

# **CAISO WHITE PAPER**

## **Three-year Market Initiatives Roadmap 2006-2008**

**REVISED DRAFT – November 28, 2006**

Prepared by

Department of Market and Product Development

# Three-year Market Initiatives Roadmap

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# Three-year Market Initiatives Roadmap

## 2006-2008

### REVISED DRAFT – November 27, 2006

This document is a revision of the August 14, 2006 revision of the CAISO's Three-year Market Initiatives Roadmap. In revising the Roadmap the CAISO has incorporated issues and potential initiatives identified by stakeholders during and subsequent to the July 18-19 Market Initiatives Stakeholder meeting, as well as impacts of the FERC Order on MRTU issued September 21, 2006. For ease of reference and continuity with previous versions of the Roadmap the CAISO has tried to maintain as far as possible the category structure and issue numbering established in the original June 5, 2006 document.

Public discussion of the initiatives identified in the Roadmap will continue at the November 29, 2006 Market Initiatives Stakeholder Meeting. Additional details that explain these issues can be found in documents prepared by the CAISO for the meetings of July 18-19 and August 17, 2006, as well as stakeholder written comments, which are located at:

<http://www.aiso.com/1822/1822931f287d0.html>

## 1. Introduction

Bid-based spot markets for electricity and independent system operators to run those markets are still relatively young innovations in a century-old industry. The ISOs and RTOs that exist in North America continue to learn from experience and develop modifications to their market designs to add enhancements or improve upon some aspect of their performance. In parallel to issues of spot market design, the matter of supply adequacy has multiple dimensions that are subjects of active proceedings. In addition, the various problems known generally as “seams issues” have challenged operators of adjacent control areas for decades even before the arrival of centralized energy spot markets, with only modest progress in finding effective solutions to the more difficult problems. In view of the extreme importance of electricity to all aspects of society combined with its significant annual costs, and recognizing the need to achieve further improvements in cost-effectiveness and reliability, the CAISO intends to face these challenges proactively by formulating and then executing a multi-year, systematic plan for enhancing its markets and addressing known problems. The “Three-year Market Initiatives Roadmap” described here is the CAISO's initial draft of such a plan.

A primary goal in establishing the Market Initiatives Roadmap is to envision and then work collaboratively towards achieving the broad goals of electric restructuring, rather than identifying and prioritizing issues on the fly, reacting to each crisis or problem as it arises. “Collaboratively” deserves particular emphasis, with respect to both determining the contents of the Roadmap and developing specific proposals to address the identified needs. Although the CAISO is taking the lead in drafting this Roadmap, it is intended to encompass a broad range of initiatives and problem areas that have been identified as high priority by external stakeholders and policy makers as well as by the CAISO itself. It includes topic areas devoted to renewable energy resources, demand response, and seams and regional issues, in addition to enhancements to the CAISO's comprehensive market redesign known as MRTU. Its scope and content will be discussed with stakeholders over the next few months to ensure that all essential matters are

covered in the Roadmap. Finally, the actual effort on any given project or initiative will involve collaborative engagement with affected parties and stakeholders, in accordance with processes for developing regulatory policies and market designs that are being defined and documented by the Department of Market and Product Development and other CAISO departments.

With this First Draft Three-year Market Initiatives Roadmap, the CAISO proposes a new vehicle to convey to policy makers and stakeholders a comprehensive view of the initiatives the CAISO is currently engaged in or is planning or considering undertaking between now and the end of 2008 to improve the effectiveness of its markets in supporting reliable grid operation, bringing efficient supplies of power to electricity consumers, supporting state policy priorities, and providing benefits to all market participants. The purpose of this White Paper is to introduce the concept, describe the scope and contents of the proposed Roadmap, describe at a high level the major topic areas, and identify specific projects that are known at this time.

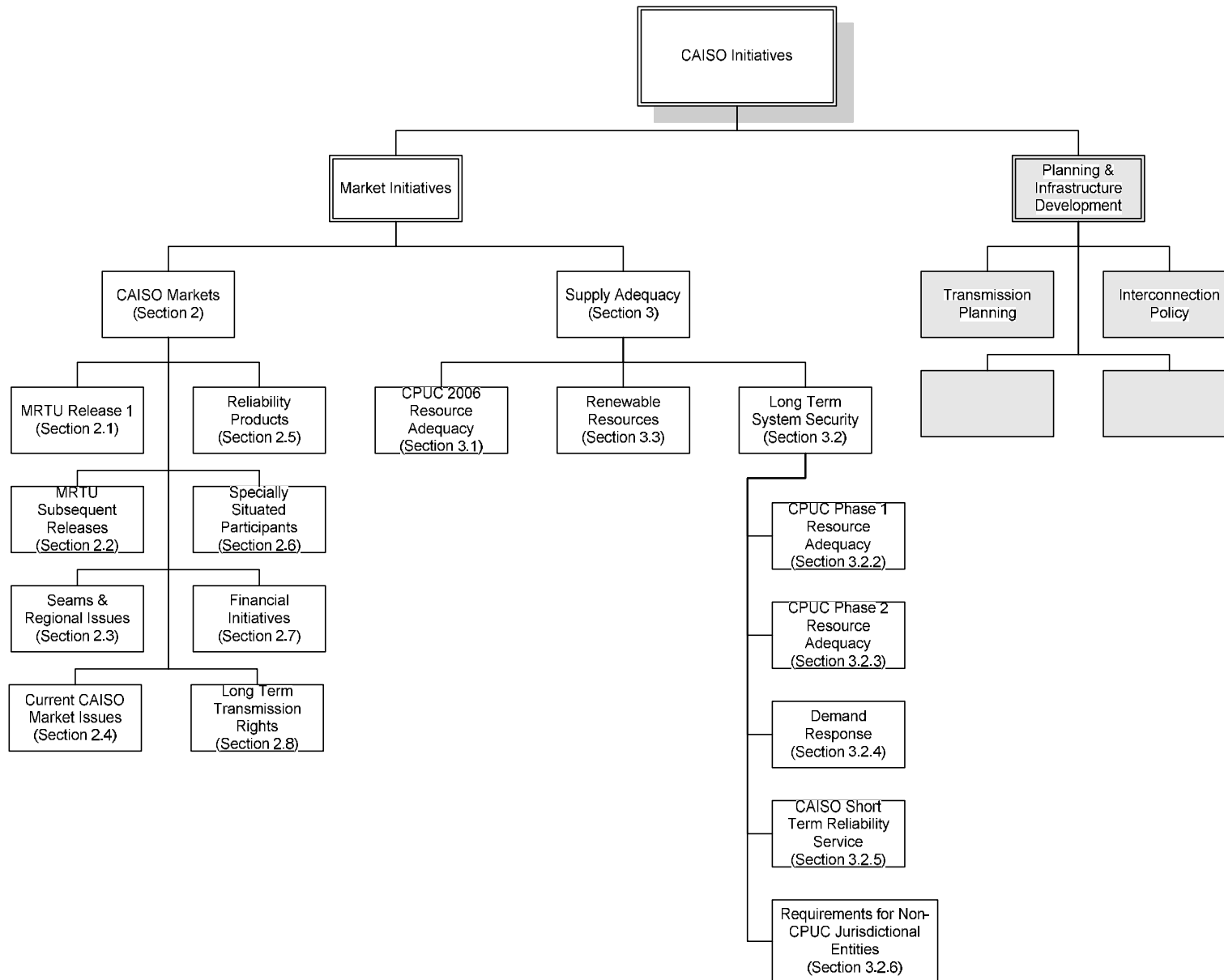
Several observations are important at the outset. First, this Roadmap does not represent a commitment by the CAISO to undertake everything identified here, nor does it reflect relative priorities or targeted milestones or completion dates except where these have already been established. To provide a comprehensive view, the Roadmap includes some items that may be candidates for actual projects, but require further assessment to determine whether they qualify for allocation of limited resources and what their priorities should be. In parallel to this Roadmap the CAISO is also developing objective evaluation criteria to apply to candidate projects, to help assess their benefits, costs and relative priorities. These criteria will be presented in draft form in conjunction with the Roadmap for discussion with stakeholders.

Second, no version of such a Roadmap can be a fully complete and finished product, nor should it be. To be useful the Roadmap must be a living document, to evolve by extending its horizon further into the future and by incorporating new initiatives as needs are identified and prioritized.

