



CALIFORNIA ISO

California Independent
System Operator

November 3, 2003

The Honorable Magalie Roman Salas
Secretary
Federal Energy Regulatory Commission
888 First Street, N.E.
Washington, DC 20426

**Re: California Independent System Operator Corporation,
Docket No. ER02-1656-009, 010 and 011 and Investigation of
Wholesale Rates of Public Utility Sellers of Energy and
Ancillary Services in the Western Systems Coordinating
Council, Docket No. EL01-68-017**

Dear Secretary Salas:

Enclosed for filing in the above-captioned dockets, please find the Status Report of the California Independent System Operator Corporation ("ISO") that will be released to the public.

Simultaneous with the instant filing, the ISO is submitting a version of the Status Report that contains confidential information. In the instant version of the Status Report, the confidential information, *i.e.*, **Attachment A**, has been redacted. In all other respects, the version of the Status Report to be released publicly is identical to the version of the Status Report that contains confidential information.

Respectfully submitted,

A handwritten signature in black ink that reads "Anthony J. Ivancovich" followed by a stylized flourish.

Charles F. Robinson
Anthony J. Ivancovich
The California Independent System
Operator Corporation
151 Blue Ravine Road
Folsom, CA 95630

Attorneys for the California Independent
System Operator Corporation

**UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION**

California Independent System) Docket No. ER02-1656-000
Operator Corporation)
)

Investigation of Wholesale Rates of Public)
Utility Sellers of Energy and Ancillary) Docket No. EL01-68-017
Services in the Western Systems)
Coordinating Council)

**STATUS REPORT OF THE
CALIFORNIA INDEPENDENT SYSTEM OPERATOR CORPORATION**

The California Independent System Operator Corporation (“ISO”)¹ respectfully submits this monthly progress report (“Report”) in compliance with the Commission’s November 27, 2002 “Order Clarifying The California Market Redesign Implementation Schedule”, 101 FERC ¶ 61,266 (2002) (“November 27 Order”), issued in the above-referenced dockets.

The November 27 Order required the ISO to file reports on the first Monday of each month, beginning in January 2003, to update the Commission on the ISO’s progress in designing and implementing the market redesign effort. The Commission directed the ISO to file a full market redesign implementation plan, including a detailed timeline with the sequential and concurrent nature of the design elements, the software and vendors (once selected) to be used, and

¹ Capitalized terms not otherwise defined herein are used in the sense given in the Master Definitions Supplement, Appendix A to the ISO Tariff.

the cost estimates for each element. The November 27 Order required that the first report include explanations of the following: (1) any alternative methods of developing market redesign elements; (2) the ISO's progress in developing the market redesign elements; (3) the action required to establish such elements; and (4) a detailed breakdown of the total start-up costs.² The Commission directed the ISO to update the market redesign implementation plan on a monthly basis, indicating the progress made and the upcoming steps.

On January 10, 2003, the ISO filed its first Status Report in compliance with the November 27 Order. Subsequent to the first filing, the ISO continues to file monthly Status Reports with the Commission on the first Monday of each month. The instant Report is intended to satisfy the monthly reporting requirement in the November 27 Order, update the information included in prior Status Reports, and generally advise the Commission of the current status of the market redesign implementation effort.

I. NOVEMBER STATUS REPORT

Section A includes a narrative of the significant changes to the "Program Plan – High Level" schedule activity that have occurred since the filing of the prior month's Status Report. Section B includes a narrative regarding the budget along with an updated Budget Tracking and Status Report.³ The Budget Tracking and Status Report is contained in Attachment A. Attachment A continues to remain confidential -- at least until the ISO has negotiated and

² November 27 Order at P 9.

³ The narrative includes only non-confidential information.

contracted with bidders for significant portions of the required functionality. In that regard, it would not be commercially prudent to reveal estimates of vendor costs prior to negotiation and contracting with successful bidders. Section C identifies the ISO's key market redesign implementation issues including the previous month's accomplishments, major milestones, upcoming activities, issue resolution with stakeholders and items requiring timely resolution by the Commission in order to meet the project schedule.

A. Current Project Timeline

Phase IB: The Commission ruled on the ISO's Tariff language, Amendment 54, on October 23, 2003. The ISO is reviewing the order. The Commission is requiring the ISO to modify its Tariff within 30 days and correct any inconsistencies and invalid references in the Tariff and Operating Protocols within 90 days of the order.

System testing for the Phase IB elements is over 75 percent complete with approximately 600 tests completed, and all critical components will be completed prior to the start of market simulation. In the October 6, 2003 Status Report, the ISO reported that some elements of testing and development were two to three weeks behind schedule, and that the ISO was working towards beginning market simulation on November 3, 2003. The ISO also reported that this date would be at risk if the testing did not continue to progress at a solid pace. Because intermittent system availability issues have prevented uninterrupted testing runs, the ISO is extending pre-market simulation activity resulting in deferral of the start of market simulation to November 17, 2003. The ISO announced the

deferral and discussed it with Market Participants on October 28, 2003 in its weekly conference call. See detailed discussion of the October 28, 2003 conference call in Section C.2 *infra*. The ISO is hopeful that the additional testing time will result in a smooth market simulation. The ISO will develop a draft document outlining the criteria for determining at what point market simulation will be deemed complete and successful. It is the intent of the ISO to allow Market Participants the opportunity to provide additional input to this document. Throughout the market simulation period, the ISO, along with the market simulation participants, will evaluate the completed test cases for meeting the market simulation criteria in the ultimate determination of the “go-live” date, currently scheduled for February 1, 2004. The ISO will keep the Commission apprised of any change in the Phase IB implementation date. The Phase IB team completed registration of Market Participants for market simulation on October 14, 2003, and is finalizing market simulation test case scenarios with Market Participants’ input.

