

# Minutes of the IESO Technical Panel Meeting

Meeting date: 15/February/2022  
Meeting time: 09:00 a.m.  
Meeting location: Video conference

Chair/Sponsor: Michael Lyle  
Scribe: Mitchell Beer, Bill Eggertson / Smarter Shift Inc.  
Please report any suggested comments/edits by email to  
[engagement@ieso.ca](mailto:engagement@ieso.ca).

<b>Invitees</b>	<b>Representing</b>	<b>Attendance Status</b> <b>Attended, Regrets, Teleconference</b>
David Brown	Ontario Energy Board (Observer)	Attended
Jason Chee-Aloy	Renewable Generators	Attended
Ron Collins	Energy Related Businesses and Services	Attended
Rob Coulbeck	Importers/Exporters	Attended
Emma Coyle	Market Participant Generators	Regrets
Dave Forsyth	Market Participant Consumers	Attended
Sarah Griffiths	Demand Response	Attended
Jennifer Jayapalan	Energy Storage	Attended
Indra Maharjan	Market Participant Consumers	Attended
Nektarios Papanicolaou	Market Participant Consumers	Attended

<b>Invitees</b>	<b>Representing</b>	<b>Attendance Status Attended, Regrets, Teleconference</b>
Forrest Pengra	Residential Consumers	Attended
Robert Reinmuller	Transmitters	Attended
Joe Saunders	Distributors	Attended
Vlad Urukov	Market Participant Generators	Attended
David Short	IESO	Attended
Michael Lyle	Chair	Attended
<b>Secretariat</b>		
Agatha Pyrka	IESO	
<b>IESO Presenters</b>		
Muhammad Bilal		
Phil Bosco		
Tim Cary		
Jo Chung		
Cary Ferguson		
James Hunter		
Darren Matsugu		
Jessica Tang		
Mohamed Ahmed		

## Agenda Item 1: Introduction and Administration

Angela Pyrka, IESO, welcomed participants and reminded them of standard logistics for an online meeting.

### Chair's Remarks:

The Chair pointed to the busy agenda for the day and encouraged participants to use their time efficiently as they moved through all the material.

The agenda was approved on a motion by Sarah Griffiths.

The minutes of the last meeting were approved on a motion by Indra Maharjan.

## Agenda Item 2: Engagement Update

Ms. Pyrka drew participants' attention to the Prospective Technical Panel Schedule and recapped the upcoming items on the calendar. She noted that the short engagement update for February would be posted in the near future, announced in the IESO Bulletin, and emailed to Technical Panel members.

## Agenda Item 3: Market Renewal Project

The Chair thanked Panel members who had contributed to developing the scenario's that members of the Market Renewal team were about to present.

Jessica Tang, IESO, introduced the team of staff who were on hand to discuss the scenarios. She said the IESO had received four written submissions in response to the initial vote to post for the Market Power Mitigation batch. Those submissions and the IESO's responses will be posted in advance of the Technical Panel's vote to provisionally recommend, but Ms. Tang highlighted the submission from the Association of Power Producers of Ontario (APPrO). Ms. Tang summarized APPrO's three areas of concern: workload associated with determination of reference levels and reference quantities, disputes on reference levels and reference quantities, and a request to reopen stakeholder feedback for an additional two weeks after the February Technical Panel meeting. She said Market Manual 14.2 already allows for an agile approach for the supporting documentation for the determination of reference levels and reference quantities, and the IESO will engage with participants outside of the Technical Panel process to understand specific concerns on and will update the market manual as required. On the issue of disputes, she said James Hunter, IESO, would provide further detail in the course of the meeting. On timing, the IESO agreed that stakeholders would benefit from the day's discussion and would therefore be recommending to the Technical Panel to repost the rules for another two weeks ending March 1.

Mr. Hunter said the upcoming presentation by Tim Cary, IESO, would cover procedural aspects of the proposed independent review process (IRP), but offered a higher-level overview of the nature and objectives of the review. He said the most important point was that the IRP is not a dispute resolution process, alternative or otherwise. In dispute resolution, he explained, parties advocate competing positions; a trial or arbitration calls for formal submissions leading into a determination of who's right and wrong; and even a mediation is focused on settling a dispute. In contrast, he said, there are no positions taken in the proposed independent review process. It involves retaining a reviewer and providing them with a set of questions, a workbook, and supporting documentation, so that the reviewer can reach an independent determination with respect to the relevant values based on the framework and available inputs. The IESO would not be provided an opportunity to present or defend its view of appropriate reference levels or reference quantities, nor would market participants be given an opportunity to argue for alternative values.

The independent review process might result in reference levels or quantities that are higher or lower than the values that either the IESO or the market participant would have assigned, Mr. Hunter said, but the IESO is agreeing, by way of the proposed amendment to replace its own determination with that of the independent reviewer's, subject to the limited exception set out in the rules. There would be no determination, as part of the Independent Review Process, with respect to whether either the IESO or the market participant were right or wrong. In fact, the process is consistent with the possibility that two different experts might reach different conclusions within the same framework without anyone misapplying the rules.

The dispute resolution process is focused on disagreements and is designed to determine whether a Market Rule had been properly applied or complied with, Mr. Hunter continued. It is important to note that if the dispute resolution process were triggered in connection with a question about reference levels or quantities, it might not result in a decision with respect to an alternative or optimal value, just a determination with respect to what the rules require. Under the independent review process, in contrast, participants would not be required to identify any specific rule that might have been misapplied, but the process would result in a new determination with respect to values. It is also important to note that the independent review process does not limit access to dispute resolution.

