

## **Market Redesign and Technology Upgrade (MRTU)**

### **Frequently Asked Questions**

#### **1. How will MRTU improve grid operations in California?**

Most importantly, MRTU improves reliable management of California's transmission grid by using an accurate model of the transmission system. Today's rules permit a serious disconnect between expected power flows and the real time impact on the transmission network, thus requiring ISO operators to manage congestion and avoid overloads in real time. MRTU fixes these flaws by creating rules for a "day ahead" market and scheduling process where:

- a) power flows over the next 24 hours are scheduled and modeled according to actual grid conditions and the laws of physics;
- b) the risk of shortages is assessed and minimized in advance; and
- c) the power flows in real time as grid operators expect from the network models.

In addition, MRTU will provide clear, stable rules for buyers and sellers in California's wholesale electricity markets as well as useful information for investors in transmission lines and power plants. The transparent MRTU rules will allow market prices to reflect actual costs based on the way electrons physically flow on transmission lines.

#### **2. Will MRTU encourage new investment in generation and transmission and provide efficient use of resources in California and the West?**

The primary drivers for investment, like today, will continue to be the State's resource adequacy requirements and long-term procurement rules, as they apply to load-serving entities. In addition, the CAISO will continue to proactively identify and pursue needed transmission projects. MRTU will complement and enhance these features of the California landscape by providing transparent locational marginal prices (LMPs) that reflect the true costs of energy and transmission.

Locational prices reveal how new power plants will impact the grid, which greatly helps investors to estimate the revenue streams they can expect to earn by siting at potential locations. High prices will more easily identify areas with congested transmission lines, so that profit-minded companies and regulated utilities can build new lines, with the CAISO's coordination, to improve efficiency and reliability.

**3. What measures is the CAISO taking to ensure that locational prices will not spike, thereby harming consumers?**

First, it is important to clarify that under MRTU only suppliers will see locational prices, not consumers. For consumers, their prices will continue to be averaged over larger geographical areas representing their utility's service area. MRTU rules include appropriate local market power mitigation measures as well as "price caps" that limit how much generators can get paid. Perhaps most importantly, as a result of requirements and incentives that promote forward contracting, generators will no longer have an incentive to raise spot market prices. Under this new framework, if load-serving entities have forward contracts, it is the suppliers that have an incentive to keep prices low, since it they who will have to buy out of the spot market if they are unable to keep their contractual commitments to deliver power. However, if price spikes are caused by supply shortages, especially during extreme weather conditions, then the price signal will ultimately attract more generation to the area and will reduce the risk of high wholesale prices.

By aligning reliability requirements with market rules, MRTU should create more incentives for power plant developers to site in areas needed to best serve consumers and promote grid reliability.

**4. Because Locational Marginal Pricing calculates prices based on the highest accepted bid (i.e., the bid of the "marginal" generating unit), will all generating units in the control area be compensated at the highest price?**

No. Under LMP the prices are calculated at each of about 3000 locations within the control area, and the highest accepted bid at each generator location sets the price for that location but not for the entire control area or large load (consumer) pricing zone. As noted above, prices charged to load-serving entities are averaged over large load aggregation areas, so the impact on consumers of a few high locational prices will be muted.

**5. How does MRTU protect load-serving entities from excessive congestion costs?**

The CAISO's new market design will give load-serving entities a hedging instrument called Congestion Revenue Rights or CRRs. These rights give the ability to load to largely hedge the risk of congestion costs, thus providing certainty in the costs of transmission service.

**6. Will load serving entities have an opportunity to evaluate in a concrete way the likely impact of the MRTU market design on their procurement plans and costs?**

The CAISO has performed several LMP studies to provide insights on the impact on the market of moving to an LMP-based congestion management system. Additional monthly studies will be posted until MRTU start-up.

Details of these studies and reports on the outcome can be found at:  
<http://www.aiso.com/docs/2004/01/29/2004012910361428106.html>

In addition, the CAISO has conducted mock allocations and auctions of CRRs, which give parties practical insights on the tools they can use to manage risk associated with the congestion component of LMPs. Currently, the CAISO is conducting its CRR Dry Run based on the allocation and auction rules that were approved by FERC.

To provide parties with a full bid-to-bill knowledge and experience prior to start-up, the CAISO has developed a series of market simulation activities that allow participants to evaluate and learn to use the scheduling and market systems. The CAISO has also worked with its stakeholders to release details of the full network model that will allow participants to evaluate the impact of the market rules using their own tools.