The ISO conducted Phase IB overview and Settlements training for approximately 84 Scheduling Coordinators (“SC”) on October 16, 2003 and October 20-22, 2003, respectively. Training for ISO Operators began on September 17th and will continue through January 2004.

Integrated Forward Market/Locational Marginal Pricing: The Commission ruled on the ISO’s July 22, 2003 Comprehensive Market Redesign

Proposal on October 28, 2003.⁴ The ISO is carefully reviewing the October 28 Order, in which the Commission gave the ISO approval to proceed with the development of software and tariff modifications and to implement MD02 without further delay. The ISO continues contract negotiations with the preferred vendors selected for both the Integrated Forward Market/Locational Marginal Pricing (“IFM/LMP”) and Congestion Revenue Rights (“CRR”) functionality. The ISO can now seek approval to finalize and award the contracts from the ISO Board of Governors as soon as contract negotiations are satisfactorily concluded.

At the October 23, 2003 ISO Board of Governors’ meeting, the ISO presented the MD02 Implementation Plan and Project Implementation schedule. A document titled “Discussion Paper and Proposed Duration Timeframe / The California ISO MD02 Implementation Plan” was posted to the ISO website⁵ and is included as Attachment B to this status report. The document outlines the reasons and benefits for moving from a two-step implementation plan to a one-step implementation plan. The proposed implementation date of October 2005 for IFM/LMP is dependent on key milestones, including (1) the Commission’s approval of the conceptual design without significant design changes; (2) the Commission’s approval of the ISO’s IFM/LMP Tariff language when filed; and (3) getting agreement from vendors that development can be completed within the timeframe assumed.

⁴ *California Independent System Operator Corp.*, 105 FERC ¶ 61,140 (2003) (“October 28 Order”).

⁵ The “Discussion Paper and Proposed Duration Timeframe / The California ISO MD02 Implementation Plan” can be found at <http://www.caiso.com/docs/2003/10/22/200310221055469117.pdf>.

As a result of the ISO's reorganization of the MD02 Project, on a going-forward basis Phase II and Phase III will be referred to as IFM/LMP. The ISO will provide updates to more than 15 specific projects under the IFM/LMP umbrella, as appropriate.

B. Market Redesign Budget Update

Attachment A -- the Budget Status and Tracking Report (which remains confidential) -- compares actual expenditures to forecast expenditures. Specifically, Attachment A shows the budgeted amounts, the amounts authorized by the ISO Board of Governors ("Board"), the amounts that have been approved through the internal ISO accounting process, and actual expenditures to date.

C. Key Issues

1. Settlements and Market Clearing Request for Proposals

The Settlements and Market Clearing Request for Proposal ("Settlements RFP") Evaluation team continues discussions with the top ranking vendor to address key requirements prior to final vendor selection. Additional interviews, demonstration, and performance benchmarking meetings are scheduled through mid-November 2003, to complete the evaluation. Awarding of a contract is now projected for late-January 2004, pending approval by the ISO Board of Governors.

In additional, the MD02 Project Timeline also was replaced and can be found at <http://www.caiso.com/docs/09003a6080/1d/97/09003a60801d976c.pdf>.

2. Phase IB Technical Issues

Beginning October 7, 2003, the ISO increased the frequency of Phase IB conference calls from bi-weekly to weekly to provide a forum for Market Participants to ask questions and provide input prior to and during market simulation. The primary topics discussed during the month of October 2003, included (1) market simulation preparation; (2) Expected Energy Accounting calculations and discussion of the "Draft MD02 Phase 1B Expected Energy Resulting From ADS Dispatch Whitepaper, version 1.4"⁶; (3) SLIC II Web Client User Interface Design⁷ requirements for Phase IB; and (4) ADS security and connectivity.

The primary agenda item for the October 28, 2003, conference call was to discuss the extension of pre-market simulation activity, which would result in deferring the start of market simulation. The ISO identified some of the issues that lead to the decision to defer the start of market simulation from November 3rd to November 17, 2003. The ISO will use the first two weeks of November to resolve any outstanding market simulation issues with Market Participants as well as to complete the necessary staging. The Phase IB team completed a draft calendar that outlines (1) pre-market simulation preparation; (2) testing activity to expect each day during market simulation; and (3) training classes for SCs who

⁶ The "Draft MD02 Phase 1B Expected Energy Resulting From ADS Dispatch Whitepaper, version 1.4" can be found on the CAISO website at <http://www.caiso.com/docs/2003/10/07/2003100710073628339.pdf>

⁷ The SLIC II Web Client UI Design – MD02 Phase IB can be found on the CAISO website at <http://www.caiso.com/docs/09003a6080/27/ca/09003a608027cadd.pdf>.

did not participate in market simulation. The ISO posted the calendar⁸ to the ISO website on October 29, 2003, and it is included as Attachment C to this Status Report.

3. Locational Marginal Pricing Studies

The ISO posted the third Locational Marginal Pricing (“LMP”) Price Dispersion Study⁹ to its website on October 6, 2003 and responded to Market Participants’ questions about the study during a conference call on October 24, 2003. As reported in the October 6, 2003 Status Report, a final LMP price dispersion study report will be completed at the end of 2003, which will include simulation of a full year of LMPs using the market bids submitted in the ISO’s current zonal market.

4. Congestion Revenue Rights Study

The ISO met with Market Participants to discuss the Preliminary Congestion Revenue Rights (“CRR”) Study Report 1¹⁰ on October 20, 2003. Market Participants submitted questions about the CRR Study to the ISO. The ISO posted responses to questions submitted by Market Participants to its website on October 27, 2003.¹¹ A second CRR Study is scheduled to begin in

⁸ The Draft Phase 1B Market Simulation calendar can be found on the CAISO website at <http://www.caiso.com/docs/2003/10/29/200310291445332033.pdf>.

