Stakeholder Feedback Form: MRP Energy Detailed Design

Design Document: Market Power Mitigation

Date Submitted: 2020/07/24

Feedback Due: July 31, 2020

Feedback provided by:

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The IESO is posting a series of detailed design documents which together comprise the detailed design of the MRP energy stream.

This design document is posted to the following engagement webpage: http://ieso.ca/en/Market-Renewal/Energy-Stream-Designs/Detailed-Design.

Stakeholder feedback for this design document is due on July 31, 2020 to engagement@ieso.ca.

Please let us know if you have any questions.

IESO Engagement

General feedback on the Detailed Design Document

OPG's detailed review comments on the Market Power Mitigation (MPM) draft detailed design are provided in the table below. The following list provides a brief summary of the main themes in our feedback. OPG looks forward to working with the IESO to address/mitigate the issues we've identified so the final design can maximize market efficiency and minimize costs to ratepayers. More details on each of the following items and proposed solutions are included in the detailed review comments.

a) Setting reference level prices for hydroelectric will be challenging given the relationship between opportunity costs, available water, and the configuration of the units at a resource. Physical offer quantities for hydroelectric resources also rely on available head/flows, which are dynamic in nature. Determination of these reference prices and quantities need to be thoroughly consulted and agreed upon with market participants.

b) There needs to be transparency in the determination/declaration of NCA/DCA/LMP areas to allow the market participant the opportunity to assess mitigation risks.

c) The new physical withholding process may result in excessive outage slip submissions and create an onerous process. This could be tedious and difficult for market participants and the IESO to manage.

d) Need to establish a well defined interface and decision/appeal process between IESO and MACD including who performs the MPM review/audit to ensure there is no overlap to maximize efficiency and minimize costs for all concerned including the ratepayer

e) The IESO should revisit all terminology used in setting conduct and impact thresholds to explicitly state whether it is the "greater of" or "lesser of" as this is an important distinction which is not clear in the detailed design. This should be done prior to reference level negotiations with market participants.

f) The rationale for the thresholds used for conduct and impact testing should be provided by the IESO. Some of the thresholds appear to differ from other jurisdictions or may not be suitable for certain resource types participating in the market and some seem inefficient and too restrictive, which may lead to over testing. Further OPG remains concerned that thresholds are being set by the IESO prior to any discussions with market participants on reference levels. Thresholds may need to be revisited after these discussions.

Section General Engine Capabilities

Detailed Comment: Impact of Market Power Mitigation (MPM) design on calculation engine run-time and capabilities

OPG cautions the IESO to ensure the calculation engine's ability to perform mitigation testing does not negatively impact the ability to optimize day-ahead and pre-dispatch schedules in a timely fashion. The running time of the mitigation module should not cause the IESO to abandon hydroelectric optimization parameters or other market efficiencies. If this becomes the case, the IESO should re-assess the thresholds as well as re-open negotiations on reference levels.

Section General Energy + OR optimization

Detailed Comment: Need for further review/discussion on trade-off functions for energy and operating reserve

At the January 23rd Technical Session: Physical Withholding, the IESO stated the trade-off functions for energy and operating reserve will remain the same as in the current market. Whereas the IESO's dispatch scheduling & optimization (DSO) algorithm may not change, introducing a market power mitigation framework that tests compliance of the joint-optimization outcome will affect market participant operations and further work needs to be considered in the design to avoid unintended market consequences. This includes the joint-optimization of energy and operating reserve, make whole payments, use of an operating reserve demand curve, outage slips for operating reserve, etc., as these design elements will affect the trade-off functions. OPG would appreciate further stakeholder discussion on these items and their impact on trade-off functions prior to negotiations on reference levels and quantities with the IESO.

OPG acknowledges these items were discussed with the IESO during a meeting on July 8, 2020 and it is OPG's understanding these elements will be further described in the calculation engine detailed design documents.

Section General Governance

Detailed Comment: Additional work required to develop governance and decision making processes dealing with MPM framework

It is important that the decision making process to address market power mitigation is efficient with appropriate governance. Market participants will be taking on additional risk with the implementation of Market Renewal and will need confidence in the proposed approach used to review offers.

One component of governance that needs to be addressed is the approach used to review alleged market power incidents by both the IESO and the Market Assessment and Compliance Division (MACD) should there be an unsuccessful conduct and impact test. As discussed at the January 23 Technical Session there is a concern that market participants may be subject to extensive review of an event more than once. OPG supports that exercise of market power needs to be avoided, however, the mitigation regime to achieve this outcome needs to be efficient and cost effective. With this in mind, OPG requests additional information on how the new market power mitigation rules will

be integrated with existing MACD enforcement. This includes whether market participants could be subject to both the new market mitigation rules as well later MACD investigation, which group within the IESO will manage the new market mitigation processes (i.e. MACD or IESO) and any confidential provisions between these groups.

