Memorandum

To: ISO Board of Governors

From: Keith Casey, Vice President of Market & Infrastructure Development

Date: December 6, 2012

Re: **Decision on bid cost recovery mitigation measures**

This memorandum requires Board action.

EXECUTIVE SUMMARY

Management recommends that the Board approve several measures to ensure payments under the ISO's bid cost recovery and residual imbalance energy settlement provisions appropriately compensate resources and mitigate opportunities for adverse strategic bidding behavior. If approved, these new measures will be implemented contemporaneously with previous Board-approved changes to separate bid cost recovery between the day-ahead and real-time market, and will supplant prior bid cost recovery changes approved through emergency filings in 2011 to address certain adverse strategic bidding practices.

Once implemented, these collective changes will provide a much better settlement design for cost recovery in the ISO market that will incent resources to provide economic bids in the real-time market and follow dispatch instructions, and will provide sufficient safeguards against adverse strategic bidding behavior.

Management recommends the Board approve the following motion:

> ***Moved, that the ISO Board of Governors approves the proposal regarding bid cost recovery mitigation measures as described in the memorandum dated December 6, 2012; and***
>
> ***Moved, that the ISO Board of Governors authorizes Management to make all the necessary and appropriate filings with the Federal Energy Regulatory Commission to implement the proposed tariff change.***

DISCUSSION AND ANALYSIS

The measures proposed in this memorandum involve two different settlement provisions for cost recovery in the ISO market:

1. Bid cost recovery compares each resource's energy and ancillary service bid costs, start-up costs, and minimum load costs to the resource's total market revenues. If market revenues are insufficient to cover a resource's cost, the ISO provides an uplift payment to cover the shortfall. The existing bid cost recovery rules specify that this shortfall is calculated over the entire trading day and includes the costs and revenues in both the day-ahead and real-time markets.

2. Residual imbalance energy is energy dispatched in the real-time market attributable to ramping down from a dispatch in a previous hour, or ramping up to a dispatch in a subsequent hour. This energy is settled by comparing a resource's submitted energy bid that generated the dispatch to its default energy bid and the locational marginal price, as described further below.

In its December 2011 decision on Renewable Integration – Market and Product Review Phase 1, the ISO Board approved changes to the bid cost recovery rules so that bid cost shortfalls would be calculated and paid separately for the day-ahead and real-time markets. At that time, Management noted this could increase incentives for adverse strategic market behavior. The need to guard against adverse strategic market behavior was of particular concern because earlier in 2011 the ISO made two emergency filings to address adverse strategic market behavior targeted towards inflating energy bid cost recovery payments.

Management also noted that developing additional mitigation measures to address this potential adverse strategic behavior would require additional time. Management committed to working with stakeholders to develop these measures and to file them with the Federal Energy Regulatory Commission along with the proposal to separate the bid cost recovery payments. Both of these changes would become effective at the same time.

In October 2012, the Federal Energy Regulatory Commission approved emergency changes to the residual imbalance energy settlement rules to address immediate market concerns. These changes took effect the date of the filing, August 28, 2012. Previously, the ISO settled residual imbalance energy based on a resource's bid submitted for the hour to or from which the resource was being ramped. This bid price could be inconsistent with the mitigated price of an exceptional dispatch. In addition, this settlement rule created the incentive for a resource to inflate residual imbalance energy payments by over-generating. In its order accepting those mitigation measures, the Commission encouraged the ISO to further refine residual imbalance energy settlement.

Consequently, Management and stakeholders worked together to develop several mitigation measures that will compensate resources for their submitted bid costs when they follow schedules and dispatch instructions, but mitigate costs when resources deviate from dispatch instructions to guard against adverse strategic behavior to inflate bid cost recovery. Management and stakeholders also developed rules that ensure that

bid cost recovery is provided only for scheduled energy that is actually delivered. These measures are described below.

Payment basis for bid cost recovery and residual imbalance energy

Deviations from dispatch can inflate the amount of energy eligible for bid cost recovery or residual imbalance energy because the ISO market re-dispatches resources in each dispatch interval from their current operating point. As a result, resources are able to increase the amount of instructed energy eligible for bid cost recovery in each subsequent interval the deviation from dispatch continues. Consequently, without mitigating measures, persistent deviations could significantly inflate these payments.

To address this issue, Management proposes to implement a persistent deviation metric that evaluates deviations over a two-hour rolling window. This metric will calculate the extent to which a resource follows its real-time dispatch in a given 10-minute settlement interval, allowing for a threshold that guards against flagging small and unavoidable or inadvertent deviations. The number of flagged intervals will be evaluated over a rolling window and, if too many intervals are flagged, all the intervals in the rolling window will be subject to mitigation. Specifically, the bid cost used in the real-time bid cost recovery calculation and for residual imbalance energy settlement will be mitigated to the minimum of the locational marginal price, the resource's default energy bid, and the resource's economic bid for incremental energy (with a symmetrical charge for decremental energy).

This measure mitigates the adverse strategic market behavior of over-generating to inflate bid cost recovery or residual imbalance energy payments because persistent deviations would effectively disqualify resources from bid cost recovery payments. This metric also accounts for inadvertent or unavoidable deviations by allowing a few deviations within each rolling window.

The August 2012 changes to residual imbalance energy settlement addressed the potential for resources to inflate residual imbalance energy payments by over-generating by settling all residual imbalance energy at the higher of the locational marginal price or the default energy bid. This blanket change will no longer be needed with the implementation of the persistent deviation metric described above. Consequently, Management proposes that residual imbalance energy go back to being settled at the reference hour bid based on a resource's submitted energy bid (or its mitigated bid if mitigated through the market process), with exceptions for ramping energy attributable to exceptional dispatches and temporary changes to minimum operating levels.