⁹ The third LMP Dispersion Study can be found on the CAISO website at <http://www.caiso.com/docs/09003a6080/28/09/09003a608028095e.pdf>.

¹⁰ The CRR Preliminary Study Report 1 and presentation material can be found on the CAISO website at <http://www.caiso.com/docs/2002/08/23/200208231358035858.html>.

¹¹ The ISO responses to questions submitted on the CRR Study Report 1 can be found on the CAISO website at <http://www.caiso.com/docs/2003/10/27/2003102711171928064.pdf>.

November 2003. The ISO will include Market Participants in the development of criteria and parameters for the second study.

The ISO staff continues to work with the California Public Utilities Commission ("CPUC") to ensure coordination with their long-term responsibilities concerning CRR allocation.

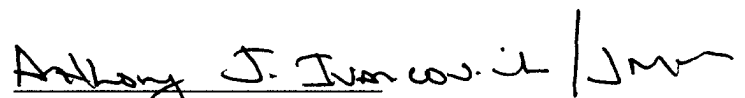
5. CPUC Procurement Proceedings

In the October 6, 2003 Status Report, the ISO reported that the Administrative Law Judge ("ALJ") expects to issue a draft decision on November 18, 2003, with a final decision scheduled for mid-December 2003. On October 25, 2003, however, the CPUC issued a ruling establishing a two-day workshop to address selected resource adequacy issues. The intent of the workshop is to supplement the expected CPUC decision. At this time, the ISO believes the ALJ's schedule is still valid, but may change as the CPUC considers the draft decision. The ALJ recognized the value of conducting a two-day workshop to address the technical details of specific resource adequacy issues. The ruling requires that a written report be submitted by January 14, 2004, summarizing options, findings and recommendations made at the workshop. The ISO will be participating in the workshop once it is scheduled. The ISO believes that the CPUC's decision will address the major elements of the state resource adequacy framework, but leave many of the implementation details to the subsequent decisions related to the workshop.

II. CONCLUSION

In Section I of this Report, the ISO has responded to the Commission's request for specific information on progress, critical issues, budget and alternative methods for the market redesign implementation effort. The ISO appreciates having the opportunity to comment and report on the progress being made on its market redesign.

Respectfully submitted,


Charles F. Robinson
Anthony J. Ivancovich

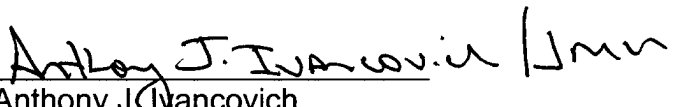
Counsel for the California Independent
Operator Corporation

Dated: November 3, 2003

CERTIFICATE OF SERVICE

I hereby certify that I have this day served the foregoing document upon the Public Utilities Commission of the State of California and upon all parties of the official service lists maintained by the Secretary for Docket Nos. ER02-1656-000 and EL01-68-017.

Dated at Folsom, California, this 3rd day of November 2003.


Anthony J. Ivancovich
The California Independent System
Operator Corporation
151 Blue Ravine Road
Folsom, California 95630

ATTACHMENT A

**Privileged Information Has Been Redacted
Pursuant to 18 C.F.R. § 388.112**

ATTACHMENT B



CALIFORNIA ISO

California Independent
System Operator

Attachment B

**Discussion Paper and Proposed Duration Timeframe
The California ISO MD02 Implementation Plan**

**Board of Governors Meeting
October 23, 2003**

Summary

The California ISO proposed MD02 design represents a significant change over the current market design, which when implemented in its entirety, should greatly improve the efficiency and reliability of California's wholesale markets. This document provides an overview of the California ISO MD02 Implementation Plan including a description of the California ISO's plans for conducting studies and market trials of Locational Marginal Pricing (LMP) prior to actual implementation. Originally, the California ISO had proposed to implement the new market design in two phases beginning with a Day Ahead Zonal Energy Market followed by a LMP market design several months later. A careful review of this two-step implementation plan revealed that it would significantly raise the overall costs of implementing the new market design and could have adverse impacts to the market due to some of the gaming problems that can arise under a zonal energy market. In light of these issues, the California ISO has decided to implement the new LMP market design in a single step (i.e. skip implementation of the Day Ahead Zonal Energy Market).

One of the cited benefits of the original two-step implementation is that it would provide a study opportunity, prior to implementing LMP, for the California ISO to calculate LMPs based on the zonal energy bids that are submitted to the Day Ahead Zonal Energy Market. The California ISO does not believe the elimination of this study option undermines the effectiveness of the overall LMP study plan, particularly since day ahead zonal energy bids are not likely to be very indicative of how market participants would bid in a LMP based market design. Moreover, the California ISO LMP Study Plan preserves the ability to estimate LMPs from submitted zonal energy bids by utilizing the zonal energy bids submitted to the ISO Real Time Market. A study based on this type of analysis is currently ongoing and a number of additional studies are planned during the approximate 18-month period required to develop, test, and implement the LMP market design. The duration and scope of the proposed LMP Study Plan will provide ample opportunity to assess the potential market impacts of the new LMP market design.

