

## **Critical Actions Necessary for Effective Market Monitoring**

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Mr. Chairman and Commissioners,

I thank you for allowing me the opportunity to share with you my views on the role of, and responsibility for, market power monitoring in a RTO market. While the views that I will offer are mine alone, they are the product of my experience with the operation of California's deregulated electricity markets over the past four years. I have witnessed many success stories and some painful disasters. I am pleased to see the Commission's resolve to make markets work. The Commission, in proposing the development of regional RTOs as the vehicles for promoting competitive power markets must also ensure that the requirements necessary to assure competitive market outcomes are put in place. While RTOs may offer many advantages to power markets, they also pose bigger challenges in terms of system reliability, efficiency and competitiveness. They will require effective market monitoring.

Order 2000 specified that market monitoring is one of the eight essential functions that a RTO must provide. Until recently, however, the FERC has for the most part left market power problems for the market to resolve. Additionally, it delegated a very limited enforcement authority to the ISO market monitors. This approach sometimes has resulted in slow responses to problems that the ISOs had identified in their respective markets, and FERC action only when the market has failed and the problems have become a crisis situation. It is encouraging to see the Commission's renewed emphasis on market monitoring in your latest policy initiative. Hopefully, this renewed emphasis will prevent a crisis such as we experienced in California from being repeated.

In California, huge transfers of wealth have taken place to the suppliers of electricity through the exercise of market power. Wholesale electricity cost in the first two years of market operation (1998 and 1999) averaged approximately \$7.7 billion per year. Those costs rose four-fold in year 2000 to \$27 billion. We estimate the cost for the first 6 months of 2001 to be approximately \$20 billion. We estimate that market costs are about \$9 billion above competitive levels for this period. This estimate does not take into account the separate but related problem of exceptionally high spot natural gas prices.

The main objective of market monitoring and market analysis is to detect and identify the causes of market power exercise, market inefficiency, and gaming. In addition, monitoring in RTO markets must determine whether transmission service is being provided on a nondiscriminatory basis and that the transmission system is being operated in a way that ensures reliability. Instead of commenting on all of the many diverse issues in market monitoring, I would like to focus on five key areas necessary to achieve effective market monitoring and ensure competitive market outcomes. These are as follows:

1. Setting a clear standard for just and reasonable rates and formulating an effective enforcement mechanism for this standard,
2. Giving effective tools and authority to the monitoring units of the ISOs and RTOs to mitigate undue exercise of market power,
3. Overhauling the criterion for granting market-based rate authority to sellers,
4. Improving federal and state co-ordination on issues which may impede competitive outcomes, and
5. Ensuring that there is adequate supply for competitive market results.

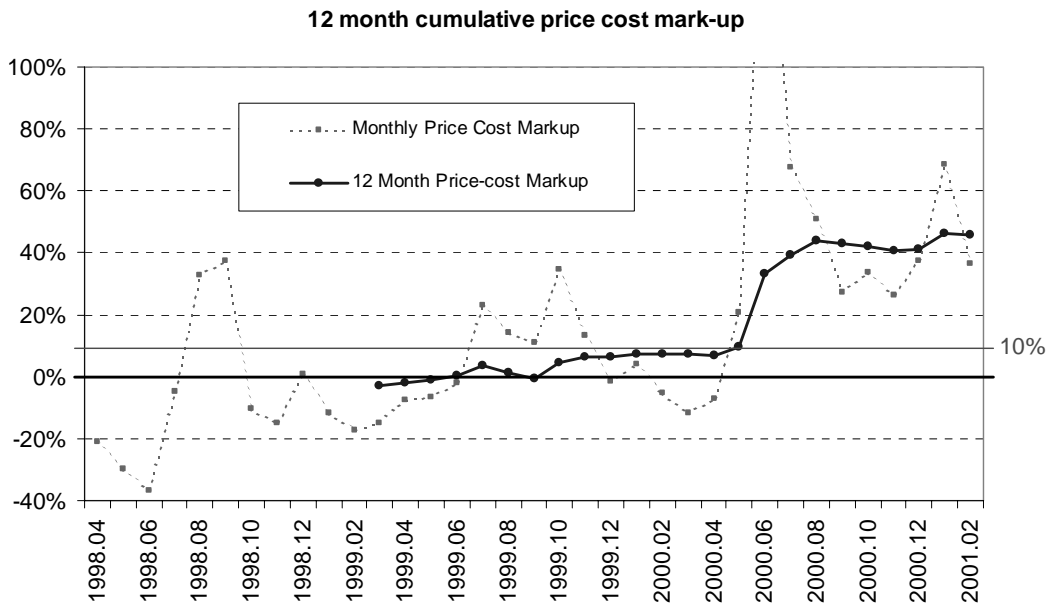
### I. Setting A Clear Standard for Just and Reasonable Rates with Effective Enforcement of the Standard