At the meeting with the OWA on July 8, the IESO took the action to provide details on who will be responsible for market power mitigation and compliance in the new market (i.e. is it MACD or the IESO). OPG is concerned about duplication of effort by IESO and MACD, which would negatively impact market efficiencies and increase costs to market participants and ratepayers.

Section General Reference Levels

Detailed Comment: Establish decision making process for reference levels

OPG appreciates and looks forward to negotiations with the IESO on the reference levels for physical withholding. Similar to economic withholding, in the determination of these levels, there needs to be a decision making process established for the reference level, a periodic review of these levels (say every 3 years), and an approach to address appeals from market participants. The IESO may wish to consider using an independent third party for the design of the reference level methodology and the negotiation of the finalization of these reference levels with market participants.

Section General Metering MPM

Detailed Comment: Metering deadband for market mitigation

At the January 23rd Technical Session: Physical Withholding, the IESO suggested that physical withholding will be measured in real-time using revenue metering. It is OPG current understanding that this is no longer being pursued by the IESO as it is no longer referenced in the detailed design document. Please confirm that this is the case, as the additional capital costs for participants to convert existing metering infrastructure would be inefficient as well as uneconomical.

Section General Reference Levels

Detailed Comment: Reference level design and need to consider risk premiums

Reference levels are critical to the discussion of market power mitigation and should be where the majority of mitigation design effort is placed. Ideally, conduct and impact thresholds should be less impactful on participants if reference levels adequately reflect a resource's costs. The IESO should provide an example of how the proposed reference level curve would be determined, implemented and enforced. A reference level curve rather than a single price may be unnecessarily complicated to manage.

The IESO's proposed process to arrive at a reference level methodology and the specific eligible amount for O&M is similar to the current RT-GCG program pre-approval process. Based on experience, this process is a complicated and resource intensive undertaking. As only a subset of market participants currently participate in the RT-GCG and the IESO has not proposed a viable

methodology for hydroelectric resources both market participants and the IESO will have a lot of work ahead to negotiate reference levels.

The MPM detailed design does not provide a methodology for determining what is included in opportunity costs. While the published materials acknowledge energy costs, speed-no-load costs, start-up costs, O&M, and opportunity costs, OPG submits that risk premiums should also be recognized as a legitimate cost in reference level pricing. OPG is concerned that designing reference levels without consideration for the interaction between the energy and operating reserve markets may lead to unintended market signals and potentially infeasible day ahead schedules particularly for hydroelectric resources that have the ability to provide both energy and operating reserve.

Section 2.2.4/3.6 Reference Levels

Detailed Comment: Challenges with hydroelectric reference Level pricing

In paragraph #2 of the section on Reference Levels, the IESO includes a statement that the gross revenue charge (GRC) will be considered in setting reference levels for hydroelectric resources - this is only one element impacting hydroelectric offers. Other factors, including opportunity costs and risk premiums for hydroelectric with limited water supply, require significant consideration. Setting reference level prices for hydroelectric will be challenging given the relationship between opportunity costs, available water, and the configuration of the units at a resource.

OPG would like to highlight the risks associated with fuel supply (water) that a hydroelectric market participant has in the day-ahead timeframe and urges the IESO to factor risk premiums and dynamic opportunity costs into reference levels. (Note: changes to inflows can impact head based capacity of hydroelectric stations).

Detailed Comment: Ex-ante mitigation may compromise management of hydroelectric

Ex-ante offer mitigation for economic withholding may override a market participant's offers causing facilities to operate in a manner not intended by market participants. This could compromise a market participant's ability to manage its resources efficiently and ensure compliance with operating limits.

Hydroelectric resources can be energy limited and offers are used to reflect the opportunity cost of water in what is expected to be the most valuable hours. If these offers fail the conduct and impact test, the ex-ante engine automatically overrides the market participant's offers with reference prices. This could result in a sub-optimal dispatch schedule as reference prices may not accurately represent the opportunity cost of the water, as it is a dynamic value. This may also have operational implications on the market participant and lead to sub-optimal market outcomes.

Section 2.2.6/3.9/3.14.2 Reference Levels

Detailed Comment: Challenge with physical withholding reference quantities for hydroelectric & proposed alternative

Section 3.14.2 of Market Power Mitigation (MPM) detailed design states reference quantities will be established following the approaches outlined in the Reliability Outlook Methodology, unless these approaches do not fully account for the specific operational characteristics of a resource. Please specify what aspect of the Reliability Outlook Methodology will be applied as OPG is concerned that this approach does not account for the unique characteristics of hydroelectric resources.

Setting reference quantities for hydroelectric will be challenging given that offer quantities rely on available head/flows. OPG highlighted this concern and proposed an alternative approach in OPG's comment submission following the Physical Withholding stakeholder session in January 2020. The comment is reproduced below and we encourage the IESO to provide written feedback to address OPG's concern and alternative proposal:

"Comment #1: Challenge with Establishing Physical Withholding Reference Levels for Hydroelectric Energy Offers

The IESO's proposed methodology for calculating reference quantities (page 6 of Reference Error! Reference source not found.), states:

"For energy, the initial estimate of the reference quantity shall be equal to the unit's installed capacity (or the IESO's centralized forecast for variable generators), modified by any relevant operating restrictions or de-ratings."