In conjunction with this change, Management proposes that the definition of the reference hour bid be revised to be the bid that led to the change in dispatch direction rather than simply the adjacent hour. This important change will address ramping that occurs over more than a single hour.

Modified day-ahead market metered energy adjustment factor

The current bid cost recovery provisions include a day-ahead market metered energy adjustment factor to align day-ahead bid cost recovery payments with actual costs incurred by a resource. This provision reduces the bid cost recovery payment if a resource operates below its day-ahead schedule and serves as an important measure to reduce bid cost recovery payments for resources that deviate from their schedule and do not deliver day-ahead scheduled energy. However, under the current rules, the ISO applies this factor even if it has dispatched a resource to operate below its day-ahead schedule in the real-time market.

Management proposes to modify this adjustment to avoid discouraging economic bids in the real-time market that will allow resources to be dispatched downward. The ability to dispatch a resource downward will be important to integrate increasing amounts of renewable resources. Under the proposed modification, the ISO will not reduce a resource's day-ahead bid cost recovery payment if it dispatches the resource below its day-ahead schedule and the resource delivers at least its real-time dispatch. In addition, the proposal includes a threshold to protect against penalizing small deviations that are unintentional or unavoidable.

Real-time performance metric

Similar to the day-ahead market metered energy adjustment factor, the corresponding real-time adjustment factor under the existing market design scales real-time bid cost recovery payments when a resource under-delivers energy dispatched by the real-time market. Management proposes to modify the real-time market metered energy adjustment factor to also apply this metric to resources' bid costs and revenue associated with the energy produced up to their minimum operating level. The modified metric, called the "real-time performance metric," will improve incentives to follow ISO dispatch instructions under separate day-ahead and real-time bid cost recovery payments.

The real-time performance metric also includes a threshold to avoid penalizing small deviations from dispatch that are likely unintentional and unavoidable. This will provide additional incentives for resources to submit economic bids in the real-time market.

Bid cost recovery or residual imbalance energy when ramping to or from an exceptional dispatch or minimum load re-rate

Management recommends changes to the payment basis for bid cost recovery or residual imbalance energy while ramping to or from an exceptional dispatch or a temporary increase to a resource's minimum operating level. These changes to residual imbalance energy settlement will preserve the intent of the changes implemented in August 2012 to ensure that residual imbalance energy associated with ramping to or from an exceptional dispatch is settled consistent with any mitigated price paid for an exceptional dispatch. These two changes are as follows:

1. Ramping to or from an exceptional dispatch: Management proposes to use the same mitigated bid basis upon which the exceptional dispatch energy is settled in (1) the payment of residual imbalance energy, and (2) the calculation of bid cost recovery.

2. Temporary increase to minimum operating level: The ISO provides resources the ability to change their minimum operating levels in the ISO market. In such cases, Management proposes to use the locational marginal price in (1) the payment of residual imbalance energy, and (2) the calculation of bid cost recovery.

Minimum load cost recovery associated with start-up and shut down instructions

Under the current bid cost recovery measures, a resource could inflate its bid cost recovery payments by ignoring an ISO instruction to shut down. To address this issue, Management proposes that minimum load costs will not be included in bid cost recovery if a resource persistently deviates to avoid a shut down instruction. Similarly, minimum load costs will not be paid to resources that start up without an ISO instruction.

POSITIONS OF THE PARTIES

The proposal described here addresses concerns raised by stakeholders, the ISO Market Surveillance Committee, and the ISO Department of Market Monitoring. The design of the bid cost recovery mitigation measures has evolved through the stakeholder process to balance competing concerns. Stakeholders viewed previous proposals for detecting persistent deviations from ISO dispatch as too complex. In response to this concern, ISO staff and stakeholders formulated a proposal that is significantly simplified and can therefore inform real-time operational decisions and can be replicated to validate settlement statements. While previous proposals also provided for greater mitigation of bid cost recovery payments which was preferable to some stakeholders, concerns remained that this would undermine the intent of cost recovery in the ISO market. In response to these concerns the proposal was revised to mitigate cost recovery payments only in the circumstances described in this memorandum. After multiple iterations, the current proposal also avoids mitigation of cost recovery payments in the case of *de minimus* or inadvertent deviations from dispatch, but targets deviations that can be used to inflate cost recovery payments. Following an extensive stakeholder process through which such competing concerns were recognized and balanced, stakeholder comments generally reflect support for the proposed market enhancements.

The Department of Market Monitoring and the Market Surveillance Committee both support the proposed approach for mitigating exceptional dispatches. The Department of Market Monitoring commented that the proposal effectively mitigates potential abuses of settlement rules for bid cost recovery without being overly complex or diminishing incentives to actively participate in the real-time market. However, both the Market Surveillance Committee and Department of Market Monitoring recommend that the ISO

monitor the effectiveness of the new measures on an ongoing basis. In response, Management will implement monitoring measures to ensure that the new measures are working as intended.

See the attached Market Surveillance Committee opinion and stakeholder matrix for additional comments.

CONCLUSION

Management recommends that the Board approve the bid cost recovery mitigation measures and the changes to cost recovery for residual imbalance energy, as described in this memorandum. As Management committed to the Board when it made the December 2011 decision on the *Renewable Integration – Market and Product Review Phase 1* market changes, Management has worked with stakeholders to develop cost recovery measures that provide incentives for resources to follow ISO-issued dispatch instructions. These measures will adjust cost recovery payments for energy that is not delivered and mitigate potential adverse bidding behavior, while providing reasonable accommodation for unintentional deviations from ISO dispatches.