Memorandum

To: ISO Board of Governors

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

Date: January 30, 2019

Re: **Decision on intertie deviation settlement proposal**

This memorandum requires Board action.

EXECUTIVE SUMMARY

The ISO relies on import and export energy that is economically scheduled through its markets, called intertie transactions, to meet operational needs. Intertie transactions are scheduled at the ISO balancing authority area's interties with adjoining balancing authority areas. These transactions are separate from energy transfers resulting from the energy imbalance market's resource-specific dispatch. The ISO implemented a non-delivery charge to incent the delivery of intertie transactions. However, the ISO has experienced increasing instances of non-delivery. When this occurs, it results in adverse reliability impacts and inefficient market pricing. To address this issue, Management proposes to modify the current intertie transaction non-delivery charge to increase market participants' incentive to deliver intertie transactions scheduled in the ISO market.

Management's proposal addresses identified shortcomings of the current non-delivery charge for intertie transactions. One of the primary shortcomings of the current charge is that it allows for a 10 percent monthly allowance for intertie declines. This was designed to account for intertie transactions that were curtailed for reliability reasons. The ISO is now able to identify specifically those intertie transactions that are declined due to reliability curtailments. Therefore, Management proposes to not apply the charge when intertie transactions are curtailed for reliability reasons and to eliminate the 10 percent monthly allowance for intertie declines. In addition, the current decline charge is based on the fifteen-minute dispatch price which can be significantly lower than the five-minute real-time dispatch price. Therefore, Management proposes that the charge be based on 50 percent of the higher of the 15-minute or five-minute real-time price in addition to any imbalance energy charges. Management believes these changes will provide significantly stronger incentives for market participants to deliver intertie transactions.

Management proposes the following motion:

> ***Moved, that the ISO Board of Governors approves the intertie deviation settlement proposal described in the memorandum dated January 30, 2019; 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.***

Management presented this intertie deviation settlement proposal to the EIM Governing Body on January 24, 2019. The EIM Governing Body will be providing advisory input to the Board regarding this proposal.

DISCUSSION AND ANALYSIS

Intertie Scheduling and Settlement

The ISO schedules intertie transactions (i.e. imports and exports) in its hour-ahead scheduling process and its 15-minute market. These schedules result from both economic bids and self-schedules market participants submit to the ISO's real-time market. They also include intertie transactions initially scheduled in the day-ahead market.

The real-time market runs the hour-ahead scheduling process at the top of each hour for the next hour. The hour-ahead scheduling process produces advisory schedules for both hourly block and 15-minute dispatchable intertie bids for the next hour. These schedules indicate how much transmission the ISO market has reserved for energy that will be delivered as a result of a cleared import or export economic bid or self-schedule.

Subsequently, 22.5 minutes before each 15-minute market interval, the 15-minute market produces intertie final schedules and prices. Schedules resulting from hourly block import or export bids are the same value over the hour.

Intertie transaction delivery is accomplished by the market participant submitting an "E-Tag" to the ISO and other balancing authority areas involved in the transaction. Balancing authority areas use E-Tags to track energy transfers between them. Two key parts of E-Tags that are relevant to this proposal are the "transmission profile" and the "energy profile." The transmission profile shows the transmission the market participant has available to facilitate energy. The energy profile shows the energy that will be delivered to complete the intertie transaction.

Final E-tags for intertie transactions, including both the transmission and energy profiles, are due by 20 minutes prior to each operating hour. This is the industry-wide deadline.

Because of differences in market timing, intertie schedules may or may not be subject to imbalance energy charges as a result of not delivering on their schedule. This is different from generation resources internal to the ISO balancing area which are always subject to imbalance energy charges.

Adverse Impacts of Undelivered Intertie Transactions

Undelivered intertie transactions can result in detrimental impacts to the ISO balancing authority area's reliability and to market pricing.

The ISO relies on intertie transactions for up to approximately 25 percent of the ISO balancing authority area's supply in individual hours. An undelivered import causes the ISO to be short supply to meet demand. When an import is not delivered, the ISO market has reserved transmission capacity for the undelivered import and cannot schedule another import to make up for it until the next hour. The 5-minute real-time dispatch must compensate for the undelivered import within the 15-minute interval by dispatching from less overall supply than was available to the 15-minute market.

Undelivered imports are detrimental to the market because they raise 5-minute real-time dispatch price, all other things being equal. Increased prices affects all market participants and likely results in a higher price than would occur if the market could have selected from a broader range of resources in the hour-ahead scheduling process and the 15-minute market. Undelivered exports can cause intertie congestion and exacerbate over-generation conditions.