This proposal fails to consider changes to hydroelectric capability that occur due to changes in head. A hydroelectric unit's registered capacity is based on the output it can achieve at maximum head. A unit's actual head and thus hourly capability fluctuates in real-time based on operating conditions including: water inflow, discharge (based on IESO dispatch), upstream and downstream relationships, lake level and river flow limitations, station storage characteristics, etc.

Under this proposal, prior to day ahead market submissions, market participants would be required to submit hourly derates/outages based on forecast expectations of head with expected hourly capabilities for the next day. In real time, hydroelectric operating conditions are re-evaluated/reconciled every hour, which will likely require revision to the previously submitted derates/outages for the remainder of the day. This approach would significantly increase the administrative burden on both market participants and IESO operations staff.

As an alternative approach, OPG suggests registering a new parameter called "minimum head based capability" for each hydroelectric generating which can then be used to calculate a physical withholding reference:

Physical Withholding Reference Level (single unit) = Max ((min head based capability - derates/outages), 0)

The above calculation could then be summed for resources with more than one unit.

Hydroelectric units would register this new parameter as part of facility registration. "

Section 2.2.7/3.10 Trading/Interties

Detailed Comment: Determination of Fair Market Value on Interties

OPG requests additional details on how fair market value of interties will be determined in order to set references levels, particularly in times of shortage.

Section 3.5 Non-financial inputs

Detailed Comment: Need clarification on rejection of non-financial dispatch data

Please clarify what happens when a non-financial dispatch parameter fails the ex-ante conduct & impact test. The detailed design document states if the submitted non-financial dispatch data parameter is outside the acceptable range it will be rejected. Would the rejected parameter be substituted by the reference level or is the offer rejected?

As an example:

If the submitted Minimum Load Point for a resource is 100% above a reference level, will it be replaced by the reference level quantity? If the value does not get replaced, will the resource be prevented from participating in the market?

Section 3 (multiple parts) Conduct and Impact Test

Detailed Comment: Suggest increasing $25/MWh minimum price for conduct & impact testing

Multiple sections of the design note that testing for economic withholding is not performed on energy offers below $25/MWh and physical withholding testing is not performed when the LMP is less than $25/MWh. A review of NYISO and MISO thresholds indicates they appear to use $25USD/MWh. The IESO should convert this figure to Canadian dollars which is approximately $35 CAD/MWh. This would be appropriate as the IESO has indicated many of these thresholds are based on US jurisdictional review.

Further this value should be reviewed by the IESO on a periodic basis (say every three years) to ensure it remains relevant for the Ontario market and reflects current gas prices, technology, etc.

Section 3.6.1.2 Conduct and Impact Test

Detailed Comment: Propose 300% for BCA energy offers

In Table 3-7, Conduct Thresholds for Impact Testing in BCA, the detailed design states for energy offers:

"Offer price is greater than either 200% or $100/MWh above reference level value; offers below $25/MWh are excluded from economic withholding tests."

It is important to note that both NYISO and MISO use thresholds of 300%. OPG proposes the IESO use a 300% threshold, which would be in line with neighbouring US jurisdictions. During the

September 27th Technical Session for Economic Withholding, the IESO stated they intended to use thresholds that were consistent with other markets. Where thresholds differ from other markets, such as this one, the IESO responded that it was based on feedback from speaking with other jurisdictions in what they would change to redesign the threshold value. However, it should be noted that a FERC stakeholdering process is required in order for these values to change in other jurisdictions. It would need to be substantiated with evidence and analysis that justifies the thresholds be decreased.

If there was evidence provided by other jurisdictions that justifies the reduction to 200%, market participants should be made aware of this information/data. Post implementation, OPG would support a review of these thresholds and a change in this value, if these thresholds are deemed to be ineffective through the appropriate channels.

The following change is recommended to the detailed design document:

"Offer price is greater than either 300% or $100/MWh above reference level value; offers below $35/MWh are excluded from economic withholding tests."

Section 3.6-3.8 Conduct and Impact Test

Detailed Comment: Provide rationale for conduct & impact thresholds in tables (Tables 3-5 to 3-27)

For Table 3-5 to 3-27, the IESO should include a short description of the rationale for each conduct and impact threshold level. The rationale should describe the IESO's view on how these threshold values will help ensure

conduct & impact testing is limited to items that have material impact on market costs. The IESO has previously indicated many of these thresholds are based on US jurisdictional review. OPG requests further details on this review and whether the proposed thresholds are based on US tariffs or anecdotal review with system operators about what they would do differently.