Third, the Market Initiatives described in this Roadmap are not the only initiatives the CAISO is engaged in. The more comprehensive view includes infrastructure planning and development, a core CAISO function that has its own vehicles for communicating its activities and initiatives to industry stakeholders and is therefore not included in this Roadmap. Another complement to this document is the Renewables Roadmap, which is mentioned briefly in Section 3.3 for sake of completeness but for details readers should consult that roadmap. Thus the broader view of CAISO initiatives includes this Market Initiatives Roadmap, the Renewables Roadmap, and infrastructure-related initiatives such as transmission planning and interconnection policy.

The Market Initiatives covered in this Draft Roadmap are divided into two main categories, CAISO Spot Markets (Section 2 of this document) and Supply Adequacy (Section 3). Although the elements in these categories are inter-related and affect each other, there are practical reasons for this basic distinction. Initiatives in the CAISO Spot Markets category will with limited exceptions be led by the CAISO, and will almost always be subject to FERC approval and regulation. In contrast, initiatives in the Supply Adequacy category are mostly led by state regulatory authorities – mainly the CPUC, are subject to state or local regulation, and involve the CAISO as a participant rather than as the leader. Finally, there is a small set of initiatives mentioned in Section 4 of this document that do not fit into either of the previous two categories because they represent methodologies or strategies that cut across the categories, in the sense that they may support many of the initiatives listed in the two main categories.

The diagram on the next page is an organization chart that illustrates the categories described above and shows the major topic areas included in each category.



## 2. CAISO Spot Market Initiatives

This section describes topic areas and specific initiatives that relate directly to the operation of the CAISO spot markets. As such these initiatives will typically be led by the CAISO and will be subject to FERC approval.

### 2.1 MRTU Release 1

MRTU Release 1 is clearly a project of the highest priority for the CAISO, and is by now a well-defined and structured project. It was mentioned in the June 5 Draft Roadmap for completeness, without detailed discussion, with the following activities identified: further FERC filings related to the Tariff, including compliance filings and possible Tariff amendments; possible FERC-mandated technical workshops or other stakeholder processes; studies (LMP, Competitive Path Assessment, etc.); BPM development; Release 1 Training; Release 1 software integration and testing; market simulations; and post Release 1 implementation activities.

At the July 17-18 meetings and in written comments submitted afterwards, participants identified the following additional elements for Release 1 consideration. In considering these elements it must be recognized that the CAISO is still awaiting a FERC ruling on the MRTU Tariff filing, and that such ruling may provide additional FERC guidance that may impact their resolution. In view of this uncertainty the CAISO reserves its rights to make legal arguments in the FERC process regarding the approach and timing for addressing these issues.

#### 2.1.1 Study of Marginal Loss Surplus Allocation to Regional Measured Demand

In the June 2, 2006 Answer to Reply Comments on the MRTU Tariff that was filed on February 9, 2006, the CAISO agreed to study the methodology for allocating the over-collection of marginal losses to measured demand on a regional basis, using available LMP studies. The purpose of this study is to determine a credible range of marginal cost of losses to serve the demand in Northern California (NP15 plus ZP 26) and Southern California (SP15), and a commensurate range of actual cost of losses in each region. A credible range of marginal loss surplus (MLS) rebate rate (\$/MWh of Demand) for each of the two regions can then be determined and compared with system-wide marginal loss surplus rebate rate. If the system-wide MLS rebate rate falls outside the credible range of the regional MLS rebate rates beyond an acceptable margin, a process for allocation of MLS based on Regional Measured Demand may then have to be worked out; in that case the exact methodology for Regional-based MLS allocation to Measured Demand will be carried out through a stakeholder process. A White Paper on the framework for this study is located at:

<http://www.aiso.com/1831/1831d9532fd30.pdf>

An interim simplified study was performed using 5 months of available LMP data (May through September 2004) with LMP decomposition based on distributed slack. A white paper is located at

<http://www.aiso.com/184f/184f8ad86b730.pdf>



In the September 21, 2006 MRTU Order, FERC accepted CAISO's system-wide Marginal Loss Surplus allocation method as filed, but PG&E filed for rehearing requesting completion of the Marginal Loss study. In its answer, CAISO agreed to complete the study using 12 months of LMP data (May 2004 through April 2005), and relaxing the shortcuts used in the interim study. Currently CAISO is working on LMP studies for October 2004 through April 2005 using distributed slack for LMP decomposition.

Additional documents related to this issue are located at:

<http://www.aiso.com/1822/1822931f287d0.html>

### **2.1.2 Application of methodology for Competitive Path Assessment**

Local Market Power Mitigation (LMPM) and Reliability Requirements Determination (RRD) functions in MRTU require prior designation of competitive and non-competitive paths in the full network model (FNM). A methodology for Competitive Path Assessment (CPA) was developed in the course of a stakeholder process in 2005 and is posted at

<http://www.aiso.com/docs/2002/08/23/200208231358035858.html>

CAISO is conducting the study to assess the merit of the proposed methodology using the 2006 network model and, upon adoption of this methodology (presumably in the Spring of 2007), will perform the assessment of path competitiveness using a network model that approximates the FNM. Initial results will be released at the end of August, 2006, with a follow-up stakeholder meeting to be held in the Fall of 2006. Subsequent iterations are expected to continue until Spring 2007. The results of these analyses will be presented to the CAISO Board of Governors later in 2007, for their approval prior to the CAISO filing of these designations with FERC.

### **2.1.3 Station Power Initiative**

SCE comments that generation that is self-supplying station power must do so based on the LMP at their generating facility.

"That is, they must not simply be allowed to net MWh, rather the generation must net total dollars (the MWh need for station power at the LMP of the station.) Further, the CAISO may need to address this issue as part of Release 1, rather than delay implementation." (See SCE Comments on Market Initiatives, July 28, 2006, at:

<http://www.aiso.com/1845/18459b7a4f300.pdf> )

### **2.1.4 Limits on Start-up/Minimum Load Costs**

SCE comments that the MRTU Tariff is silent regarding what generation can submit under the election of start-up and minimum load costs. SCE requests clarification that market-based minimum load costs are subject to the bid caps in place for energy, and that the CAISO cap the allowable market-based start-up costs.

"Unbounded prices present the risk of an unacceptable outcome in which a single generation dispatch causes irreparable harm to California customers. This issue must be addressed, and again this is a Release 1 issue." (See SCE Comments on Market Initiatives, July 28, 2006, at:

<http://www.aiso.com/1845/18459b7a4f300.pdf> )

### **2.1.5 Tracking and Reallocation of CRRs as Load Migrates**

SCE suggests that the CAISO should have systems in place to track the amount of loads that migrate between LSEs.

“Again, this a Release 1 issue and should be addressed as soon as possible.” (See SCE Comments on Market Initiatives, July 28, 2006, at: <http://www.caiso.com/1845/18459b7a4f300.pdf>)

## 2.1.6 Generation Resources for Meeting Resource Adequacy Requirements

SCE suggests that a Release 1 issue should be the assurance that power from RA units can be dedicated to serve California load during critical periods.

“SCE continues to believe this is a crucial issue and deserves immediate attention at the CAISO. Again, at least for the manual work-around, this is a Release 1 issue.” (See SCE Comments on Market Initiatives, July 28, 2006, at: <http://www.caiso.com/1845/18459b7a4f300.pdf>)

## 2.1.7 New Methodology for Pricing and Settlement of Real-time LAP Load Deviations

The filed MRTU Tariff (as filed on February 9, 2006) provides for the settlement of real-time Load Aggregation Point (LAP) load deviations (LAP level uninstructed imbalance energy) through a combination of an hourly LAP price (Tier 2 UIE price) and an hourly LAP price adjustment (UIE Adjustment). Over-consumption (real-time LAP load in excess of the day-ahead LAP load schedule) is charged the sum of the LAP price and the LAP price adjustment and under-consumption (real-time LAP load below the day-ahead LAP schedule) is paid the difference of the LAP price and the LAP price adjustment (Tariff Section 11.5.2).

Some stakeholders (SCE and NCPA) stated concerns about this approach. Moreover, in the stakeholder discussions related to the design of Convergence Bidding it appeared that having two different real-time LAP prices (depending on over or under consumption) would not be compatible with the idea of “price convergence” between day-ahead and real-time markets. Further scrutiny, primarily based on input from SCE and NCPA revealed that under some (albeit rare) conditions, the two-price methodology as stated in the Tariff might lead to excessive charges to a single Scheduling Coordinator (SC). Accordingly, CAISO has developed a new method for computation and settlement of real-time LAP load deviation. A white paper is posted at:

<http://www.caiso.com/189b/189be9fd64170.pdf>

The new proposed method was discussed at the November 13, 2006 MSC meeting and is supported by the MSC.