Vlad Urukov asked whether the IESO would set the question the independent reviewer was asked to address, and whether market participants would have the opportunity to review and comment on the framing. Mr. Hunter said market participants would be involved in defining the scope of the process and framing the questions the reviewer would answer but would have no opportunity to advocate for a solution.

Jason Chee-Aloy said it was unfortunate the details of the independent review process hadn't been communicated months ago, but thanked Mr. Hunter for doing so now. He connected Mr. Hunter's remarks back to past discussions on overall governance, in which Market Power Mitigation was always an example. While the additional explanation of the independent review process might make it more challenging, Mr. Chee-Aloy added, market participants will be able to work through the process.

Mr. Cary reminded Panel members that the Market Power Mitigation framework was intended to trigger interventions only when competition is restricted to prevent efficient market outcomes, an occurrence that is typically infrequent. He said the examples he had prepared for the day's meeting covered energy and operating reserves and demonstrated methodologies for testing, but the logic of testing on commitment costs will be made clearer once the Calculation Engines are available for review, while settlement mitigation will be covered under the Settlement batch.

Mr. Cary walked through each step in a detailed reference level process diagram, then moved to examples of different scenarios that might raise concerns about Market Power Mitigation.

Mr. Urukov asked Mr. Cary whether preliminary views would be included in the material supplied to the consultant under Section 22.8.4. Mr. Cary said they would not.

Mr. Urukov asked whether the absence of a time frame associated with the certain steps in the process was meant to suggest an indefinite period of time allotted for these steps, in contrast to specific business day references in other parts of the Market Rules. Mr. Cary said certain steps in the process were not meant to be time-bound, since timing could vary significantly across different facilities and requests. The intent is to be flexible to allow a consultant the time it needs for a particular review.

In reply to a follow-up question from Mr. Chee-Aloy, Mr. Hunter said that not all of the steps in the diagram would be explicitly time-bound, but the RFP would be. Mr. Chee-Aloy suggested documenting the timing in the Market Manuals, to provide guidance and flexibility without putting participants at risk of breaching the Market Rules.

Mr. Cary noted that Section 22.8.2 set a deadline of five business days for the IESO to issue an RFP to launch a review, reflecting participants' strong view that they would want the process resolved in a timely fashion. Mr. Chee-Aloy agreed that a market participant subject to review would want the process initiated quickly, but not if that decreased the probability of attracting a sufficient number of bids from prospective consultants—since the worst case scenario for the market participant would be to receive no outcome from the RFP.

Mr. Chee-Aloy recalled past Technical Panel discussion of the limited universe of consultants available for independent reviews and the risk of bias on the part of the available consultants. He asked whether the IESO would have final say on whether to accept or reject a recommendation. Mr. Cary said the IESO could reject an IRP finding based on the limited conditions established in Section 22.8.6, in the event that a consultant relied on a factual error to make a finding, failed to address an issue, adopted a finding that fell outside the scope of the review, adopted a finding that would require the IESO to register a reference level or quantity inconsistent with the Market Rules, or failed to provide a reason for a finding.

Mr. Chee-Aloy asked what recourse a market participant would have if it disagreed with the IESO's action—for example, if the market participant disagreed with a reference level but nothing changed because the IESO rejected a consultant's recommendation. Mr. Cary replied that if the IESO rejected a finding, it would repeat the procurement and cover the costs. But the market participant would have no ability to opt in or out of the outcome if it triggered an IRP and didn't like the number that resulted from the process.

Mr. Chee-Aloy asked what recourse the market participant would have if the IESO engaged multiple consultants to review a reference level, rejected their findings for whatever reason, and still ended up applying the original reference level, with which the market participant didn't agree. Mr. Cary reiterated Mr. Hunter's earlier point that there would be no restriction on using the dispute resolution process within the applicable time bounds if the market participant believes that a market rule has been misapplied.

Mr. Urukov asked what recourse a market participant would have if it was satisfied with the outcome of an IRP but the IESO rejected the finding. Mr. Cary said the IESO would communicate its rationale under Section 22.8.6.1, but Mr. Urukov asked how transparently the IESO's assessment would be conducted, and whether the market participant would be able to view the process and provide its own views and opinions. Mr. Hunter reiterated that market participants always have the option of triggering the dispute resolution process if they feel a market rule has been misapplied, and that provision would include any concern that a part of the independent review process had been misapplied.

Mr. Urukov asked whether the IESO's rationale for rejecting a consultant's finding would be visible to the market participant, and Mr. Cary said the IESO would be transparent about the process and rationale. He said he would take the question back to ensure that intent was reflected in the document.

Mr. Chee-Aloy said it would be important to clearly state in the rules for the IRP whether or not the dispute resolution rules apply to the IRP. Mr. Cary said that this request was consistent with past stakeholder comments. He deferred to counsel on the following point, but said he'd understood that the connection was not made explicit out of a concern about creating an adverse inference if the same language, cross-referencing the market rules regarding dispute resolution, didn't appear elsewhere. But Mr. Cary assured Technical Panel that the commitment to transparency would apply generally in a reference level consultation.

Mr. Chee-Aloy asked whether a similar process existed elsewhere in the Market Power Mitigation batch, or in other ISOs. Mr. Cary said he is not aware of an IRP process in other jurisdictions.

Mr. Urukov noted a notation that an uncompetitive intertie zone could be designated if the IESO reasonably determined that competition is expected to be restricted. He asked how that provision would be applied. Mr. Cary promised to return to the question later in the discussion.

