Memorandum

To: ISO Board of Governors

From: Eric Hildebrandt, Director, Market Monitoring

Date: March 19, 2015

Re: **Department of Market Monitoring report**

This memorandum does not require Board action.

EXECUTIVE SUMMARY

This memo provides comments by the Department of Market Monitoring (DMM) on three Management proposals being presented to the Board:

- **Energy imbalance market year 1 enhancements.** DMM supports Management's proposed design changes to the energy imbalance market (EIM) scheduled for implementation when NV Energy joins the EIM in October 2015. DMM believes the most important element of Management's proposal involves how transfer limit constraints between EIM balancing authority areas will be modeled. The approach proposed by Management is designed to maximize the use of transmission rights made available in the EIM on different interties while avoiding any inappropriate impact this has on locational prices within EIM areas. DMM believes this approach can effectively balance these objectives, but recommends that the details of this approach be carefully tested and adjusted as necessary based on market simulation prior to implementation, as described in Management's memo.

- **Commitment cost enhancements phase 2.** DMM supports Management's proposal to clarify the current definition and qualification criteria for resources that are granted use-limited status. This has important implications since units deemed to be use-limited will continue to be exempted from some important bidding and availability standards established through other market initiatives to help ensure sufficient capacity is available for dispatch to meet the ISO's growing need for operational flexibility. However, DMM is concerned that the ISO's effort to develop a methodology and model for calculating opportunity costs that could be directly incorporated in bids for use-limited resources has again been deferred. DMM has provided detailed input on this project and will continue to work with the ISO and stakeholders on this important market enhancement.

- **Reliability services initiative.** DMM is supportive of Management's proposal under the first phase of this initiative as a step forward toward improving and streamlining resource adequacy requirements and processes to meet the need for increased operational flexibility to integrate new renewable energy resources. Under Management's proposal, until opportunity cost estimates can be implemented, use-limited resources can exempt themselves from the availability standards by submitting special outages. Therefore, DMM urges the ISO to commit the resources necessary to develop and implement the opportunity cost estimation method, as noted above. DMM also recommends that the ISO monitor whether the new level of the availability incentive established under this initiative is high enough to prevent suppliers from opting to pay a penalty rather than provide substitute capacity when supply conditions are relatively tight. If this occurs, the ISO will need to procure capacity through the capacity procurement mechanism.

ENERGY IMBALANCE MARKET YEAR 1 ENHANCEMENTS

EIM transfer limits constraints

DMM believes the most important element of Management's proposal involves how transfer limit constraints between EIM balancing authority areas will be modeled. As described in Management's memo, the approach proposed by the ISO is designed to maximize the use of contractual transmission rights made available in the EIM on different interties, while minimizing the impact these contractual considerations have on locational prices within EIM areas. DMM believes Management's proposed approach for modeling EIM transfer limit constraints should accomplish these objectives if carefully tested prior to implementation, as proposed by the ISO.

DMM has closely reviewed the proposed approach for modeling EIM transfer limit constraints based on the level of detail provided in the ISO's final proposal, and submitted a detailed summary of DMM's analysis.[1] Based on this analysis, DMM concurs with the ISO and the Market Surveillance Committee that if the transfer cost used in the market software is set at a relatively low value, the proposed approach should allow the ISO to efficiently make use of EIM transfer capacity while limiting the impact of the transfer cost on locational market prices.

The final proposal outlined in Management's memo specifies that the transfer cost used in the market software will be determined by the ISO. If an EIM entity has multiple EIM internal interties, the ISO will consult with the EIM entity to determine the appropriate

[1] The detailed summary of DMM's analysis can be found here: http://www.caiso.com/Documents/DMMComments_EnergyImbalanceMarketYear1Enhancements-DraftFinalProposal.pdf.

transfer costs to balance the goals of maximizing use of transmission made available in EIM while minimizing impacts of the transfer cost on locational market prices. This clarification addresses concerns that an EIM entity could be subject to scrutiny by DMM if the transfer cost was set by the EIM entity rather than by the ISO. DMM is prepared to work closely with the ISO and EIM entities to determine the level at which transfer costs should be set based on pre-implementation market simulation results and actual market results after implementation.