## 2.2 MRTU Subsequent Releases

Since the introduction of the concepts of MRTU Release 1 and MRTU Release 2 during the 2005 MRTU policy resolution stakeholder process, the CAISO has been accumulating a list of candidate enhancements to the MRTU Release 1 markets to be considered for implementation in a subsequent release or releases. For two of these enhancements, FERC’s September 21, 2006, “Order Conditionally Accepting The California Independent System Operator’s Electric Tariff Filing To Reflect Market Redesign And Technology Upgrade” (referred to below as the “9/21/06 MRTU Order”) directed their implementation by the CAISO within 12 months of the effective date of MRTU Release 1. These are described below as Release 1A, which may ultimately include other enhancements as well. The 9/21/06 MRTU Order (P 33) also directed certain additional design enhancements to be made by the time of MRTU Release 2, which FERC described as being implemented about three years after Release 1. For other

enhancements that FERC did not specify either within 12 months of MRTU implementation or in Release 2 and that remain under consideration by the CAISO, there is no definitive schedule at this time for a subsequent MRTU release, nor has the CAISO made a firm commitment to implement any specific element in a subsequent release. The CAISO has, however, committed to conduct the following activities with regard to MRTU subsequent releases, and to engage stakeholders in these activities.

- Specification of criteria for evaluating and prioritizing candidate elements for inclusion in a subsequent implementation (see Section 4.1).
- Scoping of MRTU post-Release 1 through a process of defining the candidate elements, subjecting them to the criteria developed in the previous activity, and prioritizing among those candidates that meet the criteria to determine a preferred feasible set of elements for a single release.

The CAISO originally intended to complete both of these activities by the end of 2006, but now expects to complete the specification of at least Release 1A during the first half of 2007. At this time the following initiatives are identified for possible post-Release 1 implementation.

### **2.2.1 Convergence Bidding: MRTU Release 1A**

Convergence Bidding is a mechanism whereby market participants can make financial sales (or purchases) of energy in the Day Ahead market, with the explicit requirement to buy back (or sell back) that energy in the Real Time market, thereby arbitraging their expected differences between Day Ahead and Real Time prices. The CAISO hosted a tutorial and panel session on June 13, 2006, and subsequently hosted stakeholder conference calls with representatives of eastern ISOs and a stakeholder conference call on design elements for convergence bidding, on August 30, 2006. Related documents are posted at:

<http://www.aiso.com/1807/1807996f7020.html>

A White Paper on the design alternatives for convergence bidding has been reviewed by stakeholders and revised to reflect various stakeholder comments. These comments and a revised White Paper are located at:

<http://www.aiso.com/1822/1822931f287d0.html>

FERC's 9/21/06 MRTU Order found that the harm of further delaying the substantial benefits of MRTU outweigh the potential benefits that are to be gained by implementing convergence bidding in Release 1, but agreed with commenters that Release 1 must include provisions to offset LSEs' incentive to underschedule in the day-ahead market. The Order directs the CAISO to develop and file interim measures, no later than 180 days prior to the effective date of MRTU Release 1, to address the potential economic incentive for LSEs to underschedule in the day-ahead market until the successful implementation of convergence bidding has been achieved. The Order also directs the CAISO to file tariff language for our review for the implementation of convergence bidding within 12 months after the effective date of MRTU Release 1.

### **2.2.2 System-level Scarcity Pricing: MRTU Release 1A**

The current MRTU design provides for scarcity pricing for Energy; however, no explicit measures are included for scarcity pricing of Reserves. In the MRTU Release 1, Reserve prices may exceed the bid cap to the extent of the opportunity cost of Energy. In other words, Reserve prices will generally be limited to the sum of the prevailing bid cap for Reserves plus the prevailing bid cap for Energy. The question that has faced the CAISO is whether (a) this

implicit scarcity pricing (double cap) is adequate for scarcity pricing of Reserves, or (b) explicit scarcity pricing for Reserves should be provided.

FERC's 9/21/06 MRTU Order (Paragraphs 1077 to 1079) found that the CAISO's proposal is too narrowly tailored, and that prices should rise to reflect the increased need for reserves and energy, whether or not the shortage arises in conjunction with a generation or transmission outage, in both the day-ahead and real-time markets. While FERC concluded that the CAISO's limited scarcity pricing proposal is a reasonable start for implementation of MRTU, the CAISO should further refine its proposal to include a more broadly-triggered reserve shortage scarcity pricing, and on a more accelerated basis, to ensure that prices are not inappropriately suppressed during periods of genuine scarcity. The Order directs the CAISO to file tariff language for the implementation of an expanded scarcity pricing methodology within 12 months of the effective date of MRTU Release 1. Furthermore, the Order directs the CAISO to develop a reserve shortage scarcity pricing mechanism that applies administratively-determined graduated prices to various levels of reserve shortage, to be implemented within 12 months after Release 1.

### **2.2.3 Day-Ahead Market Power Mitigation and Unit Commitment issues**

In reviewing the CAISO's market design, the consultants LECG suggested the use of bid-in Demand rather than Demand forecast in Pre- Integrated Forward Market (IFM) passes in the Day-Ahead Market. LECG also recommended eliminating use of extreme DEC bids in Pass 2 pre-IFM for schedules selected in the Pass 1, and unrestricting the pool of resources in IFM and RUC based on unit commitment in Pre-IFM. LECG's comments (February 2005) on these issues is located at:

<http://www.caiso.com/docs/2005/02/23/200502231634265701.pdf>

A related issue not addressed by LECG (or FERC) that will have to be worked out if pre-IFM is to be based on bid-in demand is RMR pre-dispatch. RMR pre-dispatch relies on the use of forecast rather than bid-in demand.

FERC's 9/21/06 MRTU Order (P 1089) conditionally accepted the CAISO's proposal to use forecasted Demand in Pre-IFM passes, subject to the CAISO instituting bid-in demand as the basis for applying market power mitigation in the pre-IFM runs no later than MRTU Release 2 to reduce the likelihood of over-mitigation of suppliers.

### **2.2.4 Simultaneous Residual Unit Commitment (RUC) and IFM**

In the current MRTU design Residual Unit Commitment (RUC) is performed after completion of the IFM and does not impact Day-ahead Market Energy, A/S, and Congestion/CRR pricing and settlement. The issue here is whether to perform IFM and RUC simultaneously, and if so, how.

In addition, SCE raises concern that resources may be committed for a time period that is inconsistent with its offer because RUC does not observe any multi-hour block constraints.

"SCE requests that the CAISO revise its software to honor multi-hour block constraints in RUC for Release 2." (See SCE Comments on Market Initiatives, July 28, 2006, at:

<http://www.caiso.com/1845/18459b7a4f300.pdf>)

FERC's 9/21/06 MRTU Order (P 1280) finds SCE's request reasonable that the CAISO should honor multi-block constraints as a bidding parameter for system resources in the RUC process, and reiterated the finding that the CAISO should examine whether such software changes could be implemented by Release 1, or to implement them as soon as feasible.

## 2.2.5 Dispatchable Demand Response

The CAISO intends to fully support Dispatchable Demand Response (“DDR”) in its MRTU software design. Price-responsive demand will be able to participate in the Day-Ahead forward Energy market under MRTU. Such demand resources will be able to submit price-sensitive bids at Load Aggregation Points and then settle any deviations from the final Day-Ahead schedule at the Real-Time Imbalance Energy price for that Load Aggregation Point. In addition, Participating Loads – i.e., Load that participates in the CAISO’s Imbalance Energy and Ancillary Services markets as well as pumped storage facilities – are types of DDR resources that are modeled with added functionality in the CAISO’s MRTU software. In the MRTU software Release 1, Participating Load will be able to participate in the wholesale Energy and Ancillary Services markets with certain limitations based on software functionality. The CAISO is working to address some of these limitations in the Release 1 software and intends to develop a more robust and comprehensive integrated solution for the participation of DDR resources post Release 1.

A full DDR model will not be incorporated into Release 1 of the MRTU software design. In 2005, LECG identified a design concern related to Participating Load that would have resulted in inequities between prices settled at Load Aggregation Points and those settled at individual nodes if a full DDR model was included in Release 1. Based on this finding, the CAISO recognized the need to get the design, rules and validation for DDR “right” and therefore deferred the full implementation of DDR to occur post Release 1.