Mr. Cary described an example of intertie withholding, including the determination of an intertie reference level, the relevant dispatch data, the conduct test, impact test and the outcome of the assessment of mitigation. The application of mitigation, involving consultation with the market participant before any settlement charge is applied, was discussed.

Mr. Urukov asked whether a dispatch day would be assessed over a 24-hour period. Mr. Cary said the *ex-post* assessment would cover a 24-hour period and factor in any crossovers between two dispatch days. Mr. Urukov asked whether that review would combine two separate but coincident events that took place at different hours or treat them as independent events. Mr. Cary said that at a broad level, they would be modelled separately to the extent that they occurred independently. He undertook to respond in writing to the more detailed questions OPG would submit in writing.

Mr. Cary then provided background on the day ahead calculation engine and where mitigation is applied and the mechanics of the conduct test, stating that the conduct test involved assessing the last portion of each tranche of an offer curve to the relevant part of the reference level curve. If any tranche of the offer curve is too high above the reference level curve, the conduct test is failed and the IESO will substitute the reference level curve for the offer curve to carry out the impact test.

Dr. Mohamed Ahmed, IESO, explained the rationale for the methodology used to carry out the conduct test and placed them in context of standard practice in other ISOs. He listed several advantages to the IESO's approach. Mr. Urukov noted that the example on Slide 18 of the presentation involved adjusting two tranches that had not in themselves failed the reference level test. Mr. Cary said the IESO would not be adjusting the offer but would assess whether to accept it or substitute the reference level in place of the offer.

Mr. Urukov asked how the IESO would represent the participant's price-quantity. Mr. Cary said the assessment would look at the difference between the last offer price for the last 0.1 megawatt in each offer tranche and the relevant tranche of the reference level curve and use the reference level curve in place of the offer curve if the difference between the two at any step was too large. He explained that splicing segments of the offer curve together would put the IESO in the position of violating the Market Rules, and could create datasets with more than 19 offer tranches, which would not be feasible within the available technology solution.

Mr. Urukov asked why the IESO could not accept the market participant's offer in the first two intervals and apply the reference level to the third. Mr. Cary said that response would work in the specific example on the presentation slide, but not if the offer curve and reference level curve were different than in the example. He said there were many situations in which replacing a portion of an offer curve would result in a new offer curve that did not monotonically increase or had more than 19 tranches, making it impractical to use the approach of partial replacement.

Dr. Ahmed pointed out the complexities and transparency issues that could arise if the IESO attempted a partial replacement. Mr. Urukov agreed, but said the question was fundamentally important to establishing participant dispatch. He encouraged the IESO to take the time to sort through the various scenarios and possible permutations. Mr. Cary asked whether Mr. Urukov was seeking more illustrative materials, and Mr. Urukov said he would like to see precise numbers to show how difference prices would change against specific reference levels. He said he'd previously understood that the IESO would only mitigate a subset of the prices in an offer, and that mitigation is only appropriate at the point where that offer raises market power concerns.

Mr. Cary said the IESO had used consistent language to describe the process of assessing mitigation with the calculation engines as being an assessment of a binary question on whether to use the reference level in place of the submitted offer. He said he would be happy to answer specific written questions to further illustrate the concept but cautioned that the system as proposed was constrained by the hard limits of the software solution and consistent with best practices in other jurisdictions.

Mr. Chee-Aloy thanked the IESO for providing detailed examples to help the Technical Panel weigh the trade-offs and decisions involved. He said it was clear that the reference level would apply if a market participant violated a conduct test, and while the market tools might be available to accept some parts of an offer and reject others, he said the discussion was providing essential insights on the economics of locational marginal pricing (LMP).

Mr. Urukov said market participants need clarity of how these scenarios would impact the industry and asked for more permutations and illustrative material with precise numbers to show reference levels and how prices will change, as well as clarification of some terms used in the charts. Mr. Cary replied that the content of the slides was consistent with previous stakeholder consultations on reference level and pricing, and offered to respond in writing to specific questions. He added that there are hard limitations to feasible solutions but that the approach is consistent with best practices in other jurisdictions.

Mr. Chee-Aloy said the discussion illustrated why industry wants more examples, adding that his intent was not to dispute the process. He said assigning the reference level to producers who fail the impact test could change the economics of the LMP, pointing to the need to understand the broader issues around setting the reference level and independent review. He asked for additional examples to accompany the release of the calculation engines batch to help stakeholders understand the process. Mr. Cary said further information was available in the numerical examples provided.

Jessica Savage, IESO, committed to providing the Technical Panel with the rationale for the offer replacement design in advance of the next Technical Panel meeting.

Following a short break, Mr. Cary resumed his presentation with comments on the topic, requested by the Panel, on joint optimization and the relevant implications of mitigation on joint optimization. Mr. Cary stated that simulation to determine actual outcomes is not possible and described the conceptual price of energy and price of operating reserve. In addition, Mr. Cary observed that

mitigation will reduce the cost of supply of these products from a resource that is mitigated which could make the relevant product relatively more attractive to the calculation engine. Whether a resource is scheduled to supply energy or operating reserve is an output of the calculation engine, however market participants can make either product more likely to be selected by submitting extremely low offer prices, noting that mitigation will not replace low-priced offers with higher-priced reference levels.

Mr. Urukov asked whether it was possible that a market participant offering in the energy and operating reserve markets simultaneously, could be mitigated in one market, which could then feed into the other market and lead to over-mitigation. Mr. Cary disagreed with characterizing the outcome of the assessment of mitigation as "over-mitigation" and then explained the process the IESO would pursue after a market participant failed the conduct test and impact test. Mr. Cary said the IESO would assess mitigation in both the energy and operating reserve markets simultaneously.

