

The ABCs of MD02

The California Independent System Operator (ISO) has honed Market Design 2002 (MD02) into a detailed proposal that addresses flaws in the current market structure. MD02 is aimed at improving reliability of the ISO grid, establishing better locational signals that encourage power plants to be built where they are needed most, adequately addressing congestion on the transmission system and giving the ISO new market mitigation tools.

FERC has issued a working paper that broadly describes its standard market design. The ISO has strived to make MD02 compatible with the FERC's standard market design.

The Comprehensive Proposal was approved by the ISO Board of Governors on April 25, and will be filed with the Federal Energy Regulatory Commission (FERC) on May 1. The "October 1 Elements" identified below, are those parts of the Comprehensive Design that must be in place when the FERC market power mitigation plan expires on September 30. Some of them may differ from the Comprehensive Design package which will take time to implement. The main point is that the October 1 Elements should not be thought of simply as interim measures, but as components of a fully integrated, comprehensive redesign of the ISO markets that will be implemented later, pending FERC approval.

This document is an attempt to briefly describe both the October 1 Elements and the long-term comprehensive measures of MD02 plan, and to compare both with the working paper on FERC's standard market design. The comprehensive MD02 proposal is available on the ISO home page at www.caiso.com.

Stakeholder input:

The ISO began the MD02 process in late December 2001, putting the initial documents on line for public consumption and comment. Since then the ISO has held two sets of four-day stakeholder meetings, one in January and one in March, and participated in a FERC Technical Conference in early April. Stakeholders have also been encouraged to submit written comments. The ISO has also made informational presentations to legislative staff, and public presentations to the ISO Board of Governors. In addition, stakeholders will have ample time to file written comment on MD02 with FERC.

ISO Filings:

May 1,	MD02 Comprehensive Proposal with Tariff language for October 1 elements only
June 15,	Comprehensive Proposal Tariff language

Layperson's Comparison of MD02 and FERC's Standard Market Designs

NOTE: The ISO elements described below reflect a work in progress. The summary of FERC's working paper is also dynamic. Details may change, blanks indicate no position articulated in paper.

	CAISO CURRENT	CAISO PROPOSED OCTOBER 1 ELEMENTS	CAISO PROPOSED (long-term)	FERC STANDARD MARKET DESIGN
<u>Price Caps</u>	Per FERC 6/19 order, soft cap based on least efficient generating unit dispatched during the last stage 1 emergency. Currently set at \$108 per megawatt-hour.	Damage-control price cap on ISO markets. The \$108/MWh price cap to continue. Hard cap, indexed to gas prices. Similar to current FERC cap.	Damage-control price cap on ISO markets proposed at \$108/MWh. Hard cap, indexed to gas prices. Similar to current FERC cap.	Damage control bid caps
<u>Capacity Obligation &/or Market</u>	None	Must Offer Obligation Must-offer requirement for non-hydro generating units with participating generator agreements. Those plants "must offer" their output to Ca Markets, if not otherwise obligated via contract.	Available Capacity (ACAP) Obligation: Load-serving entities (LSEs) will have an Available Capacity Obligation, defined as a margin above their monthly peak load, to be met by a combination of own generation, firm energy contracts, capacity contracts, and demand-side management. ISO will verify compliance monthly and assess penalties for any shortfall. Designated ACAP resources will be required to be fully scheduled or bid into ISO markets to serve ISO control area load. Daily performance will be monitored. ISO verifies that load-serving entities meet their capacity obligations. NOTE: The ISO has commissioned a consultant to work out the details of the ACAP design; ISO has discussed the detailed design for stakeholder feedback and plans to file with FERC in on May 1, 2002.	FERC currently calls for State and Regional reliability authorities to coordinate setting long-term reserve margins to be maintained by LSEs subject to their jurisdiction. ACAP is similar in many respects to obligations placed on LSE's in control area's managed by the New York ISO or by PJM.

