

**Statement of Terry Winter
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**Before the
United States House of Representatives
Subcommittee on Energy Policy, Natural Resources and Regulatory Affairs**

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Mr. Chairman; Members of the Committee:

Thank you for inviting me here today to discuss the California Independent System Operator's Market Design 2002 (MD02) initiative. I very much appreciate the opportunity to tell you about this initiative and to explain its importance in the reform of California's energy sector.

You have asked me to testify on our plans for addressing Locational Marginal Pricing, seams issues, mitigation measures and resource adequacy, and to discuss the current status of the MD02 process. I am happy to do so because I believe that it is crucial for policymakers to understand the elements of MD02 in context and have a sense of how these elements will work together to benefit California consumers and market participants. We want to make sure that policymakers in Washington have confidence that we are headed in the right direction.

First I want to explain briefly our role in California's energy infrastructure. The California Independent System Operator (ISO) is the independent, nonprofit, public benefit corporation responsible for managing the flow of electricity along the high-voltage power lines that make up most of California's transmission system. The system that we operate is one of the largest in the world, directing some 233 billion kilowatt-hours of electricity a year to California utilities based on their real-time electricity needs. Ultimately, the utilities that use our wholesale transmission service provide electricity to more than 10 million retail customers statewide.

Since the onset of California's energy crisis in the Spring of 2000, the California ISO has been engaged in planning and implementing a range of actions directed at effectively addressing the problems that are under our control as transmission system operator. I want to emphasize to you that the ISO has not been alone in pursuing workable solutions to the problems confronting California's electricity system. We are just one part of a larger effort by elected officials, state and federal agencies, municipalities, private-sector entities, and the citizens of California themselves. This overall effort is made up of a number of important components, including:

- Long-term planning to ensure supply adequacy during peak load periods;

- Increased use of long term and bilateral contracts for electricity to minimize dependence on spot markets;
- Expansion of conservation and price responsive demand programs;
- Expedited licensing and construction of new generating units;
- Authorization of transmission upgrades;
- Development of procurement rules for regulated utilities;
- Increased participation by municipal utilities in the ISO's wholesale electricity market, and;
- Implementation of important design changes to fix the ISO's wholesale spot market.

The ISO's MD02 project complements and supports all of the above efforts by reforming the way the ISO performs its core function of safely and reliably managing electricity flows on the transmission network. Although the costs of this network represent but a small fraction of total electricity costs, it is the superhighway system necessary for the reliable and efficient delivery of power to millions of consumers. Once fully implemented, MD02 will bring significant stability and certainty to the California electricity system, creating a framework for future investment in California's energy infrastructure. However, I must caution you that, at present, the system remains inefficient, vulnerable to manipulation, and unsustainable because of flaws in the original design and the accumulation of patches and partial fixes over the five years since the ISO started operation.

In particular, a crucial activity for the ISO is to schedule, on a daily basis, the planned electricity flows for the next day, and to ensure that these planned flows will fit within the physical limits of the transmission system. This activity is called "congestion management" because its purpose is to eliminate the "congestion" that occurs when too much electricity is sent over lines that cannot carry the full load. Today the ISO's existing system for day-ahead management of congestion is overly simplified and therefore does not represent a realistic picture of how power will actually flow in real time. As a result, day-ahead schedules may not fit within the capacity of the grid, and the ISO's grid operators must make last-minute operational adjustments, making it unnecessarily difficult and costly to manage the grid and maintain system reliability. In addition, this discrepancy between the simplified day-ahead procedure and the actual physical grid creates opportunities for gaming and manipulation, again increasing costs to consumers. Furthermore, since the demise of the California Power Exchange (California PX), all short term balancing of supply and demand has been pushed into the more volatile real-time market operated by the ISO, further complicating and compromising reliable operation of the power system.

Compounding these design problems is the fact that our original computer systems are nearing seven years old. These legacy systems are not capable of providing the

flexibility or reliability that today's market demands. The California ISO's MD02 proposal is designed to address these problems.

