



Memorandum

To: ISO Board of Governors
From: Frank A. Wolak, Chairman, Market Surveillance Committee of ISO
cc: ISO Officers
Date: September 2, 2005
Re: *Summary of the Market Surveillance Committee Meeting of July 7, 2005*

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

The Market Surveillance Committee (MSC) held a public meeting on July 7, 2005 at the California ISO. All MSC members were present. Brad Barber called the meeting to order and asked for public comment.

Public Comment

There were no comments from the audience at the meeting or on the telephone conference call.

Market Update

Doug Bergman, Senior Monitoring Analyst in the Department of Market Monitoring (DMM), updated the MSC on the performance of the California market during May and June. The major theme of Bergman's presentation was that the relatively low load levels in the February to April continued into May and June because of mild weather, and supply conditions were relatively strong because of substantial hydroelectric energy availability in California. As a result, the real-time market in California was decremental energy market, particularly during early May and late June.

Bergman stated that because spill conditions for hydro have largely ended and load levels are higher than earlier in 2005, bids into the ancillary services market have increased so that the incidence of bid insufficiency has declined. Transmission upgrades completed over the past year have significantly reduced the volume of re-dispatched energy, intrazonal congestion costs and minimum load costs (associated with must-offer waiver-denials) during the first six months of 2005 relative to the first six months of 2004.

Uninstructed deviations continue to be a problem for ISO operators because many known technological operating characteristics of California generation units are not modeled in the Real-Time Market Application (RTMA). Most of energy that is not accounted for by RTMA is produced when generation units are starting up or shutting down. Price volatility has also continued to be a problem with RTMA because of steep bid curves in the real-time energy market. Bergman showed that during many hours of the day—particularly the early morning hours—the amount of MW bid into the real-time market at prices below \$50/MWh was less than 100 MW.

Several MSC members expressed surprise with the fact that RTMA did not account for all known operating constraints associated with California generation units in dispatch process. They urged the ISO to model all known operating constraints—in particular, start-up, no load, and steam inertia—in the day-ahead and real-time markets under Market Redesign and Technology Upgrade (MRTU). In addition, Frank Wolak urged the ISO to consider a more flexible procurement strategy for ancillary services. Instead purchasing seven percent of forecast demand

regardless of the level of demand, Wolak urged the ISO to consider purchasing the amount of ancillary services that the operators deemed necessary to reliably operate the system in real-time. Wolak recognized that a more realistic ancillary services procurement strategy would require the ISO operators to specify locational ancillary needs. However, the benefit a locational procurement strategy is that it would eliminate the need for a must-off waiver denial process.

Measuring Market Competitiveness

MSC Member James Bushnell made a presentation on the use of residual demand curves to measure unilateral market power. Jeff McDonald of DMM and Farrokh Rahimi, consultant to DMM, then made presentations on the approaches that the ISO was considering for market competitiveness measurement. Market competitiveness measures would be used for: (1) determining whether to increase the bid cap on the ISO's real-time energy market, (2) determining whether transmission paths are competitive or non-competitive, and (3) determining the competitiveness of the ISO's ancillary services procurement regions. Rahimi and McDonald discussed the approaches used by the other US ISO's for competitiveness assessment. Because it embodies the information contained in all other measures of market competitiveness, the MSC advocated that the ISO adopt a measure of market competitiveness based on a supplier's residual demand curve. The residual demand curve approach also eliminates the need to use generation shift factors to determine the effectiveness of suppliers in relieving congestion on specific transmission paths. Finally, the residual demand curve approach can be applied to the locational marginal pricing (LMP) market design that will exist under MRTU.

Bushnell noted that residual demand curve can be computed on a prospective basis using plausible assumptions about the bidding behavior of existing and prospective new entrants. The resulting residual demand curves can be used to perform market competitiveness assessments. One plausible assumption for computing residual demand curves is that all other suppliers bid their variable cost for each generation unit in their portfolio. This assumption can be thought of as the most favorable assumption against a finding of significant unilateral market power, because it assumes that all other suppliers bid as if they possessed no unilateral market power.

Bushnell then discussed how the use of this assumption could be made more realistic by dividing suppliers into those that are likely behave as price-takers (bid their variable cost function) and those likely to possess unilateral market power (strategic bidders). He then described how the residual demand curve jointly facing the strategic bidders could be computed and a non-cooperative equilibrium computed.