Detailed Comment: Day-ahead conduct and impact testing thresholds should be larger than those for real-time (Tables 3-5 to 3-27)

Please clarify whether the conduct and impact thresholds defined in Tables 3.5 to 3.27 will be the same in both the day-ahead and real time markets?

OPG suggests different and larger thresholds be used for day-ahead as compared to real-time given the larger uncertainty of fuel supply (water) for hydroelectric resources in the day ahead timeframe. In the absence of different thresholds, OPG proposes the IESO include weather/inflow related risk premiums in the costs and quantities included in reference levels.

OPG remains concerned the thresholds are being set by the IESO prior to reference level negotiations with market participants. With this in mind, thresholds may need to be revisited subject to the outcome of the discussions with market participants to set reference levels.

Section 3.6.2.1 Conduct and Impact Test

Detailed Comment:

OPG is concerned the 0 MW MIN area constraint threshold is too low and could result in over testing. OPG requests the IESO provide rationale for a 0 MW MIN area constraint and suggests using a higher value consistent with other deadbands used in the current market, such as the ADE deadband of 2% or 10 MW. In this case, 2% of the total market OR would be ~30 MW, which is likely too high under Local Market Power constraints leading to OPG's recommendation to use a 10 MW MIN area constraint threshold.

Section 3.7 Conduct and Impact Test

Detailed Comment: Need for mitigation testing in both pre-dispatch and real-time

The design states:

"Mitigation tests for price impact will be applied in the day-ahead market (DAM) and the pre-dispatch (PD) scheduling processes. If processing time permits, the IESO will also implement mitigation tests for price impact in the real-time dispatch (RTD) scheduling process. Whether this is possible will be determined in the implementation phase."

If an offer has passed the mitigation tests in day-ahead and pre-dispatch runs, why would there be a need to implement mitigation tests in real time?

Section 3.8 MWP

Detailed Comment: Settlement mitigation for make-whole payment- comment 1

OPG believes Section 3.8 is incomplete and the IESO should incorporate Market Settlements DES-28 Section 3.13.1 Make-Whole Payment Impact Test into this design document. Each type of make-whole payment requires its own impact test threshold and the one size threshold does not fit every make-whole payment. From DES-28:

"The settlement amounts subject to the make-whole payment impact test are: DAM_MWP;· DAM_GOG; RT_MWP;· RT_GOG;· DAM_BC; and· RDSA." It appears that DAM_MWP, RT_MWP, DAM_BC, and RDSA are hourly settlement amounts while DAM_GOG and RT_GOG are assessed for each commitment."

OPG further notes that DAM_MWP is a component of DAM_GOG and RT_MWP is a component of RT_GOG.

OPG further notes that DES-28 Section 3.13.1 states:

"When a resource meets the conditions to carry out a make-whole payment mitigation impact test, the IESO will determine what the settlement amount would have been, if the dispatch data had been subject to mitigation based on the set of conduct and impact thresholds that apply to the most restrictive constrained area. The most restrictive set of thresholds for the dispatch data will be determined over the period that the settlement amount is calculated. Therefore, if the settlement

amount is calculated over multiple hours, the hour with the most restrictive set of thresholds will determine the set of thresholds used in all hours of the calculation."

The practicality of this approach is questionable as the new day-ahead and pre-dispatch calculation engines evaluate hourly mitigated offers over the entire commitment period and subsequently issues commitment schedules. It seems reasonable during settlement mitigation each of these hours remains independent prior to being summed to a total make-whole payment. The extra step of performing ex-post mitigation for all hours of the commitment period (instead of hourly by constrained area) prior to comparing to the settlement amount seems to be an overly complex solution to a problem that does not exist.

OPG recommends the IESO define a make-whole payment impact test for each of the make-whole payment amounts which sets the thresholds as hourly or commitment based, and considers that DAM_MWP and RT- MWP are components of DAM_GOG and RT-GOG. Further Section 3.8 needs further stakeholdering and should be subject to a technical discussion due to the complexity of its application.

Detailed Comment: Settlement mitigation for make-whole payment – comment 2

Section 3.8 should explicitly remove Day Ahead Balancing Credits (DAM_BC) from make-whole payment mitigation. In Market Settlements DES-28 Section 3.7.7, the design states:

"Under certain circumstances, a market participant with a DAM financially binding schedule may incur a financial loss as a result of an IESO control action on energy and operating reserve in real time. When this occurs, the IESO will provide a DAM Balancing Credit (DAM_BC) to cover any operating loss incurred as a result of following dispatch instructions. DAM_BC provides an offset against any negative impact of real-time balancing due to a system reliability need."

Imposing make-whole payment mitigation on a settlement amount that is designed to compensate a market participant for financial losses incurred after following a reliability dispatch is not reasonable. Please provide an example on when it would be appropriate to mitigate the DAM_BC make-whole payment.

