Memorandum

To: ISO Board of Governors

From: Mark Rothleder, Senior Vice President, Chief Operating Officer

Date: November 11, 2020

Re: **Decision on Pseudo-Ties of Shared Resources**

This memorandum requires Board of Governors action.

EXECUTIVE SUMMARY

Management proposes to allow the ISO market to model a portion of a resource's output that is outside of the California ISO balancing authority area (CAISO BAA) as connected to the CAISO BAA as a "pseudo-tie." A pseudo-tie is a mechanism that allows a resource that connects to transmission in one BAA to be a supply resource for another BAA. Modeling a portion of a resource's output as a pseudo-tie is useful when a portion of a resource is owned or contracted to a market participant in another BAA.

Resources already participate in the Energy Imbalance Market (EIM) using pseudo-ties to connect shares of a resource's output to multiple BAAs other than the CAISO BAA. However, the current ISO market rules only allow the full output of a resource to be connected as a pseudo-tie to the CAISO BAA.

Implementation of this option to connect a share of a resource with a pseudo-tie to the CAISO BAA involves two key provisions to ensure the ISO market accurately models the shares and equitably financially settles them. The first provision is submission of a meter data plan that details how the energy output meter readings of a shared resource will be allocated to the resource shares and reported to the ISO for financial settlement. The second provision requires the submission of a written protocol that describes how the shared resource will be operated, and documents its operating characteristics. This protocol also includes how costs used for ISO settlement of bid cost recovery provisions are allocated among the shares and how resource outages affecting the shares will be reported to the ISO.

The primary driver for the proposal is EIM-specific, but the tariff provision will apply to bidding into both the day-ahead market and the real-time market from resources in EIM and non-EIM balancing authority areas. Therefore, Management has classified this initiative as hybrid, and is seeking approval from both the EIM Governing Body and the Board of Governors for the entire initiative.

The EIM Governing Body approved this proposal at its November 4, 2020 meeting.

Management proposes the following motions:

> ***Moved, that the ISO Board of Governors approves the proposal for pseudo-ties of shared resources described in the memorandum dated November 11, 2020; 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 proposal described in the memorandum, including any filings that implement the overarching initiative policy but contain discrete revisions to incorporate Commission guidance in any initial ruling on the proposed tariff amendment.***

BACKGROUND

The ISO's EIM implementation has accommodated pseudo-tie arrangements between several EIM entities' BAAs that have joint ownership shares. The ISO also allows dynamic schedules of shared resources coming into the CAISO BAA, and proposes no changes to its provisions for dynamic scheduling. Dynamic schedules and pseudo-ties are the two mechanisms for dynamic transfers of resources between BAAs and are very similar, with the primary distinction being that dynamic schedules remain part of the host BAA's resource portfolio while pseudo-ties become resources under the attaining BAA's control. This distinction has different implications for real-time interchange accounting.

The implementation of pseudo-ties in the EIM has been workable for transfers of existing EIM participating generation resources between non-ISO EIM Entities. Some BAAs that will begin EIM participation in 2021 or later host resources that currently have dynamic schedules for resources into the CAISO BAA. Modeling these resources as pseudo-ties will simplify and improve their modeling for EIM participation.

Dynamic schedules and pseudo-ties from an EIM Entity BAA to the CAISO BAA have implications for real-time interchange accounting that differ from the accounting for dynamic schedules in parallel with EIM transfers. These interactions can cause data conflicts in real-time. Specifically in the case of economic bidding in real time by dynamic schedules from EIM Entity BAAs, there can be conflicts with EIM transfers and the real-time interchange accounting that may have an effect on market pricing and dispatch. In essence, a dynamic schedule over an EIM transfer path could be priced differently than the transfer path market price. The transfer path market price is established by the bids from the participating resources in the EIM Entity BAA. This interaction could result in inconsistency between dispatches and bids for the dynamically scheduled resources, which cannot be resolved through accounting adjustments. At the same time, converting a dynamically scheduled resource to a pseudo-tie avoids the market inefficiency that could otherwise materialize if the resource continues to dynamically schedule. Similar data conflicts do not occur with pseudo-ties because the pseudo-tie logically transfers the resource from the EIM entity BAA to the CAISO BAA and it is no longer included in the interchange accounting between the two balancing authorities.

The current requirement that only an entire resource could be connected to the CAISO BAA as a pseudo-tie, as opposed to just a share of the resource, stemmed from a previous rule that generation in the ISO market have energy production meters that the ISO reads directly. That rule has since changed, allowing a resource operator to calculate and submit meter readings for only a share of a generator's output.

Management's proposal would allow resource shares currently dynamically scheduling to the CAISO BAA the option to convert to a pseudo-tie and avoid the data conflicts. The ISO will continue to support dynamic schedules, including economic bidding, and pseudo-ties to the CAISO BAA as it does today.

PROPOSAL

The ISO market will model each share of a partially pseudo-tied resource as a separate market resource. Each resource share will consist of a simple generator with a non-negative minimum load, start-up and minimum-load cost, and a single operating range, like the similar EIM participating generation resources. Different resource owners may make separate decisions about whether and when to register using a pseudo-tie participating generator agreement to become eligible to submit bids in the market and receive separate dispatch instructions. Each share of a pseudo-tied resource will remain subject to all existing ISO tariff requirements, contractual terms, and business practices that are applicable to generating unit participation in the ISO market.

When there are multiple owners of a generator, the ISO market's modeling and financial settlement is more complex than when a single owner has responsibility for all operational and financial consequences of operating the resource. A primary consideration is to ensure there are neither gaps nor overlaps in the resource data reported to the ISO for resource operation and financial settlement.

