

7. Issues Under Review and Investigation

7.1 2003 Investigations

7.1.1 Ancillary Service Price Spikes and Bid Insufficiency

During the summer of 2003, the markets for non-spinning and spinning reserve often cleared at unusually high levels on high load days. Our subsequent analysis revealed that a small group of participants had large quantities of reserves available from on-line units and were able to bid these reserves into the ancillary service markets in a manner that significantly influenced market outcomes. The DMA assessed the competitiveness of bidding in these markets by thermal units that were on-line and committed to provide a significant portion of their capacity as energy through a bilateral transaction scheduled in the Day Ahead market. In performing the assessment, the DMA compared the bid prices of these units to the potential opportunity costs associated with providing spinning and non-spinning reserve. Opportunity costs were measured by the difference between real time market energy prices and each unit's marginal operating costs.¹ The DMA forwarded the results of this analysis and other results of the ISO's investigations into ancillary service bidding practices to FERC. The CAISO continues to monitor its ancillary service markets for anti-competitive behavior.

The DMA's investigation of price spikes in the ancillary service markets also revealed a trend of low bid sufficiency that began in October. Its investigation into low bid sufficiency led the DMA to conclude that there was a significant amount of unloaded capacity that could be bid into the ancillary service markets, but participants were discouraged from doing so by market rules making units that were denied Must-Offer Waivers ineligible to receive Minimum Load Cost Compensation (MLCC) if they had a Day Ahead or Hour Ahead market schedule for energy or Ancillary Services. The CAISO is filing a proposed change to this rule with FERC that will allow units denied Must-offer Waivers the opportunity to provide ancillary services and keep these revenues in addition to the MLCC payments covering their operating costs at minimum load.

¹ For example, if the expected real time energy price was \$80 and a unit's incremental marginal cost was \$50, the potential opportunity cost of keeping a portion of a unit's capacity unloaded and scheduling it as spinning or non-spinning reserve would be \$30.

7.1.2 Palo Verde Negative Decremental Bidding

In July, the 500kV Miguel transmission line was congested and the CAISO needed to utilize decremental supplemental energy bids at the Palo Verde tie point to relieve this congestion. A number of supplemental energy export bids submitted at Palo Verde were selected and subsequently dispatched, at low or even negative prices. Although the soft price cap of -\$30 for decremental energy was not exceeded, the CAISO became concerned about the persistence of unusually low decremental energy prices when the Miguel line was congested. This concern stemmed from the fact that day-ahead hub prices for energy in the Southwest region were notably higher than the prices being bid at Palo Verde for decremental energy. Potential reasons for marketers bidding low bid prices for decremental real time energy at Palo Verde include the difficulty, risks and transaction cost of selling “odd lots” of energy with relatively short notice. DMA has analyzed the costs of this potential anti-competitive bidding based on a range of potential competitive benchmark prices of \$0, \$10 and \$20. The results of this analysis are shown in Table 7.1. For example, if we assume that the competitive market value of decremental real time energy dispatched out of sequence (OOS) on the Palo Verde tie is \$20, then the potential overcharges resulting from the non-competitive bidding would be about \$3.2 million in 2003. These additional costs would be \$2 million at a benchmark price of \$10 or about \$1.2 million at a benchmark price of \$0. The \$1.2 million in costs relative to a benchmark price of \$0 reflects the total amount of savings that would have occurred from decremental energy sales on the Palo Verde intertie if a \$0/MWh minimum decremental bid cap had been in effect, rather than the -\$30/MWh minimum decremental bid cap currently in effect under the FERC’s July 17, 2002 Order.

In order to put decremental energy costs associated with potentially uncompetitive market conditions in perspective, Table 7.1 also shows the “redispatch costs” associated with these OOS dispatches of decremental energy in real time calculated by valuing this decremental energy at the real time market clearing price (MCP). The total re-dispatch cost is approximately \$7.6 million for the period covering August through December 2003,² of which \$1.2 million to \$3.2 million may be attributable to uncompetitive market conditions based on this analysis.

The CAISO has referred the issue of potential anti-competitive bidding of decremental energy in the real time market to FERC, and continues to monitor the total costs and behavior of individual participants bidding at the ties for potentially anti-competitive behavior.

² This re-dispatch cost is a subset of the decremental re-dispatch costs tabulated in the section on Intra-zonal Congestion Costs earlier in this report.