The ISO has experienced large quantities of undelivered intertie energy during stressed system conditions, ranging up to more than 2,000 MW in an hour. This has contributed to emergency situations and threatened grid stability. For example, the ISO declared an "Energy Emergency Alert Level 1" on May 3, 2017 in part because of undelivered imports during the peak load hours.

ISO operators often take actions in advance, in anticipation of undelivered intertie transactions, to ensure adequate supply is available to meet real-time system needs. These measures include increasing the load forecast the market uses for the hour-ahead scheduling process to schedule additional imports and/or exceptionally dispatching additional imports out of the market. Although these measures may be needed to assure system reliability, they can also introduce differences in prices between the hour-ahead scheduling process, 15-minute market, and the 5-minute real-time dispatch. This can diminish incentives to deliver intertie transactions because the market initially schedules them in the hour-ahead scheduling process based on its prices, but they are financially settled at 15-minute market and/or real-time dispatch prices.

Existing Intertie Transaction Non-Delivery Charge

The existing intertie transaction non-delivery charge consists of a penalty of 50 percent of the 5-minute real-time dispatch price applied to the quantity of an undelivered import or export, with a $10/MWh minimum. However, it is ineffective because it includes a 10 percent monthly threshold, which is rarely exceeded.

The existing non-delivery charge totals each market participants' undelivered quantities over the month and compares them to the total amount of imports or exports the market participant had over the month. The non-delivery charge only applies if the undelivered quantity of imports or exports exceeds 10% of the total amount of the market participant's imports or exports.

This charge is not effective for two reasons. First, the 10 percent threshold is rarely exceeded. From July 2017 through June 2018, market participants only exceeded this threshold for imports in two months. The quantity of transactions the non-delivery charge applied to and the final charge amounts after applying the monthly threshold were negligible.

Second, the non-delivery charge is ineffective because applying the charge over a month masks stressed periods when intertie transaction non-delivery is most impactful to the ISO. For example, a market participant may fail to deliver import energy during a heat wave when pricing is high and supply is scarce. This will negatively impact the ISO, but if the market participant has not exceeded the 10 percent monthly threshold it will not be assessed the non-delivery charge.

Proposed enhancements to the intertie transaction non-delivery charge

Management proposes to enhance the intertie transaction non-delivery charge as follows:

- **Eliminate the 10 percent threshold**

  Management proposes to eliminate the non-delivery charge's threshold of 10 percent of a market participant's total monthly imports or exports for the charge to apply. The ISO originally established this threshold because the ISO was unable to determine if an intertie transaction was not delivered because another balancing authority area had curtailed transmission. The threshold is no longer needed because the ISO now receives curtailment information from other balancing authority areas.

- **Apply the non-delivery charge by market interval**

  The ISO calculates the existing non-delivery charge monthly, rather than for every market interval, as part of applying the 10 percent threshold. Not calculating the charge for every interval allows a market participant to deliver an intertie transaction during stressed system conditions with accompanying high prices without incurring a non-delivery charge as long as it does not exceed the 10 percent monthly threshold.

- **Enhance 15-minute market inputs**

  The 15-minute market currently assumes an intertie transaction will be delivered if a market participant provides an indication that it will deliver an intertie transaction through the ISO's dispatch system after the hour ahead scheduling process is completed. This is irrespective of whether the market participant has submitted an E-Tag.

  Management proposes to enhance the 15-minute market inputs to more accurately reflect intertie transactions that will be delivered. Management proposes to enhance these inputs so that the 15-minute market will only schedule hourly block intertie resources if the market participant has submitted an E-Tag prior to the market run with the transmission profile part completed. This will provide greater assurance that the transaction will be delivered.

  In addition, Management intends to modify the relevant Business Practice Manual and make the corresponding system changes so that only intertie transactions for which an E-Tag with the transmission profile part completed will count for the ISO balancing authority area as part of the energy imbalance market's resource sufficiency tests.

- **Enhance the non-delivery charge price and calculation and apply them to 15-minute dispatchable intertie bids**

  Management proposes to modify the non-delivery charge by basing it on 50 percent of the greater of the 15-minute market or 5-minute real-time dispatch price, rather than just basing it on the 5-minute real-time dispatch price as it is today. This ensures the charge provides a strong incentive to deliver even if the 5-minute real-time dispatch price is low. The $10/MWh minimum will remain to ensure there is still a significant charge when market prices are below this or negative.

