

# Memorandum

**To:** ISO Board of Governors  
**From:** Anjali Sheffrin, Interim Vice President, Market and Program Development  
Lorenzo Kristov, Principal Market Architect  
**cc:** ISO Officers  
**Date:** October 12, 2005  
**Re:** *Approval on MRTU Issues Resolution for November 2005 Tariff Filing*

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*This memorandum requires Board action.*

## EXECUTIVE SUMMARY

Management recommends Board approval of the MRTU policy elements summarized in this memo and explained in detail in Appendix A. These policy and design features have undergone extensive public review and many have been modified in response to stakeholder concerns. A summary of the stakeholder issues and how they were addressed is provided in a matrix as Appendix B.

Recommendations are provided for twenty-eight issues which are grouped into the following broad categories:

1. **Resource Adequacy / MRTU Integration** issues involve the manner in which generation units identified as satisfying resource adequacy requirements will be made available to the ISO markets. This includes treatment of resources with only partial RA contracts, must offer obligation for different RA resource types (short start, long start/multi-day, and import/export resources), treatment of use-limited RA resources, Participating Intermittent Resources Program (PIRP), Local Reliability Backstop Procurement, Reporting and Compliance and RA requirements for non-CPUC jurisdictional entities.
2. **Transmission Rights** issues include how congestion revenue rights (CRRs) will be allocated so market participants can hedge the LMP-based congestion charges. This includes how CRRs will be allocated to internal and external load serving entities, details on the residual CRR auction, how entities who have existing transmission rights (ETCs) or Transmission Ownership Rights (TORs) will be scheduled, validated and settled under LMP, and how CRRs will be allocated to sponsors of new merchant transmission projects.
3. **Market Power Mitigation** issues include designation of paths for which congestion can be cleared using competitive bids (Competitive Path Assessment), how costs are approximated using Default Energy Bids (DEB) in those situations where participants have market power, and determination of a Bid Adder for frequently mitigated units (FMUs),
4. **Spot Market Pricing and Settlement** issues, include defining Trading Hubs, pricing and settlement for pre-dispatch inter-tie bids in the hour ahead scheduling process (HASP),

ancillary services pricing in HASP and Real time, Inter-SC trades of Ancillary Services, settlement at Load Aggregation Points, Refunding Excess Revenues from Marginal Loss collection and details on the Participating Intermittent Resources Program (PIRP).

Management recommends the following motion:

**MOVED,**

**That the ISO Board of Governors approves the Market Design and Technology Upgrade policy proposals, as outlined in the memorandum dated October 12, 2005, and related attachments.**

## **BACKGROUND**

As discussed at the last several Board meetings, the ISO is aggressively moving to meet its commitment for implementing MRTU by February 07. This new design and technological improvements will enhance reliability because power flows will be largely resolved in the day ahead time frame, so that ISO operators will be better prepared to handle unforeseen emergencies. The creation of a forward market that is integrated with all aspects of real-time dispatch and that utilizes locational marginal pricing to manage congestion are established practices within other ISOs. The ability of suppliers to exercise market power will be mitigated and the electricity market managed by the ISO will be more transparent and will promote reasonable and stable prices.

When the MRTU market redesign effort began at the beginning of 2002, the ISO identified several critical objectives reflecting the need to correct fundamental flaws in California's electricity markets related to the zonal market design and the collapse of the California Power Exchange. These objectives, which continue to be the primary focus of the MRTU effort, are to: (1) perform effective congestion management in the ISO forward markets (day-ahead and hour-ahead) by enforcing all transmission constraints so as to establish feasible forward schedules; (2) create a day-ahead energy market; (3) automate real-time dispatch so as to balance the system and manage congestion in an optimal manner with minimal need for manual intervention; and (4) ensure consistency across market time frames (day-ahead through real-time) in the allocation of transmission resources to grid users and in the pricing of transmission service and energy. Collectively these objectives comprise the over-arching goal of aligning the scheduling and operating incentives inherent in market prices with the requirements of reliable system operation.