Post Release 1, the CAISO’s full Dispatchable Demand Response model should consider incorporating the following attributes and functionality:

- A three-part bid consisting of:
  - Load curtailment cost
  - Minimum load reduction cost
  - Load energy bid
- Load curtailment time (time to curtail load)
- Minimum load reduction time (min time after load curtailment)
- Minimum base load time (min time after load restoration)
- Maximum number of daily load curtailments
- Load drop rate
- Load pickup rate
- Maximum Non-spinning reserve capacity (load reduction within 10 minutes)

The DDR model should also incorporate the following additional features:

- The base load component is a price taker, *i.e.*, it is charged the relevant aggregate LMP as any non-participating load irrespective of dispatch
- When the DDR is dispatched from the base load, it is eligible for recovering its load curtailment cost and its hourly minimum load reduction cost
- When the DDR is dispatched, it is paid its LMP for the load reduction

Finally, RTOAdvisors comments that Electric Service Providers (ESPs) seek assurance that DR programs will count toward meeting Resource Adequacy requirements, and seek to include “any additional issues that arise that would affect RA counting for DR.” (See Comments of RTOAdvisors, July 28, 2006 at: <http://www.caiso.com/1845/18459965461b0.pdf>)

Note: Recognizing that most of the existing Participating Loads are large hydro pumps, the MRTU Release 1 will support having participating pump load (or other Participating Load that can operate like a pump) participate as DDR using what the CAISO refers to as the “pump/storage” model. While the pump/storage model is able to provide some desired

attributes of a DDR resource (e.g., multi-part bids and some inter-temporal constraints), it has limitations including an inability to aggregate loads that share common metering. Therefore, as an alternative to the pump/storage model, the CAISO is also prepared to support Participating Loads using the same Energy Bid structure as non-participating Loads, and to support the eligibility of Participating Loads to provide Non-Spinning Reserve through a manual work-around, provided that metering and the network topology support this arrangement.

### **2.2.6 The CEC's proposal on rebate of loss over-collection for renewable resources**

In Spring 2005 in the context of the MRTU stakeholder process the California Energy Commission (CEC) proposed a method for reducing the impact of LMP-based marginal transmission loss charges on intermittent resources. At the time the CAISO and the stakeholders agreed to defer discussion of this proposal for consideration after MRTU Release 1. Subsequently, in the 2005 MRTU stakeholder and policy resolution process the CAISO agreed to modify the crediting back of marginal loss surplus revenues and accelerate that process, so the question here is whether special treatment for intermittent resources is still needed, and if so, how. FERC's 9/21/06 MRTU Order directs the CAISO to address issues related to the integration of intermittent resource issues, including transmission line loss over collection issues, in Release 2.

### **2.2.7 Consideration of a full Hour-Ahead settlement market**

This issue is whether to augment the two-settlement market design of MRTU Release 1 with a third Hour Ahead settlement market, which could be either a substitute for or in addition to the Hour Ahead Scheduling Process (HASP) element of the Release 1 design.

### **2.2.8 Dynamic pivotal supplier test for market power mitigation**

Local Market Power Mitigation in Release 1 is accomplished through prior classification of transmission constraints as "Competitive" or "Non-competitive". The question here is whether this process should (or could) be replaced by "on-the-fly" determination of pivotal suppliers in the market-clearing process.

### **2.2.9 Multi-settlement system for Ancillary Services**

LECG's February 2005 report stated that the lack of a full multi-settlement system for Ancillary Services that optimizes real-time reserves and settles deviations from day-ahead schedules at real-time prices could raise consumer costs when reserves scheduled in the Day Ahead market must generate energy in Real Time as a result of minimum run times, minimum down times or transmission constraints. The Release 1 design procures A/S in the Day Ahead market to meet 100% of forecasted real-time needs, and then procures additional A/S incrementally in Real Time only to the extent that they are needed due to changes in system conditions or demand exceeding the Day Ahead forecast. Moreover, unless the Operating Reserves are designated as "Contingency Only", their energy will be dispatched economically, and if as a result the Operating Reserves fall below the NERC/WECC's Minimum Operating Reserves Criteria (MORC), CAISO will procure additional Operating Reserves in real-time. The question to be considered is whether to modify the Release 1 design to create a multi-settlement A/S market as suggested by LECG.

In MRTU Release 1, FERC's 9/21/06 Order on MRTU found it reasonable for the CAISO to limit Ancillary Services substitution opportunities to units that are in the appropriate location and

whose bids clear in the relevant market, but directs the CAISO (Paragraph 303) to address the possibility of added flexibility for substitution of the source of Ancillary Services in future MRTU releases.

### **2.2.10 Consideration of import energy in the RUC process**

Early in the 2005 MRTU stakeholder process it was suggested that import energy bids that were not cleared in the IFM could be considered in the RUC optimization by treating such bids in the same manner as the minimum load bids of internal generators that were not committed in the IFM. The question to consider is whether, in light of the treatment of imports in RUC as filed in the Release 1 MRTU tariff, any additional provisions for considering imports in RUC are needed or appropriate.

### **2.2.11 Multi-day unit commitment in the IFM**

In MRTU Release 1, the forward looking time horizon in IFM is one day, taking into account the impact of prior commitment of units with very long start up times. During the MRTU Stakeholder meetings there were requests that the CAISO make commitment decisions in the IFM that look out beyond a single day in order to create a commitment decision that is more efficient and better reflects the impact of startup-up cost for a resources that have long start-up times. There are several design issues, including the need for bidding and bid replication rules as well as software performance and solution time requirements that must be discussed and resolved via a stakeholder process before considering modification of the software to accommodate Multi-Day unit commitment in IFM.

### **2.2.12 DEC Bidding Activity Rule on Final Day-Ahead Resource Schedules**

The bidding activity rules in MRTU Release 1 disallow post Day-Ahead Market reduction of the Energy Bid prices that have been accepted in the IFM. This activity rule was designed to prevent the "DEC" game in situations where transmission derates require re-dispatch of generation in the real-time market. LECG pointed out problems with this activity rule. The issue under consideration is to relax this activity rule without the risk of creating "DEC" game incentives. One proposed solution is to allow a limited re-bid period shortly after the publication of the Day-Ahead market results (e.g., between 1:00 p.m. and 3:00 p.m.) without enforcing this activity rule. Accordingly, during the re-bid period, accepted Day-Ahead bids can be changed above or below the corresponding Day-Ahead bid prices for use in the Real-Time market.

### **2.2.13 Ramping Limits for the Real-Time Pricing Run with Constrained Output Generation (COG)**

The February 2005 LECG report stated that the mechanism proposed for implementation of real-time constrained output generator (COG) pricing could result in the calculation of inappropriately high prices during circumstances in which uneconomic gas turbines are operating as a result of either minimum run time or minimum-down time constraints. The proposed solution to be considered, which is used in the NYISO markets, is to use the dispatch level of non-COG resources from the previous interval's pricing run as the initial operating point of the non-COG resources in the pricing run for the current interval, rather than using telemetry as basis for the initial operating point of non-COG resources as the Release 1 software will do.

### **2.2.14 LMPM for COG units; provision for daily bidding of minimum load**

In the course of the stakeholder discussions and during the Tariff page turn in 2005, several participants commented that the ability for the COG resources to bid their Minimum load on a daily basis, subject to local market power mitigation, was stated as a highly desirable feature. This issue would explore how to implement this possible post-release 1 feature.

### **2.2.15 Ramp Rates**

Operational ramp rates are used for scheduling and dispatch in real time. In order to maintain performance of the software within the required solution timing parameters, the number of operational ramp-rate segments supported in Release 1 is limited to 4 (versus 10 segments initially contemplated). Only 5% of the resources with ramp-rates operational ramp-rates defined in the Master-File would have ramp rates with more than 4 segments defined. Some participants have concerns about the reduction in the number of ramp-rate segments. After actual performance is determined, the CAISO can work with its vendor to determine if additional operational ramp-rate segments can be supported.

While a separate Operating Reserve ramp-rate is used for procuring the spinning and non-spinning reserves, the Operational ramp rate is used for all dispatching of a resource. To the extent the operational ramp rate at a given operating level is less than the Operating Reserve ramp-rate, the resource may be subject to A/S “No-Pay” charge for reserves that are not actually available based on the lower Operational ramp rate. Modifications to the software would be necessary to more closely align procurement of A/S with energy dispatch from A/S capacity in real-time.