	CAISO CURRENT	CAISO PROPOSED OCTOBER 1 ELEMENTS	CAISO PROPOSED (long-term)	FERC STANDARD MARKET DESIGN
<u>Day Ahead Energy Market</u>	None after the demise of the PX	No forward energy market facilitated by the ISO for the October 1, 2002 implementation.	Integrated with Congestion Management: Simultaneous forward energy, Congestion and Ancillary Service markets (see below)	Integrated with Congestion Management; simultaneous forward Energy, Congestion and Ancillary Service markets (see below)
<u>Congestion Management Market</u> Model spatial granularity (How "fine" can the system get in recognizing location-specific congestion)	Congestion recognized in three large zones.	Zonal; radial model. More specific than 3 zones, but still "coarse" in nature. Any congestion within zones mitigated in real time. No day-ahead option to mitigate intra-zonal congestion	Full network model (3000 busses including external loops) uses Locational Marginal Pricing to mitigate congestion and send appropriate market signals	Endorses Locational Marginal Pricing using full network model, or most specific system model available, integrated with DA energy market (optimized simultaneously); Bid-based Settlement based on nodal prices; possibility to define trading hubs
Other Scheduling Requirements	Requires balanced schedule	Requires balanced schedule	Accepts balanced or unbalanced SC schedules. Require generation feasibility. Proxy prices to be on file for mitigating congestion with no competitive inc/dec bids.	Accepts balanced or unbalanced SC schedules. Provides for local (out of merit order) market power mitigation
Congestion Prices	Congestion prices in forward market are the difference between marginal INC and DEC bids (of the marginal SC) accepted for redispatch to clear congestion across the interface.	Congestion prices in forward market are the difference between marginal INC and DEC bids (of the marginal SC) accepted for redispatch to clear congestion across the interface.	Congestion prices (including the cost of losses) in forward market are the difference between hourly nodal energy prices.	Congestion Price (including losses) is calculated as difference between 2 locational prices; No congestion costs are socialized

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<p><u>Ancillary Service Market</u></p> <p>Services</p> <p>ISO Acquisition or Self-provision Procurement</p>	<p>Spinning Reserves, Non-Spinning Reserves, Replacement Reserves, Regulation Up, and Regulation Down</p> <p>Both, SC's option</p> <p>Auction after CM market closes; award based on capacity bids only; markets for Regulation (Up an Down), Spin, Non-spin, and Replacement cleared sequentially in that order; Rational Buyer procurement allows demand substitution, i.e., procurement of higher quality A/S in the sequence to substitute for the lower quality A/S when doing so reduces total A/S procurement cost.</p>	<p>Spinning Reserves, Non-Spinning Reserves, Replacement Reserves, Regulation Up, and Regulation Down</p> <p>Both, SC's option</p> <p>Auction after CM market closes; award based on capacity bids only; markets for Regulation (Up an Down), Spin, Non-spin, and Replacement cleared sequentially in that order; Rational Buyer procurement allows demand substitution, i.e., procurement of higher quality A/S in the sequence to substitute for the lower quality A/S when doing so reduces total A/S procurement cost.</p>	<p>Spinning Reserves, Non-Spinning Reserves, and Regulation</p> <p>Both, SC's option</p> <p>Simultaneous auction with energy based on bid-cost minimization (rather than the Rational Buyer type payment minimization objective function)</p>	<p>Operating Reserves Market required of RTO: including at least AGC and 10-minute operating reserves.</p> <p>Both</p> <p>Simultaneously auction with Day Ahead energy and congestion management markets.</p>
<p><u>Centralized Unit Commitment.</u></p>	<p>None in original ISO market design. Currently, CAISO commits long-start-up time units subject to the FERC June 19, 2001 must-offer obligation (current approach similar to proposal)</p>	<p>Residual Unit Commitment (RUC):</p> <p>If submitted schedules (final schedules clearing the day-ahead market) do not fully reflect ISO load forecast, ISO may commit additional units to ensure adequate capacity on-line. Designated ACAP resources are required to be available for unit commitment.</p>	<p>Day-ahead Unit Commitment Service (UCS);</p> <p>More complex, market driven solution, but still allows for ISO to require units to start up to meet next day demand if resources are falling below apparent demand.</p>	<p>RTO to provide Unit Commitment service allowing submission of multi-part energy bids, start-up, and minimum loads, and various operating constraints in conjunction with integrated Energy/Congestion Management market. Compatible with both short and long term plans by ISO</p>