California Independent
System Operator Corporation

Memorandum

To: ISO Board of Governors

From: Keith Casey, Director, Market Monitoring

Date: May 13, 2008

Re: ***Market Monitoring Report***

This is a status report only. No Board action is required.

This month's Market Monitoring Report provides comments and recommendations on four refinements to MRTU market rules being presented for approval at the May 21-23, 2008, Board of Governors Meeting:

1) Modeling and Pricing for Integrated Balancing Authority Areas (IBAAs)

2) Bidding Rules for Decremental Energy

3) Mitigation and Payment of Exceptional Dispatches

4) Generation Outage Reporting Requirements

1. Integrated Balancing Authority Areas (IBAA) Proposal

In a separate memo to the Board, CAISO Management is requesting Board approval of its proposed modeling approach of Integrated Balancing Authority Areas (IBAA) under MRTU.[1] The Department of Market Monitoring (DMM) recommends the Board review that memo prior to reading the comments and recommendations provided below, since the Management memo will provide a more complete overview of the IBAA proposal that will place the DMM comments in context.

The DMM has been very involved with the IBAA modeling issue since early 2007, and has worked closely with CAISO staff as they developed their proposal for modeling market interactions between the CAISO and Balancing Areas that are highly integrated with the CAISO system. Under the initial MRTU market

[1] See Memo to CAISO Board from Steve Greenleaf, re: *Approval of Integrated Balancing Authority Areas Proposal,* dated May 13, 2008.

design, this approach would only be applied to two Balancing Areas that are embedded within the CAISO system and are highly interconnected with the CAISO grid: the Sacramento Municipal Utility District (SMUD)[2] and the Turlock Irrigation District (TID). Due to the high degree of interconnection between these areas and the CAISO system, continued use of the current method for modeling inter-ties with the SMUD and TID balancing areas (i.e., as simple radial connections) would likely cause significant and unnecessary additional congestion on the CAISO system under MRTU. In addition, continued use of the current approach for modeling inter-ties with the SMUD and TID systems could create significant gaming opportunities as the CAISO implements a Day Ahead and Real Time Market based on Locational Marginal Pricing (LMP). Thus, it is important under MRTU for the CAISO to develop an alternative approach for scheduling and settling energy schedules with these areas that accounts for the way load and generation dispatches within the SMUD and TID areas actually affect power flows within the CAISO – and sets LMPs accordingly.

The first key objective of the IBAA proposal is to improve the accuracy of how the CAISO models the way that forward energy transactions in and out of the SMUD and TID areas impact flows and congestion on the CAISO network, in order to produce schedules and prices in the CAISO markets (Day Ahead, HASP) that are more consistent with the actual flows and prices in real-time (relative to flows and prices that would result in the current method of modeling the SMUD and TID systems, through simple radial inter-ties with the CAISO). However, because these areas are external to the CAISO system, the CAISO does not have real-time visibility to the specific resource schedules within these areas, and therefore must make certain simplifying assumptions about the location of the supply and demand which constitute the actual source and sink for import and export schedules with the CAISO. These simplifying assumptions are reflected in the design of the various hubs, proxy resources, and distribution factors that the CAISO may use to model imports/exports from SMUD and TID under the CAISO's IBAA proposal.

An important secondary objective associated with the CAISO's IBAA proposal is to guard against the potential costs for CAISO participants that could be associated with any modeling and pricing inaccuracies, and to limit the incentives that such inaccuracies could create for imports/exports to be scheduled in a manner that takes advantage of these inaccuracies to the detriment of CAISO participants. To ensure this second objective is met, the CAISO is proposing to establish a *single hub default pricing rule*, which is designed to protect CAISO participants against the potential for settlement of imports and exports between the CAISO and SMUD and TID at prices that do not reflect the actual value or cost of these imports or exports for the CAISO system. Eastern ISOs have found it necessary to adopt such single-bus default pricing rules in order to deter scheduling of imports and exports in a manner that maximizes profits (or reduces costs) for participants importing or exporting energy from an ISO, but which may impose significant costs to ISO participants in the form of increased congestion costs and/or uplift charges created by revenue differentials for imports/exports between the ISO and neighboring areas.

The CAISO initially contemplated adopting a more granular *six-hub approach* for modeling and pricing based on six different hubs for the SMUD and TID areas.[3] However, the CAISO concluded that settling transactions at different LMPs for each of these six hubs may be problematic due to the difficulty of

[2] The SMUD Balancing Authority Area also includes the systems of the Western Area Power Administration (Western), the Modesto Irrigation District (MID), the City of Redding (Redding) and the City of Roseville (Roseville).

