Memorandum

To: ISO Board of Governors

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

Date: January 31, 2019

Re: **Briefing on MSC activities from November 4, 2018 to January 25, 2019**

This memorandum does not require Board action.

During the period covered by this memorandum, the MSC held two general session meetings, wrote and adopted a formal Opinion on Intertie Deviations, and began the preparation of drafts of two additional opinions that will be considered for adoption in the near future.

General Session Meetings of December 7, 2018 and January 25, 2019

At the December 7, 2018 general session meeting, four ISO initiatives were on the agenda. ISO staff made formal presentations at each followed by discussions among stakeholders, ISO staff, and MSC members. The initiatives discussed included:

1. *Local market power mitigation enhancements.* The presentations and discussion emphasized possible measures to prevent economic displacement and the estimation of opportunity costs for hydropower plants. (This initiative will be the subject of a MSC opinion now in preparation.)
2. *Intertie deviation settlement.* The presentations here provided data on undelivered intertie resources in the real-time markets, and a summary of the ISO's proposed under/over delivery charge, which is intended to strengthen incentives to deliver imports and exports scheduled in the hour-ahead scheduling process. (The Committee has adopted an Opinion on this proposal, which is summarized later in this memo.)
3. *Storage as a transmission asset.* This agenda item included a presentation on how a resource selected for cost-of-service-based transmission service might also provide market services to reduce costs to ratepayers. Alternatives for providing those market services were discussed.
4. *Day-ahead market enhancements.* The emphasis of the presentation here was upon two broad alternatives for coordinating the day-ahead energy market and the day-ahead residual unit commitment. Discussion ensued on the importance of the question whether ISO forecasts or net cleared demand, including virtual demand, resulted in better predictions of real-time net load. The resolution to this question has implications for the choice between the alternatives.

The January 25, 2019 general session meeting addressed three ISO initiatives. Each of

those agenda items included ISO staff presentations and discussions among meeting attendees. In addition, MSC Chairman Dr. Benjamin Hobbs made a presentation on a technical issue concerning the market price implications of constraints to prevent economic displacement by mitigated bids in the energy imbalance market. The three initiatives on the agenda included the following:

1. *Reliability-must-run and capacity procurement mechanisms.* This initiative will be the subject of a formal MSC Opinion in the near future. ISO staff presentations addressed the proposed changes to these mechanisms. Vigorous discussion among stakeholders, staff, and MSC members addressed issues of appropriate compensation for reliability-must-run resources, whether they should be subject to a must-offer obligation, and other issues. (This initiative will be the subject of a MSC opinion that is now in preparation.)
2. *Local market power mitigation enhancements.* Staff presentations followed up on the December 7, 2018 presentations by providing further information on the functioning of measures to prevent economic displacement and on the determination of default energy bids for hydropower plants. Dr. Hobbs's presentation indicated that a mathematical condition called degeneracy might mean, in theory, that there are multiple sets of prices that will be consistent with the market dispatch in real time when the economic displacement constraint is imposed. Some prices will favor consumers in the constrained balancing area more than others. Dr. George Angelidis, Principal of the ISO, explained how in practice the existence of multiple prices is unlikely to be a problem, and that the market software can be designed to avoid degeneracy. The issue of whether prices from distant markets should be factored into default hydropower bids was discussed, including the role of firm transmission rights; MSC members expressed reservations concerning the relevance of distant markets and how transmission rights should be valued.
3. *Day-ahead market enhancements.* The staff presentation presented data on the relative accuracy of ISO day-ahead forecasts versus net day-ahead market demand (net of virtual bids) for predicting real-time net demands. ISO day-ahead forecasts usually, but not always, performed slightly better. Staff raised the question of whether bids for similar market products should be required to be equal, or should be allowed to be differentiated. An example is day-ahead flexible ramp product and capacity that is required under the contingency model enhancements, both of which involve making capacity available for possible dispatch in the real-time markets.

Opinion on Intertie Deviation Settlements

On January 18, 2019, the MSC adopted an Opinion on the ISO initiative to revise intertie deviation settlements. This initiative is designed to incent delivery of power transactions in real-time that were scheduled in the day-ahead market and hour-ahead scheduling procedure.

