

## Memorandum

**To:** Energy Imbalance Market Governing Body

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

**Date:** November 22, 2017

**Re:** **Decision on Consolidated Energy Imbalance Market (EIM) Initiatives**

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***This memorandum requires EIM Governing Body action.***

### EXECUTIVE SUMMARY

Management proposes to make several EIM system functionality enhancements and to modify the market rules for the ISO's core non-generator resource model that is generally available to resources in the ISO market.

The proposed EIM system functionality enhancements are intended to automate manual processes, facilitate bilateral financial settlement, and expand the market's modeling capabilities. The proposed functionality enhancements are consistent with existing EIM design and principles. Management seeks approval of these enhancements under the EIM Governing Body's primary authority.

The non-generator resource market rule modifications fall under the EIM Governing Body's advisory role, as this element is severable from the other EIM design changes being proposed under this umbrella initiative and the changes being proposed are generally applicable to the non-generator resource model, which is available to the entire ISO market. Although the non-generator resource model was recently approved by the ISO Board of Governors as part of the *Energy Storage and Distributed Energy Resource* policy initiative, in reviewing potential uses of the model, Management identified certain aspects that would benefit from additional clarification and inclusion in the ISO tariff.

The scope of the *Consolidated EIM Initiatives* policy initiative originally included three other items that were included in the 2017 policy development roadmap: (1) third party contribution of transmission to the EIM, (2) a mechanism to manage bilateral schedule changes, and (3) equitable sharing of wheeling benefits. Management removed these items from the scope of this initiative because stakeholders did not support moving forward with these items at this time.

Management proposes the following motion:

***Moved, that the EIM Governing Body approves the proposed EIM system functionality enhancements, as described in the memorandum dated November 22, 2017.***

## **DISCUSSION AND PROPOSAL**

The following sections describe Management's proposed EIM system functionality enhancements and its proposed non-generator resource market rule modifications. They also include summaries of stakeholder comments. A brief discussion follows regarding items originally included in the policy initiative but that Management removed based on stakeholder input.

The proposed enhancements will be available to all EIM participants, and in the case of the non-generator resource market rule modifications, to all participants throughout the ISO market. The proposed enhancements are important to supporting Idaho Power and Powerex joining the EIM in spring 2018.

### ***EIM system functionality enhancements***

The EIM system functionality enhancements will automate existing manual processes, facilitate bilateral settlements, and improve modeling accuracy. The proposed enhancements are consistent with the existing EIM design and principles.

The proposed EIM system functionality enhancements are under the EIM Governing Body's primary authority and are as follows:

- **Automate "matching" import or export schedule changes to a non-participating resource within the applicable EIM balancing area**

EIM Entities submit hourly base schedules representing their base supply and demand. When an import or export schedule included in a base schedule changes after final base schedules are submitted, an EIM Entity must balance supply and demand by (1) manually dispatching a resource in its balancing area, or (2) allowing the EIM to resolve the imbalance by dispatching participating resources.

Management proposes an enhancement to offer a third option for an EIM Entity's supply and demand to remain balanced in the event of an import or export schedule change. This enhancement will allow EIM Entities to select a non-participating resource within its balancing authority area for which the market will automatically adjust its schedule to match an import or export schedule change.

This functionality will reduce the need for manual dispatch and maintains the amount of available energy bids from participating resources, which are needed for the EIM's resource sufficiency tests. In addition, this enhancement will ensure that the import or export schedule change and non-participating resource

schedule change are simultaneously communicated to the market. This will improve market efficiency relative to the current practice of manually dispatching resources, because manual dispatches may not take place until after an import or export schedule change is already communicated to the market.

Stakeholders support this functionality as it automates a manual process and facilitates participation in the EIM.