What is MD02?

The ISO's proposal to substantively reform California's wholesale electricity market is focused on eliminating the problems that continue to exist in our market design, thereby stabilizing the wholesale electricity spot market, minimizing the size and role of the spot market, and eliminating unnecessary challenges to reliable operation, thus helping to foster investment in California's critical energy infrastructure. This effort is known collectively as "Market Design 2002" or MD02.

It is important to understand that MD02 is not an experiment in untried market design. Since its inception, the MD02 effort has focused on a "best practices" approach wherein the ISO has looked to market design features that have been successfully implemented and that have worked on a sustained basis in other parts of the country.

It is equally important to understand the changes that are proposed in MD02 in the larger context of California's current energy market structure. Most of California's day-to-day demand for energy is met through bilateral contracts between utilities and suppliers, or by the generating units still owned by the utilities. The majority of power is scheduled with the ISO in the day-ahead timeframe, at which time the ISO must ensure that these day-ahead schedules can actually be delivered over the grid. In this way the ISO manages the flow of energy on the transmission grid, but is not a party to the bilateral energy transactions. Typically, less than five percent of the energy needed on any given day is transacted through the ISO real-time energy market. However, virtually 100 percent of the energy needed is delivered over the ISO grid. Thus, although MD02 is not a plan to reconstruct California's entire electricity sector, it is an investment in a crucial piece of infrastructure necessary to accommodate and complement the features of the California market beyond the purview of the ISO. MD02 is but one facet of the larger regulatory and institutional framework necessary to reform California's electricity sector.

The mission of MD02 is to develop market design changes that ensure effective and sustainable performance of the ISO's core function: to provide open access to reliable and non-discriminatory transmission service. ISO market rules and grid management procedures will closely support grid operations and accomplish four major goals:

- 1) Improved Economy and Efficiency: The new design will be able to perform day-ahead assessment of the key factors, such as power plant performance and costs and grid bottlenecks, needed to determine how best to dispatch power plants to match real-time grid operating needs. That means that consumers can be served by the most efficient mix of supply resources to meet each hour's energy needs, and each generating unit can be used in the most efficient and economic manner possible.

- 2) Improved Congestion Management: MD02 uses a realistic computer model of the grid to predict a day ahead of time how scheduled energy will actually flow in real time. This allows the ISO to manage congestion on the grid well before real time, enhancing real time reliability and preventing many of the Enron-like games that occurred during the 2000-2001 energy crisis. The method we propose, which has proven effective in other parts of the country at managing congestion, is called "Locational Marginal Pricing" (LMP).
- 3) Reduced Volatility: MD02 will enable the ISO to match buyers and sellers through a transparent day-ahead market that reduces reliance on the more volatile hour-ahead and real-time markets. Since the California PX ceased operating there has been no transparent market for spot energy transactions to balance supply and demand ahead of real time. MD02's "Integrated Forward Market" will serve this function.
- 4) Better Planning for Generation and Transmission Investments: MD02 is designed to produce hourly data on the transmission congestion impacts at any point on the grid and allow policymakers and market participants to assess more accurately the benefits of infrastructure investments at any specific location.

Locational Marginal Pricing

You have asked that I specifically comment on the Locational Marginal Pricing component of the MD02 proposal. As I have indicated, LMP is simply a method for managing congestion on the grid. Although some opponents of MD02 have alleged that it is an untried system, it is actually already being used successfully in the New York, New England and PJM ISOs for congestion management. For California, the ISO sees the LMP as the needed remedy for the well-documented flaws of the original congestion management design – exactly the opposite of the risky design change some parties have claimed LMP to be.