Jennifer Jayapalan asked what would happen if a market participant offer had one low-priced tranche below the reference level and one tranche that failed the conduct test. Mr. Cary said the IESO would not replace low-priced offer tranches that were below the relevant reference level but would adjust the reference level via pre-processing to avoid mitigating a lower offer up to a higher reference level.

Mr. Cary presented a hypothetical example involving multiple facilities within a single narrow constrained area. A thermal facility and hydro facility that failed the conduct test and impact tests but a wind facility that passed those tests. When presenting, Mr. Cary clarified that narrow constrained areas are assessed for the impact test on the basis of the area, not solely on the basis of the LMPs at each resource. An NCA would fail the impact test if any of the LMPs in the narrow constrained area was significantly higher in the as-offered run than it was in the reference level run. Mr. Urukov asked if the LMP could fail for the thermal facility but not the hydro site. Mr. Cary said that would depend on the system configuration at the time. It was expected that in most cases, LMPs in narrow constrained areas will move together however there could be particular configurations and intra-constrained area congestion that could result in LMPs within a narrow constrained area being different at different resources.

Mr. Cary's next example considered a hydro facility being assessed for physical withholding. He noted that the IESO would use two simulated LMPs to carry out the impact test rather than comparing the actual market price to a simulated one as this approach will isolate the effect of the change in the offer quantity on LMPs and prevent any differences between the production environment and the simulation tool environment from affecting the outcome of the assessment of mitigation. In order to simulate the reference quantity LMP, the IESO will combine the submitted offer with the reference level curve and the reference quantity value. If the market participant did not submit an offer for that resource, the IESO will use the reference level curve and the reference quantity value to determine the offer to use. The combination of these inputs may be complicated in the scenario when the resource offered some MWs.

Mr. Cary described the outcome of the assessment of physical withholding which is a potential settlement charge. The formula for the calculation of this settlement charge was described, explaining the rationale for the 1.5 multiplier that is unique to the assessment of physical withholding due to the potential reliability impact of this type of behaviour. Mr. Cary noted that the intent of the settlement charge was not to resettle the market and nullify the impact of the withholding, but rather to provide an incentive to avoid the behaviour.



Mr. Urukov asked for clarification on the settlement charge that would be imposed, and Mr. Cary showed the formula for calculation, related to physical withholding. Potential settlement charges would be communicated in a first notice, and the market participant would then have up to 45 days to provide relevant information and request an alternate reference value. Only if, after reviewing any such requests, the IESO finds that the conduct test and the impact test is still failed would a settlement charge result.

Ms. Jayapalan asked how many times the interval level would be applied. Mr. Cary said the IESO would run the simulation over a 24-hour period and carry out the relevant analyses for the entire 24-hour period. Ms. Jayapalan asked whether storage would be assessed based on a single hour or on a set of more than one hours in a row, noting that capacity contracts typically obligated storage resources to offer their contracted capacity for a multiple hour period. Mr. Cary said the assessment would be made on the basis of a single hour. He noted that market power mitigation design does not account for any contracts by intent, but rather views the market in isolation from any effects of contracts or regulation or other non-market factors. He noted that even if storage resources were contracted to a multiple hour series, that they were also able to offer their capacity outside this period to manage their risk of being assessed for physical withholding. Market participants would be able to choose the approach that is best for them and calibrate their risk accordingly. He said the goal of the approach for storage was to provide flexibility for participants, while protecting the market against occasions where participants' market power would enable them to drive market prices up significantly.

Mr. Urukov asked for clarification on the rationale for using the actual LMP to determine the settlement charge for an assessment of physical withholding. Mr. Cary said the IESO wants to provide an incentive that was consistent with actual market outcomes, so that if the market participants behaviour resulted in high prices, the settlement charge would be higher than would otherwise be the case.

The next scenario was of multiple resources within an NCA, where behaviour was assessed in aggregate for common members of one market control entity for physical withholding. The example showed a thermal, hydro, and solar resource with a common market control entity for physical withholding being tested for physical withholding, including the input data, conduct test thresholds and impact test thresholds and the offers from each resource. It also showed the reference quantities for each resource and the LMP at each resource as well as the reference points from participants and the LMP from each resource. Mr. Urukov asked whether a resource could ever be charged more than it was paid for a particular dispatch hour. Mr. Cary confirmed that the amount a resource was paid was not considered in the assessment. Indeed, in the purest form of physical withholding, a resource would not submit any offers, not receive a schedule and not be paid anything. Addressing this type of behaviour, where the resource did not offer its available supply, was behaviour that physical withholding assessments are intended to target.

Mr. Urukov agreed that it was appropriate that the assessment address inappropriate behaviour. But he expressed concern the assessment might also catch instances when there was no deliberate intention to withhold and said there should be appropriate means to protect against that outcome. Mr. Cary said the issue had been raised a number of times during the detailed design phase and that the process to assess physical withholding did not include any assessment of intent by design. The objective would be to determine what supply was available and the impact of that supply being withheld from the market. The focus of the assessment of physical withholding is on actual market outcomes. In contrast, any assessment of intent would move the matter into the type of consideration that is used for assessing compliance issues and sanctions. If the IESO requested

information related to an assessment of physical withholding, the IESO would not be looking for an explanation or rationale, but simply for the market participant to provide information that was related to the available supply that the resource had on that particular dispatch day to ensure an accurate estimate of the available supply.

Ron Collins said he understood the rationale in the example, but asked what the IESO is trying to avoid by using the market control entity for physical withholding in assessments of physical withholding. Mr. Cary said the IESO's intent in using the market control entity for physical withholding to assess physical withholding would be to avoid the ability of a corporate entity to hold back a small number of megawatts across a large number of resources, to drive a significant price impact while avoiding the tests for physical withholding based on the resource level.