The policy issues discussed in this memorandum should complete the conceptual design and resolve overriding policy issues that establish the foundation of this market re-design, although there are some other activities in progress at this time whose outcomes can affect the resolutions proposed here and could therefore require the ISO to make adjustments to the Release 1 design. These other activities are: (1) the CPUC proceeding on Resource Adequacy, which has not yet issued a final decision; (2) a FERC inquiry on demand response in which the ISO and the stakeholders participated, and on which FERC is expected to issue an order on MRTU-related matters including aspects of price aggregation for internal load; and (3) final review by the ISO's software vendors of the detailed specifications for implementing these proposals. Should any of these activities require adjustments to the Release 1 MRTU design the ISO will discuss the issues with stakeholders. In addition, more specific details on the implementation of these policies will be part of the Business Process Manuals to be developed in 2006 in consultation with stakeholders.

## **STAKEHOLDER PROCESS**

Since March the ISO has conducted monthly forums encompassing at least 18 full days of face-to-face stakeholder meetings, five formal rounds of stakeholder written comments and numerous iterations of White Papers proposals that have shaped the development of these policies.

Stakeholder participation has been extensive and extremely helpful. Management recognizes that some stakeholders remain concerned with certain features but management believes that in each case the ISO's proposed resolution is reasonable, fair and workable. In some cases the ISO's position was driven by its view of the best approach to assure reliable, efficient markets. In other cases where equity was the primary consideration, the ISO sought to achieve a balanced approach based on the stated participant interests.

A matrix of issues that includes previously expressed stakeholder positions and the ISO responses is detailed in Attachment B.

## **MRTU ISSUES RESOLUTION**

In this section we provide a summary description of the MRTU issues that have been resolved within this stakeholder process.

### ***1. Resource Adequacy / MRTU Integration Issues***

In accordance with FERC's June 2004 Order, the ISO will not include a FERC-approved Must Offer Obligation (MOO) when MRTU is implemented. However, the ISO must assume that the CPUC's Resource Adequacy (RA) requirements will be fully implemented by the time the FERC obligation expires.

As part of these RA requirements, the CPUC has specified that load-serving entities must make their resource adequacy resources available to the ISO in its day-ahead market (through bids or schedules) and Residual Unit Commitment (RUC) process. The ISO is currently advocating in the CPUC proceeding on Resource Adequacy that load serving entities will either directly schedule and bid their RA resources or will establish contractual obligations on suppliers to bid their RA resource into the ISO's markets through and including the RT market. The ISO has also committed to developing a release mechanism post DA market that would potentially release some of the short-start and other similar units from an obligation to stay available through real time. The ISO presumes this means that additional rules approved by the CPUC will provide that all RA resources be made available to the ISO as necessary to assure reliable system operations consistent with the nature and physical limitations of these resources.

Following the airing of concerns and extensive discussion of this policy among stakeholders, the ISO intends to prepare tariff language to reflect a world where the RA-MOO will replace the existing Real-Time MOO imposed by FERC, and the unit commitment capability of the ISO's proposed day ahead Integrated Forward Market (IFM) and RUC processes will replace today's Must Offer Waiver process.

Management believes the ISO has defined the policy for specific RA based MOO requirements for the diverse portfolio of resources that the ISO will need to accommodate or be able to manage. In response to numerous concerns raised by stakeholders, the ISO has committed to: 1) instituting a mechanism that could release certain short-start units from its offer obligation if these resources are not needed after the day-ahead processes, 2) pursuing (after the initial MRTU release) multi-

day unit commitment within the integrated forward market for long-start units, 3) developing an advisory plan for use-limited resources so the ISO can optimize of these resource within their capabilities, 4) adapting MRTU software so that part of the capacity of a resource can be used to meet its RA-based obligation, while other parts remain uncommitted.