[3] Within the SMUD IBAA, separate hubs could be used to model and price imports/exports from four separate sub-areas: SMUD, Western, Roseville, and MID sub-areas. Another fifth proxy hub would be used to model/price imports into the CAISO system from the SMUD IBAA that are actually sourced from the Bonneville Power Administration Balancing Authority Area (i.e., the Captain Jack inter-tie). A sixth separate hub would represent the TID area.

verifying the actual incremental source of generation that was increased or decreased as a result of imports/exports scheduled from each of these hubs into the CAISO. Therefore, the CAISO decided on a single hub design that would be the default scheduling and pricing location for all import/export schedules with the SMUD and TID areas. Under this approach, individual participants may still seek to be eligible for pricing of imports/exports at one or more of the previously proposed six specific hub prices, but would need to reach prior agreement with the CAISO to establish specific informational requirements and criteria for verifying the actual incremental source of generation that was increased or decreased as a result of imports/exports scheduled through the CAISO. This aspect of the proposal also mirrors the approach Eastern ISOs have taken for granting exceptions to the default single-hub pricing rule on a case-by-case basis, subject to specific information reporting requirements and criteria.

DMM believes that the CAISO's approach represents a reasonable initial approach that is designed to provide improved congestion management and pricing, while protecting against the financial risks to CAISO participants of modeling inaccuracies and potential market behavior designed to exploit modeling weaknesses. DMM is also hopeful that over time, it may be possible to incorporate a significant portion of imports/exports between the CAISO and the SMUD and TID balancing areas into agreements with the major entities in these areas that will allow for pricing and congestion management to be performed at the individual hubs within the SMUD and TID areas. Such agreements will better ensure that congestion management and the resulting CAISO market prices reflect the actual incremental source of generation that is increased or decreased as a result of imports/exports scheduled from each of these hubs into the CAISO.

In addition, DMM notes that under any approach adopted by the CAISO, it will be important for the CAISO to perform analysis and monitoring of actual system conditions and scheduling patterns on an ongoing basis to validate the modeling assumptions upon which the initial SMUD IBAA is based, and to modify these assumptions and enhance the modeling design if significant inaccuracies or flaws are identified that would create inefficient or inequitable market outcomes, or allow detrimental market behaviors. DMM believes that some aspects of this issue – such as the way the SMUD network and proxy buses are modeled – should be monitored and analyzed by the CAISO primarily as a market design and modeling issue, with the goal of establishing a feedback loop for improving specific modeling assumptions over time given actual system and market conditions. Meanwhile, DMM will monitor for specific scheduling practices that may be designed to circumvent market design rules or exploit market design weaknesses.

DMM is working with other areas of the CAISO to ensure that all these aspects of this proposal are monitored and analyzed by the CAISO in an integrated and thorough manner as MRTU is implemented. The results and experience developed in the process of monitoring and further analyzing the initial application of the IBAA approach in the SMUD area should also provide a basis for assessing how the approach might be applied to enhance the modeling of other neighboring balancing areas.

2. Relaxing the DEC Bidding Rule on Final Day-Ahead Schedules

The current MRTU tariff includes a *DEC bidding rule* requiring that decremental energy bids submitted to the hour-ahead scheduling process (HASP) and Real Time Market be equal or greater than the bid curve submitted on a day-ahead basis in the Integrated Forward Market (IFM). The intent of this rule is to prevent the so-called "DEC Game" under MRTU, where a supplier might schedule excessive amounts of energy in the IFM market and then sell this energy back in the HASP or Real Time Market at a lower price. The DEC Game was fairly prevalent under the current market design because the current forward scheduling process does not recognize or enforce transmission constraints within each of the major zones within the