### **2.2.16 Ancillary Service Self-Provision at the Interties**

Under MRTU Release 1 the self-provision of Ancillary Services from interties is not supported. Import A/S can only be bid and must compete with import energy bids for the use of New Firm Use (NFU) transmission capacity. This issue would explore how to accommodate A/S self provision from the inter-ties as a potential post-Release 1 feature. This topic may have overlapping issues with the direction in FERC’s 9/21/06 Order on MRTU (Paragraph 326) to ensure that all provisions of ancillary services, self-provided or not, are subject to the same regional constraints.

### **2.2.17 Reservation of transmission capacity for Ancillary Service exports**

Under MRTU Release 1 there is no formal mechanism or specific process for on-demand export of A/S. The optimization does not reserve transmission capacity for this functionality. In MRTU Release 1, a manual workaround will be provided for entities with on-demand obligation; to the extent transmission capacity is available (or must be reserved according to ETC/TOR rights). This issue would explore how to build the reservation of transmission capacity into the optimization so that market participants who might have an obligation to supply Ancillary Service energy in real-time to neighboring control areas can serve this obligation. FERC’s 9/21/06 Order on MRTU (Paragraph 355) directs the CAISO to develop software to support exports of ancillary services in the future through stakeholder processes and to propose necessary tariff changes to implement this feature no later than Release 2.



### **2.2.18 Hourly designation of Ancillary Service Contingency Only Flag**

In MRTU Release 1 the designation of “Contingency Only” Ancillary Services is accommodated on a daily basis. This issue would explore provisions for hourly designation of “Contingency Only” A/S a potential post-Release 1 feature.

### **2.2.19 Multi-Segment Ancillary Service Bidding**

In MRTU Release 1, Ancillary Services Bids consist of a single Bid segment. In comments leading up to FERC’s 9/21/06 Order on MRTU, Powerex requested that multi-segment bidding should be provided for some Ancillary Services. While FERC did not impose this requirement in MRTU Release 1, FERC directed the CAISO (Paragraph 341) to file a report, before making its MRTU Release 2 filing, addressing the potential benefits of including this element.

### **2.2.20 Combined-cycle modeling**

In MRTU Release 1 different configurations of a combined cycle unit are modeled collectively as a single resource. The idea here is to model each configuration as a separate resource, and incorporate software capability to ensure changes in configuration during different scheduling and commitment cycles in the course of the optimization process respect all relevant technical and inter-temporal constraints. This approach is of interest to different ISOs, but has not yet been implemented successfully. Recognizing the software constraints the CAISO is faced with, FERC’s 9/21/06 MRTU Order (Paragraph 573) directs the CAISO to continue working with software vendors to develop an application that will accurately detail the constraints of combined cycle units, and to file tariff language for implementation of such improvements no later than MRTU Release 2.

### **2.2.21 Treatment of use-limited resources with limited number of hours or start ups**

Use-limited resources accommodated in MRTU Release 1 are those with Energy (MWh) limitations. This issue would explore how to incorporate software capability to accommodate other types of use limitation, including limitation on the number of hours of usage, or the number of start-ups a resource may be used for, during the scheduling horizon.

### **2.2.22 Start Up Energy**

The current MRTU design (Release 1) will not explicitly recognize the time lapse from unit synchronization to operations at its minimum stable operating unit. Any Start Up Energy, i.e., energy produced during the time interval from synchronization to minimum load, is assumed to be uninstructed deviation. This issue would explore how Start-up Energy might be considered as instructed energy during the dispatch process. Various stakeholders have suggested that some resources may take time to ramp to minimum load, and that better recognition of this start-up ramp would better reflect the imbalance energy needs and reduce uninstructed deviations during resource start-up.

### **2.2.23 Automation of sub-LAP adjustments in step 3 of LAP clearing validation**

As explained in the MRTU Tariff and testimonies, the LAP clearing procedure recommended by LECG and incorporated in MTU Release 1, may under some rare conditions result in

unintended inefficiencies. A three-step process was suggested to deal with such rare situations. The third step in this process involves “softening” the constraints imposed by fixed LAP Load Distribution Factors (LDFs) and allowing independent adjustment of nodal loads. A manual process in MRTU Release 1 will accomplish this step. The issue here is to automate this step in the post Release 1 MRTU software.

### **2.2.24 LAP Load Settlement**

FERC’s 9/21/06 Order on MRTU found that the CAISO’s approach to calculating and settling energy charges for load based upon three LAP zones provides a reasonable and simplified approach for introducing LMP pricing, while minimizing its impact on load. The Order recognized that some areas could experience higher prices under a nodal model, thus making it desirable to soften the distributional impacts of LMP, and also recognized that LMP could create an economic hardship on entities located in load pockets. Accordingly, FERC approved the CAISO’s proposal of three major LAP zones as an acceptable starting point. However, the Order directs the CAISO (Paragraph 611) to increase the number of LAP zones for Release 2, to provide more accurate price signals and assist participants in the hedging of congestion charges.

FERC’s 9/21/06 MRTU Order (Paragraph 614) noted that previous guidance orders had asked the CAISO to consider an eventual move to nodal pricing for load, and directed the CAISO to move to nodal pricing for load in the future.

### **2.2.25 Partial RA Units**

RTOAdvisors comments that some generators and LSEs may want to enter arrangements in which some or all of the capacity is designated for meeting RA requirements for a period of time, and then not designated for meeting RA requirements for other periods of time.

“The CAISO should study what modifications are required to MRTU to allow these types of arrangements.” (See Comments of RTOAdvisors, July 28, 2006 at: <http://www.aiso.com/1845/18459965461b0.pdf>)

### **2.2.26 Sale of CRRs in CRR Auctions**

MRTU Release 1 includes the purchase of CRRs in CRR auctions, which includes an ability to buy CRRs in the opposite direction to ones that a purchaser already holds, which offsets the originally-held CRR when they are obligation CRRs. Also, CRRs can be sold bilaterally. Stakeholders commented, leading to FERC’s 9/21/06 MRTU Order, that it would be useful to be able to sell CRRs, and the CAISO has planned to consider this functionality for inclusion in Release 2. FERC’s 9/21/06 MRTU Order directs the CAISO to file tariff language to implement the ability to sell CRRs in the CRR auctions no later than MRTU Release 2.

### **2.2.27 RUC Self-Provision**

Because of limited interest by most market participants in RUC self-provision feature as a priority for Release 1, the CAISO did not to include this feature in Release 1. However, FERC’s 9/21/06 MRTU Order (Paragraph 172) directs the CAISO to continue to work with market participants on this issue, and to provide reasons for the inclusion or exclusion of RUC self-provision no later than MRTU Release 2.

## **2.3 Seams and Regional Issues**

This topic area includes initiatives to improve coordination between the CAISO and neighboring control areas, expand markets for import and export of energy and capacity, and support the continuing development of effective energy markets across the western region.

FERC's September 21 Order on MRTU discussed seams issues and directed FERC staff to convene a technical conference in the western region specifically to identify and find solutions for any seams issues alleged to be created or exacerbated by MRTU. The technical conference has now been scheduled for December 14-15, 2006 in Phoenix. CAISO will be participating in this conference, and will update this section 2.3 as appropriate based on what transpires there.

### **2.3.1 Import and Export of Intermittent Resources**

Across the western region there are specific locations where intermitted resources such as wind can be operated most productively, but these locations are not necessarily inside the control areas that can fully utilize such generation. Moreover, some areas that may not contain highly productive intermittent resource locations are still subject to renewable portfolio standards. It is necessary, therefore, to develop principles and procedures for importing and exporting the energy from intermittent resources in a manner that reflects the unique operating characteristics of these resources. This activity also includes the Western Wind Sharing initiative.

### **2.3.2 Interchange transactions after the Real Time Market**

This item will explore ways to allow SCs to schedule bilateral import and export transactions with the CAISO after the close of the Real Time Market at T-75 minutes, in situations where the needed import and export transmission capacity is available.

### **2.3.3 Import and Export of Ancillary Services**

This item will consider ways to expand the ability to import and export reserves.

SCE suggests that interruptible imports bidding into the CAISO market should be charged for the additional Operating Reserve.