The ISO's policy for units in the Participating Intermittent Resources Program (PIRP) that have RA obligations also has evolved significantly as a result of stakeholder suggestions. For PIRP resources, Day-Ahead schedules will not be required but may be submitted. The ISO will consider Day-Ahead PIR schedules and PIR forecasts in RUC decisions. Schedules submitted in HASP must be consistent with the forecasting service used by PIRP resources. Day-Ahead schedules will be settled at Day-Ahead prices. HASP schedules will be settled at the real-time prices. Uninstructed deviations between HASP schedules and Real-Time will be averaged on a monthly basis as currently done.

The ISO will help implement the CPUC's directives requiring Load-Serving Entities to submit monthly reports showing a planning reserve margin of 15%. ISO staff is working closely with non-CPUC jurisdictional entities to develop tariff language reflecting appropriate application of this policy for these entities. In addition, the ISO has put forth guiding principles for a local reliability backstop in case RA procurement by Load-Serving Entities proves to be insufficient to support reliable system operations in specific areas. The ISO anticipates ultimate resolution of this issue -- which may involve tariff language for payment of generation that is supplemental to RA -- will be part of a FERC process involving the Independent Energy Producers (IEP) recent complaint to FERC.

## ***2. Transmission Rights Issues***

### ***CRR Allocation Rules for Entities Serving Consumers Inside the ISO Control Area***

Congestion Revenue Rights (CRRs) are a key feature of MRTU because they allow market participants to hedge the LMP-based congestion charges to which they may be exposed. Consistent with the ISO's July 2003 filing to FERC, the ISO will first allocate CRRs to entities serving the load that pay for the embedded costs of the ISO transmission grid, and then provide an auction of CRRs open to all creditworthy parties.

As part of the on-going MRTU stakeholder process, the ISO and stakeholders have reviewed how these financial rights are allotted by the eastern RTOs/ISOs, with particular focus on balancing the inherent trade-offs in the distribution of these financial instruments in a way that is as equitable as possible and most appropriate for California.

The ISO has worked closely with stakeholders in developing an allocation process that carefully balances diverse interests. The specific manner in which CRRs are allocated is not central to the ISO ensuring reliable operation and efficient markets under MRTU, as long as some basic efficiency and incentive considerations are addressed. Therefore the ISO's CRR allocation design has been heavily driven by the interests expressed by stakeholders. In summary, the ISO has proposed:

- Seasonal and monthly CRR instruments, to be allocated to load-serving entities (LSEs) in annual and monthly processes followed by CRR auctions process open to a larger group of participants;

- The ability of LSEs to request sets of CRRs they believe will most effectively hedge their congestion costs;
- In the first year, verification by the ISO that the CRRs requested by LSEs reflect their historic use of the grid;
- In subsequent years, a provision for priority renewal or “grandfathering” of previously-allocated CRRs, to increase LSE certainty of obtaining needed CRRs for multiple years and to eliminate the need for continuing verification by the ISO;
- Clear procedures whereby LSEs gain or lose CRR eligibility as retail load migrates under retail access or grows over time, as a way to ensure equitable CRR allocation to consumers without regard to their choice of retail LSE.

In response to a recent public discussion by the Market Surveillance Committee and a specific question posed to stakeholders by members of the ISO Board, the ISO recently explored with stakeholders the concept of a “pro rata” allocation of CRRs rather than one based on nomination by the LSEs as described above. The intention of the pro rata approach, as expressed by the Board members and the MSC, would be to simplify the procedures for allocating CRR instruments. With the assistance of two MSC members, the ISO provided to stakeholders one potential design for such a pro rata approach, in as much detail as possible given the short amount of time to develop it, in order to allow stakeholders to provide meaningful comments comparing it against the proposal described above, which has been under development for several months. The discussion of the pro rata alternative occurred at an October 6 stakeholder meeting, and written comments were requested by the ISO by close of business October 10. These stakeholder comments have been posted to the ISO website and are included in the documents provided to the Board.

In considering the package of MRTU proposals before the Board today, the Board will have to decide whether to adopt the proposal described in Appendix A, which has been under development with stakeholders since May, or to direct management to change course and pursue development of the pro rata alternative. The following considerations are highly relevant to this decision.

