

# Minutes of the IESO Technical Panel Meeting

Meeting date: April 9, 2024  
Meeting time: 9:00 a.m. – 10:02 a.m.  
Meeting location: In-person and Video Conference

Chair/Sponsor: Michael Lyle  
Scribe: Trisha Hickson, IESO

Please report any suggested comments/edits by email to  
[engagement@ieso.ca](mailto:engagement@ieso.ca).

Invitees	Representing	Attendance Status Attended, Regrets
Jason Chee-Aloy	Renewable Generators	Attended
Rob Coulbeck	Importers/Exporters	Attended
Dave Forsyth	Market Participant Consumers	Attended
Jennifer Jayapalan	Energy Storage	Attended
Indra Maharjan	Consumers	Attended
Forrest Pengra	Residential Consumers	Attended
Robert Reinmuller	Transmitters	Attended
Joe Saunders	Distributors	Attended
Vlad Urukov	Market Participant Generators	Attended
Michael Pohlod	Demand Response	Attended
Lukas Deeg	Generators	Attended
Matthew China	Energy Related Businesses and Service	Attended
David Short	IESO	Attended
Michael Lyle	Chair	Attended

## Secretariat

Invitees	Representing	Attendance Status Attended, Regrets
Trisha Hickson	IESO	Attended
<b>IESO Presenters</b>		
Stephen Nusbaum Dennis Chellakudam Josh Duru		

## Agenda Item 1: Introduction and Administration

Trisha Hickson, IESO, welcomed everyone joining the meeting.

The meeting agenda was approved on a motion by Rob Coulbeck.

The February 13, 2024, meeting minutes were approved on a motion by David Forsyth.

### Introductory Remarks from the Chair:

Michael Lyle, Chair provided an update on the status of new Technical Panel member appointments and welcomed Lukas Deeg and Matthew China to the panel. Mr. Lyle mentioned the ongoing efforts to fill a vacancy for the Market Participant Consumers representative and encouraged Technical Panel members to share information regarding this vacancy with their networks.

## Agenda Item 2: Engagement Update

Trisha Hickson, IESO provided an update on the prospective schedule which can be found on the Technical Panel webpage. Ms. Hickson identified upcoming sessions as part of the IESO April Engagement Days and encouraged Technical Panel Members to attend. Ms. Hickson provided an update regarding the IESO Chapter 3 Market Rule amendments, noting that stakeholder engagement is ongoing, which includes direct outreach with specific organizations, and education to the Technical Panel will commence once the engagement and outreach activities conclude.

Paula Lukan, IESO provided an update related to a Capacity Auction Market Rule amendment. Ms. Lukan noted a minor correction to a formula used to calculate the cleared ICAP. Ms. Lukan indicated this is the formula used to calculate a resource's cleared ICAP following the auction using the cleared UCAP amount from the auction from each resource. Ms. Lukan noted there is no change to the design, this is simply a transposition error that was made in the Market Rules, and the change is required to be made ahead of the upcoming December auction. This change was presented during the March 21 Capacity Auction Stakeholder Engagement session and there were no questions or concerns from stakeholders regarding this amendment. Ms. Lukan stated that the IESO recommended providing the proposed amendment and education deck to the Technical Panel as a package by May 1, and conducting an education and a vote to post in one session during the

May 14 Technical Panel meeting. The item would then be brought to the June 11 Technical Panel meeting for a vote to recommend.

Michael Pohlod asked for clarification regarding this amendment and if it was regarding the Performance Adjustment Factor (PAF) Market Manual amendment mentioned during the March 21 Capacity Auction Engagement Session.

- Adam Cumming, IESO replied that the amendment is not related and clarified that the amendment is specific to the cleared ICAP calculation. In 2023, during the implementation of the Stream 2 enhancements to add the PAF process into the Capacity Auction market rules, this calculation was missed, and the proposal is to simply add the calculation back in.