Mr. Collins expressed concern about the large difference between the factors of one and three in the persistence multiplier. Mr. Cary said the factor in a real case would be based on the number of finalized second notices issued in the previous 180 days, after a participant has had the benefit of consultation and the opportunity to supply new information before any of the second notices was issued. Mr. Collins said that assessing physical withholding amounted to questioning why a participant failed to perform as expected, and asked how they would validate cases related to equipment failure or other technical issues. Mr. Cary said issues of that nature would be documented in outage slips, ensuring that the IESO did not waste time pursuing legitimate issues. Mr. Short also responded to this question, noting that having market participants communicate the types of equipment limitations that Mr. Collins was describing by providing outage or de-rate slips through the outage management system was a participant obligation.

Mr. Collins asked how the assessment of physical withholding would distinguish between gaming the system and one-off incidents, since there are many factors that could be at play, such as temperature inversions that don't happen all the time but are difficult to prove. Mr. Cary said that concern underscored the important issue of giving market participants 45 calendar days to provide supplementary information, adding that that should be enough time to provide full documentation on any operational issues the IESO raises. Mr. Collins expressed concern that market participants and the IESO might have different interpretations in such a scenario, which could create the risk or perception of an arbitrary decision.

Mr. Urukov asked why the process for requesting an alternate reference quantity value did not include an option for market participants to use the independent review process. Mr. Cary said Market Manual 14.2 outlines the relevant parameters and inputs to determine reference quantities to determine the available supply for a resource. The IESO will consider the materials submitted to support a request for an alternate reference quantity value and if market participants feel like the IESO didn't apply the rules correctly with respect to the request for an alternate reference quantity value, the dispute resolution process is available to them. Using an independent reviewer to assess the process of physical withholding has not been explicitly considered to date, he added, but there would be other implications of that discussion, including the considerations around the persistence multiplier. If market participants could invoke an independent reviewer, that would add time and complexity to the process to assess physical withholding, which would likely mean that there would be a need to re-examine the persistence multiplier and associated time periods.

James Hunter, IESO, explained that the intention of the independent review process was not to create an alternate dispute resolution process for all market power related issues. As part of market design, the IESO committed to creating an independent review process for IESO established reference levels and reference quantities. This commitment was intended to respond to a concern

expressed by market participants that the only recourse they would have to challenge IESO determinations with respect to reference levels and reference quantities would otherwise be the Dispute Resolution Process, which process would be unnecessarily complicated and time-consuming for all parties.

Mr. Chee-Aloy said stakeholders have been asking for a more robust governance framework and the ability to exercise their recourse since the beginning of market renewal. The IESO responded with an independent review process, but its scope was narrowed, he said, leaving outstanding questions regarding governance. With market participants still disputing similar decisions in the United States, Mr. Chee-Aloy called for further discussion before final decisions are made, adding that these issues will continue to come up and will not go away.

Mr. Cary showed a slide with the outcome of a mitigation being a potential settlement charge, and reiterated the span of 45 days to submit more information before any charge is finalized.

His last slides showed an example of assessment of physical withholding for operating reserve in a local reserve area. These are areas in the grid where the IESO sets minimum or maximum limits for Operating Reserve in a local pocket. Conditions for assessing physical withholding for operating reserve in a local area are met when there is a minimum constraint of a value greater than 0 for a local reserve area, he explained, since that condition would severely restrict competition in the local reserve area, and require the IESO to schedule supply of operating reserve from a limited set of resources. For this condition, he said the IESO had set more restrictive conduct thresholds and impact thresholds due to the fact that competition was more restricted, consistent with the guidelines for market power mitigation thresholds established during high level design in consultation with market participants.

The example in Mr. Cary's slide involved the assessment of a combination of thermal, hydroelectric, and dispatchable load resources, and Mr. Chee-Aloy said the available supply for hydro resources might be complicated between the energy and operating reserve markets, depending on water conditions and supply-demand balance. He said he hopes the discussions back and forth in this scenario would be sufficiently flexible and sensitive and acknowledge the role that different resources can play depending on system conditions. In the United States market, which has less access to hydro resources, he said load from coal and gas facilities may be easier to anticipate. Mr. Cary said the IESO had modified its reference quantities for hydro resources in direct response to stakeholder feedback.

Mr. Urukov said the issue would play out mostly at the extremes, with high prices driving large settlement charges, adding that there will be specific situations in the market where it may be completely reasonable that the megawatts cannot be offered. Mr. Cary clarified that, in these cases where supply that was available but was not provided drives a large impact to prices, it is entirely appropriate for the quantum of charges to increase with those higher prices, as consumers will feel the impacts of them. While settlement charges may be high in some cases, that could be a reasonable reflection of the market impact of the decision to hold available supply out of the market. The assessment of physical withholding results in large settlement charges when there are high prices in the market. It is reasonable to presume that suppliers have incentives to bring their available supply to market to target those types of high-priced opportunities.

In line with the Technical Panel's previous deliberations, Mr. Cary said the IESO was recommending a vote to post the market power mitigation batch for another round of stakeholder comment on the draft Market Rules concluding March 1, following which the IESO will post stakeholder feedback by

March 8 along with an updated readers guide. That process will lead into a March 22 vote on whether to provisionally recommend the batch for Board approval.

The Chair said the posting for another two weeks would provide an opportunity for stakeholders to comment on the draft Market Rules. The Chair invited questions from observers attending the meeting but technical difficulties prevented at least one observer from being able to ask a question.