Background

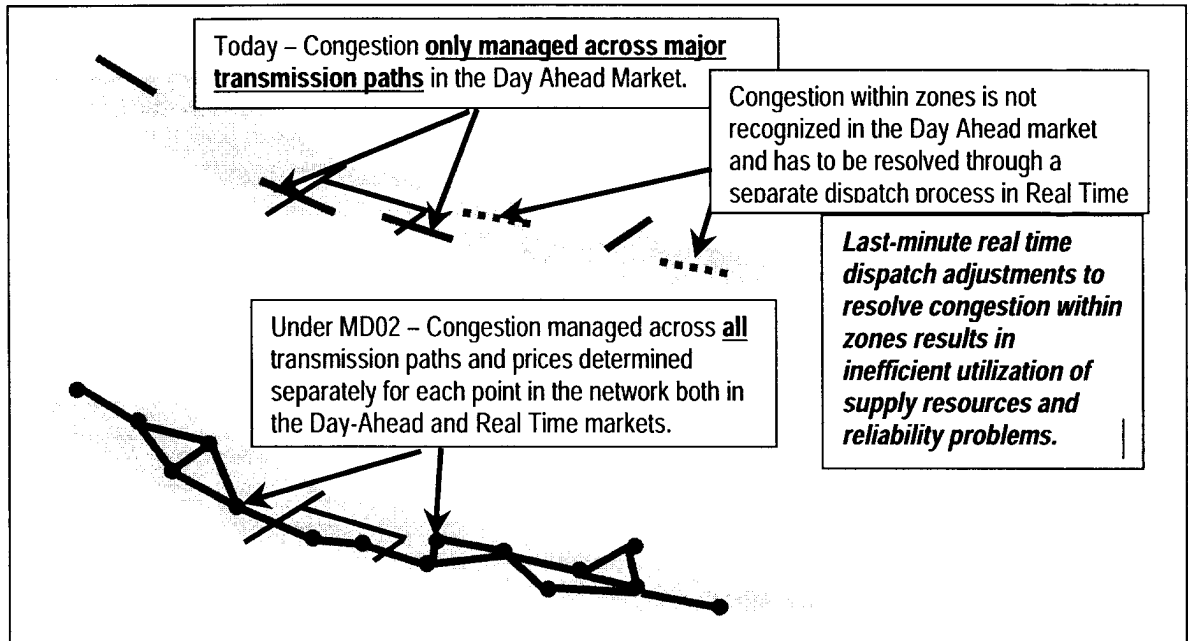
The California ISO proposed MD02 design represents a significant change over the current market design, which when implemented in its entirety, should greatly improve the efficiency and reliability of California's wholesale markets. Some of the major elements of the proposed market changes are summarized below and contrasted against the current design.

Comparison of MD02 Design to Current Design¹

Current California ISO Market Design	Proposed MD02 Final Design
<ul style="list-style-type: none"> ➤ No Day Ahead Spot Energy Market ➤ Market Participants self-schedule energy in the Day Ahead and schedules are adjusted to manage congestion only on major transmission paths between zonal areas. 	<ul style="list-style-type: none"> ➤ Day Ahead Spot Energy Market ➤ Congestion is managed in the Day Ahead Market across all transmission paths and separate energy prices are computed for each point in the transmission network (i.e. Locational Marginal Pricing (LMP)). ➤ Day Ahead energy purchases are charged to Load Serving Entities (LSEs) based on the average LMPs across the entire zone.
<ul style="list-style-type: none"> ➤ Real Time Zonal Energy Market – <ul style="list-style-type: none"> ▪ Supply resources are dispatched in real-time to correct for zonal imbalances between supply and demand. ▪ Separate dispatches and payment uplifts made to supply resources to manage congestion on transmission paths that were not recognized in the Day Ahead Congestion Management Market (i.e. Intra-Zonal Congestion). ▪ Real Time energy imbalances charged to Load Serving Entities (LSEs) based on a zonal energy price. ▪ LSEs charged with additional payment uplifts for Intra-Zonal Congestion. 	<ul style="list-style-type: none"> ➤ Real Time LMP Energy Market – <ul style="list-style-type: none"> ▪ Dispatches supply resources in real-time to correct for supply and demand imbalances and to manage congestion across all transmission paths with separate energy prices computed for each point in the transmission network (i.e. LMP). ▪ Real Time energy imbalances charged to Load Serving Entities (LSEs) based on the average LMPs across the entire zone. ▪ Since all congestion is managed in the Real Time energy market, there are no additional uplifts for Intra-Zonal congestion dispatches.

¹ Only the major the Day Ahead and Real Time design elements that are relevant to this discussion paper are shown in this table. A complete overview of the entire MD02 design can be found at <http://www.caiso.com/docs/2003/07/22/200307221150369856.pdf>.

How is Locational Marginal Pricing (LMP) Different than Today?



Potential Benefits of proposed MD02 Design

- Eliminates costly gaming opportunities associated with current design.
- Eliminates perverse incentives for new generation siting.
- Results in efficient dispatch of supply resources.
- Provides transparent and accurate information on congestion patterns on the entire power grid, which will aid planners in evaluating transmission and new generation investments.

Potential Costs of proposed MD02 Design

The potential benefits of LMP may be undermined if the following issues are not adequately addressed:

- Local Market Power Mitigation
- Defining reasonable delivery terms for existing long-term energy contracts
- Providing adequate hedging for load serving entities against congestion management costs through allocating them financial entitlements to congestion revenues.

Original MD02 Implementation Plan

The original MD02 implementation plan called for implementing LMP through a two-step process. Under this approach the California ISO would first implement a Day Ahead Zonal Energy Market for a short period (e.g. several months) and then transition to the final LMP market design. Since the LMP market design would be built from the zonal energy market design (i.e. Step 1), this approach would add to the software developed in Step 1 as opposed to completely replacing it. At the time, the benefits put forth for the two-step process were the following:

Original Perceived Benefits of the Two-Step Implementation

1. Provides a more manageable approach for the California ISO and market participants to test the new market software by essentially providing separate testing for the integrated Day Ahead Zonal Energy Market (Step 1) and LMP pricing (Step 2).
2. Would likely provide market participants with a day-ahead energy market sooner than would be the case if the California ISO went straight to an LMP market design.
3. Would provide an additional opportunity to test LMP pricing by calculating LMPs, for informational purposes, based on submitted Day Ahead zonal energy bids.