Section 3.8.1 Conduct and Impact Test

Detailed Comment: Make-whole payment impact thresholds for BCA (Table 3-18) should be larger than those for NCAs/DCAs (table 3-16)

For make-whole payments in Section 3.8.1, the impact thresholds appear to be the same for NCAs/DCAs (Table 3- 16), BCAs (Table 3-18), and Global Market Power (Table 3-22). The thresholds for BCAs and Global Market Power should be higher than NCAs/DCAs as BCAs and Global Market Power are more competitive areas.

OPG proposes the thresholds for BCA and Global Market Power be increased from 10% to 50% higher than the make-whole payment calculated using the reference level values. This approach considers that in Table 3-9 the conduct thresholds for Global Market Power are 100% of the reference levels for both Speed-no-load and Start-up costs indicating a more competitive area then

the NCA/DCA, however, recognizing the calculation of Make-Whole Payments is complex and uses both components, a 50% threshold on make-whole payments is more logical than suggesting 100%.

Section 3.8.2 Conduct and Impact Test

Detailed Comment: Request IESO's rationale for using a positive congestion value set at any number greater than $0/MWh

Section 3.8.2 bullets states:

- "An NQS resource was committed, which would otherwise receive a make-whole payment, and has a positive congestion component greater than $0/MWh on any binding constraint that was not an NCA or DCA constraint; or
- An NQS resource was committed, which would otherwise receive a make-whole payment, and has a GSF greater than 0.02 on an active constraint that was not an NCA or DCA constraint and which would have been binding or been violated but for the commitment of the resource"

More information about IESO's rationale for using a positive congestion value set at any number greater than $0/MWh is required. The IESO should increase the positive congestion component to at least greater than $2/MWh. The use of $0/MWh may trigger time consuming and costly reviews by the Market Participant and the IESO when positive congestion is as little as $0.01.

Section 3.8.4 Conduct and Impact Test

Detailed Comment: $10,000 Threshold to Apply Market Power Mitigation to NQS Make-whole Payments should be higher

OPG is concerned the IESO has not considered unit status in the development of the pre-testing criteria for NQS unit's make-whole payments of $10,000. This oversight may cause systemic over-testing of resources simply due to the unit status being warm or cold.

Instead the pre-testing criteria should use the reference level start-up cost of the unit when assessing whether to proceed with conduct and impact testing. For example, if a unit has a reference level start up cost of $20,000 then a make-whole payment of $20,000 should not trigger the testing criteria.

This solution would reduce the administrative burden on both IESO and market participants.

Section 3.9.2.1 Conduct and Impact Test

Detailed Comment: IESO persistence multipliers may be overly punitive

The 1x, 2x, 3x persistence multiplier progression from Table 3-29 may be overly punitive - the NYISO uses a less punitive progression of 1x ,1x , 2x, 3x. Further OPG would like additional details on how these multipliers are applied in terms of timing. For example, can multiple infractions on a single day lead to the max multiplier penalty? Or must the infractions occur on separate days for the multiplier to progress?

There is an existing MACD process to manage these types of infractions by market participants and this process does not need to be duplicated by the IESO. Will the IESO penalties replace MACD compliance or will it be in addition to MACD compliance?

Section 3.9.3 Conduct and Impact Test

Detailed Comment: Conduct thresholds for operating reserve (OR) are too small

The OR conduct thresholds from Table 3-30, including $5/MW LMP minimum price criteria, are too low and will likely result in over testing. It is OPG's understanding the IESO is targeting a threshold that would result in testing only 10% of the time or less. Has the IESO performed analysis to predict the frequency of testing that these thresholds would generate (i.e. is it more than 10% of the time)?

Section 3.9.3 Conduct and Impact Test

Detailed Comment: Physical withholding conduct thresholds are too narrow

In Table 3-30 for Physical Withholding of Global (OR), the first bullet states:

" Submitting operating reserve offers of quantities that are lower than either 10% or 100 MW below a resource's reference quantity."

The above thresholds are too narrow for small resources. For example, 10% of a reference quantity of 10 MW is only 1 MW which under global constraints appears punitive. OPG proposes the IESO should reword the bullet to:

"Submitting operating reserve offers of quantities that are lower than the greater of "

The thresholds should be set higher to reflect this is a global market power assessment which would result in having a large number of resources impacted. The global market constrained area could contain all of Ontario generators which would result in a large number of small generators impacted by these thresholds.

Further, OPG recommends the IESO revisit all of the terminology used in setting all conduct and impact thresholds to use terms explicitly stating whether it is the greater of or the lesser of prior to engaging in reference quantity negotiations with market participants.

The 2nd bullet from Table 3-30 states:

"For at least two resources from one market control entity, submitting operating reserve offers of quantities that are in the aggregate, lower than either 5% or 200 MW below the resources' aggregate reference quantities."

OPG proposes the IESO consider the number of resources that will be in the global market constrained area (potentially all Ontario generators) and only use the percentage threshold. In July 2020, Ontario primary demand peaked in the 24,000 MW range. Using a 200 MW threshold would equate to less than 1% of Ontario internal supply on these July days where hydroelectric stations are in summer operating ranges and have limited inflows due to summer heat and lack of precipitation.