  Management proposes the charge will include an additional 25 percent of the greater of the 15-minute market or 5-minute real-time dispatch price if the market participant does not provide an indication that it will not deliver an intertie transaction through the ISO's dispatch system after the hour ahead scheduling process is completed. This is to incent market participants to provide this notification so that ISO system operators have additional time to take actions to ensure reliability.

  Management proposes that the non-delivery charge will also apply undelivered 15-minute dispatchable intertie bids, rather than just hourly block intertie bids, as it does today. This is because undelivered 15-minute dispatchable intertie bids tie up transmission capacity reserved in the hour-ahead scheduling process the same as undelivered hourly block intertie bids.

Finally, Management proposes a change in which the non-delivery charge will apply to intertie transactions that are effectively real-time market exports, but the ISO dispatches by reducing imports originally scheduled in the day-ahead market.

- **Data analysis and process improvements**

  The ISO has committed to complete data analysis to better understand the impacts of load conformance adjustments and exceptional dispatches on both real-time pricing and intertie declines. The results of the data analysis will lead to process improvements that can be implemented in conjunction with the intertie deviation settlement proposal. By ensuring real-time intertie prices reflect system conditions, the ISO will ensure effectiveness of the intertie deviation settlement proposal. Likewise, implementation of the intertie deviation settlement proposal provides greater assurance that intertie resources will be delivered, which eliminates the need for out-of-market processes that may be negatively impacting real-time pricing.

POSITIONS OF THE PARTIES

Most stakeholders support this intertie deviation settlement proposal. They believe the proposed non-delivery charge is justified and will incent delivery of intertie energy, which will increase grid reliability. Additional benefits, as identified by stakeholders, include more accurate market inputs to the ISO real-time market, more accurate inputs to the EIM resource sufficiency evaluation, and a reduction of speculative bidding. Speculative bidding is bidding without a firm source (or export sink) lined-up, or choosing to sell bid-in energy elsewhere after an intertie transaction bid is submitted to the ISO.

Some stakeholders question the need for a non-delivery charge that is in addition to imbalance energy settlement.

One stakeholder maintains that imports are “surplus energy” and is not needed for reliability because the ISO has resource adequacy requirements. Management believes this view does not recognize that intertie transactions that economically clear the ISO market <u>are</u> needed for reliability. Resource adequacy requirements require bids from resource adequacy resources but they do not necessarily clear the market. Consequently, undelivered intertie transactions can displace resource adequacy capacity from being available in real-time (e.g., resource adequacy imports and uncommitted internal resource adequacy resources).

Another stakeholder maintains intertie transactions should be treated like internal generation that are just subject to imbalance energy settlement at the 5-minute real-time dispatch price for deviations from 15-minute schedules. Management believes the additional non-delivery charge is appropriate for intertie transactions because intertie schedules tie up intertie capacity that is reserved in the hour-ahead scheduling process. Additionally, as described above, intertie transactions are not always subject to real-time imbalance energy settlement, depending on the timing of when the real-time market learns the transaction will not be delivered.

The ISO's Market Surveillance Committee (MSC) supports the framework of the intertie deviation settlement proposal. However, they believe the ISO must also address market inputs that affect real-time market intertie prices at the same time it implements the proposed changes.

The MSC notes that in instances of stressed system conditions and high amounts of undelivered imports, the real-time market had high hour-ahead scheduling process prices with much lower 15-minute market and 5-minute real-time dispatch prices. They state this may provide incentives to not deliver imports as the prices used for financial settlement could be lower than the submitted import bid.

The MSC notes these price anomalies may be caused by ISO grid operator load forecast adjustments and intertie exceptional dispatches in anticipation of undelivered imports. They urge further analysis of this relationship and measures so that 15-minute market and 5-minute real-time prices better reflect stressed system conditions. As discussed above, Management intends to undertake this analysis and look for process improvements to address the identified issues that can be implemented in conjunction with the intertie deviation settlement.

Attachment A presents a summary of stakeholder comments and Management's responses.

The MSC opinion is attached as Attachment B.

CONCLUSION

Management requests the Board of Governors approve this proposal. The intertie deviation settlement proposal will incentivize delivery of scheduled intertie energy. The non-delivery charge coupled with the enhanced fifteen-minute market logic will increase grid reliability and improve accuracy of market inputs and real-time market pricing.