On a motion by Joe Saunders, the Technical Panel voted to post the market power mitigation batch of draft Market Rules for further stakeholder comment until March 1.

The meeting paused at 11:55 AM with an agreement to reconvene at 12:45 PM.

#### Agenda Item 4: Adjustments to Intertie Flow Limits

The Chair recalled that Technical Panel had last discussed this item at its October 5 meeting. At that time, a number of members expressed concern about the process that had been followed and the Panel voted against posting the proposed Market Rule amendments for further stakeholder comment at that time. The IESO subsequently undertook a separate stakeholder engagement for the initiative, and the Market Assessment and Compliance Division (MACD) issued a notice stating that it was considering whether the IESO's actions of August 23 with regard to intertie flow limits in the northwestern part of the province had breached the existing market rules.

The Chair explained that MACD is a separate business unit within the IESO, responsible for ensuring Market Rule compliance on the part of market participants and potentially taking compliance actions against the IESO itself in the event of potential breaches. He said the organization has controls in place to ensure MACD's independence in the event of actions related to the IESO. MACD Vice President Glenn McDonald announced this review in December, in a public communication that was posted on the stakeholder engagement website. The Chair said the review will focus on the language of the existing Market Rules to determine whether the IESO's actions on the date in question were authorized under the existing rules.

The Chair said the IESO's view as an entity apart from MACD is that it did have the authority for the actions it took, but MACD may come to a contrary conclusion. He said the review would not consider whether the IESO should have the authority laid out in the Market Rule amendments now proposed, nor what market design would be best to deal with the circumstances that commenced on August 23.

Whichever way MACD decides the compliance review, the Chair said the IESO will still want to proceed with the proposed amendments. If MACD affirms the IESO's authority under the current Market Rules, the IESO will want to add the clarifying language in the amendments. If not, the IESO will pursue the amendments with the understanding that they would come into force prospectively and would have no impact on MACD's determination of the organization's previous authority.

The Chair indicated that Emma Coyle, who could not attend the meeting, had expressed her intention to vote against the motion to post, on the basis that MACD had not yet concluded its review and that Panel members would benefit from those findings prior to casting their votes. Ms. Coyle added that the IESO was characterizing the proposed amendments as clarifying language, and in that case, there should be no objection to postponing the vote to post while the MACD review was still under way.

The Chair said the IESO respectfully disagreed with Ms. Coyle on her first point, reiterating that the purpose of the amendments would go beyond clarification if MACD concluded that the IESO lacked the authority it had asserted on August 23. He invited questions and comments.

Rob Coulbeck asked whether the IESO had gone to MACD for an opinion on whether the proposed amendments would give the IESO the authority it sought. The Chair said that was not a question MACD would normally entertain. But he expressed confidence that the new version of the rules would authorize the actions in question, and that indeed the IESO had that authority on August 23, although he acknowledged that this later point was an arguable question. The Chair committed to bring Mr. Coulbeck's question forward to MACD, making clear that it came from an individual Panel member, to get a sense of whether the amendments would serve their intended purpose.

Mr. Collins asked for clarification of MACD's purpose. The Chair reiterated that its role is to assess whether actions by market participants, or in some cases the IESO itself, are compliant with the Market Rules. He said MACD had made no statements on the current package of proposed amendments, and that would not be their role. In this instance, their sole focus was on the events of August 23 and whether the IESO operated within its existing authority at that time.

Mr. Collins asked if there would therefore be value in postponing the vote to post pending MACD's conclusions. The Chair said MACD would only provide an opinion on the Market Rules as they currently stand, not on the proposed amendments.

Ms. Griffiths asked what impact the IESO would expect if the vote to post were delayed again. The Chair replied that if MACD ultimately concluded that the IESO had acted unlawfully on August 23, and the IESO wanted to exercise its authority in future, MACD's determination would apply to any similar actions in the period before the new rules took effect. The IESO would risk further compliance issues if it continued to exercise the authority it believes it has, in the event that MACD concluded otherwise.

Mr. Urukov observed that a determination that limited the IESO's current authority would change the proposed amendments from a clarification of existing authority to an incremental rule change. The Chair acknowledged the point. Mr. Urukov asked whether such a determination would trigger a different discussion at Technical Panel. The Chair said that was why the IESO was flagging the issue now, in anticipation of further discussion before the Panel votes on whether to recommend the proposed amendments for Board approval.

Mr. Urukov echoed Ms. Coyle's point about whether the IESO was asking the Technical Panel for a simple vote or a more carefully-considered change in authority. He asked how long the MACD process would take. The Chair said he had no information on timelines but observed that MACD often takes considerable time to reach its conclusions. He also stressed the importance of distinguishing between an interpretive exercise and a determination of the authority the IESO should have from a policy perspective. The IESO's position is that it should have the additional authority in the public interest, and that the Technical Panel's role is to review whether the language of the proposed amendments implements the policy approach the IESO aims to achieve. Failing to act would create a risk while the MACD determination is pending.

Mr. Coulbeck asked whether the MACD decision would result in the need to consider a change in the market rules as amended, leading to the need for further action from Technical Panel. The Chair said that outcome was not impossible, but not likely.

Robert Reinmuller said the proposed amendments were needed, regardless of the conclusion MACD reached. The Chair agreed. In reply to a comment from Mr. Saunders, the Chair said he could not speak for MACD, but the language in the proposed amendment would give the IESO the authority it would need to implement the policy intent in the future to act in the interest of the public and with that, invited Darren Matsugu to present on why the IESO took the actions it did in August.

