Memorandum

To: ISO Board of Governors

From: Benjamin F. Hobbs, Chair, ISO Market Surveillance Committee

Date: July 3, 2013

Re: **Briefing on MSC Activities from May 3, 2013 – June 30, 2013**

This memorandum does not require Board action.

Over the period covered by this memorandum, the Market Surveillance Committee has focused on preparing the analyses and report that the MSC is required to submit to the Federal Energy Regulatory Commission on local market power mitigation, in particular the criterion used to differentiate competitive and noncompetitive paths. Originally, FERC had asked that the report be submitted on May 1, 2013, but at our request, the ISO petitioned FERC for a time extension until June 28, 2013, which was granted by FERC. The report was formally adopted during a public teleconference meeting of the MSC on June 27, 2013. I summarize the conclusions of the report below.

The MSC has also participated in ISO initiatives concerning the Energy Imbalance Market and Contingency Modeling Enhancements. This included individual members participating in public calls and meetings, as well as calls with ISO staff. During our scheduled July 2, 2013 public meeting in Folsom, these topics will be discussed. Additionally, the report just submitted to FERC will also be reviewed.

MSC Study of Alternative Competitive Screens in Local Market Power Mitigation

In its March 1, 2012 Order,[1] the Federal Energy Regulatory Commission (FERC) directed the MSC to report findings regarding the appropriateness of the three-pivotal-supplier test and whether an alternative competitive screen to identify market power opportunities for generation in load pockets is necessary. The conclusions of the report filed by the MSC in response to this order are summarized below.

In the report, we first describe the role of a local market power mitigation mechanism (LMPM) in a bid-based, short-term wholesale electricity market and briefly explain the

[1] 138 FERC ¶ 61,154, UNITED STATES OF AMERICA, FEDERAL ENERGY REGULATORY COMMISSION Docket ER12-423-000, ORDER ACCEPTING TARIFF REVISIONS (Issued March 1, 2012).

difference between structure-based mitigation approaches such as the ISO's competitive path-based method and other alternatives such as the conduct and impact-based mitigation. We then discuss the potential for both over-mitigation and under-mitigation of generation units under the California ISO's LMPM procedures. Over-mitigation is defined as a false positive in which bids are adjusted by a LMPM procedure to levels that subsequently result in market inefficiencies. Under-mitigation is similarly defined as a false negative, in which bids that should have been mitigated are not, resulting in prices that are not just and reasonable, unjustified income transfers from consumers to producers, and possible market inefficiencies. In particular, we examine how a market screen based on a number of joint pivotal suppliers could result in such over- or under-mitigation. Finally, with the assistance of the California ISO's Department of Market Monitoring, we have analyzed market data drawn from the ISO's first year implementation of LMPM in the day-ahead market in order to assess the outcomes of the three pivotal supplier screen relative to counterfactual screens based on two or four pivotal suppliers.

The following are our primary conclusions. We conclude that, in theory, if there is adequate competitively-priced counterflow available to decongest a path even if the three largest suppliers of counterflow withdraw their supply, then it will be highly difficult to exercise market power. This is the present three pivotal supplier test. Market power may indeed be difficult to exercise even if this is not the case, but there is adequate competitively-priced counterflow if just the two largest suppliers withdraw. This corresponds to the alternative, more lenient two pivotal supplier test.

However, this theoretical conclusion does not mean that the present three pivotal supplier-based definition of non-competitive paths is necessarily overly conservative in practice. This is because pivotal suppler tests, as they can currently be practically implemented for defining competitive paths, do not properly account for the ability of generators to raise prices in several circumstances even when a generator is not fully pivotal. There are at least two major reasons why a pivotal supplier test may overestimate the competitiveness of paths, and hence a three pivotal supplier test is in practice less stringent than it could appear in theory. First, competitive path assessment does not account for the competitiveness of supply bids, which is a shortcoming because uneconomic residual supply is ineffective in restraining market power. Second, the present inability of the competitive path assessment process to consider how unit commitment costs affect the amount of economic residual supply is also a shortcoming, and may result in overestimation of the competitiveness of paths.