Table 7.1 Decremental Costs for Out-of-Sequence Energy at the Palo Verde Tie Points

Month	MWh	Avg. Price	Cost @ Different Price Benchmarks			
			\$0	\$10	\$20	Re-dispatch Cost
Aug-03	-29,736	-4.06	256,991	452,202	725,839	1,178,260
Sep-03	-20,087	-2.76	196,950	298,906	457,684	1,075,665
Oct-03	-37,975	-10.32	548,506	833,272	1,167,453	1,966,052
Nov-03	-4,590	9.20	1,675	13,601	49,839	81,785
Dec-03	-34,770	-2.73	263,426	499,607	807,727	3,307,417
Total	-127,158		1,267,548	2,097,588	3,208,542	7,609,179

7.1.3 Circular Schedules

Following the release of the Enron Memoranda in May 2002, the CAISO issued a Market Notice on June 14, 2002 detailing prohibited behaviors and notifying participants that these behaviors would be subjected to increased scrutiny. Among those behaviors was circular scheduling, which Enron counsel referred to as “Death Star.” Circular schedules have been described as sets of schedules on two or more tie-points between different control areas or zones which create a closed loop flow of energy that does not have a separate generation source and load in the CAISO Control Area or in another control area. The entire purpose of the circular schedule is to collect congestion revenues by creating a scheduled counter flow on a congested path within the CAISO system. In the presence of forward transmission congestion, the market participant would insert a schedule ostensibly from a source outside CAISO, wheel the schedule through CAISO on a congested path against the direction of congestion (the “counter-flow direction”), then connect transmission back from CAISO to the supposed generation source. The CAISO categorizes this practice as circular scheduling. Due to the physics of power flows, no real power would actually flow although the schedule would get paid for congestion relief.

DMA instituted a review of such scheduling behavior in 2003 beginning with the date of the 2002 Market Notice and extending to May 2003. It issued data requests regarding these schedules to four market participants. DMA’s review of participant responses prompted the CAISO to issue cease-and-desist letters directing several market participants to cease the practice of circular scheduling. DMA continues to monitor potential circular scheduling patterns and will continue to investigate and, if necessary, refer circular scheduling activity to FERC.

The CAISO also included a prohibition on circular scheduling and penalties for any violations of this prohibition in its Oversight and Investigation filing (Amendment 55) made in July 2003. In February 2004, the FERC issued an Order on Amendment 55 affirming the CAISO’s proposed prohibition on submitting circular schedules. FERC retained authority to penalize circular scheduling and did not grant the CAISO authority to penalize such behavior.

7.1.4 FERC Orders Show Cause on Enron-style Gaming Strategies

In June, the FERC issued an Order to Show Cause to specific market participants why the transactions identified by the DMA as potential gaming transactions should not be considered gaming transactions.³ The ultimate purpose of this Order was to disgorge profits resulting from market behavior that the FERC deemed to be in violation of the CAISO tariff. DMA submitted additional analysis identifying potential employment of these strategies and provided verification and clarification to named parties. In the settlement portion of this proceeding, the CAISO filed objections to numerous proposed settlements that the CAISO believes did not reflect the extent to which the named party had employed the gaming strategies, or provided inadequate justification that the gaming did not occur. Table 7.2 below shows the current proposed settlement amounts, by market participants.

Table 7.2 Settlement Amounts for Gaming Order to Show Cause.⁴

Participant	Settlement Amount (\$000)
American Electric Power Service	\$445
Aquilia Power Corp.	\$76
Coral Power	\$7,800
Duke	\$550
Dynegy	\$3,000
Idaho Power	\$83
Mirant	\$332
Modesto Irrigation District	\$14
Morgan Stanley	\$857
PacifiCorp	\$68
Portland General Electric	\$13
PowerEx	\$1,300
Puget Sound Energy	\$17
Redding, City of	\$6
Reliant	\$836
SDG&E	\$28
Sempra Energy Trading	\$7,200
Williams	\$45
Total	\$22,671

To date, Enron is the only party named in the Commission's Gaming Order to Show Cause that has not proposed a settlement.

³ See the Department of Market Analysis 2002 Annual Report on Market Issues and Performance for a more complete description of the gaming strategies and accompanying analysis.

⁴ The numbers in this table are current as of February 2004, and represent either certified or proposed settlement amounts.

7.2 Market Surveillance Committee (MSC)

Historically, the MSC has served as an impartial voice on market issues primarily for the CAISO as well as for state policymakers, the FERC and the media. Since its inception, CAISO management and the FERC have adopted a number of Committee recommendations. The MSC has been recognized consistently by the industry and the public as successful due in large part to the stature of its members as nationally recognized experts as well as their perceived independence. Both characteristics have led to the MSC being shown considerable deference by state and federal regulators.