It should be noted that very narrow thresholds place greater importance on the negotiation of reference quantities to reflect the unique characteristics of hydroelectric including hourly variations of head based capacities.

Section 3.12.2.1 Additional Reporting

Detailed Comment: IESO to provide advanced notice for DCA designation

For market transparency, the IESO should provide notification at least 14-days in advance for planned transmission outages that will trigger a DCA. This proposal will allow market participants sufficient time to revise outages and factor DCAs into water management strategies for impacted areas. DCAs or risks for potential DCA designations should be known to market participants as soon as they are inputted into IESO's outage management system, ideally in a formalized report. In addition the criteria to trigger DCAs should be reviewed by the IESO, and provided to market participants similar to Market Participant Confidential 'Outage Planning Guideline Reports'.

Section 3.12.2.3 Additional Reporting

Detailed Comment: DCA notification for planned outages

OPG recommends that IESO publish standardized reports on upcoming NCA/DCA/BCA/Global Market Power/Uncompetitive Interties prior to Day Ahead Market submission window opening (i.e. prior to 06:00 EPT day ahead). This publication timeframe allows market participants sufficient time to adjust their day-ahead offers.

If a new constraint designation occurs due to forced outages in real-time, OPG proposes the IESO allow market participants to revise offers including opening the mandatory window. This proposal will mitigate the impact of unplanned transmission conditions on generators.

Section 3.12.4.2 Additional Reporting

Detailed Comment: Publish private reports to identify manual constraints

For market transparency, OPG suggests the IESO publish private reports at the end of each dispatch interval that flag which dispatches were the result of an IESO manual constraint. This report should contain the manual constraint types to determine which constraints are excluded from mitigation. This can be utilized to ensure accuracy of mitigation reviews from the IESO and provided in a report format so market participants have the ability to pull the reliability constraints into their tools.

OPG notes that data files indicating intervals constraint type (NCA, DCA, Reliability, etc.) is also required during the Market Settlement. Market Settlement DES-28 Section 3.7.7 on Balancing Credit and Section 3.13 on Market Power Mitigation require these inputs to complete the settlement process.

Section 3.12.5 Reporting

Detailed Comment: Timeframe for publishing designation of uncompetitive interties

In Section 3.12.5, please clarify the IESO's timeframe for publishing the designation of uncompetitive interties. The IESO should use similar publication criteria as used with NCA designation. At minimum, the IESO should publish in advance of the Day Ahead submission window at or before 06:00 EPT.

Section 3.12.5.1 Conduct and Impact Test

Detailed Comment: Need clarification on what "grounds to believe" means

The comment in the final bullet of Section 3.12.5 should be more clearly defined and not subjective:

"An intertie where the IESO finds grounds to believe that effective competition for the supply of imports or demand for exports is or is expected to be restricted."

Section 3.13 Reference Levels

Detailed Comment: Need for Risk Premiums to be included Reference Levels

Day Ahead schedules for energy limited resources create a new risk for the market participant to physically manage resources to both meet day ahead schedules and to provide flexibility in the real-time market. In comments submitted following the economic withholding stakeholder session held on September 27, 2019, OPG identified the following situations where risk premiums may be required to address costs:

- When the Day Ahead Market closes at 10:00 EPT of current day, the market participant is already committed to the remaining hours of the current day (HE11-24) and has submitted offers that may lead to a generation schedule for 24 hours in the day ahead;
- Due to cascade operation of hydroelectric stations, there is a risk that the remainder of the day's schedule would need to change at multiple stations to balance the cascade river system recognizing that it is an energy limited resource. A risk premium on offer submissions would allow hydroelectric resources to offer at a price that would include the costs of providing the generation either earlier or later than the day-ahead schedule in order for the system to use this flexibility if required in real time.
- This change from a day-ahead schedule to a real-time schedule could also necessitate changes at upstream and downstream stations resulting in the possible inefficient use of water and the potential for spill.
- This can become even more complicated with the balancing market settlements for both energy and operating reserve at a number of different hydroelectric stations.

A risk premium is necessary to allow a market participant to offer flexibility in real time above the day-ahead schedule taking into account the need for physical schedule changes in future hours for both energy and operating reserve.

Section 3.13 Reference Levels

Detailed Comment: Reference Levels – Use of Administrative Pricing in MPM

OPG would appreciate further details on how the IESO intends to apply Administrative Pricing principles (Market Manual 4.3, Section 9) to LMPs (as opposed to the current uniform pricing) in the event reference prices are determined to be incorrect. This is important as the two-day timeline associated with the IESO issuing administrative pricing means participants must have the opportunity to appeal its issued reference price within the two days. The design states that if a participant disagrees with the IESO determined reference price and the price is not changed prior to dispatch, the current Notice of Disagreement (NOD) process will be available to that participant for recourse. As the NOD process cannot be initiated until the preliminary settlement statement is received (ten business days after the fact), the IESO will be unable to administer prices with the correct reference prices. OPG believes a more expeditious process should be available for market participants to appeal reference prices prior to administrative pricing deadlines.