First, note that this question applies specifically to LSEs who serve load within the ISO control area, who will be the most affected by the Board’s decision on this matter. Initial verbal comments on this issue – made at the September 22 Board/MSO and the October 6 stakeholder meetings – indicate that the parties responsible for serving the greatest share of load within the ISO are in favor of the proposal that has been developed through the stakeholder process. Moreover this preference is based on principle, and is not just a preference to avoid changing course.

Second, a Board decision to change course at this time will result in as-yet-undetermined delays in the MRTU implementation process. The delays are hard to determine because they involve, first and foremost, the FERC regulatory process. Specifically, because the pro rata alternative is just a concept at this time and has had very little stakeholder discussion, unless the stakeholders very quickly converge on a preferred design it will not be possible to include CRR allocation in the MRTU tariff filing on November 30. At the very least this would likely delay FERC approval of the MRTU tariff significantly.

Third, although the pro rata alternative would probably reduce complexity and workload for the ISO, it may not confer the same benefits on the LSEs who are the recipients of allocated CRRs. The reason is that the set of CRRs allocated on a pro rata basis would not match the LSEs’ expected needs for hedging congestion. As a result, LSEs who prefer an effective congestion

hedge would be required to invest substantial time and effort in the CRR auctions to obtain the CRRs they need. For these LSEs, the costs avoided by not adopting the proposal in Appendix A may be fully offset by the additional costs and risks associated with having to participate in the CRR auctions.

### **CRRs for External Load**

Entities that serve load outside the ISO control area have argued that they support the embedded costs of the ISO grid and should be allocated CRRs in a manner analogous to LSEs serving load inside the control area. Other parties, including the CPUC staff, argue that LSEs with external load are differently situated to LSEs with internal load and therefore should not be entitled to CRR allocation.

Management believes that the best solution is to follow established practices in other ISOs and to follow the principle to allocate CRRs to parties that are obligated to pay for the fixed costs of transmission during the period of the CRRs. Therefore the ISO is proposing to allow LSEs that serve load outside the control area to request CRRs through the same allocation process the ISO performs for LSEs with internal load, but only in exchange for pre-paying the access charge for the period for which the requested CRR is valid, and only from their CRR sources within the control area. This proposal is consistent with provisions approved by FERC for ISO-NE.

### **CRRs for Merchant Transmission**

The principles outlined by the ISO would allocate Merchant Transmission (MT) CRRs for the incremental amount of transfer capability impacting the entire ISO Controlled Grid. The ISO has outlined a proposed methodology for determining this incremental amount based largely on PJM's process for comparable rights. The ISO intends to include general tariff language regarding MT-CRRs while developing more detailed processes for allocating Merchant Transmission CRRs in consultation with stakeholders.

### ***Existing Transmission Contracts (ETCs)***

Following an extensive stakeholder process in 2004, the ISO filed and FERC approved a conceptual proposal for the treatment of ETCs under MRTU. That proposal resolved how ETCs would be scheduled, validated and settled under LMP. In particular, FERC accepted the ISO's proposal to exempt ETC schedules from congestion charges both in the Day-Ahead and Real-Time.

Certain issues involving the settlement of non-congestion costs, validation processes and other stakeholder concerns have been clarified during this stakeholder process. The issue that raised the most interest among stakeholders involves the treatment of losses for ETC schedules. The ISO's initial approach was that ETC schedules should be charged for marginal losses under LMP just like other schedules, and the ETC contract parties can resolve among themselves who is responsible for paying these losses. In response to a number of strong comments, the ISO has changed its preferred method for refunding excess revenues from losses so that such refunds are provided to all load, including ETC holders, for every settlement period. This new refund mechanism appears to satisfy most ETC stakeholders. Regarding other settlement charges, the ISO's recommended approach is to continue the current practice that exempts ETC schedules from access charges after MRTU is implemented.

### ***Transmission Ownership Rights (TORs)***

The ISO generally defines a Transmission Ownership Right (TOR) as a right to utilize, for the purpose of electric transmission service, transmission facilities that are located within the ISO Control Area but are either wholly or partially owned by an entity that is not a Participating Transmission Owner (PTO).