A clear *standard for just and reasonable rates* in wholesale electricity markets must be established. When FERC chooses to rely on deregulated markets to meet its regulatory obligations under the Federal Power Act, it should apply a clear and mandatory standard to measure market outcomes. I offer two suggestions to the Commission for a just and reasonable rate standard: (1) market costs cannot exceed the cost of service plus twenty percent on a cumulative annual basis and (2) market costs cannot exceed a competitive market benchmark price, based upon an established formula, plus 10% on a cumulative 12-month basis. Both these standards should clearly be high enough to allow annual cost recovery for new investment. These standards would be evaluated on rolling twelve month basis based on a comparison of total market revenues to total benchmarked prices using developed indices and would not require individual costs of service analyses for each generating unit.

One example of a cumulative cost standard based on a 10% threshold above competitive market results is provided below. Figure 1 illustrates how a just and reasonable standard would have provided the critically needed warning signal to FERC in the case of California. It shows how a 12-month rolling average of total market costs above the competitive level can be computed and tracked. Using this index we see mark-ups averaged less than 7% in the first two years of CAISO market operation despite some months with mark-ups above 20% to 30% (July 1999 and Oct. 1999). Then the monthly mark-up jumped to 20% in May of 2000 and over 100% in June of 2000. As a result, the 12 month index moved up to 10% in May, and then more than 30% in June. Clearly, a 10% *standard* would have been violated by May 2000, and it would have alerted FERC that markets were not yielding just and reasonable rates, and that market power mitigation needed to be applied. This mechanism would have provided an early warning signal and helped avert the worst part of the crisis. Simply changing price caps when markets are uncompetitive was inadequate protection. As July and August 2000 proceeded without intervention, the mark-up of costs above competitive levels had jumped to over 40%.

**Figure 1: Illustration of a 10% Above Competitive Level Standard**

Standard for just and reasonable rates based on 12-month moving average of price-cost mark-up with a 10% criterion<sup>1</sup>



Along with a *standard for just and reasonable rates* must come guidelines that provide for *effective enforcement and establish refund authority*. FERC must investigate cases when the market outcome is over the just and reasonable standard and, if verified, order appropriate refunds. As interpreted by the Commission, the current definition of the time period when refunds can be authorized is inadequate, especially when markets have been allowed to yield uncompetitive results month after month. It gives consumers no confidence that they may rely on deregulated market outcomes without assuming inordinate risks. A clear standard will help both producers and consumers. By enforcing a clear standard on a cumulative annual basis, occasional price spikes would be allowed. Producers would know when their action would provoked mitigation. Consumers would also have assurance that rates found to be unreasonable could be recovered in full. An example of a clear standard has been Stage 1 emergency for lowering price caps. Some suppliers have offered the CAISO, power to avoid a Stage 1 if we are not able to acquire the need through our markets.

<sup>1</sup> The benchmark is the highest cost unit needed to meet system demand with all inputs priced at spot market prices, not at actual costs. The benchmark is conservative since not all purchases are made at spot prices, and benchmark costs does not include the revenues from ancillary services or RMR contracts. Since the mark-up is based on spot market purchases and not actual costs, it can be negative. Negative and positive values are averaged.

Monitoring must also be conducted and a just and reasonable rate standard be implemented for the natural gas market. If the gas price is inflated due to market power, the electricity price will be inflated that much more. The crisis in California highlighted the problem where gas prices were vastly increased in the West compared to national prices. FERC is the only regulator who has the authority to monitor and mitigate market power in those markets.

## II. Giving Effective Tools and Authority to the Monitoring Units of the ISOs and RTOs to Mitigate Undue Exercise of Market Power.