The discussion among MSC members then contrasted residual demand analysis with the residual supply index (RSI) and pivotal supplier frequency. This discussion emphasized that the residual demand approach nests both of these approaches. A procedure for computing residual demand curves for the locational marginal pricing (LMP) market that would exist under MRTU was also described. A similar process can be used to assess the competitiveness of ancillary services procurement regions.

CCR Allocation Mechanism

Lorenzo Kristov, Principal Market Design Architect of the CAISO, updated the MSC on the Congestion Revenue Right (CRR) allocation process. The first issue he discussed was how to treat merchant transmission investment in the CRR allocation process. James Bushnell suggested a process where the merchant transmission owner would be allowed to choose CRRs subject to the constraint that these CRRs were consistent with the increase in the simultaneously feasible set of CRRs made possible by the transmission upgrade. Under his scheme, the ISO would compute the set of simultaneously feasible CRRs before and after the upgrade. The merchant transmission owner would be given the option to choose CRRs that are simultaneously feasible as a result of the upgrade subject to the constraint that they do not limit the amount of CRRs that were allocated before the upgrade. These

CRRs would be valid for the assumed life of the merchant transmission project, regardless of what happened to the actual capacity of the transmission facility that the merchant transmission owner constructed. Under this mechanism, the merchant transmission investor is assured a known revenue stream—the CRRs that it chose at the time the merchant transmission project was put into service.

Kristov then discussed the progress of the design of the CRR allocation process. Frank Wolak reiterated his concern that it is extremely difficult to determine the historical use of the transmission network by a specific market participant, particularly given the current zonal market design. He noted that allocating CRRs based on a market participants generation holdings and the locations of its loads was a reasonable approach to determining historical use, but this would leave many CRRs unallocated. For this reason, Wolak emphasized that the major challenge of the CRR allocation process was finding a consensus among stakeholders on what constitutes a “fair” allocation of CRRs. He re-iterated his suggested “fair” allocation mechanism to first determine the total megawatts of CRRs that maximize the total congestion revenues that the ISO expects to refund and then allocate each load-serving entity its total ISO load-weighted share of each point to point CRR. For example, if an LSE had a 10 percent annual share of total ISO load, it would receive 10 percent of each of the point-to-point CRRs allocated across the entire ISO transmission network. Market participants would then be free to trade these CRRs among themselves in the informal bilateral market or in a formal CRR auction operated by the ISO.

Wolak noted that this mechanism could be modified to account for generation ownership of the load-serving entity. In particular, CRRs could be first allocated from the LSE’s generation holdings to its loads. Then all remaining CRRs could be allocated to LSEs using this load-weighted average basis. Several other members of the MSC expressed support for this two-step CRR allocation process based on verifiable historical use (generation ownership) and then load-weighted average allocation of the remaining CRRs.

Resource Adequacy Requirement Process at CPUC

Eric Hildebrandt of the DMM summarized the current state of the CPUC RA proceedings. He described the local capacity requirements (LCRs) implemented by the CPUC Resource Adequacy Requirement (RAR). Hildebrandt noted that the LCRs would replace the current Reliability Must-Run (RMR) units. He also compared the estimated 2006 RMR requirements for the California ISO control area of 17,429 MW to the 2006 LCR of 25,044 MW for the ISO control area. His presentation was followed by a number questions and comments by MSC members.

Frank Wolak asked how the local market power associated with procuring approximately half of the generation capacity in the California ISO control area as LCR units would be addressed. Wolak stated that the potential for the exercise of local market power in the LCR capacity market was substantial in several of the major metropolitan areas of California—particularly, San Diego, Western Los Angeles, and parts of the San Francisco Bay Area. He emphasized that the details of the local market power mitigation mechanism for energy and ancillary services under MRTU should be clarified as soon as possible so that California suppliers and the major California LSEs could negotiate the necessary LCR contracts or forward contracts for energy and ancillary services in time for the start of the MRTU market.

Wolak then re-iterated that the resource adequacy process should focus on preventing a repeat of the events of June 2000 to June 2001. Inadequate generation capacity to serve demand in California was not cause of the events of June 2000 to June 2001. Instead the lack of fixed-price long-term contracts for energy and ancillary services between suppliers and California’s major LSEs was the major cause of the crisis. Consequently, the resource adequacy process should focus procuring sufficient energy and ancillary services in advance to serve locations in the grid where California LSEs actually withdraw energy to serve their customers.