However, since the California ISO originally proposed the two-step implementation of LMP, several new considerations have arisen.

1. A Day Ahead Zonal Energy Market would exacerbate gaming and perverse market incentives.

- A Day Ahead Zonal Energy Market would create greater opportunities for participants to over-schedule on constrained transmission paths that are not recognized in the zonal design and then benefit through payment uplifts from having those schedules curtailed in real time.
- A Day Ahead Zonal Energy Market would create more perverse incentives for generation developers to site plants without considering whether there is sufficient transmission to deliver the plant's output to load. Under the LMP framework, if a generator owner locates a plant in an area of the transmission grid where transmission constraints limit the ability of generation at that location to actually get to consumers, the market price at the plant's location will be lower than areas that are not so constrained. This will occur because generators will compete with each other for the limited transmission capacity. This is not the case under a zonal market because most transmission constraints are not enforced until real time. As a consequence, a generator owner can locate a plant in a constrained area and schedule its full output in the Day Ahead Market regardless of whether that output is actually deliverable.

2. The two-step implementation approach would result in higher implementation costs.

- The two-step implementation would result in additional development costs for market software and supporting systems both for the ISO and market participants.
- The two-step implementation would result in having two separate software testing periods, one for the zonal market structure and one for the eventual LMP market structure. There are significant costs associated with software testing including the costs of personnel hours for ISO and market participants.

Attachment B – MD02 Discussion Paper and Proposed Duration Timeframe

3. The perceived benefits for the two-step implementation are likely to be fairly moderate when one considers the following:

- The purported benefits of simplifying software testing through the two-step implementation are apt to be minimal. In fact, having the ISO and Market Participants test and implement 2-different software systems within a six-month time frame may actually increase the complexity and cost of implementation.
- The benefits of having a day-ahead energy market sooner, rather than later, are likely to be offset by the potential gaming and perverse market incentives under a Day Ahead Zonal Energy Market.
- The additional benefit to LMP testing from estimating LMPs from submitted day-ahead zonal energy bids will be of limited value because participant bidding behavior is likely to change significantly under an LMP market. Furthermore, the California ISO will still have an ability to estimate LMPs from submitted zonal energy bids to the real time market.

The California ISO Proposal

In considering all of these factors and weighing them against the potential perceived benefits, the California ISO believes that the significant downside market risks and software costs of the two-step implementation outweigh its potential benefits and favor an approach that was successfully adopted by the ISO New England of implementing a Day Ahead and Real Time LMP markets in a single step.

The ISO New England Experience

The ISO New England (ISO-NE) began its market operations on May 1, 1999 with a very simplistic market design. Specifically, the ISO-NE design consisted only of a single zone real time energy market with no mechanism for congestion management. This simplistic design, created many of the same problems that plague the California ISO's current market design. ISO-NE frequently had to issue separate real-time dispatches to supply resources to manage congestion and pay them through separate market uplifts. Managing congestion through separate dispatches and uplift payments created reliability risks, resulted in inefficient dispatch, and provided non-transparent pricing and congestion information to the market.

In light of the problems with its current design, the ISO-NE embarked on developing and implementing a LMP market design for both a day ahead and real time energy market. The implementation called for going straight from a real time single zone energy market to a forward and real time energy market based on LMP. This design was successfully implemented in March 1, 2003 and after 6 months of operation, the experience to date has been very successful.

Prior to implementing the new market software, the ISO NE provided a series of internal and external market trials and over 18-months of extensive training for market participants and ISO employees.

The California ISO LMP Study Plan

The California ISO's proposed study plan under the single step implementation involves over 18-months of simulations and analysis of LMP pricing and consists of several efforts. A detailed description of each of these study efforts is provided below.

➤ **LMP Studies** – This effort initially involves conducting LMP studies using off-line software as a surrogate for the actual LMP market software that is currently under development. This testing effort has already commenced with some initial LMP studies already completed, a LMP study currently in progress, and some planned future studies. The LMP Studies will continue with the actual LMP market software once it is available. These individual studies are summarized below:

- LMP Study 1 – This study built on analyses performed in the ISO's Comprehensive Market Redesign (CMR) project during 2000, using cost-based bids and other bid assumptions to examine price dispersion and impacts of alternative market structures to guide the formulation of the ISO's MD02 Comprehensive Market Design Proposal. Because initial results from LMP Study 2 became available shortly after the conclusion of LMP Study 1, its results were not published.
- LMP Study 2² – This analysis was completed in February 2003 and was based on a network model developed for the ISO. Under this study, the simulation software dispatched supply resources using **cost-based bids** to estimate prices that may have occurred in the ISO's current real-time market if it were based on LMPs instead of zonal prices. This analysis guided the initial formulation of the MD02 project by modeling actual demands and enforcing network constraints to reveal local LMP variations.
- LMP Study 3 – Is currently in progress and is based on a more sophisticated LMP simulation software package known as Security Constrained Optimal Power Flow or "SCOPE". This study uses actual schedules and **real-time market bid data** to estimate prices that may have occurred in the ISO's current real-time market if it were based on LMPs instead of zonal prices. The ISO recently published some initial results from this study based on ten selected days over the past year. A comprehensive study will be completed at the end of 2003, which will provide a summary analysis of estimated real-time LMP prices over the 12-month period of November 1, 2002 through October 31, 2003, and will add additional case studies to the ten days that appear in the preliminary report. This will be followed by a continuation of this analysis in the form of periodic reports, until the production software to be used to implement the MD02 markets is ready for testing.
- LMP Study 4 – This study will pick up where LMP Study 3 left off and will continue to calculate LMPs based on submitted schedules and real-time zonal market bids, but will use the software that will actually be placed in production for the MD02

² See LMP Study 2 report ("Market Design 2002 Locational Marginal Pricing Study, Analysis of Cost-Based ", issued in final form on February 4, 2003).