Section 3.13.1.1 Reference Levels

Detailed Comment: Energy offer reference level curve interaction with Physical Withholding

Reference quantities used in Economic Withholding may need to be different than the reference quantities used in Physical Withholding. On page 54, the design states:

"For an energy offer, the IESO will establish an energy offer reference level curve for each set of dispatch data values. This will include up to 20 non-decreasing values of the energy reference level to form a monotonically increasing cost curve. This energy reference level curve will be used for the conduct and impact testing of the price quantity pairs submitted by the market participant."

Please clarify how the energy offer reference level curve will interact with the calculation of physical withholding reference quantity.

Detailed Comment: Initial Consultation and Frequency of Reference Level Review for Hydro Stations

The consultation process will need to be an extensive collaborative discussion between market participants and the IESO. The IESO should recognize that each hydroelectric plant and river system is unique in terms of both its water management plans and operational/physical constraints. Determining opportunity costs during periods of low flows combined with operational constraints is particularly complicated as the market participant must assess how to represent a resource which has one hour of energy available for the day, but has the ability to respond to operating reserve activations above this energy schedule. A blanket approach for all hydroelectric units is not feasible. The process for determining the energy offer curves will likely require further review on a monthly or seasonal basis based on prevailing conditions.

Detailed Comment: Changes to cost parameters that required notification to IESO

In the final bullet on Page 55 the design states the following:

"the market participant notifies the IESO of an increase or a decrease in its initially submitted costs. Market participants shall inform the IESO if their initially submitted short-run marginal costs – excluding fuel and opportunity costs – decrease no later than five business days following the decrease in costs coming into effect."

OPG recommends the IESO and market participants explicitly define which cost parameters will be excluded. As an example, fuel transportation costs and hydroelectric opportunity costs are just two items that should be excluded from the requirement to notify the IESO. Further stakeholdering needs to be conducted to identify all fuel and opportunity costs that should be excluded.

Detailed Comment: Default Value for Operating Reserve Reference Levels

In section 3.13.1.1, the design states:

"If a resource has not established an operating reserve reference level, the IESO will use a default reference level of $0.10/MW."

A default reference level for OR should only be applied in the event a market participant is in agreement. A backstop default reference level, may not yield a collaborative outcome on reference levels.

Detailed Comment: Opportunity to Update Fuel Costs Prior to Market Scheduling

In section 3.13.1.1, the design states:

"On a daily basis, the IESO will populate the values for each of the variables in each equation and the reference level values will be determined for a particular dispatch day for every applicable resource. The data that the IESO will use to populate values for each variable will depend on the variable. For example, natural gas prices would be used to populate values for energy reference levels for gas-fired resources."

The IESO should develop a process that allows market participants to view and revise these variables during the market submission timeline. OPG also notes that depending on the complexity of the hydroelectric stations there may be a number of different variables that need to be updated to accurately capture changing opportunity costs of hydroelectric resources.

Section 3.13.1.1 Conduct and Impact Test

Detailed Comment: OR Reference Levels – opportunity costs for OR should be defined independently from those for energy

The IESO process should use fuel costs, opportunity costs, risk premiums, etc., in the development of OR Reference Levels during negotiations with stakeholders. Opportunity costs for OR reference levels should be defined independently from the opportunity cost for energy. For example, risk premiums need to factor into opportunity costs and these risk factor premiums will likely be different for OR than for energy.

Detailed Comment: Reference Levels for dual-fuel resources should not necessarily use the least-cost fuel and need to consider fuel availability

In paragraph #4 of this section on Page 58 it is stated that:

"The IESO will use the least expensive fuel type among the registered primary and secondary fuel types for a resource's reference level for the timeframe when it tests a submitted offer for market power. Market participants can request the IESO to change this default fuel type selection if the least expensive fuel (in $/MWh), as flagged by the market participant and approved by the IESO, is unavailable or not preferred because of an acceptable reason for the specific subset of hours during the trading day."

This methodology is simplistic and does not take into consideration the number of factors that determine which fuel is least expensive. OPG recommends further discussion between market participants and IESO as part of the reference level negotiation for energy offer curves to account for situations where the energy offer curves of the two fuels cross.

Determining fuel costs for facilities that do not have firm gas contracts is challenging in both day-ahead and real- time. The IESO needs to recognize the unique challenges around fuel availability, procurement, and transportation. This will be a key consideration in discussions with the IESO in setting appropriate reference levels for dual-fuel resources and reporting on the use of different fuels.

There should be a method for market participants to submit outages for specific 'fuel types', without impacting the availability of the resource, as they would be available on the alternative fuel.

