

Memorandum

To: Chairman Ken Wiseman

From: Anjali Sheffrin, Ph.D., Director of Market Analysis,
Greg Cook, Manager of Market Monitoring

cc: ISO Governing Board Members, ISO Officers, and Gary Ackerman

Date: May 25, 2005

Re: *Response to WPTF Letter Concerning 2004 Annual Market Issues and Performance Report*

On May 17, you received a letter from the Western Power Trading Forum (WPTF) expressing that they have a different opinion from that of the Department of Market Analysis (DMA) regarding the interpretation of data in DMA's "2004 Annual Report on Market Issues and Performance" ("Report") of April 28, 2005. WPTF noted that, although there is a great deal of commonality between the Report and the way their members see the state of the California electricity market; they hold different opinions on certain analyses contained in the report. We appreciate WPTF taking the time to bring these issues to our attention. We carefully reviewed the points they made and we find that their interpretation may be a result of a fundamental misunderstanding of the primary function of the Report. While the Report represents a retrospective view of the market in 2004, WPTF seems most concerned with the future performance of the markets. We attempt to clarify the interpretations of the data that WPTF used to support its viewpoint. We welcome future discussions with them to clarify the issues they raised and potentially resolve any differences between us in perspective and interpretation of the performance of the California wholesale electricity market. To provide you with a clarification of the issues addressed by WPTF, we address each below in the order in which they were presented in the WPTF letter.

First and foremost, WPTF takes a different interpretation of the Report's description of the market as stable and healthy. Their arguments are based on their perspective that long-term markets have not spurred generation capacity additions in southern California where the region is forecast to be tight or even short on supply during peak conditions for the next few years. We agree with their assessment of the outlook for southern California. We have advocated that effective resource adequacy requirements be imposed by the California Public Utilities Commission (CPUC) to ensure sufficient generation capacity is built and transmission upgrades are constructed to meet the CAISO's standard for grid reliability and economic need. We stressed the need throughout the report for implementing a comprehensive resource adequacy evaluation process, and demonstrating the economic need for transmission upgrades.

We believe the fundamental reason for WPTF's opinions is their misunderstanding of our primary purpose for issuing the Report, which is to evaluate the California spot energy markets performance during 2004. Using widely accepted measures to assess short-term wholesale market performance, in general, the CAISO markets were both stable and healthy throughout 2004. As we noted in the Report, reserve margins did drop in 2004 from higher levels in 2002 and 2003. However, they did not drop to a point that made the short-term energy markets uncompetitive or create shortage conditions during 2004. The CAISO has published a separate report—the 2005

Summer Assessment--that evaluates future system conditions. The summer assessment projects reserve margins to continue to tighten over the next few years. However, a possible upcoming capacity shortage would not have affected short-term energy prices during the year 2004. Short-term energy prices are impacted by current market conditions not projected future conditions. As we described in the Report, the short-term energy markets functioned well in 2004. This was due to several factors including the significant amount of forward contracting by load serving entities, significant amounts of new generation added within California since 2001, and increases in energy imports due to substantial amounts of new generation being added in the southwest. It is important to note past market performance is not an indicator of future market conditions. Future market performance is best understood by examining structural indicators such as the level of resource adequacy needed to meet growing load and the level to which forward contracts cover load. Both of these factors combine to determine whether sales revenue will be adequate to attract new generation. In addition, the available level of price responsiveness demand plays a very critical role in maintaining overall market competitiveness.

A. Supply Demand Balance Deteriorating

WPTF argues that the Report's discussion on intra-zonal congestion simply labels the problem as "congestion" and that this masks the underlying issue of SP15 being significantly short of resources now and into the near future. Moreover, they feel that the Report understates the problem of growing dependence on imports at a time when the rest of the WECC loads are also growing at a fast pace. In the Market Performance Report, we highlighted the fact that scheduling increased imports of energy from more efficient energy resources outside southern California load centers, combined with the CAISO's current zonal congestion management system, resulted in infeasible schedules that were, during many hours, not entirely deliverable to the Los Angeles Basin. This practice increases the difficulty CAISO operators have in reliably meeting demand in the major SP15 load centers. The Report provided a comprehensive analysis showing that the growing reliance on imports to meet load requirements has contributed largely to the increase in intra-zonal congestion within southern California. We noted that this trend has heightened the need for well-defined resource adequacy and deliverability requirements and stressed that an economic methodology for assessing proposed transmission expansions be implemented as soon as possible. The CAISO has strongly advocated both these positions at the CPUC during the resource adequacy proceedings and in its recent proposed Palo Verde-Devers Line Number 2 transmission expansion recommendation.