Attachment B – MD02 Discussion Paper and Proposed Duration Timeframe

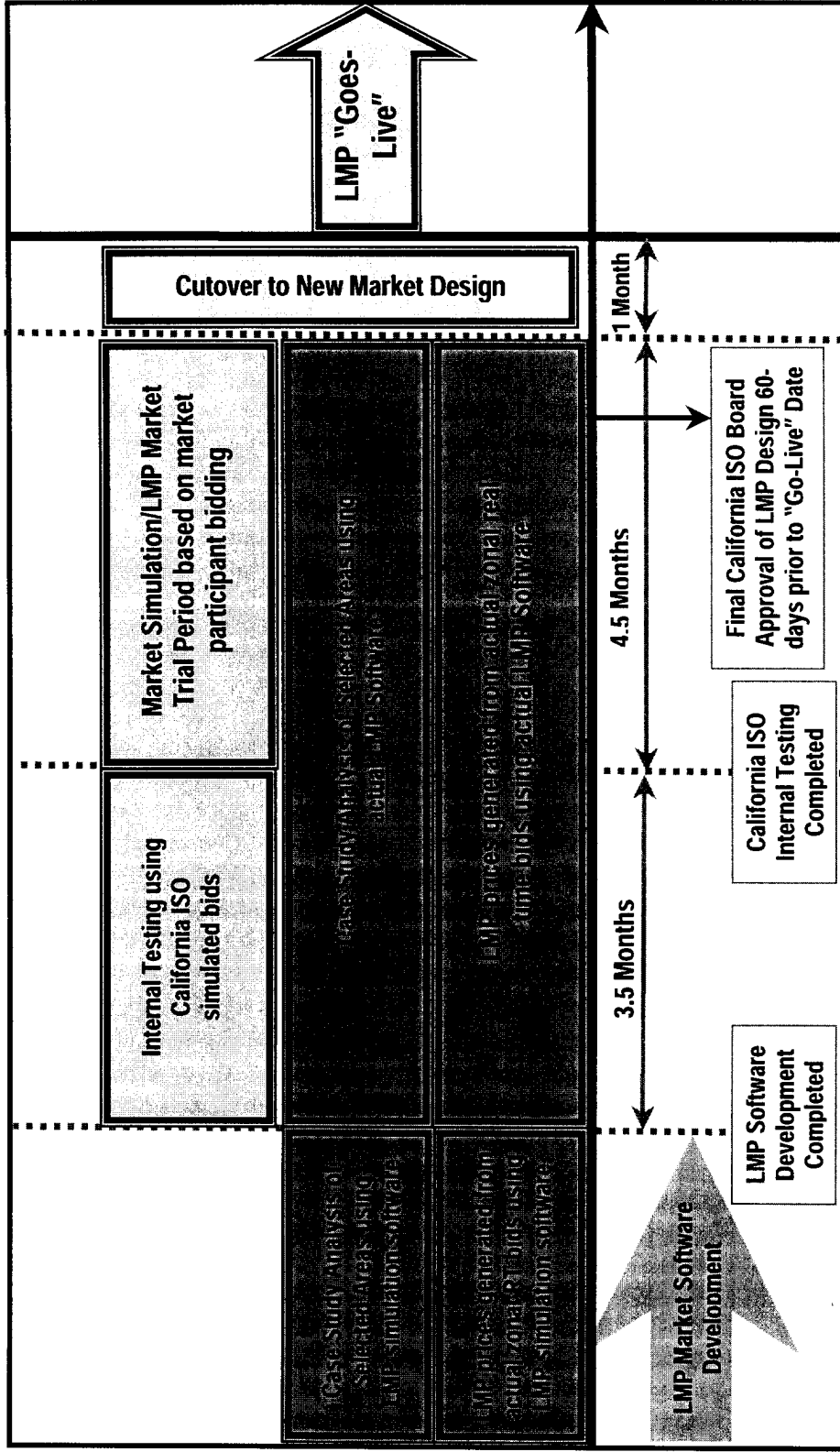
markets, during its testing. Study results will be summarized and published periodically, perhaps monthly. In addition, LMP Study 4 will include selected "case studies" of transmission paths or areas of the transmission network that are frequently congested. Such case studies will assess the competitiveness of the market in and around these constraints under various system conditions and bidding behavior and the effectiveness of proposed local market power mitigation procedures in mitigating market power abuse.

- **LMP Market Trials** –LMP Market Trials will commence once the actual LMP market software (Day Ahead and Real Time Markets) is available for external testing and will involve calculating market clearing quantities and prices using the actual Day Ahead and Real Time LMP market software based on non-financially binding bids and schedules provided by market participants and supplemented as necessary by the ISO.³ Market Participants will of course continue to bid and schedule in the existing market structure thus this market simulation will run in parallel to the current Real Time Zonal Market design until the simulation and testing period is completed. The Market Trial results (market clearing quantities and prices) will be published according to the established market timelines and thus will provide immediate feedback for market participants to revise their bidding strategies for the next trade hour or trade day.

