

Memorandum

To: MRP Implementation Working Group

From: Candice Trickey

Date: June 29, 2023

Re: Market Renewal 'day-in-the-life' Overview Presentations

IESO is developing a series of overview presentations to walk participants through the lifecycle of different resource types in the new market.

Each presentation will include an overview of the new market processes from registration to settlements. They will include three to five scenarios to illustrate different scheduling and operational outcomes and the resulting settlements.

Purpose

The proposed presentations will serve as a high level summarization of all of the released market rule drafts, with an emphasis on how they fit together into a coherent market. The purpose for conducting these presentations, therefore, would be to:

- Provide a technical overview of market interactions and outcomes from registration to settlement by participant type to increase understanding of the market as a totality
- Satisfy stakeholder requests for an illustration of new market processes in a more holistic, end-to-end manner than afforded by segmented market rules releases
- Develop additional understanding of the changes MRP is implementing

Audience

The presentations will target participants that have been actively engaged with MRP but will be open to all stakeholders. Seven separate presentations are proposed covering the following participation types:

- Non-quick starts
- Pseudo units
- Hydro
- Storage
- Intertie traders (including transmission rights)
- Virtual traders
- Loads (non-dispatchable; price responsive; dispatchable)

Timing

IESO is considering offering these education sessions in the Q4 2023/Q1 2024 timeframe. This places them after the release of all of the draft market rules except the final alignment batch.

Feedback Requested

The IESO would like:

- Input on the appropriateness of the potential scenarios (see last section)
- Suggestions for alternative scenarios appropriate for the audience and in a presentation format that IESO should consider adding
- Feedback on the potential timing

High Level General Table of Contents

The following is the general table of contents for the presentations. It will vary by audience and subject matter (e.g., virtuals will have less discussion of pre-dispatch, interties will include a section on Transmission Rights)

- Introduction
- Market Registration
- Day-Ahead Market
 - High level discussion of DAM purpose and processes
 - Bidding and Offering
 - Daily dispatch data (if applicable)
 - Hourly dispatch data
 - Timelines
 - DAM calculation engine
 - Ex-ante MPM
 - Scheduling
 - Pricing
 - Reports
- Pre-dispatch
 - What is received from the DAM?
 - High level discussion of pre-dispatch purpose and processes
 - Unrestricted and mandatory windows
 - PD calculation engine
 - Ex-ante MPM
 - Scheduling
 - Pricing
 - Reports
- Real-time
 - What is received from pre-dispatch?
 - High level discussion of real-time purpose and processes
 - Real-time calculation engine
 - Scheduling
 - Pricing
 - Reports
- Ex-post mitigation
- Settlements (basic energy and OR market settlements)
 - Settlement mitigation
- Scenarios
 - 3 to 5 scenarios illustrating different operational and settlement aspects and outcomes

Potential Scenarios

A. NQS Scenarios

1. Scheduled for 4 hours in DAM; no change in PD; real-time dispatched for two additional hours; real-time prices similar/same as DAM prices for DAM scheduled hours, higher than DAM prices for two extended hours
2. Scheduled for three hours in DAM; PD schedules additional commitment; constrained on for final hour to respect MGBRT and MLP
3. Scheduled in DAM and PD for several hours; curtailed in real time for reliability
4. MP submitted offers above reference level in DAM; ex-ante mitigation

B. PSU Scenarios

1. PSU scheduled for energy in DAM for full offered period and MWs; no change in PD; delivers in real-time as per DAM schedule; DA and RT price higher
2. DAM commitment; PD adds second start up; PSU two hours late meeting MGBRT for second start; include synchronization processes for CT and ST
3. MP submitted offers above reference level in DAM; ex-ante mitigation
4. Offers energy and OR in DAM; no DAM commitment; PD schedules commitment; in RT is activated for OR