### Agenda Item 3: Market Renewal Program (MRP): Market and System Operations (MSO) Batch and Calculation Engines, and Final Alignment Update

Josh Duru, IESO, provided a summary on the engagement activities to date regarding the MRP MSO Batch and Calculation Engines Market Rules. Mr. Duru noted that the Calculation Engines appendices were initially published in February 2022, and during this initial engagement the IESO received and responded to 30 stakeholder comments. Upon completion of this initial engagement, the IESO presented a high-level overview of the Calculation Engines to the Technical Panel in July 2022.

The MSO Batch was initially published in July 2023, and during this initial engagement the IESO received and responded to 128 written comments. Most recently, the IESO presented to the Technical Panel in October 2023 and February 2024, an overview of the MSO content, along with stakeholder comments and a summary of key changes in the MSO Batch.

Stephen Nusbaum and Dennis Chellakudam, IESO provided a presentation to discuss the following:

- Further amendments to the market rules and manuals in advance of the Vote to Post for the Market & System Operations (MSO) and Calculation Engines batches
- Results from the Third-Party Dispatch Scheduling & Optimization (DSO) review conducted by PricewaterhouseCoopers (PwC)
- Finalized approach that will be taken for supporting Technical Panel's review of the Final Alignment (FA) batch

A copy of the presentation is available on the Technical Panel webpage.

Vlad Urukov, asked about the significance of the IESO not including the dynamically created Market Power Mitigation (MPM) parameters as part of the PwC DSO review.

- Mr. Chellakudam clarified that the IESO is extensively testing the MPM parameters as part of the IESO's comprehensive testing regime, including testing of the Market Power Information System that feeds into the DSO. Mr. Chellakudam clarified that the reason PwC is not testing the noted parameters is because the IESO does not calculate the MPM parameters within the

DSO, as there is a separate system that calculates those parameters and thresholds that are used as inputs by the DSO, and the DSO uses those inputs to calculate ex-ante mitigation results. The rationale to exclude inputs like dynamically created MPM parameters from the MRP DSO review is consistent with the required scope dictated by the Market Rule and the related previous DSO/DACE reviews that the IESO has undertaken.

Mr. Urukov, asked how the market impacts simulated through this testing will be shared with market participants (MPs).

- Mr. Nusbaum noted that this stage of testing was internally focused to ensure the tools are working as intended in advance of upcoming phases of external testing, and that MPs will be able to see operational outcomes as part of end-to-end testing. The full reports from PwC contain the scope, approach and summary of results of the external review that was conducted.

Mr. Urukov asked if the feedback from additional testing would be something the IESO is going to make available to market participants, or whether market participants need to request this information.

- Candice Trickey, IESO, noted the end-to-end testing will include MPM parameters and inputs will be part of testing. MPs will be able to see the inputs and outputs.

Mr. Urukov noted concerns around the short end-to-end testing window, adding that during the last Technical Panel meeting, the IESO noted that participants should supply the IESO with information regarding what information they would like to test. Mr. Urukov queried whether MPs are all aware that the IESO is waiting for MPs to be explicit in requests for testing versus the IESO confirming for participants what testing will include.

- Ms. Trickey, replied that the IESO will share what inputs end-to-end testing can and will include. However, there may be certain outcomes that the IESO needs to set-up to have the conditions occur, and this is where the IESO is asking for input on what types of scenarios MPs want to narrow in on. Ms. Trickey added that the IESO will assess if it is possible to create certain conditions to have a particular requested event occur. Ms. Trickey added, that this aside, MPM is part of the end-to-end testing and noted the feedback received to date through the MRP Implementation Working Group and the IESO engagement efforts, and the IESO has committed to continue to communicate with MPs as the external testing phases progress.