Greenhouse gas bidding rules

DMM supports proposed changes involving greenhouse gas bidding rules. These changes would implement recommendations made by DMM during the initial EIM design to encourage EIM participation and address stakeholder concerns. FERC's June 19 order on the initial EIM design directed the ISO to include these provisions in the future EIM design.

As noted in Management's memo, one detail involved in complying with FERC's June 19 order was the degree of flexibility that will be provided to participants in terms of "flagging" resources' bids that could be deemed delivered to the ISO versus being available only to meet demand within other EIM balancing authority areas not subject to California's cap and trade program compliance obligations. Management's proposal seeks to provide flexibility by allowing the portion of each resource's bid quantity eligible for delivery to the ISO to vary from hour to hour, rather than requiring each resource to "opt in or out" of being potentially subject to California's greenhouse gas program on a daily or longer term basis.

DMM appreciates that this flexibility is being provided in response to requests from some stakeholders and to encourage participation in EIM. Some stakeholders have expressed concerns about the need for this flexibility and requested that DMM review this market design feature for potential gaming or other detrimental market impacts. DMM has reviewed this issue, and while we see limited value or need for this additional flexibility, we also do not have any significant concerns about potential gaming or other detrimental impacts of this bidding flexibility. Nonetheless, DMM will monitor any bidding behavior that may indicate an attempt to detrimentally affect market outcomes by hourly changes in greenhouse gas bidding.

COMMITMENT COST ENHANCEMENTS PHASE 2

Transition costs

Management is proposing to simplify the calculation of multi-stage generating resource transition costs and treat these costs similar to generator start-up costs. Scheduling coordinators will be allowed to bid transition costs in the same manner that proxy and

registered costs are currently bid into the market, so that transitions cost bids may be submitted up to 125 to 150 percent of cost-based calculations.

DMM is highly supportive of these enhancements which address recommendations that have been reiterated by DMM in each of our last three annual reports. These two enhancements greatly simplify the current calculation of transition costs, provide more clarity for market participants, and provide a basis for the ISO to review and verify these costs.

Use-limited status

DMM also supports Management's proposal to clarify the current definition and qualification criteria for resources that are granted use-limited status. The proposal clarifies that under current market rules resources can only be deemed use-limited based on physical, environmental or regulatory limits, and that units cannot be eligible for use-limited status based on contract-based limitations or economic operating costs.

This has important implications since units deemed to be use-limited will continue to be exempted from key bidding limits and availability standards established through other market rules and initiatives aimed at making sure capacity is available for dispatch to meet the growing operational need for flexible capacity.

As noted by DMM in this stakeholder process, the ISO's efforts to limit the number of resources with exemptions due to actual physical or regulatory use limits may be undermined if scheduling coordinators can use other unit operating constraints in the market model to limit unit usage and flexibility. One key model input currently used by participants to limit unit operation is the limit on start-ups per day that can be entered into the ISO master file by each unit's scheduling coordinator.

DMM has expressed concerns that daily start limits entered by participants do not reflect the actual physical limits of generating units. In 2014, the ISO started a process to examine this issue. Under the flexible resource adequacy program requirements being implemented by the ISO and CPUC, units will be required to enter at least two start-ups per day in order to meet requirements for this most flexible category of resources. DMM encourages the ISO to continue to review and clarify rules regarding daily start limits and other unit operating constraints submitted by scheduling coordinators that can also have a major impact on unit availability and flexibility.

One common factor cited by participants for wanting to be deemed use-limited resources or limit their daily start-ups, is to limit the longer term maintenance costs ultimately incurred as a result of starting-up or running a unit. However, starting in 2014 resources are eligible to apply to have a major maintenance adder included in their start-up and minimum load bids. This adder is designed to cover the incremental maintenance costs incurred from major maintenance actions that periodically occur

based on the number of times a unit has started up and/or the number of hours it has run. Including these additional costs in start-up and minimum load bids can reduce the frequency that units get cycled on and off, and ensure that generators recover these costs whenever they are dispatched to operate.

Although the process for implementing major maintenance adders in 2014 was initially problematic, the ISO, in consultation with DMM, assumed responsibility for this process in mid-2014. Starting in 2015, fewer units were allowed to bid up to 150 percent of costs under the registered cost option as a result of changes made under the first phase of the commitment cost initiative. This led many units that had previously not applied for a major maintenance adder to avail themselves of this bidding option.