LMP is sometimes called "nodal" pricing because it develops a wholesale energy price for each location or "node" on the grid. There are approximately 3000 nodes on the ISO's system, each representing a place where energy is received from a power plant or delivered to customers. A computer model of the system is called a "Full Network Model" because it provides an accurate and transparent representation of the physical transmission system -- the lines that interconnect each node and connect the ISO's grid to its neighbors

LMP is designed to make day-ahead scheduling fully consistent with real-time electricity flows, and thus make real-time operations more manageable and reliable. In this regard there is no doubt that it would be a major improvement over the current system. The use of LMP also addresses current problems in accommodating new generation additions which are competing for use of the grid. The Full Network Model solves this problem and provides an efficient, transparent mechanism for allocating transmission to all users of the system.

While LMP will make cost differences at different nodes apparent, there will be no localized price impacts on retail customers under the nodal system. The ISO's proposal specifically calls for averaging spot market prices and spreading the wholesale energy costs over the existing investor-owned utilities' service areas, so that all customers -- including municipal utilities and direct access customers -- would be charged aggregated prices. In other words, our proposal assures that consumers in areas where transmission is inadequate would not face higher prices because the wholesale costs for power would be evenly distributed. Moreover, to further mitigate concerns regarding price fluctuations, the ISO proposes to allocate to each load-serving entity in the state the financial rights -- called Congestion Revenue Rights ("CRRs") -- necessary to protect them from fluctuating transmission congestion costs. While this concept sounds complicated, it has been successfully implemented and applied for years in the eastern markets. The ISO has established a prudent schedule to phase in the new market design along with a plan to simultaneously and intensively test LMP under actual system conditions. This means all stakeholders will be able to see LMP prices well in advance of full implementation.

The ISO Board of Governors has received formal letters from several Members of Congress and some members of the California Senate and Assembly urging that we slow down our LMP implementation efforts. The ISO Board directed staff to continue with ongoing LMP studies in order to fully evaluate the effect of LMP on energy prices in California. The Board also directed that a cost-benefit analysis of LMP be undertaken in order to clarify the function and benefits of MD02. We are pursuing three specific studies to ascertain the potential impact of the LMP proposal:

LMP Price Dispersion: In summer, 2002, the ISO initiated a series of analyses to determine the potential dispersion of prices in the ISO Control Area from implementation of LMP. This study is intended to approximate the relative price difference between locations in the ISO control area. It is not intended to predict actual energy prices for each location under LMP. The first two analyses, based on actual cost-based information, were made publicly available on September 30, 2002 and February 4, 2003 and are posted on the ISO's website. We are currently performing additional studies using actual bid data. Although LMP price dispersion is important to study and understand, I re-emphasize that the MD02 design fully insulates consumers from local price impacts by averaging wholesale electric prices over entire utility transmission service territories.

LMP Cost-Benefit Analysis. Pursuant to a request from certain members of the California Legislature, the ISO has initiated an effort to perform a peer reviewed cost-benefit analysis regarding the transition to LMP. The ISO is currently in the process of selecting a consultant to conduct such an analysis. The ISO hopes to conclude this analysis within the next several months.

CRR Study. As noted above, the ISO proposes to provide Congestion Revenue Rights (CRRs) to load-serving entities as a means to hedge against the risk of fluctuating transmission costs. In an effort to provide load-serving entities with an idea of how many CRRs will be allocated to them, the ISO is in the process of conducting a study to

determine how many CRRs may be made available on both a system-wide and individual load-serving entity basis.

In combination with the load aggregation pricing described above, the ISO believes that these analyses will ameliorate concerns regarding the ISO's proposed transition to LMP.

Seams

The Western Power Grid is an infrastructure that distributes power to 11 states, two provinces of Canada, and part of northern Mexico. The many individual service areas that once existed have been reduced to about 20 areas, but the West continues to be a patchwork of control areas operated under different scheduling timelines and differential tariffs and rules to access and utilize the grid. In order to continue to facilitate the historical interregional transfers that take advantage of the load and resource diversity in the western system, the ISO is committed to working with its regional partners to align, to the extent practical, the market design and operational features of each sub-region.