Therefore, even if there is not a strong theoretical basis for building local market power mitigation around a three pivotal supplier test versus a two pivotal supplier test, such a test might be found to be a reasonable approach in practice because of the imperfect way in which a pivotal supplier test must be applied in practice. Empirical data on how competitive status of congested paths and counterflow bidding behavior have actually

interacted in the past is highly relevant to analysis of alternative criteria for defining noncompetitive paths. Therefore, we asked the DMM to provide us data on generator bidding and congestion status of paths for several months in 2012 when the day-ahead market was operating under the new LMPM system. Of course, there are still shortcomings to such an empirical analysis, not the least of which is that bidding behavior is likely to change when confronted with a different mitigation standard. So our analyses should not be regarded as the last word concerning the comparison of the two tests, but rather as a set of conclusions based on information that is available at this time.

The following are the conclusions of our analysis of market bidding and congestion data:

- There is a significant portion of merchant generator bids that are several multiples of their default energy bids (DEBs). There is a slight increase in the proportion of merchant bids that are 120% of the DEB or above when a three pivotal supplier (3PS) test is failed but a two pivotal supplier (2PS) is passed compared to when the present 3PS test is passed. However, we have not assessed the statistical significance of this trend. This represents weak evidence that bidding is less competitive when there is less competition to provide counterflow on congested paths.

- Another test of a relationship between concentration in counterflow supply and bidding behavior is to examine whether suppliers providing counterflow on paths that passed a two, three, or four pivotal supplier test were more likely to submit bids that were less than 95% of the default energy bid. We had hypothesized that if generators were more able to exercise market power in some cases than in others, we would see a greater tendency for bids to bump up against the DEB level in the former cases. However, we found no evidence for such behavior in the least competitive conditions.

- We examined the twelve paths that were most often designated as noncompetitive in the period June-September 2012. We found that generating units that have a higher probability of providing counterflow on those paths when the paths are congested also have statistically higher bids, as measured by the divergence between their bid and DEB. This is evidence that bids tend to increase when there is congestion.

- We also examined all potentially non-competitive paths in order to consider the potential impact of changing from the present 3PS standard for competitive paths to a more lenient 2PS standard. We find that over the five-month period documented here, about 285 GW-hr of effective counterflow that simultaneously

(1) bid over 120% of DEB and (2) would be mitigated under the 3PS standard on a congested path would instead *not* have mitigation triggered by that path constraint under the alternative 2PS standard. Effective counterflow is defined as the capacity of a generating unit who provides counterflow on the constraint times its so-called shift factor, which describes how flow on that constraint changes if the generator increases its output. This estimate of 285 GW-hr, which averages about 75 MW in each hour, therefore corresponds to much more than 75 MW of actual generation capacity. This amount is slightly more than half of the overall 552 GW-hr of effective MW (~150 MW per hour) exposed to mitigation under the present 3PS standard during that five month period.

Overall, our analysis indicates that a large fraction of merchant units bid in excess of 120% of their default energy bid during congested hours. Furthermore, a non-trivial number of units bid in excess of five times DEB. It is also clear that many of these bids are currently mitigated using the 3PS standard for defining non-competitive paths. We conclude that this data indicates that it is likely that there would be a substantial number of additional bids in excess of 120% of their DEB that would have gone unmitigated had a 2PS standard been in place. However, we were unable to assess what, if any, price differences would result because we could not re-run the market software. In analyzing these data we were unable to identify a clear and material change in bidding behavior associated with higher or lower concentration that would provide support for use of a higher or lower (*e.g.*, 2PS or 4PS) threshold for defining competitive paths and applying local market power mitigation. Hence, our conclusion is that the data we analyzed do not provide support for a change in the current three pivotal supplier threshold for defining noncompetitive paths. For that reason, we recommend that the present threshold be maintained.