DMM believes further refinements to the tariff provisions regarding the major maintenance adder could be made. These changes would make this market feature even more effective at ensuring that unit commitments reflect actual marginal unit commitment costs and that resourced owners recover the additional costs associated with starting up and operating flexible generating units more frequently to meet the ISO's growing need for operational flexibility.

Opportunity cost bid adder

As noted in previous comments in the stakeholder process and to the Board, DMM is very supportive of the concept of including opportunity costs in start-up and minimum load bids, and is supportive of the ISO's general approach to calculating opportunity costs. We recommend that the ISO continue further refining and developing their current prototype spreadsheet model and continue to engage stakeholders in developing and refining the opportunity cost methodology and model.

DMM supported removing the opportunity cost adder from this initiative, given the lack of progress that has been made on developing a complete and well-designed model and process that would allow this option to be implemented. DMM is concerned that this important market enhancement has been deferred again, as this represents at least the fourth time this market enhancement has been dropped from a stakeholder initiative since 2010.

During the course of this initiative, the ISO has begun to implement a process to verify the actual use limits of various resources. This represents an important input to the process of establishing opportunity costs for various resources. However, DMM is concerned that given the current status and resources being applied to this project, it may be very difficult for the ISO to complete the development, testing and stakeholder review of an opportunity cost model and rules in time for consideration of this issue by the Board in September, as indicated in Management's memo.

Currently, this methodology has only been tested using a simple prototype spreadsheet model that can incorporate only one type of use-limit (e.g. a limit on start-ups or run

hours per month). The next step is to develop a software model that will allow inclusion of additional features including multiple usage constraints commonly included in air permits, such as simultaneous monthly and annual limits on both start-up and run hours.

For ISO staff to actually implement opportunity costs in the market, this software must also be highly automated and allow for opportunity cost to be updated as necessary based on changes in market prices or actual generating units. DMM has also recommended that a version of the model be made available to market participants so that they may perform their own analysis and request updates or modifications to their opportunity cost bids as appropriate.

DMM continues to look forward to working closely with the ISO and stakeholders on working out the details of this important market enhancement and implementing this functionality in the market.

RELIABILITY SERVICES INITATIVE

As described in Management's memo, changes being proposed under the first phase of the reliability services initiative include (1) enhancements to further integrate preferred resources into the grid; (2) a new availability incentive mechanism to assess resource adequacy resources including demand response and use-limited resources; and (3) revisions to resource adequacy outage rules to streamline ISO processes and provide a framework for flexible resource adequacy outage rules.

DMM is supportive of Management's recommendations as a step forward toward improving and streamlining resource adequacy requirements and processes to meet the need for increased operational flexibility to integrate new renewable energy resources. DMM has two recommendations concerning this initiative, as described below.

Exemption for use-limited resources

The new availability incentive mechanism to assess use-limited resource adequacy resources was designed on the assumption that the opportunity cost estimates for use-limited resources would be available before these changes were implemented. As noted above, the development of the method to estimate opportunity costs has been postponed yet again. Until these opportunity cost estimates can be implemented, use-limited resources can exempt themselves from the availability standards by submitting special outages. Therefore, DMM urges the ISO to commit the resources necessary to develop and implement the opportunity cost estimation method in a timely manner.

Penalty price

The ISO proposes to set the penalty price for not meeting availability standards at 60 percent of the soft offer cap for the capacity procurement mechanism that was approved at the February 5 Board meeting. DMM notes that if the cost of replacement capacity approaches the soft offer cap, it will be less costly for generating unit owners to pay the penalty rather than provide substitute capacity. DMM believes this scenario could occur precisely when supply conditions are tightest and options for capacity that can be procured bilaterally by participants or by the ISO through the capacity procurement mechanism is most limited and non-competitive.

DMM recommends that the ISO monitor this issue once the new incentive mechanism has been implemented. DMM has suggested that the ISO set the penalty price for not meeting availability standards higher than 60 percent of the soft offer cap for the capacity procurement mechanism. Setting the penalty price at 100 percent of this soft cap would appear to maintain a clear logic that exists in the current standard capacity procurement policy.