During 2003, the Committee consisted of the following members: Frank Wolak of Stanford University, Benjamin Hobbs of John Hopkins University, James Bushnell of University of California, Energy Institute at Berkeley, and Brad Barber of University of California, Davis Graduate School of Management. Frank Wolak serves as the Chairman of the Committee.⁵

7.2.1 Current Members

Dr. Frank A. Wolak, the Chairman of the MSC since its inception in 1998, is a Professor of Economics at Stanford University. His fields of research are industrial organization, regulatory economics, econometric theory, and health economics. He specializes in the study of methods for introducing competition into infrastructure industries -- telecommunications, electricity, water delivery and postal delivery services -- and on assessing the impacts of these competition policies on consumer and producer welfare. Dr. Wolak is a visiting scholar at University of California Energy Institute and a Research Associate of the National Bureau of Economic Research (NBER).

Dr. Benjamin F. Hobbs, a member of the MSC since 2002, is a Professor of Geography and Environmental Engineering and Chairman of the Department of Geography and Environmental Engineering at the Johns Hopkins University, Baltimore, Maryland with a joint appointment in the JHU Department of Mathematical Sciences. Professor Hobbs has published widely on environmental and water resources systems and on electric power market economics, regulation, and systems analysis. His area of expertise includes use of engineering economic models to simulate imperfectly competitive energy markets, and decision analysis of alternatives under uncertainty and multiple objectives. He teaches courses on microeconomics, decision analysis, and optimization, with emphases on environmental and power sector applications. He also serves as Scientific Advisor to the ECN Policy Studies Unit and on the Public Interest Advisory Committee of the Gas Technology Institute. Dr. Hobbs is on the editorial boards of the ASCE Journal of Infrastructure Systems; Energy, The International Journal; and The Electricity Journal. He is also Area Editor for Energy, Natural Resources, and the Environment for Operations Research. He is a Senior Member of IEEE and Member of ASCE.

⁵ More information available at <http://www.aiso.com/surveillance/overview/Committee.html#Members>

Dr. James Bushnell serves as the Director of the California Energy Institute at Berkeley. He also serves as Lecturer at the Haas School of Business, Berkeley on policies and strategies in the energy markets. His research interests include, game theoretic optimization models, industrial organization and regulatory economics, energy policy, and environmental economics. He has published numerous articles on the economics of electricity deregulation and has testified extensively on energy policy issues. Much of his research has focused on examining the market incentives; in particular, the market rules and structures created, and in developing empirical methods for measuring the impact of market power on deregulated electricity markets.

Dr. Brad M. Barber is a Professor of Finance at the UC Davis Graduate School of Management. His recent research focuses on analyst recommendations and investor psychology. He is a regular speaker at academic and practitioner conferences. He currently also serves on the Investment Advisory Committee for Mercer Global Advisors.

7.2.2 Accomplishments

A few of the notable accomplishments of the current four-member MSC during 2003 are listed below:

- Filed five opinions on pertinent MD02 issues with FERC, such as locational marginal pricing and local market power mitigation. These opinions assisted the CAISO in receiving positive outcomes in subsequent FERC rulings.
- Provided expert advice to CAISO management on potential gaming opportunities in the market and how to improve CAISO protocols to reduce incentives or loopholes that may cause gaming and manipulation of the market.
- Authored several white papers that provided technical advice for MD02 policy decisions.
- Provided input to the stakeholder process considering the ramifications of WAPA separating from the CAISO control area.
- Reviewed and commented upon a number of different studies undertaken by the CAISO and participated in the stakeholder process.
- Attended numerous FERC technical conferences on market monitoring techniques, MD02 design issues, and locational market power mitigation mechanisms. Contributed significantly to the discussions with the stakeholders, provided technical support in resolving pending issues of MD02 implementation, and suggested changes to the MD02 implementation.
- Met with FERC staff and Commissioners and state legislators on behalf of the CAISO to discuss several MD02 issues.
- Continued to provide expert advice to the Department of Market Analysis (DMA) in the development of tools used to assess the benefits of the transmission expansion and the design of market power mitigation measures.

The following sections provide a brief summary of the specific activities of the MSC during the year of 2003.

7.2.3 MSC Opinions

The following is a list of opinions provided by the Committee during the year and a short description of what the Committee filed with FERC and other regulators⁶.

1. *Comments on Locational Marginal Pricing (LMP) and the California ISO's MD02 Proposals. April 7, 2003*

In this opinion, the Committee endorsed the general framework of the proposed CAISO market design. Specifically, they addressed locational marginal pricing (LMP) and its uncertain impact on the consumers. The Committee extensively explored the reasons why market redesign was necessary and made the following observations:

- The application of LMP is not a revolutionary or experimental concept.
- The application of LMP to retail load has been indefinitely postponed.
- Testing and simulation is not the same thing.
- LMP-based transmission management and MD02 cannot be separated easily.