The ISO expects and has initially proposed these TOR entities would be scheduled and settled under MRTU in a way that is generally similar to ETCs. However, each of these TOR entities has different facilities that may involve unique contractual arrangements. Some TOR entities also suggest the ISO should charge actual losses rather than marginal losses just for their TOR facilities, and the ISO intends to review this request.

## **3. Market Power Mitigation Issues**

### ***Competitive Path Assessment***

The ISO and stakeholders have worked out a specific methodology to determine when a particular transmission path is deemed “competitive” in the application of Local Market Power Mitigation. The starting assumption is that the existing inter-zonal paths are competitive and the existing intra-zonal paths are non-competitive.

Some stakeholders suggest a smaller number of suppliers be used for the pivotal supplier test than the currently proposed three suppliers, and others suggest that three suppliers be used plus a pricing test. The MSC recommends designating the existing zonal transmission paths as the only competitive paths during the initial year of operation. The ISO is proposing the three pivotal supplier test along with retaining the three existing inter-zonal paths as competitive, and is conducting preliminary tests to determine the appropriateness of using two suppliers as part of the methodology along with a price movement screen.

### ***Default Energy Bids***

The overall intent of the mitigation system is to mirror competitive outcomes in those situations where participants might have market power. The ISO believes that under competitive outcomes generators will be bid their variable costs. Consequently the Default Energy Bid (DEB) is designed to approximate that cost. The ISO proposes that the preferred DEB calculation methodology be ranked by the unit owner from among the following three options:

- A. Variable cost + 10%.
- B. A weighted average LMP based on the lowest quartile of LMPs set at the unit location during hours in the last 90 days when the unit was dispatched. Generators must pass a competitiveness screen to qualify for this option in which 50% of their MWh dispatches over the prior 90-days must have been unmitigated
- C. A rate negotiated with a designated Independent Entity.

There will be separate DEBs for day-ahead and real-time markets, as well as for peak and off-peak hours. Every unit that chooses LMP-based DEB as the first choice must have either a negotiated curve or cost-based curve as second choice. The competitive screen to qualify for an LMP-based option is applied to the whole curve rather than on a segment by segment basis. To calculate the appropriate

incremental heat rates market participants will be required to supply the heat input coefficients for their thermal generators.

### ***Bid Adder for Frequently Mitigated Units (FMU)***

As part of its Local Market Power Mitigation (LMPM) procedures, the MRTU design provides for application of a Bid Adder to units that are frequently mitigated (FMUs). The general criteria for determining whether a unit is Frequently Mitigated and eligible to have the FMU Bid Adder applied to its Default Energy Bid will be established on a monthly basis. A unit will be designated as an FMU if it is mitigated in over 80% of its run hours over a rolling 12-month period and ran for more than 200 hours over the rolling 12-month period.

In response to stakeholder suggestions, the ISO will use a scaled bid adder for partially contracted RA units.

## **4. Spot Market Issues**

### ***Scheduling and Settlement at Load Aggregation Points***

Due to overwhelming stakeholder support, the ISO is reiterating its position filed in the July 2003 MRTU Conceptual Proposal to use three Load Aggregation Points for the settlement of load, with a few exceptions dealing with ETCs and Participating Load entities. These LAPs correspond to the three large IOU service areas. The ISO position includes a provision not to allow opting out of these LAPs.

### ***Credit of Net Revenues of Marginal Losses***

To address strong stakeholder concerns, the ISO has agreed to alter its previously filed process for returning excess revenues from marginal losses. In the July 2003 MRTU conceptual design filing, the ISO had proposed (and FERC approved) a process where the excess revenues collected from marginal losses would flow into an account to ensure CRR revenue adequacy, with the remainder flowing back to the PTOs to reduce their access charges. The ISO now proposes that all Scheduling Coordinators will receive directly a pro rata share of the excess revenues based on all demand for each settlement period. Under this new policy, all Scheduling Coordinators (including ETC holders) will get a share of the refunds for excess losses, and this will occur faster and more frequently.

