MRP Energy Detailed Design Engagement
Linked Wheel Transactions

Meeting Summary

Background:

The IESO hosted a technical session on the Linked Wheel Transactions as part of the Energy detailed design within the Market Renewal Program (MRP). The session was held on November 15, 2019 in downtown Toronto (IESO Offices) and via teleconference from 9 a.m. to 11 a.m.

The focus of the discussion was Linked Wheel Transactions, specifically the design elements related to scheduling methods, intertie pricing, and settlement. Required reading material on these design topics was shared two weeks in advance to support the discussion on November 15.

The purpose of the session was to understand stakeholder questions and perspectives based on the reading material provided in advance to inform the release of the draft detailed design section. The design section when fully released will be open to additional engagement, feedback and discussion with stakeholders.

Attendance:

The following organizations participated in the session:

Hydro Quebec	Northland Power
Bruce Power	Ministry of Energy, Northern Development and Mines
Ontario Energy Association	TransAlta
Evolugen	Manitoba Hydro
Ontario Power Generation	TC Energy

Discussion Topics:

The following themes emerged from stakeholder questions and comments during the session:

Participation and Scheduling

- Stakeholders expressed a preference for scheduling linked wheel transactions using e-tags with no pricing restrictions (as currently used in the Day-Ahead Commitment Process) rather than e-tags with pricing restrictions (as currently used in the pre-dispatch scheduling process).
    - o Participants commented that both methods work right now, but they would prefer to have flexibility when pricing transactions.
    - o The most important consideration under either option is to ensure that the import and export legs are scheduled in equal quantities.

- Participants questioned why methods that are used to schedule linked wheels in other jurisdictions were not considered as an option. For example, participants described how traders in MISO are able to enter a single value indicating how much they are willing to pay for a transaction. Participants suggested that the optimization engine vendor may already have an off-the-shelf solution for the designs used in other jurisdictions.
  - Stakeholders discussed the two scheduling methods that work in Ontario currently. For simplicity, the IESO decided to choose between those two options, as opposed to developing a new design or adapting one from another jurisdiction. Unless the IESO's design poses a significant implementation challenge or is inconsistent with the market renewal principles, the IESO is not planning to pursue other methods for scheduling linked wheels.

Intertie Pricing

- Stakeholders commented that it seems odd to have different intertie congestion pricing methodologies for the import and export legs of a linked wheel transaction, and expressed a preference to be able to target a price spread for the transaction instead of being subject to the prices at each intertie.
  - The decisions for intertie congestion pricing were made in consultation with stakeholders during high-level design. The IESO will consider if there are any unintended consequences in terms of efficiency by applying the same design used for imports and exports to linked wheel transactions.

Settlement

- A market participant expressed interest in seeing additional examples, such as how settlement would be impacted if the quantity for a linked wheel transaction changed between day-ahead and real-time.
  - Market participants can use the example included in Appendix A of the pre-reading materials as a guide for exploring additional two-settlement scenarios. The example in Appendix A assumes the quantity is 20MW in both day-ahead and real-time. If the scheduled quantity changed between day-ahead and real-time, the quantity used in the real-time balancing settlement would be higher or lower than the day-ahead quantity.

Next Steps:

The feedback and discussion with stakeholders at these sessions is being used to inform the detailed design sections which will be released and subject to stakeholder comment and discussion in the upcoming few months.

Feedback:

Written feedback that was received (with permission to make public by the submitter) has been appended to this meeting summary.

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Attention: Stakeholder engagement

**Subject: Comments of HQ Energy Marketing Inc. ("HQEM") on the treatment of congestion in a
Linked wheel transaction.**

Please find below HQEM's feedback, following November 15th technical session on the Linked Wheel
("wheel") Transactions.

First of all, HQEM commends the Independent Electricity System Operator ("IESO") for
providing stakeholders with opportunity to comment on the energy detailed design.

As previously indicated in past comments, HQEM still opposes the processing of the import decision
published in the high-level design last August. As the largest energy importer for Ontario, HQEM
considers that this treatment is particularly unfavorable, in comparison with the treatment proposed for
exports. In recent years, approximately 70% of the total imports made by the IESO has been supplied by
HQEM.

As mentioned at the last meeting, the new design will offer the participants the option to decide the
prices for their bids and their offers, in order to proceed with a wheel. This approach would offer traders
more options compare to the current market design. As of now, in order to perform a wheel, a 2000$ bid
and an offer of -50$ or -2000$ are required. By submitting an offer and a bid at the wheel's nodes, rather
then bidding on the spread between those same nodes, participants will be facing more complexity and
risks, as they perform their transactions.

Here is an example to explain HQEM's opinion. When it comes to a wheel transaction, a trader will
consider it as a fee, in order to sell the energy in the desired market. The trader will then decide the price
he is willing to pay to cross the Ontario market, and will make bids and offers accordingly. The trader
will evaluate his offer for his sale to exit the market based on the amount he will be willing to pay to
enter it. There is a link and a complementarity between the two legs of the wheel. With that in mind, and
with the propose settlement methods for the imports and exports legs of a wheel, here is the kind of
situation the traders would face with the proposed design: a trader is willing to pay $ 5 to cross the

Ontario market. In order to do so, here is an example of prices that he will enter in the system: sale (offer) $ 25/MWh, purchase (bid) $ 30/MWh. The trader will be willing to sell his energy at 25$/MWh to enter the market and then buy it back at a 30$/MWh to exit the market and sink into the desired one. When processing the transaction, the selling price will be treated as follow: the minimum between the pre-dispatch and the real time price. Let's say the pre-dispatch comes out at $ 25 and the real time drops to $ 20 at the import node. The concept of IOG is not applicable to wheel transactions. The trader will then sell his energy 5$/MWh cheaper then what he expected. If we consider that the export leg of the WT settles at 30$/MWh, the transaction would occur, but the price paid to cross the market would be 5$/MWh greater than what the participant wanted to pay.

By bidding the spread between the two nodes, the transaction wouldn't go through as the trader wouldn't be willing to pay more then 5$/MWh to cross the market. This would be the desired design; the dispatching and settlement methods would need to be set in order to achieve to this behavior.

HQEM is aware that this treatment will only apply to real-time transactions. HQEM would be in favor of a different treatment where there is settlement uniformity. The current proposal involves that, in theory, two transactions could occur at the same node, and have each one of them, a different treatment, depending if it's an import or an export.

Best regards,

Frédéric Bélanger
Manager, Regulatory Affairs, HQEM