Darren Matsugu, IESO, recapped the purpose of the proposed amendments and reported back on engagement activities since the IESO's October meeting. He reminded members of the challenging conditions in the northwest, after drought reduced the water supply and significant transmission outages were required to enable the building of new transmission capacity. If the interties in the area had not been adjusted, and supply fell short of demand in the region, it would have been impossible to achieve scheduled exports without constraining-on import transactions. The amendments addressing that situation were subject to a stakeholder process that began during Engagement Days November 22 and generated three stakeholder responses, to which the IESO responded. One action item with the Technical Panel from November was in relation to specifying the equation the proposed amendments refer back to in the appendix. This equation was identified during the public engagement session, with a plain language explanation provided in the response to stakeholder feedback.

Mr. Urukov asked whether the water and drought conditions underlying the draft amendments were likely to continue. Mr. Matsugu said they could, depending on future hydrological conditions and the progress of work on the east-west tie. David Short, IESO, said the full capacity of east-west tie will not be available until late 2022 or into 2023. He agreed with Mr. Matsugu that conditions are likely to continue until water conditions dramatically improve, traditionally during the spring, but extensive transmission outages will continue for the foreseeable future.

Mr. Coulbeck said it might be worthwhile to wait for MACD's determination before considering the proposed amendments. The Chair said that would create the risk of the IESO taking action on similar conditions, only to have MACD determine in future that the new action was out of compliance, an outcome the IESO would want to prevent. Mr. Coulbeck asked whether MACD would comment on the proposed amendments, and the Chair agreed to bring that question to their attention.

Mr. Chee-Aloy acknowledged that the IESO was trying to minimize the potential of non-compliance in MACD's eyes, without knowing the outcome of its current review. The Chair agreed with that characterization but said the IESO would want to clarify the language in the existing Market Rules, even if MACD were not pursuing the matter.

Mr. Urukov asked whether the IESO would have presented any additional information if it had been presenting the proposed Market Rule amendments as necessary to give the IESO added authority, rather than a clarification. Mr. Matsugu said he would have presented the same set of facts either way.

The Chair noted that a vote to post would not necessarily indicate a future vote to recommend, adding that the time between votes would give members an opportunity to reflect on the issue and hear further stakeholder comments. A vote to post would also fulfil the Technical Panel's mandate by allowing the matter to be addressed through stakeholder engagement.

Ms. Griffiths asked whether the IESO's communications protocols had been amended to ensure that information goes to all traders, not just active ones. Mr. Matsugu said the IESO had received feedback on whether it had been sufficient on August 23 to circulate the notice only to active traders on the northwest interties. With that in mind, information on the November engagement was

circulated to all traders, whether or not they were active in the region. Mr. Coulbeck recommended in the future communicating the issue to Transmission Rights market participants, as well, and Mr. Matsugu agreed.

The Chair invited comments from observers, and David Brown asked whether there was any suspicion of improper behaviour by traders. The Chair said he could not speculate on the question.

On a motion by Robert Reinmuller, the Technical Panel voted to post the proposed Market Rule amendments for further stakeholder feedback. Mr. Chee-Aloy clarified that he would be voting in favour of posting with two caveats: that he was doing so only because the matter had already been circulated for further stakeholdering at the Technical Panel's request, and that MACD's opinion should be known well in advance of any further discussion at Technical Panel. Mr. Urukov agreed and added the suggestion that market participants think through the clarification as well as the proposed Market Rule change and comment accordingly.

Members voted as follows:

Yea: Collins, Forsyth, Griffiths, Jayapalan, Maharjan, Pengra, Reinmuller, Saunders, Short, Urukov

Nay: Coulbeck, Coyle

## Agenda Item 5: Replacement of the IESO Settlement System (RSS)

Phil Bosco, IESO, presented proposed Market Rule amendments on replacement of the IESO settlement system. He said the matter would be brought back to Technical Panel for a motion to post March 23, ahead of an anticipated vote to recommend in April. Concluding the process in June would ensure the amendments were in place in time for the launch of the new settlement system November 1.

Mr. Urukov asked how the IESO saw the proposed amendments "refining the scope of the current disagreements and dispute processes by extending, clarifying or introducing limitation periods to address specified errors," as indicated on Slide 8 of the presentation. Mr. Bosco said the intent was to clarify the timelines for addressing issues and presenting recalculated statements within the metering channel and limiting the review to two years, rather than seven. In reply to a follow-up question from Mr. Urukov, he said the proposal had been stakeholdered.

Abbas Zaidi, IESO, said the change would have the greatest impact on the billing channel.

Mr. Urukov queried the 23-month limit on addressing metering disagreements. Mr. Bosco said market participants would have the opportunity to file Notices of Disagreements (NOD) from the time they first saw changes in their settlement statements. The procedure would not apply if there were no adjustments between preliminary and final statements, but if a recalculated statement included an adjustment due to an uplift, the NOD process would apply. Mr. Zaidi said market participants can dispute any new items, including adjustments between preliminary and final statements and future recalculations.

Mr. Urukov asked whether there were overlaps between the disagreement and dispute processes. Mr. Zaidi said Notices of Dispute could only be filed on items that have previously been the subject of a Notice of Disagreement, but the proposed amendments extended those provisions to allow participants to file notices of dispute in the 20 days after Notices of Disagreement have been settled.

Mr. Urukov asked how the two processes would work alongside each other, and whether the IESO was creating two types of charges. Mr. Zaidi said the first step for a market participant would be to file a Notice of Disagreement if it found an item in a final statement where it believed that action was warranted. The IESO's conclusion on the notice would be contained in a decision letter or appear in a subsequent statement. After that, the participant would have 20 days to file a dispute.