SCE comments that "...prior to allowing non-firm import sales in any future Release, the CAISO must, at a minimum, have systems in place, which charge the non-firm imports for their associated A/S." (See SCE Comments on Market Initiatives, July 28, 2006, at: <http://www.caiso.com/1845/18459b7a4f300.pdf> )

### **2.3.4 Improve Tagging Procedures and Functionality**

This item will consider methods to better integrate and streamline the process of producing market schedules and tagging such schedules. By eliminating duplicate information that exists in market schedules and tags it may be possible to streamline the control area check-out process and eliminate market schedule and tagging inconsistencies that can have reliability impacts. By using tag information such as the physical source and physical sink it may be possible to expand upon the benefits of the Full Network Model by modeling the flow effects of the interchange schedules.

### **2.3.5 Exchange of Day Ahead Scheduling Information**

The CAISO will work with other control areas in the west to establish day-ahead exchange of scheduling information, to allow coordinated day-ahead congestion management and to reduce the magnitude of unscheduled loop flows in real time by capturing a major portion of such flows in the day-ahead process.

### **2.3.6 Dynamic / Pseudo Tie Imports**

Increasingly, dynamic scheduling and pseudo-tie scheduling arrangements are being proposed and implemented. As different versions of these arrangements are proposed, the impact to the market design is evaluated and recommendations made regarding the implementation of such arrangements. In addition, as the new arrangements are implemented, monitoring is performed to ensure the dynamic and pseudo-tie scheduling arrangements are operating as expected.

### **2.3.7 Maximizing Intertie Transfer Capability**

BPA identifies this issue as a way to enhance reliability, market competitiveness, and system efficiency.

“Highest priority should be coordination of ATC calculations, outages, and curtailments to maintain transfer capability. Creating opportunities for secondary marketing of unused capacity is another priority, including using any available intertie rights (not just PTO rights) to reach CAISO markets and participants.” (BPA’s comments are located at: <http://www.caiso.com/1845/184597e041d00.htm>)

### **2.3.8 Dynamic Scheduling (Import and Export) for Load and Generation**

NCPA suggests this market initiative issue for consideration. (See NCPA Comments, July 28, 2006 at: <http://www.caiso.com/1845/18459bee52990.pdf>)

## **2.4 Current Market Issues (Pre-MRTU)**

This initiative will monitor existing market performance and regulatory policy developments to identify what if any existing market issues need to be resolved prior to the implementation of MRTU. In order to conserve and focus resources to meet the MRTU initiative, Pre-MRTU issues will be evaluated in terms of impact and effort to ensure only those issues that have the most impact and least amount of effort will be considered for resolution. Some market issues that are identified as part of this initiative may be recommended for resolution as part of future releases of MRTU.

### **2.4.1 Forward Price and Real-Time Price Convergence**

This initiative will identify the sources of apparent systematic differences between the forward bilateral index prices for energy and the CAISO real-time market price, will assess the impacts of such differences and explore possible approaches to improve price convergence.

## 2.4.2 Scheduling Accuracy

This initiative will continue to monitor the impact scheduling accuracy is having on reliable grid operation and market efficiency. As part of this initiative the CAISO will perform an evaluation of the impact the 95-percent scheduling rule is having on the market.

## 2.4.3 Operating Reserve Procurement

This initiative will evaluate the pre-MRTU impacts of proposed new WECC operating reserve policy. WECC is in the process of considering changes to how operating reserve should be calculated with regard to each type of interchange schedule (firm, non-firm, unit-contingent). To the extent these policies are approved by WECC for operation prior to MRTU, the CAISO may need to modify its operating reserve practices in the current market.

## 2.4.4 Payment Acceleration

SCE and RTOAdvisors suggest the on-going effort to reduce the amount of time for settlement reconciliation should be included as a market initiative issue.

“SCE has not seen a CAISO process to actually implement payment acceleration assuming an MRTU implementation of November 2007. If payment acceleration is still expected to be implemented six months after Release 1, the CAISO must refocus attention on this issue.” (See SCE Comments on Market Initiatives, July 28, 2006, at: <http://www.aiso.com/1845/18459b7a4f300.pdf> )

“This is not a Post Release 1 issue, but should be included in the category, “Current Market Initiatives (pre-MRTU). We urge the CAISO to add this to the list of active Market Initiatives and to discuss progress on this effort at future meetings.” (See Comments of RTOAdvisors, July 28, 2006, at: <http://www.aiso.com/1845/18459965461b0.pdf> )

## 2.4.5 System for Reporting Outages and Derates

SCE comments that the current system for reporting unit outages and derates is inadequate for participants with large generation portfolios.

“Simply put, the current outage reporting systems are insufficient to implement settlement functions related to either UDP or for unit derate reporting. Thus, prior to the CAISO implementing settlements or penalties for UDP or unit derate reporting, the current SLIC reporting systems must be enhanced or replaced.” (See SCE Comments on Market Initiatives, July 28, 2006, at: <http://www.aiso.com/1845/18459b7a4f300.pdf> )

The CAISO notes that a stakeholder process is underway to explore alternatives that can be utilized to establish an appropriate explicit minimum megawatt threshold for the outage reporting. This stakeholder process will also provide an additional opportunity to further clarify and respond to any additional questions or concerns Market Participants may have with reporting requirements.

## 2.4.6 Multiple SCs at a Single Meter

On June 7, 2006, FERC issued an order directing the CAISO to address the current prohibition on the use of multiple Scheduling Coordinators at a single meter. On July 12, 2006 the CAISO posted a White Paper identifying various options for dealing with this issue. The White Paper is located at:

<http://www.caiso.com/1832/1832c86e1ade0.pdf>

The City of Riverside has commented that full-scale implementation of the capability of multiple SCs in bidding, operation and settlement would be desirable.

SCE suggests the CAISO should consider redirecting its limited staff to focus on other issues such as MRTU (Release 1) implementation.

Pursuant to the CAISO's compliance filing on September 7, 2006, the FERC noted that at this point there is minimal stakeholder interest for pursuing an immediate software solution for the "Multiple SC at a Single Meter" issue. The CAISO's "Ranking Criteria" will be applied in the future to help determine the priority of issues to be developed further and implemented after MRTU Release 1.

## **2.5 Reliability Products**

The focus of this initiative is to determine how the CAISO can meet its needs for reliability products and services in the most efficient manner, utilizing market mechanisms where effective. In the course of this assessment the CAISO will also consider whether new products or services should be defined to meet reliability needs that are not fully met by existing products. The following products have been identified to date.

### **2.5.1 Voltage Support and Black Start Procurement**

This project is a re-appraisal of CAISO procurement methods for these two services, as directed by a FERC order. This activity is independent of MRTU, but will be coordinated with that project. As stated in the CAISO's filing in compliance with the FERC order, the CAISO plans to engage stakeholders in discussions of this topic and to reach a final proposal by March 2007.

### **2.5.2 Frequency Responsive Reserve (FRR)**

Recently CMOPS approved the definition of a new Ancillary Service, Frequency Responsive Reserve or FRR, which will have one-minute response capability. It is estimated that 3200 MW of this reserve will be needed in the west, of which 750-800 MW will be needed within the CAISO Control Area. The CAISO will need to determine the most effective way to procure this service and develop the appropriate procurement mechanism.

## **2.6 Specially Situated Participants**

This area includes initiatives targeted to entities whose special circumstances or needs warrant some sort of special provisions.

SCE offers the general comment that "MRTU will continue to have 'Phantom Congestion' because of disparate treatment of transmission. SCE views uniform transmission as an important goal for the CAISO and encourages the CAISO to strive for that result." (See SCE Comments on Market Initiatives, July 28, 2006, at:

<http://www.caiso.com/1845/18459b7a4f300.pdf>

### **2.6.1 Metered Subsystems**

Currently Metered Subsystems (MSS) have the capability to participate in the CAISO Markets, but tend not to participate fully: (1) to keep their reserves available for load following, (2) to prevent their generating units from being dispatched to serve other entities' demand and risk leaving the MSS short to serve their own demand, and (3) tax exempt status of bonds used to

fund the construction of the generating units to serve their municipal customers could be lost if the resources' energy is sold to parties other than their intended customers. One objective of the CAISO is to encourage MSS to participate more fully in the CAISO Markets.

To encourage greater MSS participation in the markets, the CAISO may perform analyses to assess the nature and level of risks for MSS participating in the markets, and to estimate the magnitude of lost opportunities for MSS who elect not to participate in the markets for each combination of MSS elective options (i.e., load following versus non-load following, net versus gross settlement, etc.). The CAISO will also examine the costs to the CAISO and to non-MSS Market Participants (e.g., via GMC) to accommodate MSS entities.