Unlike transactions that are contained within the footprint of an ISO, transactions that cross the boundaries between the ISO and another balancing area must be coordinated with the other balancing area in accord with regional transaction scheduling requirements. One

example is the California ISO's experience with imports and exports to neighboring control areas, known as intertie transactions. These transactions are economically evaluated by the ISO in its market processes, but must also comply with regional intertie scheduling rules. Several times in the last decade, the ISO has been unable to rely upon the delivery of intertie transactions that are scheduled in its market processes, because these transactions fail to flow during the operating hour for which they were scheduled. The uncertainty created by these failures raises the cost of meeting ISO load and can adversely impact reliability.

A key distinction between intra-ISO transactions and those with neighboring control areas is the timing of scheduling and of settlement of "day-of" transactions. Because supply conditions and transmission availability outside of the ISO can change after the ISO's day-ahead market is run, and some intertie transactions are only offered as hourly transactions, the ISO runs an hour-ahead scheduling process to coordinate the scheduling of hourly intertie transactions (including those that cleared in the day-ahead markets) ahead of real-time. Importantly, the hour-ahead process determines schedules for hourly intertie transactions but does not set a financially binding commitment for those schedules. Instead these intertie transactions are settled along with other "day-of" transactions in the ISO's 15-minute market and real-time dispatch.

This settlement design means that, unlike an intertie transaction that clears in the day-ahead market, a firm who is scheduled to import power in the hour-ahead process but does not tag and deliver the power in the 15-minute market will not face an imbalance settlement, absent explicit rules that impose charges. In order to discourage arbitrary non-delivery, the ISO has implemented a specific penalty for non-delivery of hourly transactions. This penalty, the intertie decline charge, was intended to penalize importers and exporters for submitting transactions that they did not intend to deliver, while trying to avoid punishing importers for intertie transactions that did not flow due to circumstances beyond their control, in particular the curtailment of non-ISO transmission capacity needed for the transaction. However, the rules for applying the penalty, which include averaging of shortfalls across periods and a 10% threshold for applying the penalty, have proven to be very weak and ineffective in incenting performance. The weakness of the penalty allows intertie suppliers to economically benefit from non-delivery even when delivery is within the ability of the seller.

The MSC identified twelve potential motives for these high levels of non-delivery in its opinion. Some of these non-deliveries might reflect an economic decision of the supplier or buyer not to deliver the power, rather than being the consequence of external factors such as transmission system curtailments.

In response to these concerns about the cost and potential reliability impact of non-delivery of imports, the ISO is proposing to substantially revise its regime for penalizing non-delivery. The changes will make distinctions between delivery failures that are caused by system conditions beyond the control of the importer/exporter and others that the importer/exporter can presumably control. The changes will sharpen the consequences of non-deliveries that are not deemed to be due to system conditions. In this way, the changes are intended to greatly reduce the profitability of non-delivery when it is undertaken for economic reasons.

The MSC concluded that while the current regime for assessing penalties for non-delivery has some clear flaws, the MSC was somewhat surprised by the inability of market prices to at least partially deter non-delivery. The fact that real-time prices often do not increase as a result of the impact of the non-delivery of imports raises some questions about the impact of the proposed changes and could also be a sign of other issues with price formation in the day-of market that may be worth addressing regardless of their impact on import non-delivery.

In summary, because the reasons behind the failures to deliver have not been fully established, the MSC stated that it could not conclude that the proposed changes would, in isolation, eliminate or even substantially reduce the amount of intertie transaction non-delivery. For the same reason, the MSC could not assess the likelihood of specific negative unintended consequences from the implementation of these changes. On the one hand, these changes might cause fewer day-ahead market transactions to be offered economically in the hour-ahead scheduling process as well as less real-time supply overall to be offered in that process. On the other hand, these changes might incent more participation in the 15-minute market by both day-ahead market and real-time transactions.

Despite these uncertainties, the MSC stated its belief that the implementation of stronger incentives for the delivery of scheduled intertie transactions is desirable, and, on balance, we recommend the adoption of the proposed changes. However, the MSC also stated that it is unable to confidently state these changes will eliminate the problem of non-delivery. Data developed as part of the development of this initiative has highlighted pricing outcomes that are potentially concerning, particularly a pattern of very low 15-minute and real-time prices during what the ISO describes as stressed system conditions. The MSC recommended that the ISO continue to investigate the causes of these pricing patterns as further changes may be necessary to fully correct the problems that motivated this initiative.