Management proposes to address this complexity by requiring that the multiple entities with shares of a resource associated with one or more pseudo-ties to the CAISO BAA designate a single entity to act as a coordinator, which Management's proposal calls the "protocol administrator." Management proposes that the protocol administrator be responsible for developing and submitting to a plan to the ISO that details how the energy output meter readings of the resource will be allocated to the resource shares and reported to the ISO for financial settlement. An additional requirement is the submission of a written "allocation protocol" that describes how the shared resource will be operated, documents its operating characteristics, and describes how costs used for

ISO settlement make-whole payment provisions will be allocated among the shares, and how resource outages affecting the shares will be reported to the ISO. Management proposes that the *pro forma* agreement associated with a pseudo-tie of a shared resource document key allocation attributes for transparency.

Management proposes that ISO review and approval of both the metering plan and allocation protocol be required before the resource shares can participate in the ISO market. In addition, the resource must be operated and data reported to the ISO in accordance with these documents. Management also proposes market rules that will provide for suspension of participation or require modification of the shared pseudo-tie arrangement if the pseudo tied share of a resource does not follow its protocol, either repeatedly or on any occasion that significantly affects market outcomes.

Metering and Telemetry

Although submission of meter data plans is an existing ISO market rule, Management proposes that the protocol administrator for a shared resource be required to develop a meter data plan that addresses “logical metering” calculations for the resource shares. Logical metering refers to predefined calculations of shares of a resource’s output based on the overall resource’s metered output.

This meter data plan will be required to ensure that the sum of the calculated logical metering shares of a resource will match the resource’s total output and conform to the ISO’s published metering standards. It will also be required to ensure that metering will reflect the ISO market dispatch instructions to the respective shares to the extent feasible, clearly explain how deviations will be handled, and account for the outage allocation methodology. To ensure equitable energy settlement, Management proposes a requirement that the uninstructed deviations assigned to a share delivered to the CAISO BAA must not exceed a pro-rata allocation proportional to instructed energy in each settlement interval.

Management proposes that the protocol administrator will also be required to provide telemetry signals to the ISO that represent separate output values for the entire resource and for each share of the resource, in addition to any other telemetry data that may be required for ISO market participation. The host EIM Entity BAA will report electronic tags for the hourly production of other shares for interchange accounting.

Outage Management and Reporting

If the partially pseudo-tied resource experiences an outage or derate, the scheduling coordinators for pseudo-tied shares will be required to report the outage of their market resource’s share according to the ISO’s existing outage reporting requirements. Resource adequacy capacity availability and substitution requirements will also apply.

The allocation of planned and forced outages between each share of a resource must account for the specific generating unit’s operational characteristics and pre-existing contractual obligations. Management proposes a default methodology for proportional allocations of outages. However, the individual submitted allocation protocols may need to include specific details. In this case, Management proposes that the protocol will be required to identify conditions that could lead to disproportionate outages, and describe how outages will be allocated in these conditions, including the formula for calculating the outage allocation among the shares.

Treatment of Minimum Load and Start-up Costs

The ISO market's bid cost recovery provisions provide for a make-whole payment in the event that market revenues over the course of a day do not cover a resource's submitted energy, minimum load, start-up, and ancillary services bids. Management proposes that bid cost recovery will apply separately to each pseudo-tied share as a separate resource, based upon each share's resource characteristics and bid costs.

Management proposes that the allocation protocol for a resource pseudo-tied to the CAISO BAA describe the equitable allocation of start-up and minimum load costs to the various resource shares. The allocation protocol will determine how to allocate the total resource costs among the resource shares. The protocol will document these proportions and describe any unique circumstances affecting the allocation of the resource's overall costs. The sum of the shares' costs must not exceed the total costs that would be represented if the shared resource were participating in the market as a single resource. Finally, the allocation protocol must also identify how compliance will be monitored and verified in comparison to the resource's overall costs.

The cost responsibility among resource shares can vary considerably. Management's proposal addresses this by not unnecessarily constraining commercial agreements for allocation of costs of shared resources. However, designs for allocation of start-up and minimum load costs may improperly benefit the participants. Management proposes to address this by explicitly stating in the ISO tariff that the provisions to suspend participation or require modification of the shared pseudo-tie arrangement apply to circumstances involving exploiting the ISO market's bid cost recovery provisions or inequitably allocating bid cost recovery payments between BAAs.

STAKEHOLDER POSITIONS

Stakeholders support Management's proposal and Management made several changes that were reflected in its final proposal in response to stakeholder suggestions.

In response to stakeholder comments, Management clarified that this proposal broadens the options for market participants to use pseudo-ties as a flexible option for EIM participation of shared resources, and Management does not propose to limit dynamic scheduling of resources from EIM Entity BAAs to the ISO BAA. Although using pseudo-ties for shared resources removes market inefficiencies that can result from using dynamic schedules for shared resources, using dynamic schedules is the only practical option for certain circumstances.

Also in response to stakeholder comments, Management added a requirement that the allocation protocol include the formula for the outage allocation if it could lead to disproportionate outages or derates, and added the provisions for suspending or modifying pseudo-tie arrangements for variances from the protocol.

Following these changes, no comments stated concerns with the final proposal.

The ISO Department of Market Monitoring supports Management's proposal and notes that the provisions to suspend or modify a shared pseudo-tie arrangement for exploiting the ISO market's bid cost recovery provisions or inequitably allocating bid cost recovery payments between BAAs addresses their earlier concerns.

CONCLUSION

Management recommends the ISO Board of Governors approve the proposal for pseudo-ties of shared resources. The proposal increases market efficiency and allows for more flexible EIM participation options by allowing shared resources to be connected to the CAISO BAA through pseudo-ties.