James Bushnell reiterated his concern that any mechanism for verifying whether LSEs had procured sufficient capacity to meet its LCR should have ex post verification process and penalties for non-compliance by the LSE. Bushnell said that he does not object to having an ex ante verification of whether a supplier had met its LCR obligations. However, he questioned the usefulness of an ex ante verification process that if the LSE failed it and the ISO would be left with no alternative way to meet its LCR obligation. Bushnell advocated an ex ante approach that occurred far enough in advance that if the LSE failed the ISO would have enough time to take the actions necessary to address this LCR deficiency. Bushnell felt that there should also be an ex post verification and penalty process to provide sufficiently strong incentives for the LSE to meet its LCR obligations.

Settlement of Intertie Bids

Lorenzo Kristov updated the MSC on the settlement of the intertie bids under the Real-Time Market Application (RTMA). The MSC recently completed an opinion supporting the ISO's pay-as-bid mechanism as its preferred interim solution to settling bids submitted at the interties until the MRTU market design can be implemented.¹ The MSC emphasized that this opinion did not imply that it supported a pay-as-bid settlement for intertie bids under MRTU.

Kristov described a number of difficulties presented by the current process of pre-dispatching imports. The RTMA must simulate how internal resources are likely to operate within the hour in deciding how much energy to pre-dispatch at the beginning of the hour. This process is complicated by the limited amount of flexible generation capacity bid into the real-time market and the fact that a number of known operating constraints on internal generation units are not modeled in the RTMA. These factors have contributed to the volatility of the real-time prices noted by Doug Bergman in his market update. Because the ISO had decided to continue with the current pay-as-bid mechanism as its interim solution, Kristov and the MSC focused their subsequent discussion on how the interties should be settled under MRTU.

Frank Wolak asked whether it would be possible for the ISO to eliminate the pre-dispatch of imports and encourage more importers to schedule dynamically and in that way set and receive the ten-minute real-time price, just like internal generation resources. Wolak acknowledged that eliminating the pre-dispatch process and requiring all importers to schedule dynamically would almost certainly reduce the amount of participation by importers in the real-time market. He also stated that eliminating the pre-dispatch process would have the following benefits. First, it would encourage importers to schedule more energy in the day-ahead and hour-ahead markets (if the CAISO were to implement an hour-ahead market under MRTU). It would reduce the thinness of the day-ahead, hour-ahead, and real-time energy markets, because importers would be required to compete on equal footing with internal resources in these three markets. Finally, it would limit the ISO's role as a market participant to just the real-time market, when it buys and sells energy on behalf of market participants that are out of balance with respect to their final schedule. Under the current market design, the ISO is the sole buyer of energy in both the pre-dispatch process and the real-time market. As a consequence, it is extremely difficult for market participants to arbitrage price differences between the pre-dispatch process and the real-time market. In particular, by purchasing a significant quantity of imports in the pre-dispatch process the ISO operators can significantly reduce the demand for energy in the real-time market and thereby depress the real-time price. If the ISO is the single buyer in both the pre-dispatch process and the real-time market, there are few options available to market participants who would like to profit from attempts by the ISO operators to reduce the demand for energy in the real-time market. By eliminating the pre-dispatch process, market participants no longer need to be concerned with the ISO operators' attempts to reduce the demand for energy in the real-time market. Given the existence of the residual unit commitment (RUC)

¹ "Medium-Term Solution to Clearing Intertie Bids in the Real-Time Energy Market" June 24, 2005, available at <http://www.caiso.com/docs/2005/06/24/2005062410563929595.pdf>.

under MRTU the reliability argument for pre-dispatch process for imports is less compelling, because the ISO operators can purchase the necessary capacity through the RUC process.

Kristov acknowledged these advantages associated with eliminating the pre-dispatch process, but he countered that the ISO operators may be uncomfortable with eliminating the pre-dispatch process because of reliability concerns. Wolak responded that he hoped that the ISO would work with the major importers to obtain an increased amount of dynamic scheduling and hour-ahead market participation so as to eliminate the need for the pre-dispatch process.

The public meeting was adjourned by Brad Barber at 3:15 pm. The MSC met in executive session until 5:30 pm to discuss specific market participant bidding behavior, to review the must-offer waiver denial process, and the current pay-as-bid settlement for interties.