Lukas Deeg noted that several MPs may not understand the hand-off of data between different systems, and it is incredibly important for MPs to know what end-user testing looks like. There will be reliance on the IESO to ensure that systems and hand-offs work. Guidance is required from the IESO in terms of what is going to be needed for user tests and what MPs need to do to support this. Mr. Deeg also noted the importance of understanding the entire holistic process between the IESO and PWC testing, to bridge any gaps.

- Ms. Trickey, responded that the IESO will ensure clarity is provided to MPs around how the IESO intends to conduct end-to-end testing and what will be included. Ms. Trickey noted that dedicated sessions are and will continue to be available for each phase of testing, adding that

the IESO is currently working through connectivity testing and once this phase is complete the IESO will focus on market trials. Ms. Trickey noted that the IESO is extensively testing how the entire system will produce appropriate results.

- Mr. Nusbaum provided further information in relation to the PwC DSO review and why it is being treated differently, stating that the agreement with stakeholders when discussing the Calculation Engine Batch was to engage a third-party to support the review of the implementation of the many new and modified calculations and formulas being introduced as part of MRP. Mr. Nusbaum reconfirmed that the IESO is also conducting internal end-to-end and business process testing to ensure functionality from start to finish. Mr. Nusbaum added that in regard to ensuring MPs are aware of what scenarios they need to be thinking about so these can be tested during end-to-end testing, the IESO is part of that conversation, but that the testing the IESO is currently doing internally does not impact what MPs need to be doing as much of it is the IESO's internal process.

Rob Coulbeck asked about the dynamic values and parameters and what data will go into the test system. Mr. Coulbeck noted that data required for testing will extend beyond the trial period and asked how the data will be communicated to MPs so they are aware of the parameters they are working with to ensure that the testing will produce the expected result.

- Ms. Trickey clarified that the IESO expects to use the most recent data supplied by MPs as inputs into the test system. Ms. Trickey indicated that if market participants have provided reference levels and quantities established and submitted these to the IESO, then, up to a certain point, that is what will be included into the test system. If some information is missing, the IESO will include mock data. MPs will have full visibility into the data included into the testing system.

Mr. Coulbeck referenced that historic LMPs (Locational Marginal Prices) will drive some of the dynamic values, and asked what will be included in place of not having the historic LMPs in the testing framework

- Ms. Trickey noted that the IESO will provide visibility to MPs as to what data will be included.

Mr. Urukov asked if constraint area information data previously provided by the IESO will be updated.

- Mr. Nusbaum noted the original document was a preliminary view and will take this request back to the IESO to assess the whether this analysis could be updated.

Michael Pohlod asked if the commitment of HDR resources has been contemplated by the IESO and will a scenario regarding the impact on pricing be included as part of this testing round of end-to-end testing.

- Ms. Trickey clarified that pricing outcomes in the test will not necessarily be an indication of what pricing will be in the real market. Ms. Trickey added, an MP will be able to see the functionality based on the conditions and inputs and parameters into the system, and how the

calculations work, what happens when you input the information, but will not produce test results that can indicate what prices might look like in the new market.

Mr. Pohlod, added, when HDR resources are dispatched at say \$200, it causes a net reduction in load on the system, which can cause a decrease in price to below the trigger price for that HDR resource. Has that been contemplated in the current design and is there a path to ensure that the trigger price range to the resource at the very least becoming the floor of the market intervals in which those resources are being dispatched. Many markets use scarcity pricing or adders of some kind.

- Ms. Trickey indicated that she would connect with Mr. Pohlod offline to discuss and provide further information on this testing request.

Robert Reinmuller, asked if the new engine considers the most efficient dispatch of resources to reduce losses.

- Dennis Chellakudam, confirmed, resource loss cost is part of the calculation.

Mr. Urukov asked if ex-post mitigation will be included in testing.

- Ms. Trickey noted this can be added to the list of scenarios to be considered.

Jennifer Jayapalan asked if the impact of energy storage not offering operating reserve in the DAM has been contemplated by the IESO and if the impact of this on the market could be included as part of the internal IESO testing.

