

# California Market Design Breakthrough

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A major step forward in California electricity market design appears in the proposal offered by the California Independent System Operator (CAISO). The CAISO paper is the focus of immediate discussion with its stakeholders in anticipation of a market design reform to be filed at the Federal Energy Regulatory Commission (FERC). This proposal has far-reaching and important implications. The parallel discussions on standard market design at FERC must take this CAISO proposal as strong testimony adding support for the Northeast market model that has been shown to work. The Midwest System Operator should be further encouraged in its market design since it already incorporates the insights now reported in California. Texans should look with concern at the Texas wholesale market design that bears a strong resemblance to the original California model now explained as built on false premises. The rest of the west should applaud and embrace the simple candor of the CAISO and get moving with a standard market design that respects the common physics of transmission systems. European regulators and market participants should save years of agony and expense trying to build a viable electricity market built on the same false premises that California now exposes.

California's market meltdown starting in June 2000 reverberated around the world. The high prices and market collapse have been cited in many policy discussions as the reason to reverse course on electricity restructuring. As bad as it was, the California market collapse was made much worse by factors unique to California in the retail market. And this has distracted many from learning the lessons about wholesale market design that have much greater relevance beyond California's borders.

California's was the most prominent market design built on the fallacy that the special characteristics of the electricity transmission grid were just details that could be

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ignored when designing the market. Built on a faith that decentralized trading could solve all problems, the original California wholesale market design embraced a philosophy that emphasized trading and minimized the role of the essential system operator.

The key bad ideas have been discussed at length elsewhere (see [www.whogan.com](http://www.whogan.com)). Central elements included simplifications supposedly intended to make the market better for traders. In place of the reality of many locations with important impacts on transmission constraints, the design relied on a few large pricing zones. In place of a realistic model of the transmission grid, the design used a so-called commercial network model that ignored critical features of the grid. In place of point-to-point financial transmission rights, the design employed interface rights between zones. In place of economic dispatch coordinated by the system operator, the design relied on decentralized trading that embraced artificially separated markets for ancillary services and ad hoc balancing rules for real-time adjustments. In place of a coordinated energy spot market, the design imposed a separate power exchange and balanced scheduling requirements.

This flawed wholesale market design did not work. From the very beginning, problems appeared and by the end of 1999 the FERC had rejected the many attempts to fix the superstructure without rebuilding the foundation. Congestion Management Reform soon became Comprehensive Market Redesign. Although the reform effort was overtaken by later events, the failure of the California wholesale market design should be a warning for every other market that has embraced its philosophy and adopted its details.

Now the CAISO has taken up the serious task of fixing what is broken. No longer constrained to be politically correct in defending the ideological errors that drove the earlier design process, the CAISO reports the simple truth.

“Upon reexamination of the [Congestion Management Reform] proposal ... we find that some of the crucial assumptions underlying the [Locational Pricing Areas] concept break down.”(CAISO, p. 13)

The assumptions were crucial and flawed. Trying to make the market simpler than is possible turned out not to be possible.

“...in reality, the ‘simplicity’ of the zonal system only appears so because the complexity is assumed away, allowing market participants to ignore it in scheduling while the CAISO must manage it through real time adjustments and periodic modifications to the rules to mitigate novel gaming strategies as they arrive. ... it will be far simpler, and more transparent, to design forward [congestion management] procedures to be as consistent as possible with the real-time operating needs of the grid.”(CAISO, p. 14)

Amen. The CAISO paper elaborates on the implications and outlines a new direction that is a major break with its past. The same design lesson was learned earlier in the Northeast markets including PJM, New York and New England. Similar insights can be found in well-designed wholesale markets in other countries, from Chile to New Zealand.

Given its prominence in promoting a fallacy, its failure in practice, and now its complete reversal on the basic principles, California's turnaround should be a pivotal moment that captures attention in the arcane world of electricity market design.

The changes now proposed for California would be fundamental and sweeping. Once reality is acknowledged, the range of possible market designs narrows substantially. The pieces must fit together. Prices have to reflect actual operations. And the system operator must perform certain functions in a way that supports the public interest in an efficient and effective wholesale market. The centerpiece would be a coordinated spot market organized as a bid-based, security-constrained, economic dispatch with nodal prices. This can support bilateral transactions with transmission usage charged at the difference in nodal prices. Point-to-point financial transmission rights would provide the economic equivalent of otherwise unworkable physical transmission rights. This design works in theory and in practice.

The CAISO proposal is a beginning but still tentative embrace of this standard market design along with consistent day-ahead markets and unit commitment. The CAISO needs to go further, and some of the ideas require close scrutiny. For example, the suggested introduction of an available capacity market would be new to California and the concept is not fully developed in the proposal, but this is not much different than the rest of the country where design of capacity markets is problematic. There is much yet to be done with the stakeholders and then at FERC.

However, the CAISO deserves recognition and support for its candor and the intelligence of its proposal for the basic elements of the market design. Enlightened market participants and leaders responsible for the public interest should resist any effort to compromise this essential reform or silence the truth. The CAISO has taken a long step in the right direction.

Everyone interested in the success of electricity restructuring should hope that Californians complete the journey, soon. We know what to do, and we can't afford to get it wrong again.

The CAISO proposal, "Market Design 2002 Project: Preliminary Draft Comprehensive Design Proposal," January 8, 2002, is available on the web at:

<http://www.caiso.com/docs/09003a6080/13/58/09003a6080135879.pdf>

For further papers on standard market design, see:

[http://ksgwww.harvard.edu/hepg/standard\\_mkt\\_dsgn.htm](http://ksgwww.harvard.edu/hepg/standard_mkt_dsgn.htm)