- **Automate changes to “mirror” system resources at intertie scheduling points between the ISO balancing area and an EIM balancing area**

“Mirror” system resources are used to model non-EIM import or export schedules with the ISO, such as day-ahead market awards, inside the EIM balancing area. The mirror system resource is used to balance the non-EIM intertie schedule with the ISO so that the market optimization does not observe an imbalance that must be resolved by the EIM.

Currently, EIM Entities are responsible for manually updating mirror system resource schedules to equal the non-EIM energy schedules with those of the ISO. Management proposes an enhancement in which EIM Entities will no longer be responsible for this update. Rather, the ISO market software will automatically update the mirror system resource schedules. This will automate a manual process and eliminate the potential for EIM Entities to submit incorrect mirror system resource values.

Stakeholders support the automated updating of mirror system resources because it automates a manual process and ensures accurate market modeling.

- **Enable financial settlement of imbalance energy resulting from energy transfers between EIM balancing areas that are included in EIM base schedules**

Bilateral interchange transactions between two EIM Entities are modeled using “base energy transfer system resources.” Currently, the ISO does not settle imbalance energy based on base energy transfer system resources schedule changes, such as those due to bilateral interchange transactions. Management proposes an enhancement to calculate a locational marginal price for these transactions at a location specified by the two EIM Entities. The use of this functionality will be voluntary. This enhancement would also allow the two EIM Entities to elect to have the ISO financially settle the transaction through its settlement system rather than them settling it outside of the market.

Stakeholders support this functionality as it is voluntary and meets the needs of EIM Entities that will utilize the functionality.

- **Allow for the submission of generation distribution factors for aggregated non-participating resources**

Generation distribution factors are used to accurately model aggregated resources at the underlying physical resources. The market uses this information to accurately reflect the flow impact from individual resources in the market optimization. EIM Entities provide generation distribution factors for participating resources as part of the hourly energy bids submitted for these resources. EIM Entities cannot currently submit generation distribution factors for non-participating resources because there are not hourly bids for these resources.

Management proposes an enhancement to allow EIM Entities to submit generation distribution factors for non-participating resources that consist of aggregations of multiple physical generators. Accurate generation distribution factors for aggregated non-participating resources will improve the market's modeling.

Stakeholders support this functionality because they recognize it is critical for accurate market modeling.

### ***Non-generator resource model market rule modifications***

Management proposes modifications to the market rules for the core “non-generator resource” market model. These modifications fall under the EIM Governing Body's advisory role because the model is used throughout the ISO market.

The ISO developed the non-generator resource model to accurately reflect the operational characteristics of storage devices in the market. These resources are able to seamlessly move from injecting energy to withdrawing energy from the grid. However, their ability to do so is limited by the storage device's state of charge. Consequently, the ISO enforces a constraint to respect these storage devices' states of charge to ensure these resources receive feasible dispatches.

As part of the ISO's *Energy Storage and Distributed Energy Resources* policy initiative, Management determined that there are devices or aggregations of distributed energy resources that do not need the state of charge respected. Consequently, the initiative developed a non-generator resource model that does not have a state of charge constraint. This is referred to as the “core” non-generator resource model.

During the implementation of the “core” non-generator resource model, the ISO realized it could be used more broadly in the ISO market for applications other than modeling distributed energy resources. These uses include modeling Powerex's upcoming participation in the EIM. The core non-generator resource model is useful for this because it can model an aggregation of resources participating in the EIM.

In reviewing these other potential applications of the non-generator resource model, Management identified certain market rules that are needed for its broad use. Management proposes the following market rules for using the non-generator resource model:

1. The non-generator resource must be capable of generating energy. Consequently, for negative generation, the resource will not be subject to ISO settlement charges applicable to demand other than any appropriate energy settlement. The non-generator resource will not be charged these settlement charges applicable to demand, which are generally uplift charges, because the negative generation is not actual demand, but rather represents reduced generation relative to a baseline.
2. Whether the non-generator resource's energy bids are subject to local market power mitigation will be based on the underlying resource's technology. The local market power mitigation rules in the ISO tariff for that technology will apply to the generic non-generator resource. For example, if the underlying resource is a conventional generator, then it will be subject to mitigation. If the underlying resource is a storage device, then it will not be subject to market power mitigation because storage devices are currently exempt from market power mitigation.
3. Non-generator resources using the core model will not be eligible to count for resource adequacy capacity at this time due to current system configuration limitations. Changes needed to address resource adequacy may be addressed through a future policy initiative.