At the same time the CAISO will continue to work to ensure that the MSS entities are fully integrated into MRTU Release 1 and subsequent releases. FERC's MRTU Order addressed a number of MSS issues, several of which the CAISO was able to address directly in the 60-day compliance filing on November 20. There are some other issues, however, that will be the topic of stakeholder discussion in the next few months and will culminate in additional tariff language on MSS being filed by the CAISO in the first half of 2007.

## **2.6.2 ETC and Converted Rights Holders**

No CAISO initiatives are identified at this time.

## **2.6.3 Transmission Ownership Rights**

Arrangements with parties holding Transmission Ownership Rights (TOR) are currently under development.

## **2.6.4 Dynamic Scheduling of Exports**

Subsequent to Market Participants expressing interest in dynamic scheduling of exports from the CAISO Control Area, the CAISO offered in the April 2004 filing of Amendment 59, footnote #7, the potential for a pilot program. A pilot program would provide practical experience and aid in the development of formal policy, standards and Tariff provisions if deemed appropriate. Market Participants' interest continues as the CAISO and SMUD included language in the Interconnection Control Area Operating Agreement (ICAOA), that within eight months after SMUD's specific request, the CAISO will initiate and, subject to CAISO Board approval, file at FERC a dynamic scheduling export pilot program, with implementation after June, 2006. The CAISO's objective now is to design and initiate a pilot program, and if appropriate, develop the capability for a permanent service.

## **2.7 Financial Initiatives**

### **2.7.1 GMC Under MRTU**

On July 26, 2006 the CAISO filed with FERC a request to extend the current GMC settlement until the earlier of MRTU implementation or December 31, 2007 with one change to eliminate a single rate applied to the Modesto Irrigation District. No protests were filed. On September 6, 2006, FERC approved the CAISO request by letter order.

Since September 2006, the CAISO has been working with stakeholders on the GMC rate structure under MRTU. Stakeholders and the CAISO have agreed on a set of GMC rate structure elements that will allow SaMC programming to begin, while providing a structure by which analysis of impacts can be performed over the coming months. The CAISO anticipates

reaching agreement on the final rate structure and rates for MRTU implementation in spring 2007.

### **2.7.2 Credit Requirements For CRR Holders**

With the introduction of obligation CRRs in MRTU, the CAISO Market Participants may obtain negative valued CRRs which would have financial obligations in the CAISO day ahead market. If the holder of a negative valued CRR defaults, that would create a financial risk for the rest of the CAISO market participants. To minimize the risk of payment default by the negative valued CRR holder, collateral amounts will be required. CAISO will develop proposals to determine the collateral amount for the owners of negative valued CRRs.

This topic will cover both the initial year of MRTU when historical LMP data is not available to assess credit requirements, as well as subsequent years of MRTU when historical data is available. The stakeholders most directly affected by this initiative will be those who hold CRRs, regardless of how those CRRs were obtained, i.e., through allocation, through the CAISO auction, or through bilateral trades in the secondary market. The CAISO proposal will be included in the July 31, 2006 release of the Business Practice Manual on Credit Requirements.

## **2.8 Long-Term Transmission Rights**

FERC Order 681 (issued July 20, 2006) requires transmission organizations that operate organized electricity markets to make available long-term transmission rights. In August the CAISO initiated a stakeholder process to develop the January 29, 2007 compliance filing required by this order. Since that time there have been two white papers issued by the CAISO, a half-day Market Issues Forum devoted to this topic, three rounds of written stakeholder comments, and discussions at meetings of the Market Surveillance Committee. The various public documents regarding this topic are located at:

<http://www.aiso.com/1845/1845dca750770.html>

## **3. Supply Adequacy Initiatives**

The broad area of Supply Adequacy includes primarily activities in which the CAISO is a participant but does not play a lead role, although in most activities the CAISO does have very specific and essential roles and responsibilities. In addition most – but not all – of the initiatives included in this area fall under state or local regulatory jurisdiction rather than under FERC jurisdiction.

### **3.1 Near-term (2006) Resource Adequacy**

The CAISO and CPUC have been engaged in separate but related efforts to establish a regulatory framework to ensure that adequate capacity is committed in a forward time frame to allow the CAISO to operate the grid reliably. In the CPUC arena this effort is called “Resource Adequacy,” and it is implemented through CPUC Decisions issued in 2004 and 2005 that establish Resource Adequacy Requirements that were effective June 1, 2006. The CAISO has an effort that has been under development over the past several years to establish complementary requirements within its tariff. The CAISO requirements are called Reliability Requirements, and were established through a tariff filing (the Interim Reliability Requirements Program) that was filed at FERC on March 13, 2006 and accepted with relatively minor modifications on May 12, 2006. In addition the CPUC, issued a decision on June 29, 2006 that



formally established locational capacity requirements for load serving entities under its jurisdiction to become effective in 2007.

At a high-level, the “Near-term (2006) Resource Adequacy” activities consist of staff from the CAISO, CPUC and CEC working together to implement the June 1, 2006 regulatory framework established by the CPUC Decisions and the FERC Order. Activities conducted after June 1, 2006 include working with the CPUC and CEC to incorporate and implement the new locational capacity requirements that have been established for 2007. In addition, staff from the CPUC, CEC and CAISO coordinate weekly, if not more often, to ensure effective implementation and refinement of the CPUC’s resource adequacy program.

## **3.2 Long Term System Security**

The larger share of activities that will ultimately support Long Term System Security are being conducted under the procedural umbrella of the CPUC’s Long Term Procurement Plan (LTPP) Rulemaking. This CPUC rulemaking includes the Phase 1 and Phase 2 Resource Adequacy proceedings as well as several more narrowly focused activities such as the Demand Response proceeding, all of which are discussed in the next four sub-sections, the first of which provides an overview of the entire Long Term Procurement Plan Rulemaking. The final two sub-sections describe Long Term System Security initiatives that are closely inter-related with the CPUC’s LTPP Rulemaking but are led by the CAISO.

### **3.2.1 CPUC Long Term Procurement Plan Rulemaking**

On February 16, 2006, the CPUC issued its Order Instituting Rulemaking (“OIR”) for Long Term Procurement Plans (R.06-02-003). This new proceeding functions as the umbrella rulemaking for all other procurement related proceedings at the CPUC. It encompasses all phases of the CPUC’s Resource Adequacy proceeding, including Phase 1 and Phase 2 described below, as well as the original Resource Adequacy proceeding conducted in 2004-2005. In its OIR the CPUC describes this Rulemaking as follows:

*The primary purpose of this rulemaking is to serve as the Commission’s forum to integrate all procurement policies and related programs. A key representation of this integration is the filing, review and adoption of long-term procurement plans by the IOUs. These plans will cover the period 2007 to 2016 and they will reflect all of the decisions made by the Commission since the last filing of long-term plans. In addition, this rulemaking will seek the participation of ESPs [retail Electric Service Providers] and CCAs [Community Choice Aggregators] as contributors to the state’s long-term resource planning process. ...This rulemaking will serve as an umbrella proceeding to handle the procurement policy issues that do not warrant a separate rulemaking and it will provide a place to integrate all of our efforts ongoing in the other procurement related dockets, including:*

- 1. Community Choice Aggregation (R.03-10-003);*
- 2. Demand Response program plans (A.05-06-006 et al.);*
- 3. Critical Peak Pricing (A.05-01-016 et al.);*
- 4. Distributed Generation (R.04-03-017 and its successor);*
- 5. Energy Efficiency (R.01-08-028 and its successor);*
- 6. Avoided Cost and Qualifying Facility (QF) Pricing (R.04-04-025);*
- 7. Renewable Portfolio Standards (R.04-04-026 and its successor);*

8. *Transmission OII, I.00-11-001; and Renewable Energy Transmission (I.05-09-005);*
9. *Confidentiality (R.05-06-040); and*
10. *Resource Adequacy Requirements (R.05-12-013).*

*This rulemaking will host any other procurement policy issues that need to be addressed by the Commission in a comprehensive or integrated fashion.*

Consistent with previous CAISO Board directives, the CAISO is supporting the CPUC in this Rulemaking to ensure that the objectives and outcomes of the various phases are aligned and an appropriate mix of resources is procured, in the right geographic areas, in adequate amounts to operate the grid reliably.