While all existing ISOs monitor the energy market closely, the proposed monitoring plans for RTOs are far less comprehensive. Although the main function of an RTO is to provide transmission service and related ancillary services, the energy market in an RTO region may be much more vulnerable to market manipulation and result in a cost impact to consumers of a magnitude bigger than all the other RTO administered services. FERC must monitor the energy markets directly and on a routine basis, or delegate this frontline function to the RTO monitoring units.

A delegation would require more local authority to deal with market power mitigation. Administration and enforcement of RTO rules in cases of gross market power abuse and gaming should be allowed on an emergency basis, rather than the lengthy tariff filing process currently used by FERC in administering deregulated markets. For example, one established form of a safety net is the market power mitigation screens authorized by FERC for use in NYISO. When “bright-line” thresholds based on conduct or impact are exceeded, bid prices are mitigated if the suppliers cannot adequately justify the bid. Another form of safety net can be some form of extraordinary corrective action (“ECAs”), which would give the ISO or RTO Temporary Extraordinary Procedures to correct market design flaws pending the approval and implementation of permanent tariff changes. Such ECAs expire in 90 days in NYISO. Administration by the RTO with an independent market surveillance committee reviewing rule changes to the RTO Board would be more effective than the current procedure to wait for tariff changes. This would allow FERC to serve as the adjudatory body for appeals on RTO rule changes.

It is essential the FERC consider modifying its application of ex-parte communication with market monitors. Ex-parte communication should not apply in its current form in the area of market monitoring. ISO and RTO monitoring groups should be viewed as an extension of FERC’s function and organization, not just a regular party in a hearing in front of FERC. Current rules slow down and destroy opportunity for important communication and enforcement of markets. One possibility is for the Commission to consider waiving certain market monitoring activities from its decisional functions to allow freer discussions and consideration of remedial actions with the monitors.

Effective tools such as bright line mitigation rules or other forms of safety nets in the market are essential in providing a minimum protection against the “billion dollar bid”. A high level damage control price cap (or bid cap) or safety net will not harm normal

market operation since it will allow cost recovery and large room for profit, but it will stop some suppliers from charging the market \$9,999/MWh. The FERC has been reluctant to support discretionary price cap authority. Yet a high damage control cap and a clear standard (which is high enough to allow for the annual cost of new investment) would restore confidence in markets for both buyers and sellers. The current situation to allow the ISO to keep the market working and for effective mitigation months later increases uncertainty.

The FERC must take care not to confuse debates over market design, such as nodal or zonal pricing, with essential features necessary for competitive market outcomes. Experience in ISO markets other than those of the CAISO indicates that low reserve margins allow even small players to be pivotal in setting extremely high prices. Figure 2, on the next page, illustrates the price spikes in four ISO markets in the northeast regions of the United States and in the wholesale purchases for Ontario, Canada during the week of July 30 to August 10, 2001. Despite significant differences in market design, all markets experienced price spikes near or above \$1000 in early August of this year, when load reached very close to or exceeded installed capacity in each market. Of course, price spikes in themselves may not be damaging if there is adequate price responsive demand developed and significant portion of load is covered by forward contracts with suppliers.

Another method that can help to mitigate market power is to implement a clear and comprehensive code of conduct for market participant behavior. Although many market participants exercised market power in the California electric markets through the summer of 2000 and into the spring of 2001, there were no specific rules in place prohibiting or penalizing much of this behavior. Codes of conduct are used in most mature commodity markets and exchanges and are necessary to effectively govern the behavior of market participants. An effective code of conduct should specify general standards of conduct as well as identify specific unacceptable behaviors that are inconsistent with stable market function. The code of conduct must be accompanied by enforcement provisions that allow for investigation and review followed by the appropriate penalties and sanctions. Under a RTO, codes of conduct between regions should be similar if not identical to provide market participants ease of conducting business under uniform rules in multiple markets.