- Mr. Nusbaum noted that the IESO has not specifically tested the scenario of energy storage not participating. Mr. Nusbaum added that if it is of interest to be included as part of the end-to-end testing the IESO can assess if it is possible.

Ms. Jayapalan noted that there is concern from the industry in that at some point there will be an increase of energy storage participation and to maintain flexibility in real-time you cannot offer operating reserve in DAM so you have a large group of resources that could flood the market.

- Jessica Savage noted the valuable input from the Technical Panel on the inputs being brought forward today. Ms. Savage added that as part of the requests for testing scenarios it would be helpful for the Technical Panel and others to articulate the objectives of each test request to help the IESO prioritize and ensure a rational approach overall to testing.

On slide 13 – MRP DSO Review: Exception 1, Mr. Urukov asked for clarification on what it meant that start-up costs were not included in the cost calculation for the mitigated schedules (steps 5 and 6), and that speed-no-load costs were incorrectly included in the cost calculation for the DAM mitigated scheduling (steps 8 and 9)

- Mr. Chellakudam noted that in the final pricing and scheduling steps of the DAM calculation engine speed-no-load costs were being incorrectly included. Also, start-up costs were

incorrectly not included in the mitigated schedule and pricing steps since commitment decisions can still be made in these steps. Mr. Chellakudam added that commitment decisions can still be made in these steps to account for mitigation results from Step 3 and Step 4 in the engine.

Mr. Urukov asked what is the final state?

- Mr. Chellakudam noted that start-up costs and speed no load costs will be included in Step 5 and Step 6 in the DAM calculation engine but would not be included in Step 8 and Step 9 because all commitment decisions have been made at that point.

Mr. Urukov, noted that during the last Technical Panel meeting discussion around the EOP and specifically wanting to ensure MPs do not lose the ability to estimate the day after, as this is important for accuracy of preliminary statements, for example. The IESO responded as part of the stakeholder responses, that they would post values determined by the IESO and communicated to market participants in market results. Mr. Urukov requested confirmation that IESO determined values would be provided the day after, with the exception of cascade hydro.

- Mr. Nusbaum noted that the required data for a market participant to perform shadow EOP calculations will be available, with the exception of one parameter that won't be available to market participants, but for which participants can deduce.

Adam Tschirhart, IESO added that inputs within the EOP calculation fall into three categories. The first being inputs that the MP provided, the second being inputs available to MPs with their market results as part of private reports they receive from the DAM and RT markets, and the third being the one input for cascade resources. MPs will be able deduce that input when they receive their EOP results.

Mr. Urukov asked when will MPs receive EOP results?

- Mr. Tschirhart noted they will be sent with the settlement statements

Mr. Urukov, noted this as a blind spot, adding that as an example, an owner of a hydro facility will not be able to have assurance the day after how to get paid.

- Mr. Tschirhart indicated that this applied for that one specific EOP, the DAM lost cost EOP. An MP can perform shadow calculations for the remainder of EOPs at the time they receive their market results.
- Mr. Nusbaum asked that if there was a specific concern with having one of three components of the EOP potentially not available until the settlement statements are available six days after the trade date, that TP members submit such concern in writing to the IESO.

Jason Chee-Alloy, asked if the parameters for hydro-electric generators were tested, and if so, was anything uncovered?

- Mr. Chellakudam indicated that, yes, all the new parameters and modelling for hydro-electric resources were tested and no exceptions were observed.

On a motion by Robert Reinmuller, the Technical Panel voted to post for broader stakeholder engagement the MRP MSO Batch.

## Other Business

No other business was brought forward.

## Adjournment

The meeting adjourned at 10:02 a.m. The next meeting will be held on May 14, 2024.

### Action Item Summary

Date	Action	Status	Comments
March 23, 2021	In relation to MR-0448-R00 market rule amendments, the IESO will periodically review the availability of Error and Omissions insurance for negligence.	Open	