C. Hydro Scenarios

1. Single unit hydro facility. No:
 - Fuel limitations
 - Forbidden regions
 - Cascade water dependencies
 - Current regulatory restrictions/requirements
 - Minimum hourly output
 - Limitation on starts/dayOffers day-ahead; is scheduled in the DAM for all MWs offered for one hour; is scheduled for one additional hour in PD; delivers in RT as per DAM schedule and PD schedules; price in RT same as in the DAM
2. One upstream resource and one downstream linked resource; 3-hour time lag; upstream resource has a MHO; both scheduled in DAM for two hours, but in hours taking the time lag into consideration; in PD, in the second hour, the upstream resource becomes uneconomic for their minimum hourly output, so are scheduled to 0MW; both upstream and downstream resource removes offers for second hour due to lack of water; in RT, resources are dispatched in the first hour for the full DAM schedule; RT price in both hours below DAM price
3. Two resources sharing a forebay; MAX DEL limits scheduling in DAM; scheduled to 2 hours but would have been scheduled to three; energy split between the two resources based on registered split; in PD, no changes; in RT, run all of the water through the one resource using compliance aggregation;
4. Maximum Daily Energy limit and minimum hourly output and limitations on starts/day

D. Storage Scenarios

1. Self-scheduling resource enters schedule day-ahead; associated load inputs bids; does not change schedule in PD; injects as per schedule and consumes as per bids in RT; RT prices higher than in the DAM

2. Dispatchable resource offers and bids in DAM; is scheduled for injection for two hours at peak in the afternoon and for withdrawal for two hours later in the day; no changes in PD; in real-time injects and withdraws as per DAM schedules; prices a bit higher at peak and in the evening than in the DAM (but still within their bid)
3. Dispatchable resource offers and bids in DAM; is scheduled for injection for two hours at peak in the afternoon and for withdrawal for two hours later in the day; no changes in PD; in real-time injects as per DAM schedules; prices change so they are economic for an additional hour; prices later in the day are sufficiently high that they are not scheduled for one of their withdrawal hours later in the day
4. Dispatchable resource offers and bids in DAM; is scheduled for injection for two hours at peak in the afternoon and for withdrawal for two hours later in the day; no changes in PD; in real-time they inject as per their DAM schedule, but are curtailed due to reliability part way through their schedule; they adjust their bids to only withdraw for part of their DAM later
5. Dispatchable resource offers in DAM; Offer price is mitigated; Is scheduled for injection for two hours at peak in the afternoon; no changes in PD; in real-time injects and as per DAM schedules; prices a bit higher than in the DAM

E. Intertie Trader Scenarios

- a) Imports
 1. Quantity scheduled real-time equals DAM schedule; price real-time same as DAM price
 2. Import failure
 3. Scheduled day-ahead; changed offers 4 hours out from real-time – not evaluated until the two-hour out run; Cut for reliability in RT; DAM Balancing Credit
 4. Offered at a high price in the DAM on an uncompetitive interface; MP fails conduct and impact tests; settlement fee imposed
- b) Exports
 1. Quantity scheduled real-time less than DAM schedule; price real-time lower than DAM price
 2. Scheduled economically in DAM; scheduled in last PD uneconomically; RT-MWP
- c) Linked Wheel Through
 1. DAM schedule on export interface reduced to match import schedule; Quantity scheduled in the last PD on import interface increased so export leg increased as well; price in RT same as DAM on import interface, lower on export side

F. Load Scenarios

- a) NDL
 1. Negative LDFC
- b) PRL – Non HDR
 1. Quantity consumer real-time equals DAM schedule; price real-time same as DAM price
 2. PRL scheduled DA above its EOP day-ahead; DAM MWP
- c) PRL – HDR
 1. PRL and HDR scheduled day-ahead for two hours; HDR given activation notice day-ahead; no change in PD; quantity consumed in real-time is less than PRL $Q_{DA} + HDR$

- Q_{DA} because HDR was test activated for two hours; price real-time was higher than the DAM price
- d) Dispatchable Loads
1. Scheduled day ahead for full amount bid; no change in PD; in RT, has a process issue so shuts down part way through the hour; real-time price less than price day-ahead
 2. Bids for energy and offers OR day-ahead; OR offers mitigated; Quantity consumed in real-time and the quantity of OR scheduled both lower than scheduled day-ahead due to an ORA; energy price lower than day-ahead and OR price higher;

G. Virtual Trader Scenarios

1. Sold DA/bought RT; real-time price lower than day-ahead price
2. Sold DA/bought RT; real-time price the same as day-ahead price
3. Bought DA/sold RT; real-time price the same as day-ahead price
4. Bought DA/sold RT; real-time price lower than day-ahead price