### ***Ancillary Services Pricing in HASP and Real-time***

The ISO proposes the following approach to A/S pricing in HASP and Real-time:

- accommodate capacity bids (subject to bid caps) for A/S in Real-time.
- procure A/S in Real-time from internal generation on a 15-minute basis, when needed, and pay a 15-minute market-clearing price based on both energy opportunity cost and A/S capacity bids. The seller keeps the A/S payment regardless of whether or not the resource is dispatched for energy in real-time (based on 5-minute dispatch instructions). If called upon for energy, the Real-time Energy is priced at the 5-minute LMP. No Pay applies to declined instructions and unavailable A/S capacity due to uninstructed deviations.



- procure A/S from imports in the HASP on a 60-minute basis, when needed, and pay a market-clearing price based on both energy opportunity cost and A/S capacity bids. Import capacity procured as A/S in HASP could be responsible for congestion charges if the capacity is scheduled on a congested intertie. The import SC gets to keep the ASMP regardless of whether or not the A/S is called upon during the hour to produce energy. No Pay applies to declined instructions and unavailable A/S Capacity due to inter-tie derates.

### ***HASP Pre-dispatch and Settlement for Inter-tie Bids***

In initial MRTU design (as well as in initial implementation of Phase 1b), the hourly bids (imports and exports) were guaranteed bid or better, receiving (or paying) real-time price established by 5-minute dispatchable resources plus an uplift (a reimbursement) when needed to make them whole for their dispatched bid. Serious concerns were raised regarding strategic behavior as well as cost shifts associated with this pricing and settlement scheme after the implementation of Phase 1b. An interim solution (“as bid” settlement of tie bids) was adopted in Phase 1b.

The ISO now proposes a 2-pronged solution in order to:

- Replace the bid or better payment to the hourly pre-dispatched bids by establishing a pre-dispatch clearing price (LMP) at each tie. This was also the preferred long-term solution for Phase 1b once the initial Phase 1b design flaw was discovered, but it could not be implemented due to Phase 1b software development and implementation time constraints.
- Allocate the cost to metered demand.

### ***Definition of Trading Hubs***

The ISO proposes Existing Zone Generator Trading Hubs (EZ Gen Hubs) as successor delivery points to today's Existing Zones (NP15, SP15, ZP26). The proposal included a base definition of EZ Gen Hubs as “the average price paid to generation in the zone” and as such would be based solely on generator LMPs.

The ISO will continue to model and analyze different formulations of the trading hubs with continued consultation with stakeholders.

### ***Inter-SC Trades of Ancillary Services***

The ISO's current (pre-MRTU) design functionality allows for the trade in Ancillary Services by Scheduling Coordinators. The process is simple and well used by market participants, who have indicated that they would like a similar functionality under MRTU.

After reviewing several alternatives with stakeholders and modifying its proposal, the ISO now proposes that A/S trades be of Fixed Quantities (as it is now). Imports will not be stripped of their A/S, and MRTU will automate the existing manual workaround. SCs that import firm energy, but do not use the associated A/S to serve their own load obligation or trade it to another entity, will receive a financial credit equal to the relevant A/S user rate. The ISO believes that its overall proposal is congruent with market efficiency, cost causation and the equal treatment of similarly situated resources.

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

The ISO proposes to drop its proposal for RUC Self-Provision because there is no significant stakeholder interest for this functionality in the MRTU design.

## **MARKET SURVEILLANCE COMMITTEE OPINION**

The Market Surveillance Committee (MSC) has reviewed these features of the MRTU design and has produced a written opinion that is being presented separately to the Board.

## **CONCLUSION AND MANAGEMENT RECOMMENDATION**

Management recommends that the Board approve the policies summarized above. Management recommends the following motion.

**MOVED,**

**That the ISO Board of Governors approves the Market Design and Technology Upgrade policy proposals, as outlined in the memorandum dated October 12, 2005, and related attachments.**