### III. Overhauling the Criterion for Granting Market-Based Rate Authority to Sellers.

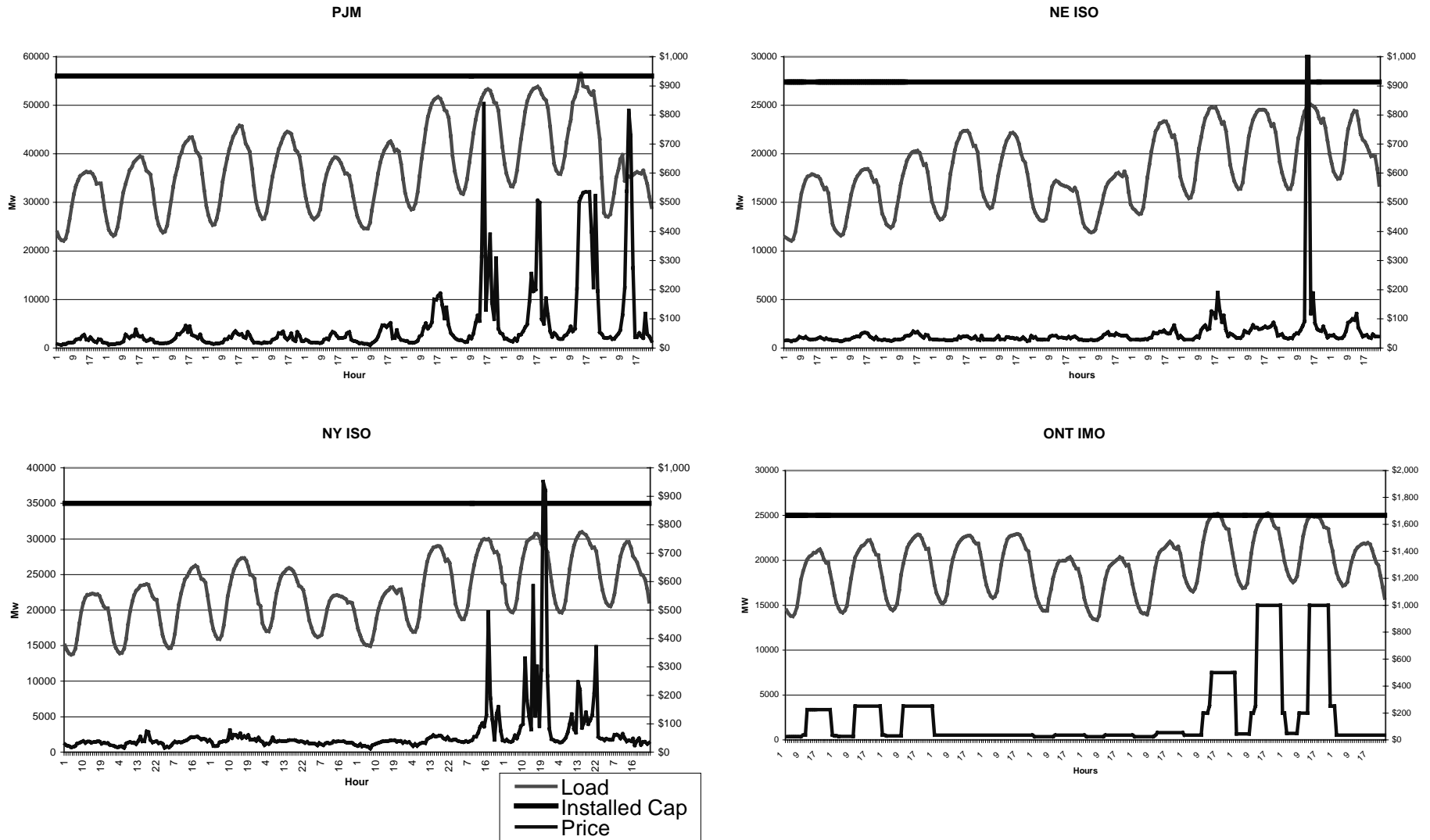
The procedure and criterion for market based rate application should be closely re-evaluated. The current safe-harbor of 20% market share is not an adequate test for the ability to exercise market power. Under certain definitions of the relevant market, no single supplier in California has a 20% market share yet no one can call our markets workably competitive. At numerous times during the past two years, suppliers with less than a 10% share have been able to influence unduly the market clearing price. Many of the strategic suppliers continue to claim that they did not violate any antitrust standards.

Thus, they argue market outcomes were not the result of any violations and therefore markets should be allowed to operate unfettered. But market outcomes must be measured against a higher standard of just and reasonable rates under the Federal Power Act and not by antitrust standards.