The three Regional Transmission Organizations that are proposed in the West – RTO West in the northwest, WestConnect in the southwest, and the California ISO -- are active participants in the Seams Steering Group -- Western Interconnection (SSG-WI). SSG-WI is an ongoing effort focusing on development and support of a seamless wholesale energy market that will benefit all consumers in the West, minimize barriers to trade and promote common business practices among the three RTOs. The goals of SSG-WI were formalized on December 5, 2002 in a Memorandum of Understanding between the three coordinating parties. SSG-WI will serve as the discussion forum for facilitating the resolution of interregional issues. Each of the three proposed RTOs and its respective governing body retains complete authority to determine whether to adopt or implement consensus recommendations of the group. SSG-WI has formed work groups to provide opportunities to discuss and resolve issues that are crucial to the development of a seamless western market. These groups will focus on:

- Developing a transmission planning and expansion process that will result in a robust Westwide interstate transmission system;
- Developing a proposal for an integrated, Westwide market monitoring function to satisfy the ever-present need for vigilant oversight of the western markets;
- Coordinating day-ahead scheduling and real time operating protocols and system development in the Western Interconnection for seamless interface and more efficient use of the grids;
- Developing proposals for price reciprocity; and
- Eliminating seams issues associated with Western RTO congestion management procedures.

Mitigation

Ever since the MD02 initiative began in the winter of 2001-2002, the ISO has stated that an express purpose of the design and all of its features was to mitigate the exercise of market power. The exercise of market power typically occurs in two forms, *physical withholding* – i.e., not making physical generating resources available to the market to serve load – and *economic withholding* – i.e., bidding high prices so as to drive up the price of power. Under either approach, the intent is to manipulate and increase the price of electricity. In order to combat such price manipulation, the ISO proposed a menu of measures to prevent both physical and economic withholding.

First, and as further discussed below, the ISO proposed a resource adequacy proposal to create a platform for adequate resources and reserves needed to operate the system reliably. This platform provided for forward contracting and resource investment by load-serving entities. In the end, the best defense against the exercise of market power in wholesale spot markets is to contract for capacity at a fixed price in the forward markets. In addition, the ISO campaigned vigorously for the FERC to extend the West-wide price mitigation measures it put in place during the 2000-2001 Western electricity crisis. While FERC did not ultimately extend all aspects of its price mitigation measures, it did extend the “Must Offer Obligation”, thereby requiring all resources not previously scheduled or on planned outage to be available to the ISO for real-time dispatch. This measure has been critical in preventing physical withholding from the market.

Second, as a backstop in case FERC did not extend all elements of its then existing price mitigation measures, the ISO proposed in its May 1, 2002 MD02 filing the following additional measures to mitigate economic withholding: 1) an Automatic Mitigation Procedure (“AMP”) that mitigates price bids in excess of certain established thresholds down to either previously accepted bids during competitive conditions or to pre-established bid levels (the ISO’s “AMP” proposal is based largely on a similar system in place at the New York ISO); and 2) a “damage control” bid cap intended to prevent prices from exceeding a defined level. The ISO implemented the AMP measures, although at wider margins than had been requested, at the end of October 2002, and the market has remained stable thus far.

Finally, a critical feature of any market design is local market power mitigation (“LMPM”). The ISO proposed certain LMPM measures that would apply when the ISO needs to dispatch a resource at a specific location either to address recurring local system reliability needs or to address certain system contingencies, such as the outage of a specific transmission line. Under these circumstances competition among suppliers is usually absent, so local generation may be able to exercise local market power and the bids on those “local monopoly” resources would need to be mitigated. In its July 17, 2002, order on MD02, FERC rejected the ISO’s original LMPM proposal and directed the ISO to use the AMP mechanism to address local market power concerns. The ISO is continuing to assess the need for additional or refined LMPM measures, and intends to pursue FERC approval in the near future for implementation of such measures when the ISO’s long-term design goes into effect.