Stakeholders support these modifications because they leverage existing resource modeling and provide additional clarity on use of the core non-generator resource model.

## **SCOPE CHANGES**

Management removed three items from the scope of the consolidated EIM initiatives because stakeholders did not support addressing these items at this time. The items are briefly summarized below and are as follows: (1) third party contribution of transmission to the EIM, (2) a mechanism to manage bilateral schedule changes, and (3) equitable sharing of wheeling benefits.

### ***Third Party Transmission Contribution***

This item would have allowed parties that are not EIM participants to contribute transmission to enable the dispatch of greater quantities of energy transfers between EIM balancing areas. The contributed transmission would increase transfer capability between EIM balancing areas and, in exchange, the third party would receive any

congestion revenue the market generated due to congestion on the contributed transmission.

Stakeholders commented that this functionality would not currently be widely used and, consequently, that implementing this functionality would be an inefficient allocation of ISO resources. This initiative will remain in the ISO initiative catalog so it can be pursued in the future if a stronger need materializes.

### ***Management of Bilateral Schedule Changes***

This item sought to develop a mechanism to hedge the imbalance energy settlement of schedule changes involving bilateral transacted imports or exports made after EIM Entities' base schedule submission deadline.

At the October 2016 FERC technical conference regarding economic bidding on EIM balancing areas' interties, market participants expressed that there was no mechanism to limit imbalance energy charges associated with these schedule changes. The ISO stated it could use its existing "wheel through" intertie bidding functionality to help market participants manage imbalance energy charges associated with these schedule changes, and committed to exploring modifications with stakeholders.

However, after exploring potential modifications to the "wheel through" intertie bidding functionality, stakeholders commented that the modifications would likely not be useful in limiting imbalance energy charges. Management and stakeholders came to the conclusion that EIM Entities could more effectively address the issue through changes to how imbalance energy is settled under their respective open access transmission tariffs and through changes to their business practices. Stakeholders agreed it was unnecessary for the ISO to move forward with this item.

### ***Equitable Sharing of Wheeling Benefits***

This item explored the situation in which the EIM frequently uses an EIM balancing area's transmission to support energy transfers by wheeling energy through its balancing area. In this scenario, the source balancing area benefits from selling incremental energy, the sink balancing area benefits from serving load at lower costs, however, it can be argued the intermediary balancing area being wheeled through receives no benefit although it facilitated the transfer.

The policy initiative explored whether an inequity exists and several potential means to distribute a share of energy transfers' benefits to intermediary balancing areas that facilitate wheeling of energy transfers.

Stakeholders generally opposed implementation of a settlement mechanism to distribute benefits to intermediary balancing authority areas. Stakeholders recognized that although net wheeling occurs throughout the EIM footprint, all EIM Entities currently have greater amounts of transactions for which they are the generation source or

serving load than transactions for which they are merely facilitating wheeling. As a result, stakeholders generally do not believe this issue should be addressed now. This initiative will remain in the ISO's initiative catalog so it can be pursued in the future if conditions change.

## **CONCLUSION**

Management requests the EIM Governing Body approve the system functionality enhancements described in this proposal. These enhancements will automate existing manual processes, facilitate bilateral financial settlement, and improve the market's modeling accuracy. Management also requests that the EIM Governing Body support the ISO Board of Governor's approval of the described core non-generator resource market rule modifications.

In addition to their market-wide benefits, the proposed enhancements are important to support Idaho Power and Powerex joining the EIM in spring 2018.