A schematic of this multi-phase testing effort is provided in the diagram below. The LMP Studies are shown in blue and will transition from being based on off-line LMP simulation software to actual LMP software once the new market software is available. As noted above, the LMP Studies consist of two different efforts; 1) generating LMPs based on submitted zonal real time energy bids and 2) case study analysis of selected areas. Each of these is shown below. Additionally, the diagram shows that prior to the commencement of the Market Simulation/LMP Market Trial Period, the California ISO will perform an approximate 3.5-month period of internal testing to make sure the software is functioning properly. Once the internal testing period is completed, the new market software will be available for market participant simulation. The Market Simulation/LMP Market Trial Period is expected to last 4.5 months. However, approximately 2-months prior to the "Go Live" date, the ISO Staff will present a summary of the LMP Studies and LMP Market Trial results to the ISO Governing Board for final ratification to go forward with LMP. Upon approval, the ISO will begin the "Cutover" process in preparation for the "Go Live" date for LMP.

³ The ISO will be submitting bids and schedules to test the new market software during the internal testing period that precedes the Market Simulation and will continue to provide bids in the Market Simulation period to ensure there is realistic representation until there is full market participation in the simulations.

California ISO Proposed LMP Testing Program



Attachment B – MD02 Discussion Paper and Proposed Duration Timeframe

MD02 PROJECT IMPLEMENTATION DURATION WITH KEY MILESTONES

	4th Quarter 2003	1st Quarter 2004	2nd Quarter 2004	3rd Quarter 2004	4th Quarter 2004	1st Quarter 2005	2nd Quarter 2005	3rd Quarter 2005	4th Qtr 2005
ISO Board	AGC Approval	Regular Updates to Board	Regular Updates to Board	Regular Updates to Board	Regular Updates to Board	Regular Updates to Board	Regular Updates to Board	Regular Updates to Board	Regular Updates to Board
Phase 1B	Market Simulation	Cut-over							
IFM/LMP		Application Development	Application Development	Application Testing	Application Testing	Integration	MARKET SIMULATION LMP TRIALS	MARKET SIMULATION LMP TRIALS	CUTOVER
Settlements		Application Development	Application Development	Application Testing	Application Testing	Integration	MARKET SIMULATION LMP TRIALS	MARKET SIMULATION LMP TRIALS	
CRR		Application Development	Application Development	Application Testing	Application Testing	Integration	MARKET SIMULATION LMP TRIALS CRR Auction	MARKET SIMULATION LMP TRIALS	
FERC	Ruling on 1B Tariff and Design						Ruling on Revised Tariff Language		
External Stakeholders	CPUC Procurement Proceeding Decision	Detailed Issue Resolution	Monthly Reports	Monthly Reports	Monthly Reports	Monthly Reports	Monthly Reports	Monthly Reports	Monthly Reports
							Ongoing Stakeholder Technical Dialogue (e.g. JADs and TSWG) and Training		

Legend:

◆	Key Milestones
Integration Testing	January 5, 2005 through February 11, 2005
End-to-End Testing	February 12, 2005 through April 4, 2005
User Acceptance Testing (UAT)	April 5, 2005 through April 18, 2005
Market Simulation	April 19, 2005 through July 19, 2005

LMP Trials	May 15, 2005 through August 31, 2005
Cutover	September 1, 2005 through September 30, 2005
GO LIVE	Phase 1B: February 1, 2004 and IFM/LMP: October 1, 2005

ATTACHMENT C

Attachment C - Draft Phase 1B Market Simulation Calendar

November 2003						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1						
2	3 Pre-Market Simulation Prep a. Prepare master file	4 Pre-Market Simulation Prep a. Prepare SI	5 Pre-Market Simulation Prep a. Prepare SI	6 Pre-Market Simulation Prep a. Open up access to ADS	7 Pre-Market Simulation Prep a. Test ADS connectivity	8
9	10 Pre-Market Simulation Prep a. Confirm SI access b. Test ADS dispatches	11 Pre-Market Simulation Prep a. Confirm SI access	12 Pre-Market Simulation Prep a. Ensure SI templates work	13 Pre-Market Simulation Prep a. Ensure SI templates work	14 Pre-Market Simulation Prep a. TBD	15
16	17 1. Market Simulation a. Run DA Market	18 1. Market Simulation b. Run DA market c. Submit Supplemental Bids	19 1. Market Simulation a. Copy DA market b. Run HA market c. Submit Supplemental Bids d. Gen Dispatch w/ unit start-up / shut-down e. Basic Tie Pre-Dispatch	20 1. Market Simulation a. Copy DA market b. Run HA market c. Submit Supplemental Bids d. Gen Dispatch w/ unit start-up / shut-down e. Basic Tie Pre-Dispatch f. UDP Aggregation OK	21 1. Market Simulation a. Prepare Settlements Push for trace date 11/20/03 b. Submit meter data for 11/20/03	22
23	24 1. Market Simulation a. Review UDP for TD, 11/20/03 b. Push TD, 11/20/03 to Settlements	25 1. Market Simulation a. Process Settlements for TD, 11/20/03	26 1. Market Simulation a. Submit Supplemental Bids b. Gen Dispatch w/ losses c. Tie Pre-Dispatch including Dynamic d. Publish prelim Settlements for TD, 11/20/03	27 Thanksgiving	28 Thanksgiving	29
30						30