The Commission's recent plan to reexamine the current "hub and spoke" method is timely and imperative. Earlier I discussed how a clear standard can be set for just and reasonable rates should be based on a benchmark price of a competitive power market. I believe that the test for market based rates should be anchored by this standard. As an example, the CAISO market experience demonstrates that the simple 20% market share test alone failed to produce just and reasonable rates. Therefore, this test cannot continue to be the sole criteria used for granting market-based rates.

**Figure 2: Price Spikes Are Closely Related to Low Reserve Margins**

**Price Spikes and Capacity Margin (July 30 to Aug 10, 2001)**



\* When demand exceeds or approaches the installed capacity in each market, large price spikes occur **regardless of market design.**

Data Source: Ontario Independent Market Operator.

A direct test for market power by suppliers is to measure their ability to raise prices above a competitive benchmark. This is measured by the price – cost mark-up. It can be measured retroactively using actual market conditions and market outcomes, e.g., what happened in the California market. Although it can be more difficult, this index can also be used for granting market based rates authority by simulating bidding behavior and projecting how far the market price will go above the competitive level.

A far simpler test can be used in granting market based rate authority is to construct the residual supply index (RSI), a measure developed by the CASIO and used in various market power analyses over the past two years. The RSI is a measure of supply sufficiency excluding the largest supplier in the market for each trading period (hourly market in CAISO). If there is sufficient available capacity to meet the load after excluding the capacity from the largest **net seller**, there is a better chance that the market result will be close to that of a competitive market. Our recent analysis using actual hourly market data found a significant relationship between hourly RSI and hourly price-cost markup in the California market (see figure 3 for results of summer peak hours). The relationship indicates that on average an RSI of about 120% will result in a market price outcome close to the competitive market bench-mark.

**Figure 3. Residual Supply Index (RSI) Provides a Significant Predictor of Price-Cost Markups**

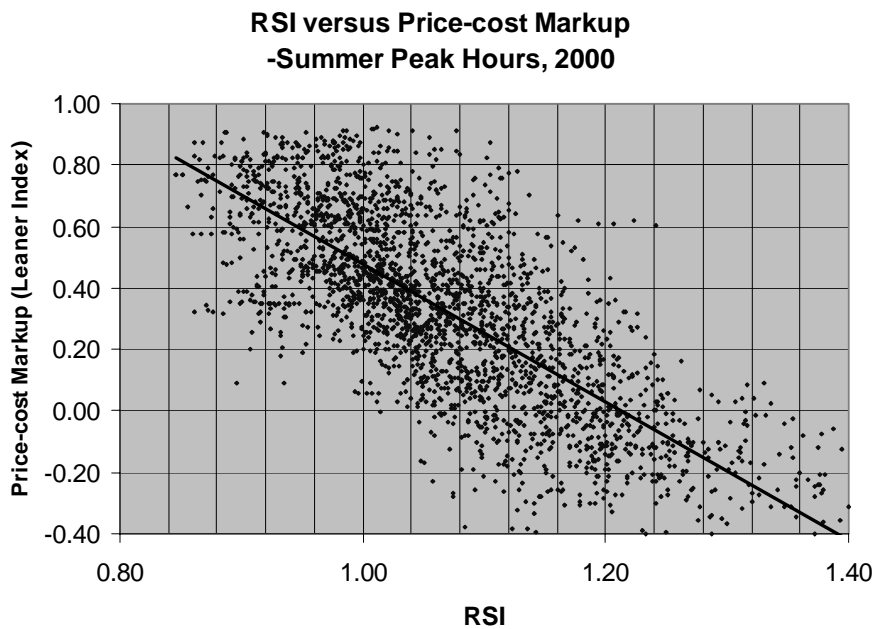


Figure 3 illustrates the relationship between RSI and Price-cost mark-up measured by the Lerner Index  $(p-mc)/p$ . It shows a clear negative correlation between the variables. The higher the RSI, the lower the price-cost mark-up. When the RSI is about 1.2, the average price-cost mark-up is about zero. This relationship can also be translated into a planning reserve margin.



