Memorandum

To: ISO Board of Governors

From: Keith Casey, Vice President, Market and Infrastructure Development

Date: December 10, 2015

Re: **Decision on expanding metering and telemetry options – distributed energy resources provider**

This memorandum requires Board action.

EXECUTIVE SUMMARY

The Board of Governors approved a framework for aggregations of distributed energy resources to participate in the ISO market at its July 16, 2015 meeting. Consistent with the Board's direction from that meeting, Management is developing tariff revisions to integrate distributed energy resource aggregations into the ISO market. During this effort, Management has reviewed certain limitations it initially proposed to apply to distributed energy resource aggregations, and no longer believes they are necessary. Specifically, in its earlier request to the Board, Management proposed certain limits for distributed energy resource aggregations that span multiple pricing nodes to mitigate the adverse effects these aggregations may have on the ISO's ability to accurately assess congestion and identify critical constraints on the transmission system. Management requests that the Board authorize it to eliminate two of these limitations and replace them with less restrictive rules.

Management will continue to explore further enhancements to offer greater flexibility to distributed energy resources seeking to participate in the ISO market. The ISO is exploring some of these enhancements with stakeholders this year under the energy storage and distributed energy resources initiative, and will explore others in 2016 and beyond as the ISO gains operational experience with distributed energy resource aggregations.

Management recommends the following motion:

> **Moved, that the ISO Board of Governors approves the proposed revisions for expanding metering and telemetry options – distributed energy resources provider, as described in the memorandum dated December 10, 2015; and**

Moved, that the ISO Board of Governors authorizes Management to make all necessary and appropriate filings with the Federal Energy Regulatory Commission to implement the proposed tariff change.

DISCUSSION AND ANALYSIS

Under the proposed framework approved by the Board at its July 16 meeting, aggregations of distributed energy resources may be at a single pricing node[1] or across multiple pricing nodes, but must be within a single sub-load aggregation point.[2]

This framework allows heterogeneous sub-resources to aggregate at one pricing node. The framework also permits sub-resources located at one pricing node to move in different directions so long as the net response at the pricing node is consistent with the ISO dispatch instruction. However, for aggregations across multiple pricing nodes, the Board approved framework requires that all sub-resources that comprise a distributed energy resource aggregation must be homogenous and must move in the same direction as the ISO dispatch instruction. In addition, the approved framework requires that, for energy storage aggregations across multiple pricing nodes, all sub-resources must operate in the same mode (that is, charging or discharging, but not a mix of the two) in response to an ISO dispatch instruction.

As part of its initial implementation efforts, the ISO has reassessed the limits described above that would apply to aggregations across multiple pricing nodes, and no longer believes they are necessary to manage congestion and other transmission constraints. These limits are not necessary so long as aggregations of distributed energy resources provide a net response at the pricing node level that is consistent with the ISO dispatch instruction and consistent with applicable distribution factors that the aggregation submits with its bid. For example, in a two-pricing node aggregation with distribution factors of 0.2 and 0.8, an aggregated resource's net response would have to be 20 percent of the total aggregation output at one pricing node and 80 percent at the other pricing node. The ISO, however, will continue to maintain a 20 MW size limit for distributed energy resource aggregations across multiple pricing nodes.

POSITIONS OF THE PARTIES

Management initially presented and discussed the proposed less restrictive requirements with stakeholders through the tariff development process that ensued subsequent to the July Board meeting. To ensure a robust stakeholder process around

[1] A pricing node is a single network node where a physical injection or withdrawal is modeled and for which a locational marginal price is calculated and used for financial settlements.

[2] A sub-load aggregation point is an ISO defined subset of pricing nodes within a default load aggregation point.

these proposed enhancements, Management also produced a supplemental white paper with illustrative examples, held a stakeholder call, and invited another round of written stakeholder comments. Several stakeholders fully support the proposed enhancements. Two other stakeholders expressed some reservations about whether distributed energy resource aggregations will perform in accordance with their distribution factors, while a third raises concerns surrounding dual use (provision of retail and wholesale service by the same resource).

Management believes its proposal addresses the performance concerns raised by some stakeholders. First, Management will propose a tariff requirement that a distributed energy resource aggregation must provide a net response at its constituent pricing node(s) that is consistent with ISO dispatch instructions and applicable generation distribution factors. Second, the tariff metering provisions will require a scheduling coordinator for a distributed resource aggregation to conduct annual self-audits and the ISO will have the authority to perform audits at any time. Third, Management will propose a tariff requirement that distributed energy resource providers must make settlement quality meter data from individual distributed energy resources comprising an aggregation available to the ISO upon request. Fourth, for aggregations of 10 MW or greater and for those as small as 1 MW providing ancillary services, the ISO will know in real-time whether its response is consistent with the applicable distribution factors since it must provide telemetry at the pricing node level in accordance with the ISO's standards for telemetry. Regarding one stakeholder concern about dual use, Management notes that these issues were previously considered when the Board approved Management's proposal in July. Management will propose a tariff requirement that aggregations must comply with applicable utility distribution company tariffs and requirements of the applicable local regulatory authority. Management also points out that dual use issues are separately being explored in the ISO's energy storage and distributed energy resources stakeholder initiative as well the CPUC's energy storage proceeding.

Management will continue to explore additional enhancements as the ISO gains operational experience with distributed energy resource aggregations. These enhancements may include changes to telemetry and/or metering requirements for DER aggregations. Management provides a more detailed response to these issues in Attachment A.

CONCLUSION

Management recommends that the Board approve the modification to the distributed energy resource aggregation proposal described in this memorandum. The proposal will increase the flexibility for distribution-connected resources to participate in the ISO market.