Attachment C - Draft Phase 1B Market Simulation Calendar

December 2003						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
7	<p>1. Market Simulation</p> <p>a. Review UDP for TD 11/26/03 to Settlements</p>	<p>1. Market Simulation</p> <p>a. Process Settlements for TD 11/26/03</p>	<p>1. Market Simulation</p> <p>a. Copy DA schedules</p> <p>b. Run HA market</p> <p>c. Submit Supplemental Bids</p> <p>d. Gen. OOS/QOM dispatch for TD 11/26/03</p>	<p>1. Market Simulation</p> <p>a. Copy DA schedules</p> <p>b. Copy HA schedules</p> <p>c. Submit Supplemental Bids</p> <p>d. Gen. OOS/QOM dispatch</p>	<p>1. Market Simulation</p> <p>a. Submit Supplemental Bids</p> <p>b. Gen. OOS/QOM dispatch</p> <p>c. Prepare settlements push for trade date 12/4/03</p> <p>d. Submit meter data for TD 12/4/03</p>	<p>1. Market Simulation</p> <p>a. Process UDP for TD 12/4/03</p>
14	<p>1. Market Simulation</p> <p>a. Review UDP for TD 12/4/03</p> <p>b. Push TD 12/4/03 to Settlements</p>	<p>1. Market Simulation</p> <p>a. Process Settlements for TD 12/4/03</p>	<p>1. Market Simulation</p> <p>a. Copy DA market</p> <p>b. Run HA market</p> <p>c. Submit Supplemental Bids</p> <p>d. RMR and Derate scenarios</p> <p>e. Publish prelim Settlements for TD 12/4/03</p>	<p>1. Market Simulation</p> <p>a. Copy DA market</p> <p>b. Copy HA market</p> <p>c. Submit Supplemental Bids</p> <p>d. RMR and derate scenarios.</p>	<p>1. Market Simulation</p> <p>a. Prepare Settlements push for trade date 12/11/03.</p> <p>b. Submit meter data for trade date 12/11/03</p> <p>c. Unstructured dispatching.</p>	<p>1. Market Simulation</p> <p>a. Process UDP for TD 12/11/03</p>
21	<p>1. Market Simulation</p> <p>a. Review UDP for TD 12/18/03</p> <p>b. Push TD 12/18/03 to Settlements</p>	<p>1. Market Simulation</p> <p>a. Process Settlements for TD 12/11/03</p>	<p>1. Market Simulation</p> <p>a. Copy DA market</p> <p>b. Run HA market</p> <p>c. Submit Supplemental Bids</p> <p>d. Various dispatches</p> <p>e. Publish prelim Settlements for TD 12/11/03</p>	<p>1. Market Simulation</p> <p>a. Copy DA market</p> <p>b. Run HA market</p> <p>c. Submit Supplemental Bids</p> <p>d. Various dispatches scenarios</p>	<p>1. Market Simulation</p> <p>a. Prepare Settlements Push for trade date 12/18/03</p> <p>b. Submit meter data for 12/18/03</p>	<p>1. Market Simulation</p> <p>a. Process UDP for TD 12/18/03</p>
28	<p>1. Market Simulation</p> <p>a. Review UDP for TD 12/24/03</p> <p>b. Push TD 12/24/03 to Settlements</p>	<p>1. Market Simulation</p> <p>a. Process Settlements for TD 12/24/03</p>	<p>1. Market Simulation</p> <p>a. Copy DA market</p> <p>b. Run HA market</p> <p>c. Submit Supplemental Bids</p> <p>d. Various dispatches</p> <p>e. Publish prelim Settlements for TD 12/18/03</p>	<p>1. Market Simulation</p> <p>a. Submit Supplemental Bids</p> <p>b. Gen Dispatch w/ losses</p> <p>c. Various dispatches</p> <p>d. Publish prelim Settlements for TD 12/24/03</p>	<p>Holiday</p>	<p>1. Market Simulation</p> <p>a. Process UDP for TD 12/24/03</p>
13						
20						
27						



Attachment C - Draft Phase 1B Market Simulation Calendar

January 2004						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
3				1 New Years	2 1. Market Simulation a. Prepare Settlements Push for trade date 12/31/03 b. Submit meter data for 12/31/03	3 1. Market Simulation a. Process UDP for TD 12/31/03
4	5 1. Market Simulation a. Review UDP for TD 12/31/03 b. Push TD 12/31/03 to Settlements	6 1. Market Simulation a. Process Settlements for TD 12/31/03	7 1. Market Simulation a. Submit Supplemental Bids b. Gen Dispatch w/ losses c. Various dispatches d. Publish prelim Settlements for TD 12/31/03	8 1. Market Simulation a. Copy DA market b. Run HA market c. Submit Supplemental Bids d. Various dispatches	9 1. Market Simulation a. Prepare Settlements Push for trade date 1/8/04 b. Submit meter data for 1/8/04	10 1. Market Simulation a. Process UDP for TD 1/8/04
11	12 1. Market Simulation a. Review UDP for TD 1/8/04 b. Push TD 1/8/04 to Settlements 2. SC Training	13 1. Market Simulation a. Process Settlements for TD 1/8/04 2. SC Training	14 1. Market Simulation a. Submit Supplemental Bids b. Gen Dispatch w/ losses c. Various dispatches d. Publish prelim Settlements for TD 1/8/04 2. SC Training	15 1. Market Simulation a. Copy DA market b. Run HA market c. Submit Supplemental Bids d. Various dispatches 2. SC Training	16 1. Market Simulation a. Prepare Settlements Push for trade date 1/15/04 b. Submit meter data for 1/15/04 2. SC Training	17 1. Market Simulation a. Process UDP for TD 1/15/04
18	19 1. Prepare for roll-out 2. SC Training	20 1. Prepare for roll-out 2. SC Training	21 1. Prepare for roll-out 2. SC Training	22 1. Prepare for roll-out 2. SC Training	23 1. Prepare for roll-out 2. SC Training	24
25	26	27	28	29	30	31