Resource Adequacy

The ISO has long recognized that a resource adequacy program is an integral component of any market design and price mitigation strategy. Originally, as part of its MD02 proposal, the California ISO proposed to establish an "Available Capacity" obligation (ACAP). Concurrent with the development of the ACAP concept, a number of California state agencies initiated rulemakings or other proceedings related to resource adequacy, with active participation by the ISO. In light of the significant progress that had been made in this area, the ISO filed a motion with FERC on January 16, 2003 requesting a deferral of action on the ACAP element of MD02. The ISO supports the State of California continuing its traditional primary role in determining how best to ensure resource adequacy, and would urge FERC to allow those efforts to continue prior to ordering users of the ISO-controlled grid to meet an ISO-based capacity mechanism.

State authorities play an important role in ensuring resource adequacy by making policy decisions about resource diversification, demand response, investment incentives and reserve margin requirements. The ISO supports California's efforts to establish a capacity obligation for load serving entities as well as its efforts to promote development of adequate system reserves and establish a statewide target reserve level.

Status of the MD02 Process

The California ISO originally proposed, and continues to propose, a prudent and phased implementation for MD02. We proposed to implement MD02 in four phases: Phase I – Price Mitigation and Real-Time Economic Dispatch; Phase II – Integrated Forward Market; Phase III – LMP; and Phase IV – ACAP. As noted earlier, the ISO has asked FERC to defer consideration of the ACAP proposal. Part of Phase I (Phase IA) of MD02, Market Power Mitigation, was implemented in October of 2002 and is working well.

In its July 17, 2002, order on MD02, the FERC did not rule on all elements of the ISO's MD02 proposal. Therefore, and based on the need to update certain elements of the California ISO's proposal, the California ISO intends to file an updated proposal with FERC within the next several months, once the LMP studies explained above are either complete or policymakers are comfortable that the ISO can proceed with the filing prior to completion of the studies. Thus, implementation of final phases of the MD02 proposal is dependent on a number of factors, including receiving the necessary regulatory approvals.

The next phase of MD02, Phase IB, will focus on a new, more efficient, real-time economic dispatch system and penalties for uninstructed deviations. It is currently targeted for implementation in the fall of 2003.

Phase 2 of MD02 proposes to establish an Integrated Forward Market. The timing of this phase, as well as the Locational Marginal Pricing component of MD02 (Phase 3), is dependent on FERC's approval of the ISO's revised market design proposal when it is

filed. The ISO will not file an amended MD02 conceptual proposal with FERC until we have had an opportunity to discuss its content and purpose with stakeholders and key policymakers and the ISO Board authorizes its filing.

In the meantime, we expect to propose additional ISO authority to enforce market rules. The Oversight and Investigations Activities Review is separate from MD02, but will work in concert with the new design elements to foster a fair and competitive market. Components of this proposal include penalties for market manipulation which degrades system reliability and is detrimental to market efficiency, clear definitions of behavior that is and is not acceptable, and close coordination with the State Attorney General and other investigatory agencies.

MD02 and SMD

In closing, I would like to add a few words about FERC's Standard Market Design (SMD) proposal. FERC's proposed rule, as stated on their July 31, 2002 Notice of Proposed Rulemaking, is directed at facilitating competitive wholesale electricity markets with clear and stable rules and creating incentives for investments in electricity infrastructure.

The SMD proposal shares many of the broad goals that we have established for ourselves in California in our own market design initiative and, in large part, the services proposed by FERC are similar to those already operating in some states and regions of the country. The proposed Standard Market Design is consistent with many of the design changes proposed in MD02. Notwithstanding the many similarities and consistencies, there are aspects of FERC's proposal that may not be suitable for application in California or that may be duplicative of policies or mechanisms established or proposed at the state or regional level. On these matters, we believe that FERC should defer to state or regional entities before prescribing a standard, one-size-fits-all solution.

It is our hope that California's MD02 initiative can serve as a model of how the unique needs and characteristics of individual regions can be accommodated within a relatively uniform market design format to ensure reliable and nondiscriminatory transmission service and provide tangible benefits to consumers.