Although California is relying more on imports to meet its load, this is to be expected since significant capacity additions have been added in the southwest, not only to meet load growth in these states, but also to market to California. While WPTF is correct that southwest demand is growing, it is not growing at nearly the pace of new generation additions in the region. For example, WECC data shows that the southwest peak demand grew by approximately 9.4 percent between 2001 and 2004. During this same period, southwest generation capacity grew by 45.6 percent, nearly five times the rate of demand growth. Clearly, much of this new efficient generation was built to serve California load, due to the economic advantages of building in the region. This new efficient generation has led to lower overall energy costs, despite the significant increases in intra-zonal congestion. It is clear that both transmission and new LA basin generation additions are needed to keep pace with load growth in that region.

B. Inconsistent Assumptions Regarding the Cost of New Resources

WPTF expresses its disappointment that, for at least the last three years running (2002-2004), the spot market in California has provided insufficient revenues to cover the cost of new generation investment. It concludes from this that the market is operating at a sub-competitive level and that immediate market reforms are needed to attract new investment. There are two points we would like to make. First, we believe, that without a long-term forward contract, a new generation unit would likely under-recover its fixed costs for a number of years and then recover them in a potentially small number of years. This is a very typical pattern for fixed cost recovery in many

capital-intensive industries. In a competitive market structure, there is no guarantee that a supplier will cover its fixed cost requirements in every year. Although reserve margins tightened in 2004, the fact that virtually all California load was covered by forward contracts led to highly competitive conditions in short-term energy markets for the majority of the hours in 2004. We are hopeful that, if effective resource adequacy policies are implemented, and generators exhibit due diligence in their siting decisions, generation investment will be financially viable over the long-term. Moreover, we believe that it is important to emphasize that existing resources in California that signed long-term contracts with either the State of California or one of the major load serving entities are unlikely to be revenue deficient, even given the level of spot prices over the past three years. Second, as we stressed in the Report, the CAISO's imbalance energy market should not be viewed as a vehicle for signaling the need for new generation capacity. Leaving investment signals up to spot markets eventually leads to serious market dysfunction. This was demonstrated during the period June 2000 to June 2001. During this period, suppliers earned revenues substantially in excess of their annual fixed costs. A new combined cycle gas turbine (CCGT) facility would have recovered more than double its annualized fixed cost requirements in 2001. This would have covered shortfalls in the following years. The average net revenue over the past four years for a CCGT in NP15 was \$111/kw-year and \$95/kw-year in SP15, close to the fixed cost estimates of new capacity. Clearly, as California has learned, relying on the spot market to signal investment is a very risky way to run an energy market. The following table illustrates that cost recovery is likely to be concentrated in a few years under such a scheme.

YEAR	TYPE	ZONE	LF	Avg.Rev	AS-\$/KW	Avg.Cost	Total \$/kW
2001	CC	NP15	79%	\$609	\$10	\$326	\$293
2001	CC	SP15	70%	\$513	\$13	\$336	\$190
2002	CC	NP15	70%	\$238	\$1	\$165	\$74
2002	CC	SP15	70%	\$245	\$1	\$168	\$78
2003	CC	NP15	58%	\$264	\$3	\$221	\$47
2003	CC	SP15	60%	\$280	\$3	\$226	\$58
2004	CC	NP15	58%	\$266	\$3	\$237	\$32
2004	CC	SP15	63%	\$302	\$3	\$249	\$55

Furthermore, as we noted in the Report, the 2004 imbalance energy market was primarily a decremental energy market due to frequent over-generation situations in real-time due to the vast majority of supplies being scheduled in the forward bilateral energy markets. This had a significant dampening impact on real-time prices and limited real-time energy revenues in the net revenue analysis. The net revenue analysis in the Report is properly interpreted as the contribution toward fixed costs from the CAISO spot markets, not the total revenue that would be expected from the wholesale energy and ancillary services market. We do not expect revenues from the CAISO markets to be the sole revenue source for new generation investment.

Finally, WPTF noted that the Report relied on cost data for new generation that did not match data used in the economic analysis of the Palo Verde-Devers transmission upgrade project (PVD2). They are correct that two different costs were used in the two reports due to different processes used to develop the estimates. . We have not performed an in-house study on the costs of a new CCGT in California. Our net revenue analysis in the Report relied upon CCGT costs derived from an analysis performed by the CEC in 2003. We believe this analysis is the best reference available publicly for California CCGT costs. The CEC report provides detailed background information on how the cost estimates were derived. In the PVD2 study, we used a \$133/kw-year figure reported in 2008 dollars. WPTF compared both figures using 2004 dollars which resulted in \$93/kw-year used in the Report compared to \$118/kw-year used in the PVD2 study. The cost figure we used in the PVD2 study resulted from a stakeholder process. Some stakeholders considered the costs in the CEC report were too high while others believed there was a greater cost differential between a combustion turbine (CT) and CCGT. To take into consideration these differing opinions and to ensure consistent analysis across the western interconnection, we used CCGT costs that were 75 percent higher than the CT cost figures presented in the 2003 CEC report. We

