



Memorandum

To: ISO Board of Governors

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

Date: July 9, 2015

Re: **Decision on expanding metering and telemetry options**

This memorandum requires Board action.

EXECUTIVE SUMMARY

Distributed energy resources will represent an increasingly important part of the future resource mix. Effectively integrating these resources into the ISO market and operations will help to lower carbon emissions and provide operational benefits to the ISO grid. With this proposal, Management is seeking to facilitate these resources' participation in the ISO market, consistent with reliable system operations.

Currently, the ISO's tariff does not offer a clear platform for smaller distribution connected resources such as rooftop solar, energy storage, and plug-in electric vehicles to participate effectively in the ISO market. To open a pathway for these resources to participate, the ISO is taking the first step by establishing a framework to enable distributed energy resources to aggregate together to meet the ISO's 0.5 MW minimum participation requirement.

Another key advance of this proposed aggregation framework is that these aggregations will be scheduling coordinator metered entities. Under this approach, the metering arrangement is between the scheduling coordinator and the resource – rather than between the ISO and the resource – and the scheduling coordinator submits settlement quality meter data to the ISO for settlement purposes. This construct avoids having each sub-resource in an aggregation engaged in a direct metering relationship with the ISO, which could create a significant burden for these aggregations and their sub-resources.

To ensure that the ISO can implement this framework quickly, Management is proposing to rely on existing market models and tariff rules to the maximum extent possible. Taking this approach means that the ISO and market participants can avoid major market system changes and the associated time required to implement those changes. This approach also means that this first step comes with some limitations.

That said, Management will explore further enhancements to offer greater flexibility to distributed energy resources seeking to participate in the ISO market. The ISO will explore some of these enhancements with stakeholders this year under the energy storage and distributed energy resources initiative, and 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 proposal for expanding metering and telemetry options, as described in the memorandum dated July 9, 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

For purposes of this proposal, a distributed energy resource is any distribution connected resource, regardless of size or whether it is connected behind or in front of the end-use customer meter. Distribution connected means connected to distribution facilities controlled by a distribution utility, regardless of voltage level, and served by the ISO grid. Examples of distributed energy resources include, but are not limited to, rooftop solar, energy storage, and plug-in electric vehicles.

Under the proposed framework, aggregations of distributed energy resources may be at a single pricing node¹ or across multiple pricing nodes, but must be within a single sub load aggregation point.² There is no limit on the number of pricing nodes within a sub load aggregation point that may compromise a single aggregation of distributed energy resources. There is no minimum size limitation on the individual sub-resources in an aggregation.

For aggregations limited to one pricing node, there is no maximum size limitation. Sub-resources may be heterogeneous – that is, a mixture of sub-resource types. For aggregations limited to one pricing node all of the sub-resources do not need to move in the same direction as the ISO dispatch instruction; rather, it is only necessary that the net movement of the aggregate of the sub-resources equate to the ISO dispatch instruction.

However, for aggregations across multiple pricing nodes, Management is proposing several limitations that are necessary to limit the adverse effects that such aggregations may have on the ISO's ability to accurately assess congestion and identify critical

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.

constraints. First, these aggregations may not exceed 20 MW. Second, all sub-resources must be homogenous and must move in the same direction as the ISO dispatch instruction. Third, for aggregations of energy storage, all sub-resources must be operating in the same mode (that is, charging or discharging, but not a mix of the two) in response to an ISO dispatch instruction. Management recognizes that this initial framework may make aggregations at a single pricing node more attractive, but the limitations Management is proposing for aggregations across multiple pricing nodes are appropriate until the ISO understands the congestion management impacts of distributed energy resource aggregations.

Under this proposed framework, a “distributed energy resource provider” would be the owner/operator of one or more aggregations of individual distributed energy resources. A distributed energy resource provider will be a new type of market participant, analogous to a participating generator or a participating load. A distributed energy resource provider will, among other things, provide the ISO with accurate information about the sub-resources in an aggregation and will timely update this information when changes to these resources occur. The distributed energy resource provider will be responsible for operating and maintaining its sub-resources consistent with applicable provisions of the tariff and must comply with applicable outage requirements as well as any applicable reliability criteria. The provider must also comply with applicable utility distribution company tariffs, requirements of the applicable local regulatory authority, as well as interconnection requirements. Aggregations would participate in the ISO’s energy and/or ancillary services market through a scheduling coordinator. The provider could serve as its own scheduling coordinator or hire the services of a scheduling coordinator.

Management proposes to create a pro forma distributed energy resource provider agreement to establish the terms and conditions under which the ISO and distributed energy resource provider will discharge their respective duties and responsibilities under the tariff. This agreement would identify every sub-resource subject to the agreement as part of a schedule to the agreement. Each provider, regardless of how many aggregations it has, will only execute a single agreement. Under this arrangement, individual sub-resources in an aggregation must participate in the ISO market as part of the aggregation and not as individual resources.

POSITIONS OF THE PARTIES

Most stakeholders either fully support, or support with qualification, Management’s proposal to establish a framework for distributed energy resources to aggregate together to meet the ISO’s 0.5 MW minimum participation requirement. These stakeholders generally support the proposal as an important first step toward enabling the participation of distribution connected resources in the ISO market. Some stakeholders also sought clarification on a number of issues and two stakeholders expressed opposition to the proposal. A detailed stakeholder comment matrix is attached.

CONCLUSION

Management recommends that the Board approve the distributed energy resource aggregation proposal described in this memorandum. The proposal is a prudent first step in advancing the ability of distribution connected resources to participate in the ISO market.