CAISO Control Area (i.e., SP15, NP15). Consequently, a generator located in a generation-constrained area of the grid could over-schedule in the day-ahead scheduling process and then submit a very low-priced decremental bid to have its schedule backed-down in real-time. In so doing, the generator would pocket the difference between the day-ahead bilateral price it earned from its unit in the day-ahead process and the very low price it had to pay the CAISO in real-time to reduce its output.[4] However, because MRTU uses a full network model for the IFM (i.e., models and enforces essentially all of the transmission constraints), opportunities for this strategy under MRTU are very limited because it will generally not be possible to submit an infeasible schedule in the IFM. Under MRTU, opportunities for the DEC Game should be confined to periods when transmission constraints change after the IFM, but before the Real Time Market starts. For example, if a transmission derate occurs after the Day Ahead Market but prior to the deadline for submitting Real Time Market bids, a generator might be able to submit a very low (even negative) decremental bid to have its unit reduced in the Real Time Market. The aforementioned MRTU DEC bidding rule was intended to mitigate this concern by limiting decremental bids to being equal or greater than the submitted and accepted day-ahead bids. However, this restriction might deter generators that have legitimate higher costs to backing down their generation from submitting decremental energy bids. Consequently, the CAISO is concerned that the DEC bidding rule could reduce overall market efficiency by reducing the supply of decremental bids that may be used to balance expected loads and resources in the HASP and Real Time Markets. Thus, as discussed in a separate memo to the Board, the CAISO is proposing to "turn off" the DEC bidding rule for MRTU start-up on the grounds that the potential costs of the DEC bidding rule – in terms of decreased overall market efficiency – may outweigh the potential costs associated with mitigating the DEC Game.[5]

In addition to the factors discussed above, DMM notes that given other aspects of the final MRTU market design and software implementation, the DEC bidding rule may, in practice, be circumvented relatively easily by participants intending to employ the DEC Game. For example, since generators are not required to submit decremental energy bids, a supplier may simply not submit any decremental energy bids for a day-ahead schedule that it expects the CAISO will need to decrement in the HASP or Real Time Market. Under this scenario, the MRTU software would treat the unit as essentially having a default decremental bid of -$30/MWh (i.e., the bid floor for decremental bids under MRTU) and would decrement the resource at that price. Thus, by simply choosing not to submit a decremental bid to the Real Time Market a generator could maximize its profit opportunity from the DEC Game. Similarly, if a supplier self-scheduled generation in the IFM – knowing that the CAISO would need to decrement this resource in the HASP or Real Time Market – then the DEC bidding rule would not be applicable and the supplier would be free to submit real-time decremental energy bids at any price.

While it may be possible to address these potential flaws in the DEC bidding rule through more detailed bidding rules in future software releases, DMM supports the CAISO's proposal to suspend the DEC bidding rule during MRTU start-up on the grounds that potential costs of the DEC bidding rule – in terms of decreased overall market efficiency – outweigh any potential benefit the rule may have in mitigating the DEC Game, which DMM believes would be minimal given the above noted means for circumventing the rule. Moreover, as previously discussed, opportunities for suppliers to play the DEC Game should be very limited under MRTU given that the IFM will be modeling all transmission constraints. Nonetheless, DMM will closely monitor the degree to which the DEC Game occurs under MRTU, and, should it become necessary, propose appropriate mitigation rules.

[4] This gaming opportunity under the current market has been largely eliminated through new market power mitigation rules.

[5] See Memo to CAISO Board from Greg Cook and Anjali Sheffrin, re: *Decision on Dropping the DEC Bidding Rule*, dated May 13, 2008.

3. Exceptional Dispatch Mitigation and Payment

Under MRTU, the CAISO has authority to issue Exceptional Dispatches to address system or local reliability issues that cannot be resolved through the CAISO market software, and, therefore, have to be resolved through manual dispatch by the market operator. Such manual dispatches are referred to in the MRTU tariff as "Exceptional Dispatches". In some cases, under current MRTU tariff provisions, units receiving Exceptional Dispatches to meet special reliability or unit operating constraints that cannot be resolved through the CAISO market software may be able to exercise market power by bidding up to the $500 bid cap that will initially be in effect under MRTU. While the CAISO expects and will seek to ensure that the frequency and duration of Exceptional Dispatches will be very limited under MRTU, there is a risk that Exceptional Dispatches may be more prevalent during the first few months of MRTU market operation. In addition, even if Exceptional Dispatches are relatively infrequent, the potential cost could be significant if generators receiving such dispatches are able to exercise local or temporary market power in the Real Time Market by submitting extremely high-priced energy bids. Consequently, the DMM has recommended that the CAISO consider implementation of a tariff provision to limit the potential for the exercise of market power by units receiving Exceptional Dispatches.