continued to use the stated CEC report numbers in the Annual Report since they provided a clear reference for readers to review. We note that our conclusion in the report would not change if we used the \$118/kw-year cost estimate. In the Report, we found that, in 2004, there was not sufficient revenue provided from selling only in the short-term CAISO markets to recover the annualized fixed and operating costs of a new CCGT unit. This result emphasizes the need for a resource adequacy provision to provide a more stable revenue stream through long-term contracting. We would welcome working with WPTF and its members on developing additional information on newly constructed generation plants in California.

C. A \$5 to \$10/MWh Markup is Not a “Reasonable” Measure of Competitive Performance

WPTF disagrees with our statement in the Report that markets are workably competitive when the 12-month competitiveness index is within a range of approximately \$5 to \$10/MWh or below. It recommends the use of a long-run marginal cost based margin benchmark. We believe it is inappropriate to use a long-run marginal cost based margin benchmark to measure the performance of the short-term energy market. In a competitive short-term energy market where no one supplier has the ability to affect the price, an expected profit maximizing strategy would be to offer energy at either its short-term marginal cost of production or the opportunity cost of selling energy elsewhere. Offering energy at a higher price, such as its long-run marginal cost, would result in fewer sales and less revenue being available to cover fixed cost requirements. Therefore, the market-clearing price in a competitive market should equal the short-run system marginal cost. We would expect, however, that annual average prices in a workably competitive energy market to recover the average total cost of a new generation unit over the life of the generation asset when considering both spot market and bilateral sales.

We use competitive benchmarks to monitor short-term market performance. With perfect information and under effectively competitive spot market conditions, competitive benchmark prices (system short-run marginal cost) should approximate actual market prices. We use the \$5-\$10/MWh markup to take into account information deficiencies and other constraints not captured in our analysis even though we have gone to great lengths to incorporate all known system constraints into the analysis by using production cost modeling. It appears that there may be some misunderstanding regarding the meaning of the markup. The mark-up only applies to what the highest cost generation unit operating each hour receives over its marginal cost of production. All other units operating in the hour receive more than this mark-up. Furthermore, in a market with an effective resource adequacy program, which would limit incidents of resource scarcity, we should have a market where the markup is low and all generators are covering their fixed cost requirements with the appropriate mix of contract and spot market revenues.

Units that do not obtain enough revenue through the spot market to cover high production costs yet are needed for local reliability reasons need a payment of some kind to cover their full fixed cost requirements. There are generators located in California load pockets that have low capacity factors due to higher costs and cannot recover their going forward costs in the short-term energy markets alone but are needed for local reliability purposes. In the Report, we recognize the need for locational resource adequacy requirements that ensure the deliverability of supplies to load. We believe any independent analysis of market performance would not advocate the collection of long-term costs through the exercise of market power in uncompetitive short-term energy markets. Well functioning short-term energy markets should produce prices near short-run system marginal costs, as they did in 2004.

D. Ancillary Services Bid Insufficiency is a Symptom of a Market That Provides Inadequate Incentives for RMR Units to Stay on Condition 1

As we noted in the Report, we agree with WPTF that a significant cause of bid insufficiency in the ancillary service markets was the large shift of capacity from Condition 1 RMR contracts to Condition 2 contracts during

2002. The Report recognized other factors as well, including the shift to locational procurement of ancillary services. The RMR contract problem arises because Condition 2 capacity is only allowed to provide reserve supply to the ancillary services markets when it has been pre-dispatched by the CAISO. Moreover, under the current RMR contract, the CAISO is prohibited from pre-dispatching RMR units for system requirements such as ancillary services. We believe that there was a variety of factors that caused the shift to Condition 2 in 2002, including the need for certain financially distressed companies to show firm contractual revenue streams to satisfy creditors. The Report recognized that there are market/contract modifications that should be considered to make this capacity available to the ancillary services markets.

Conclusion

As WPTF acknowledges, it is not appropriate for DMA to express the views of stakeholders in the independent market performance report. However, we embrace feedback and feel it is entirely appropriate and important for WPTF to weigh in on what it thinks of our analysis. In light of the issues raised by WPTF this year, we intend to solicit input on key issues that stakeholders would like to see addressed prior to when our team of economists review data and conduct their analysis of 2005. We always welcome input from WPTF and other stakeholders. Keeping open lines of communication and establishing a healthy dialogue provides us valuable information.