The RSI and its relationship to price cost mark-up can be used for a variety of applications including performing an economic assessment of transmission upgrades and determining reserve margins necessary for competitive market outcomes. We evaluated the market power mitigation benefit of the expansion of Path 15 by analyzing the market benefits of more imports into a region which can increase RSI and reduce prices. The RSI analysis can also be used to test the level of reserve margin necessary to yield competitive market results. An example of this type of analysis is provided in Section V.

#### IV. Allowing Substantive Regional Authority and Improve Federal-Local Coordination

Rules on the development of retail competition, price responsive demand, and transmission and generation upgrades are developed by state regulatory commissions but are critical to how well wholesale markets perform. Effective co-ordination on these issues is critical to the success of any RTO. In particular regard to transmission expansion, it is essential that State and Federal regulators adopt a regional (inter-state) perspective in evaluating the benefits of major transmission upgrades which expand markets and help mitigate market power.

#### V. Ensuring Adequate Supply for Reliability Needs as Well as Competitive Outcomes

The most important factor impacting the ability to exercise market power is the lack of resources to meet the load. Any restructured market must establish the responsibility to ensure adequate supply in the short run and long run. One approach to address resource adequacy is to clearly assign obligation to serve the load to any load serving entity (LSE) which has retail load being served at a fixed rate. That entity should be annually required to demonstrate the ability to meet its obligation for the succeeding year. Each RTO/ISO would verify that all loads have 90% of their needs identified ahead of time. Penalties would be imposed for any LSE who fails to secure sufficient capacity resources in advance. The RTO should only act as a backstop to ensure resource adequacy in the overall market. Hopefully, with the correct reward/penalty structure in place, load serving entities would be encouraged to plan in advance to meet their needs at much more favorable prices from suppliers.

Sufficient capacity not only provides the basis for a robust functioning market, but also it helps to guarantee energy reliability and competitive market pricing. Capacity must be sufficient during the highest load hours to serve all load. This requires effective outage coordination and incentives in place to minimize forced outages. Suppliers offering their resources as capacity to serve load will already have the obligation to provide power and be precluded from withholding it from the market. Except for units on scheduled and approved maintenance, available resources should have the obligation to offer into the market and deliver power if scheduled or dispatched.

At the end of 2000, CAISO proposed to institute an available capacity requirement in California as a major component in addressing the market power problem in our market.

Last month, the Commission issued a staff paper “Ensuring Sufficient Capacity Reserves in Today's Energy Markets: Should We? And How Do We?” asking for inputs on including a capacity market requirement into ISO/RTO market design. I believe that a sufficient capacity reserve may be the single most important market design element allowing an ISO or RTO to ensure reliability and workable competition.

There have been wide spread opinions expressed that the congestion management market design, particularly nodal market vs. zonal market, will be the most important element in a RTO market design.. However, both theoretical analysis and market experience indicate that, in the overall scheme of things, congestion management market has had a much smaller impact on the CAISO market. While congestion management may decide costs in the millions of dollars in market outcome, the energy market decides outcomes with billions of dollars of impact. The key factors determining market performance are the amount of forward contracting, demand responsiveness, and the ISO/RTO's discretion to mitigate bids when out of merit order. The current PJM design has all these features which make it successful. These protections were not in place in California. In short, nodal-pricing has little to do with addressing problems of competitiveness and market power. The PJM market would face the same difficulties where it not for the large amount of load which are covered by forward contracts with suppliers and they were not able to mitigate out of merit bids.

As I discussed above, there is a close relationship between RSI and price-cost mark-ups in the California market. We used this observed relationship to answer the question, “How large a reserve margin is necessary to maintain competitive market outcomes and keep a market cost mark-up to less than 10% of competitive levels on an annual basis?” We ran a simulation of how much capacity is needed to produce a workably competitive market outcome using data from 2000. The existing market resources produced an annual price cost mark-up of more than 40%. We then conducted a simulation by adding 4500 MW of competitive supply capacity into the market. We assumed this new supply would be fully contracted to serve load. This resulted in an annual price cost mark-up of about 10%. With the added capacity, the planning reserve margin would be about 16% for California. This analysis reinforced a belief that sufficient capacity reserve can bring significant benefits in mitigating market power. A reasonable criterion of capacity reserve margin should be established to promote competitive market outcomes.