In conclusion, the Committee stated that LMP, though a small part of the MD02, is a significant part of the market redesign. The Committee commented on the phased implementation process proposed by the CAISO and noted that the implementation of LMP will be beneficial in long run by (1) providing the ability to secure effective local market power mitigation tools from FERC, (2) reducing undesirable trading strategies (e.g., the “dec game”), (3) providing greater transparency, efficiency, and reliability in system operation, (4) improving demand responsiveness (given the ability of dispatchable loads to bid and respond as generation and receive the LMP), and (5) allowing greater granularity in the costs of transmission congestion to aid the transmission planning process.

We would like to note, however, that the CAISO deviated from the phased implementation process for LMP at the later part of the year and will be further exploring a single phased implementation through the stakeholder process during 2004.

2. *Opinion on Scheduling Priority for Balanced Schedules May 9, 2003*

In this opinion, the MSC considered three specific questions about whether MD02 should include a scheduling priority for balanced schedules in the day-ahead market:

- I. When there is no transmission congestion, but the total bid and self-scheduled generation cannot satisfy the self-scheduled (vertical) demand of all schedule coordinators (SCs), what priority should be given to preserving balanced schedules when curtailing loads?
- II. When there is transmission congestion, but it cannot be resolved with adjustment bids, what priority should be given to preserving balanced schedules when curtailing load or generation?
- III. Should congestion revenue rights (CRRs) attached to self-schedules (either balanced or unbalanced) provide such schedules a higher priority over self-schedules with no CRRs?

⁶ The MSC opinions can be found at the ISO website at <http://www.caiso.com/docs/2000/09/14/200009141610025714.html>

The MSC opposes the idea of a scheduling priority but does discuss the special circumstances in which the priority can be given to scheduling coordinators. It also states that CRR holders should not be given any priority for scheduling but CRRs should be used for financial hedging.

3. *Opinion on the Necessity of Effective Local Market Power Mitigation for a Workably Competitive Wholesale Market May 29, 2003*

In this opinion, the MSC addressed the inadequacy of local market power mitigation (LMPM) in the current CAISO market, characterized the determinants and identified why they are common to all congestion pricing methods, including locational marginal pricing (LMP). They also described a set of criteria for evaluating LMPM mechanisms and proposed an LMPM mechanism for the California market that satisfies these criteria. In summary, the MSC strongly urged the Federal Energy Regulatory Commission to allow the CAISO to implement effective local market power mitigation.

4. *Letter of Support for Amendment 55 Filing by California ISO. September 4, 2003*

In this letter, the MSC supported the CAISO Amendment 55 filing and reiterated the needs for a mechanism for monitoring, investigating, and penalizing market rule violations in the CAISO's Amendment 55 filing.

5. *Opinion on MD02 Single-Step Implementation and LMP Testing. November 18, 2003*

The CAISO's proposed MD02 design originally included plans to implement a multi-settlement locational marginal pricing (LMP) market in two steps. First the CAISO would implement a day-ahead zonal energy market where it would commit units based on start-up costs and their energy bids using a network model that only recognized transmission constraints across the CAISO's existing congestion zones. Several months later, the CAISO would then implement a day-ahead LMP market with a real-time LMP balancing market. A number of factors have led the CAISO to re-think this two-step implementation process and, instead, consider implementing the multi-settlement LMP market in a single step. The MSC concluded that the transition to an LMP market should be viewed as a continuous process rather than a discrete and irreversible decision.

In addition to these opinions, the committee members, individually and collectively authored many white papers to support the MD02 efforts of CAISO. They also contributed significantly to the technical LMP and CRR studies the CAISO conducted during 2003.

7.2.4 MSC Meetings

During the year, the MSC conducted five all day meetings at the CAISO offices in Folsom. The primary topics of Committee discussion were current market operation issues, and market design issues. The meetings provided a forum for the stakeholders to take part in the discussions with the MSC and allowed the MSC to understand the opinions and concerns of the stakeholders.

7.2.5 Other MSC Activities

In addition to providing opinions and discussing current market issues in public meetings, the MSC was very active in supporting the CAISO in its efforts to inform state legislators and regulators about the CAISO's market redesign efforts and other issues throughout the year. MSC chairman Frank Wolak, and James Bushnell attended meetings with the Electricity Oversight Board (EOB) and visited the legislative staffs of senators to discuss various market design issues. The MSC also collectively and individually attended several CAISO and FERC stakeholder meetings on MD02 market design. The MSC continues to provide technical advice to the improvement of the Transmission Economic Assessment Methodology (TEAM).