**7. Given all the complexities and uncertainties associated with Locational Marginal Prices, is it worth it? Why not stick with the current market?**

First, the “simplicity” of the current market design is illusory and, as explained above, is based on an inaccurate representation of the power system. This forced simplicity creates reliability problems for our operators and results in huge uplift costs to all customers as a result of the need to make last minute adjustments to the power system. Moreover, this disconnect between the market design and reality can allow others to manipulate the system. The current market design is a belt and suspenders system sustained by burdensome regulatory requirements on generators, heavy dependence on State contracts, extensive manual operational procedures in real-time and high uplift costs (costs not reflected in the market transaction price) that are being spread to all consumers rather than allocated on cost causation principles. LMPs replace this current system of unpredictable and sometimes substantial uplift costs with prices that are based directly on cost-causation principles.

Moreover, congestion management based on LMPs using a full network model provides a tried and tested structure to aid grid operators. LMP provides more transparent processes for determining dispatch levels, enabling all parties to observe and track the cost of redispatch due to congestion.

**8. How does MRTU affect on-going concerns with “seams” between the CAISO markets and other markets in the Western region?**

Seams issues between control areas have long existed. The CAISO believes that MRTU will help alleviate some seams issues and is neutral on the rest. For example, the start of a Day Ahead market will help resolve congestion earlier and the improve flows that need to be managed in real-time between control areas.

Additionally, MRTU diminishes current differences between CAISO and the rest of the west, by moving the intra-day scheduling deadline from 2.25 hours before each operating hour (T-135) up to 1.25 hours (T-75). This change has been widely sought by parties scheduling interchange transactions, and will facilitate increased intra-day trading of power for import and export to and from the CAISO control area.

The most beneficial aspect of MRTU with respect to seams is the fact that LMPs will provide more transparent and predictable pricing. One existing problem at the seams, and one that MRTU alone will not be able to resolve, is the chronic problem of unscheduled loop flows in real time, which is a challenge to reliable operations as well as yet another non-transparent cost that is spread to all grid users.

Pursuant to a FERC’s directive, the CAISO will be participating in a technical conference and is working on further initiatives to address seams issues under MRTU. The CAISO looks forward to working with its neighbors to address unscheduled flows and other seams issues that are problematic features in the industry throughout the West.

**9. The Energy Policy Act of 2005 afforded the Pacific Northwest protection of transmission contracts, preventing FERC from requiring the conversion of physical transmission rights financial rights. Will MRTU impact transmission rights outside of California?**

No. MRTU does not require utilities in neighboring control areas to convert their firm transmission rights to financial rights.

The CAISO does not anticipate that MRTU will alter transactions between the CAISO control area and the rest of the West. Nevertheless, the CAISO recognizes that there are differences in market rules that will require solutions to ensure that barriers to trade between the control areas are minimized or eliminated. The CAISO has launched a coordinated effort to consult with its neighboring control areas to identify and address any seams issues that may exist.

**10. How will capacity markets in California affect the Pacific Northwest?**

At the start of MRTU, the CAISO will not have a centralized capacity market in place. The State's current "Resource Adequacy" and "Long-Term Procurement" rules should lead to more contracts with generating plants in California. The CPUC is now starting a process to evaluate the need for capacity markets in California, which could lead to further incentives for generation investment both within and outside of California.

**11. Does a municipal electric system or other entities have to buy or sell in the CAISO's markets?**

No. Parties in California must submit hourly energy schedules so the CAISO can safely manage the grid, but there is no requirement to participate in CAISO markets. Any entity can buy or sell directly with any other entity, with no CAISO knowledge or involvement other than scheduling the transmission.

**12. Will the ISO offer long-term firm transmission rights as directed by FERC?**

Yes. The CAISO is currently developing these long-term rights under MRTU, with significant input from stakeholders.

**13. How does the CAISO accommodate the business needs of municipal electric systems?**

Over the years, the CAISO has worked closely with the municipal community to develop specific features that substantially enhances the functioning of municipal utilities in the CAISO Control Area. One of these important features is the ability for a municipal utility to be a metered subsystem (MSS) entity. Under today's market, an MSS entity can choose to follow their load with their resources, schedule resources within their MSS to serve their own load, and be exempt from uplift charges. Under MRTU, MSSs can continue to function the same way.

In addition, MRTU guarantees that contracts for transmission service remain effective, even if signed before the CAISO's creation. Finally, MRTU preserves the primary jurisdictional roles by which municipalities are regulated and meet necessary reserve margins.

**14. Will the MRTU rules change if there is more competition for retail electricity customers?**

No, not necessarily. If California policy makers decide to change State law and revive and promote "Direct Access" among electricity consumers, the MRTU design structure is already set up to be compatible with retail choice.