During the January 2008 Board meeting, DMM presented potential modifications to the MRTU tariff to mitigate the price paid for Exceptional Dispatches of energy in cases where market power was likely to exist due to special local or unit-specific reliability requirements not incorporated or met by the MRTU software.[6] CAISO Management supported these proposed mitigation provisions, but deferred seeking Board approval in order to allow further discussion and consideration of other aspects of pricing rules for Exceptional Dispatches for units that are not under various reliability contracts that require units to offer their available capacity into the CAISO markets, and, in return, provide payments toward recovery of the unit's fixed costs. These contracts include Resource Adequacy (RA) contracts, Reliability Must Run (RMR) contracts, and any contracts established under the new Interim Capacity Procurement Mechanism (ICPM). Based on further review and stakeholder input, the CAISO is proposing to modify payment provisions for Exceptional Dispatches of energy for units that are not subject to RA, RMR or ICPM contracts.

After conducting a stakeholder process to address this issue, CAISO Management is recommending a "relaxed" mitigation provision that would apply for units that are not under RA, RMR or ICPM contracts. A detailed description of this proposal is provided in a separate memo to the Board.[7] Under the CAISO's final proposal, such resources would be eligible to be paid their *unmitigated* bid for any Exceptional Dispatches unless the unit reached a revenue cap equivalent to a monthly ICPM payment. If this revenue cap was reached, the resource's bids would be subject to the same mitigation that would be applied to RA, RMR and ICPM units for the remainder of the month. As a safeguard during the initial MRTU start-up period, the CAISO proposes to implement the mitigation rule to all units initially and to implement the relaxed mitigation after the first two months of market operation.

DMM supports the CAISO's final proposed revisions to Exceptional Dispatch payment provisions. The CAISO's final proposal incorporates the same price mitigation provisions recommended by DMM for units under RA, RMR or ICPM contracts. For units that are not under such contracts, the CAISO proposal would still limit the potential for the exercise of market power, while providing additional recovery of fixed costs if

[6] See Memo to CAISO Board re: *Decision on Bid Mitigation for Exceptional Dispatches under MRTU*, dated January 18, 2008, http://www.caiso.com/1f56/1f56f65cab60.pdf

[7] See Memo to CAISO Board from Udi Helmand and Anjali Sheffrin, re: *Decision on Exceptional Dispatch,* dated May 13, 2008.

such units receive Exceptional Dispatches for energy needed to meet local or temporary reliability requirements related to unit-specific operating characteristics. DMM expects that to the extent Exceptional Dispatches for energy are needed for local reliability, such requirements should usually be met by units under RA, RMR or ICPM contracts. Thus, DMM expects that – in practice – the impacts of the proposed Exceptional Dispatch payment provisions for units not under such contracts should be very limited. In the event that such payments become excessive, DMM will assess the cause for such Exceptional Dispatches and payments, and propose appropriate modification to market rules.

4. Generation Outage Reporting Requirements

The CAISO is proposing to amend the generation forced outage reporting requirements and the associated penalties for non-compliance in the CAISO tariff.[8] The proposed revisions cover two key areas:

- ***Time Limit for Reporting Outages or De-rates*.** The revised requirements would extend the time limit for market participants to report reductions in generator availability from 30 minutes to 60 minutes from the time of discovery.

- ***Allowance for Late Reports***. The tariff currently defines each late availability report as a violation, and provides for only a single warning letter each rolling 12-month period before financial penalties apply to violations. The proposed revisions would modify the tariff to specify that a single late report per generating unit per calendar month does not constitute a violation. In addition, if a second late report occurs in a calendar month, a warning letter would be provided rather than a financial penalty.

As described in DMM's October 2007 Market Monitoring Report, market participants' timeliness in reporting generation availability reductions improved significantly since DMM initiated enforcement of penalties for outage reporting requirement in July 2007.[9] Despite this improvement, some violations continue to occur each month, and some participants have complained that they must expend excessive effort to have perfect compliance with the 30-minute timeframe currently required.

The CAISO's Grid Operations Department has made the assessment that the proposed modifications to outage reporting requirements and sanctions can be made while still allowing the CAISO to receive the level of outage reporting needed to ensure grid reliability. Since DMM is charged with administering any sanctions for outage reporting requirements, DMM has worked with the CAISO to ensure that the proposed revisions result in clear rules that can be effectively administered. Thus, DMM believes that the proposed modifications will provide a reasonable balance between the information needed for grid reliability, and minimizing the administrative burden that outage reporting imposes on market participants and the CAISO.

[8] See Memo to CAISO Board from Jim Detmers and Greg Van Pelt , re: *Decision on Outage and Availability Reporting,* dated May 13, 2008.

[9] See Memo from Keith Casey to CAISO Board, re : *Market Monitoring Report*, dated October 9, 2007, *http://www.caiso.com/1c73/1c73b0135e3a10.pdf*