The LTPP Rulemaking has been separated into two phases (which are distinct from and not to be confused with the two phases of the Resource Adequacy Proceeding, discussed in Sections 3.2.2 and 3.2.3 below). In LTPP Phase 1 the CPUC reviewed the need for additional policies to support new generation and long-term contracts in California, including possible transitional and/or permanent mechanisms (e.g., cost allocation and benefit sharing, or some other alternative) which can ensure investment in and construction of new generation in a timely fashion. In Phase 2 the LTPP Rulemaking will serve as the forum for the CPUC's biennial procurement review process, established pursuant to AB57, D.04-01-050 and D.04-12-048, which requires that investor-owned utilities submit long-term procurement plans that serve as the basis for their procurement, and will comprehensively integrate all CPUC decisions from all procurement related proceedings. The CAISO is expected to take an active role in the review of these plans to provide insight as to their ability to provide the necessary portfolio of resources that can reliably serve the load in the CAISO control area.

### **3.2.2 CPUC Phase 1 Resource Adequacy (Completed)**

Phase 1 of the CPUC Resource Adequacy proceeding (R.05-12-013) was a continuation of the state's program to ensure reliable and cost-effective supply in California through augmentation of the CPUC's previously adopted program of resource adequacy requirements ("RAR") in R.04-04-003. Central to Phase 1 of this Resource Adequacy proceeding was the establishment of a local capacity requirement that is to be implemented through the RAR program in 2007 for CPUC-jurisdictional load-serving entities (LSEs). This phase is now complete and a final decision was issued by the CPUC on June 29, 2006.

### **3.2.3 CPUC Phase 2 Resource Adequacy**

Initiated in late summer 2006, Phase 2 addresses a number of new topics as well suggested improvements to the current program. New topics include significant issues such as the institution of a capacity market and a zonal capacity requirements obligation on load-serving entities. The CPUC is expected to issue a scoping memorandum to outline Phase 2 topics and timelines by December 2006, after which there will be workshops and written comments by participants. The timeframe for a decision on Phase 2 topics is difficult to discern at this time, however, certain aspects may be decided in 2007 and other topics decided in 2008.

### **3.2.4 Demand Response**

With the heat storm of 2006 and record setting load growth in California and the nation, along with the persistent challenges associated with adding new transmission and generation capacity, policy makers, utilities and customers are taking a renewed interest in demand

response as a viable option for meeting future resource needs. Interruptible and load cycling programs have long been effective demand “responsive” resources used by utility operators to maintain reliability, particularly during emergency conditions. However, given deregulation and the spawning of wholesale energy markets, along with the advent of automated, addressable, and dispatchable demand response technologies that can be triggered in very specific and targeted ways, perspectives on demand response applications have broadened. Regulators and policy makers see the potential for demand response to not only enhance the reliability of the grid operator, but to create efficiencies by bringing additional capacity and liquidity to the wholesale energy markets.

The CAISO understood this potential. The CAISO also understood that California was serious about meeting the state’s growing energy needs by first lowering demand before increasing supply<sup>1</sup>. Additionally, California is committing millions of dollars on demand response programs, yet both of these efforts are largely disconnected from the CAISO as the grid operator and wholesale market provider.

Understanding that the demand-side represents the “other” economy in the wholesale energy market, yet unsure as to what the CAISO’s role should be in encouraging and/or extracting the reliability and market value from this resource, the CAISO embarked on a project to develop exactly what the CAISO’s vision and strategy should be with regards to demand response.

Informed by internal and external opinion shapers, the CAISO will publish a final vision statement and a strategic plan for Demand Response in early 2007. The approved plan will define the CAISO’s role and field of play in the Demand Response arena as well as help define resource requirements necessary to fulfill the agreed to vision. In developing the plan, the CAISO considered:

- What other ISOs/RTOs offer, both domestically and internationally.
- The CAISO’s role in the context of what the other state agencies and IOUs are developing and offering.
- Whether the CAISO should initiate and operate its own Demand Response programs or only support programs operated by IOUs, the CPUC, the CEC, and others.
- Whether the CAISO should establish standards and specifications that enable demand response to integrate easily into the CAISO’s wholesale markets.

The CAISO recognizes that it cannot delay in developing and articulating its policy in this area given the momentum already behind demand response at the state level and a keen interest expressed by FERC on the subject. As such, the CAISO will be presenting its findings to the CAISO Board in January with the expectation that the vision statement and strategic plan will be finalized shortly thereafter.

### **3.2.5 CAISO Short-term Reliability Service**

In early 2006, the CAISO participated in a joint filing of the Reliability Capacity Services Tariff Offer Of Settlement (“RCST” Settlement), for which most elements are in effect. However, the CAISO and market participants are awaiting a FERC final decision on the price basis for RCST payments. If approved as filed, the RCST Settlement provisions will expire the earlier of MRTU implementation or December 31, 2007. The terms and conditions of the offer contain a modified

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<sup>1</sup> CPUC and CEC adopted the Joint Agency Energy Action Plan, which among other things, established a goal of 5% price-responsive demand by 2006 and a loading order that gives highest priority to energy efficiency and demand-side resources in the resource procurement priority order of the IOUs.

version of the existing FERC-ordered Must Offer Obligation (MOO) for some units, but this MOO as well as the original MOO are, according to the current MRTU proposal, ending with the implementation of MRTU.

The Resource Adequacy (RA) proceedings of the CPUC are intended to ensure that adequate resources are available to meet the demand and operating requirements of the CAISO. In order to properly meet all projected system conditions, system-wide capacity requirements must be supplemented by local and zonal requirements. Even then, however, there are conditions and circumstances that require supply capacity that was not procured under the RA requirements. The RCST provisions, in combination with the MOO, are expected to provide a mechanism to enable the CAISO to meet such needs. But because these provisions sunset with the sooner of MRTU start-up or the end of 2007, the CAISO must develop a successor mechanism for procuring reliability services on a short-term basis to be implemented at that time.

In furtherance of this objective the CAISO has identified the following activities:

- Review, assess and analyze performance of the RA requirements and, if approved by FERC, RCST.
- Issue White Paper on conceptual proposal for mechanism to ensure reliability upon MRTU implementation, 1<sup>st</sup> Q of 2007.
- Begin stakeholder process on reliability mechanism – 2nd Q of 2007
- File a reliability mechanism at FERC by June 2007, to obtain FERC approval no later than September 2007.
- Implement the approved reliability mechanism by MRTU start-up or end of 2007.

### **3.2.6 Reliability Requirements for Non-CPUC Jurisdictional Entities**

The CAISO in collaboration with the CPUC and other local regulatory authorities is establishing a framework of requirements to ensure supply sufficiency for the control area. The CAISO has established appropriate tariff based reliability requirements, which include reporting and offer obligations to ensure comparability for all parties. Currently, the CAISO is working with non-CPUC jurisdictional entities to implement the reporting requirements such that these entities are providing the CAISO with critical operating information through a standard template. In addition, the CAISO is working with all stakeholders to review the study assumptions and methodologies employed to determine the locational capacity needs in the CAISO control area. Moving forward, this activity will continue to clarify and refine the obligations and processes that all non-CPUC jurisdictional entities will use in meeting the CAISO reliability requirements.

## **3.3 Renewable Resources**

Consistent with its 2006 Annual Corporate Goals, the CAISO developed a plan for supporting State policy regarding renewable resources. This plan, called the “Renewables Road Map,” was provided to the CAISO Board at the June 13-14, 2006 meeting.

The primary goals and objectives of the plan are to integrate renewable resources into the CAISO's transmission planning, markets and operations to support the State's goal of 20 percent of customer load being served by renewable resources by the end of the year 2010; and to identify additional issues and challenges that must be addressed to support the State's ultimate goal of 33 percent of customer load being served by renewable resources by 2020.

The Renewables Road Map can be found through the following web link:

<http://www.caiso.com/pubinfo/BOG/documents/index.html>

## **4. Other CAISO Initiatives**

Certain other CAISO initiatives do not fit clearly into the above categories because they are more generic supporting approaches that are applicable to many of the initiatives described above. This is best understood by looking at the specific initiatives.

### **4.1 Criteria for Evaluating Proposed Market Initiatives**

The number and range of potential market initiatives that the CAISO could consider undertaking is limitless, whereas time and resources are finite. The CAISO is therefore developing objective criteria for determining which potential initiatives are worth pursuing and for setting priorities among those that are found to be worthy. Central among such criteria are various aspects of costs and benefits, including overall market efficiency, grid reliability, and impacts on differently-situated market participants and stakeholders. The CAISO will be developing a proposal for such criteria in consultation with stakeholders over the course of Summer 2006.