Mr. Collins asked why the proposed amendment specified a 23-month review period, rather than two years. Mr. Bosco agreed to report back with a reply at the next Technical Panel meeting.

Mr. Bosco said most stakeholder feedback on the proposed amendments had focused on how they will be implemented, not on the overall concepts. He said the IESO would be presenting a more detailed implementation plan the following week.

Mr. Urukov asked how detailed system changes in the proposed amendments, like splitting charge codes and introducing new ones, would endure into Market Renewal. Messrs. Bosco and Zaidi said the energy charges between generation consumers, transmission, and import/export would endure, with additional breakouts layered on for the day-ahead and real-time markets and revised formulae introduced.

Mr. Urukov said it would be important to ensure that any changes required of market participants now would continue into Market Renewal, rather than applying for only a short period of time. He also queried the timeline for collecting and reporting stakeholder comments in time for the March 25 Technical Panel meeting and suggested the IESO complete the stakeholdering process in a substantive way before scheduling a vote to pass. Robert Doyle, IESO, said they had anticipated the question and was developing plans to ensure the Technical Panel has the information it needs to make decisions.

## Agenda Item 6: Improving Awareness of System Operating Conditions

Muhammad Bilal, IESO, traced the proposed Market Rule amendments back to summer, 2020, when Ontario's electricity system was stressed by several days of extreme demand. The events of that summer underscored the need for better communication with market participants to give them a better understanding of operating conditions and the actions that might be required of them. With extreme weather events occurring more frequently, Mr. Bilal said both the IESO and market participants will have roles to play in maintaining reliability, all of which can be facilitated by heightened system awareness. The IESO is proposing to introduce a new advisory notice framework and Conservative Operating State to meet these requirements.

Mr. Reinmuller asked whether the proposed amendments would preclude or change any aspect of the process for declaring an emergency alert. Mr. Bilal said they would not.

Mr. Reinmuller noted that warnings under the new system could flow gradually or in very quick succession and recommended the IESO make that clear to market participants. He asked whether the alerts would occur one or a couple of days ahead based on system adequacy, or on the day at hand when a situation emerged. He said market participants might find it helpful to receive two or three days' notice if the IESO could anticipate an instance of extreme conditions like high temperatures.



Mr. Bilal said the IESO's goal would be to provide more information farther in advance to anticipate adverse system conditions, where possible. The conservative operating state that is a part of this batch of proposed amendments would focus more on the actions market participants might need to take and, as such, is more focused on day-at-hand notifications.

Nektarios Papanicolaou asked where the Conservative Operating State would fall in comparison to a standby notice for demand response resources. Mr. Bilal said if we are in a conservative operating state, it would be during the day-at-hand and therefore demand response standby or activation notices, if required, would be known.

Mr. Urukov asked whether the amendments would have any impact on outage approval. Mr. Bilal said the IESO already works with market participants to ensure that extreme conditions have no impact on the grid. The amendments would ensure greater transparency on system conditions, making it easier to move resource outages around and set planned outages without further stressing the system.

Mr. Urukov asked whether the proposal would entail any incremental risk to the system. Mr. Bilal said no as the proposed changes will provide more transparency to prevailing system conditions and enhance situational awareness.

Mr. Reinmuller said it would be useful to add clarity on different categories of action—for example, if an alert is expected to cover the entire month of July, market participants will want to know what to expect, and whether planned outages will have to be cancelled. Mr. Reinmuller acknowledged the degree of coordination this would require between the IESO and generators but said it would at least be useful to have some indication of what to expect if the system escalated to the next level. Even a day's notice of a cancelled outage would be useful, he said, when a generator has hundreds of staff scheduled to do the work. Mr. Bilal said the goal would be to give market participants several days' notice where possible if planned outages needed to be re-scheduled and that there would be direct follow up with affected market participants to prevent missed messages.

Mr. Collins asked whether future use of microgeneration would make it possible to send alerts to smart buildings. Mr. Bilal said that type of resource would be expected to receive visual notifications. Mr. Collins asked whether the shift to smaller, smarter generation sources and smart cars with charging would enable faster, wider communication.

Mr. Reinmuller cautioned against signalling down the whole grid in the event that a call to reduce demand reached all the appliances across the province and took a couple of hundred or thousand megawatts off the system. Mr. Short acknowledged the point, adding that the IESO is always attentive to potential cybersecurity issues. He said computer systems in a future decentralized scenario would have to be compliant with appropriate standards.

Mr. Collins said it would be useful in itself to send a signal to a smart meter to check on current conditions, in contrast to issuing a command. Mr. Saunders noted how quickly emerging technologies have been gaining ground, adding that the trend is likely to continue in coming years.

## Other Business

The meeting adjourned at 2:20 PM. The next meeting will be held on March 22.

## Action Item Summary

<b>Date</b>	<b>Action</b>	<b>Status</b>	<b>Comments</b>
February 15, 2022	Technical Panel members asked for a MACD review of if the MR-00468 proposed market rule amendments met the intent of the design.	Open	A letter from the Technical Panel Chair is posted to the Technical Panel webpage.
February 15, 2022	In relation to MR-00472 – Replacement of the IESO Settlement System, the IESO will provide rationale as to why a 23-month review period, rather than two years was specified.	Open	
October 5, 2021	In relation to MR-00468 – Intertie Scheduling Limit, specify if the proposed amendments refer back to the appendix rather than the equation governing intertie limits.	Closed	Update provided during February 15, 2022 Technical Panel meeting.
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	Update provided during November 2021 TP meeting.