Solving the treatment of reference levels for dual fuel resources during negotiations will avoid the administrative burden documented in Market Settlements DES-28 Section 3.13.2 Reference Level Settlement Charges (RLSC) and 3.13.3 Reference Level Settlement Charge Uplift (RLSCU).

Detailed Comment: Process for changing cost data ex-ante needs to be simple

In Section 3.13.1, the design states:

"The IESO will establish a process to allow market participants to submit change requests for fuel costs. Market participants will be able to submit requests up to 30 minutes before the close of the offer window for the DAM and the mandatory window in the real-time market. All verifiable supporting information, including cost data, must be submitted to the IESO before the IESO can begin assessing the request."

OPG recommends the IESO create a simple list and process to for the IESO control room to implement in real-time. This should include the type of documentation readily accessible to the market participant at the time. For example, supporting cost data would include quotes from gas marketers to a market participant for products and services. The IESO should not require invoices or information ex-ante that is only available to market participants after-the-fact.

Section 3.13.1 Settlements

Detailed Comment: Need to enhance IESO tools to support settlement process for mitigating dual fuel resources

In the section on Settlement Process for Mitigating Dual Fuel Resources, the design states:

"After the market participant places a request to use the higher-cost fuel in either of the timeframes, they must provide evidence to the IESO that the higher-cost fuel was used. This evidence must be provided within two business days after the trading day in which the higher-cost fuel was used.

The settlement process should provide at least one week for market participants to provide information on expenses incurred. It can take more than two day for market participants for some expenses to be incurred. For example market participants may not know the amount of their storage expenses for non-firm gas contracts within two days."

This Settlement Process would not be required if the IESO in collaboration with market participants develop reference level curves that capture the unique challenges of dual-fueled resources. The IESO should enhance its tools to support reporting of fuel availability either through the outage process or the offer submission process. Developing IESO tools to take into account unique characteristics of dual-fuel resources fuel availability would simplify the market power mitigation process and reduce the administrative burden on both market participants and the IESO of providing evidence after-the-fact.

If the IESO is unable to enhance their processes, OPG suggests the settlement process should use timelines similar to the current RT-GCG program which allows expense information to be submitted within a reasonable number of days after the fact.

Section 3.13.2 Conduct and Impact Test

Detailed Comment: Changes to non-financial reference levels should be made following completion of testing and commissioning

The fourth paragraph of Section 3.13.2 the design states:

"In the event that a market participant makes changes to a resource that impacts the operational characteristics described by a non-financial reference level, the market participant must update the registered value of the relevant non-financial reference level no later than five business days following such a change."

Changes to non-financial reference levels should be made following completion of testing and commissioning rather than five days after the operational change is made to registration data. The IESO should not require registration data to change until operational changes have been tested and verified.

Section 3.13.2 MPM & Hydro

Detailed Comment: Reference level methodology for non-Financial dispatch data – hydroelectric Seasonal Variations

This IESO's strategy of establishing reference levels for non-financial data is not suited to hydroelectric. Hydroelectric characteristics can change significantly within seasons and even months and a simple winter/summer divide is not sufficient. OPG proposes that during the reference level negotiations a process is established that will allow daily inputs by market participants to be used in the reference level curves for energy and operating reserve.

Section 3.14.2 Reference Levels

Detailed Comment: Reference Level negotiations – May need third party arbitrator to reach consensus

The process for establishing reference quantities with market participants must be developed in consultation with market participants. This is particularly important for hydroelectric given its unique characteristics and the resulting challenges with reference quantities.

The last paragraph of Section 3.14.2 (reproduced below) implies that the IESO will make final decisions on reference quantities without approval by market participants, which concerns OPG. OPG suggests a third party mediator or arbitrator may be required to reach consensus on decisions regarding reference levels. In addition, a dispute resolution process should be developed.

"If the approach described above does not fully account for the specific operational characteristics of a resource, market participants may submit additional data and supporting documentation to the IESO during the Facility Registration process. The IESO will review and use this additional information where appropriate to establish the reference quantity of each resource."

Section 3.14.2 Conduct and Impact Test

Detailed Comment: Use of Reliability Outlook Methodology may not be appropriate for Market Power Mitigation

While the use of the reliability outlook methodology may be suitable in terms of long-term forecasting, OPG does not believe it will be suitable for use in market power mitigation, particularly for hydroelectric in the short term (i.e. day ahead and real-time).

Please provide more details on the elements of the Reliability Outlook Methodology that will be applied for market power mitigation and physical withholding.

Section 3.14.2 Outages

Detailed Comment: Need to enhance outage reporting tools for OR capability

In section 3.14.2, the design states:

"The reference quantity for suppliers of operating reserve will be based on the operational capability of the resource. Operational restrictions that prevent a supplier of operating reserve from providing incremental energy can be reflected in their reference quantity."

The IESO should enhance outage reporting tools to allow outages or derates to Operating Reserve capability. OPG notes that Ancillary Out of Service (ASPOOS) slips are informational and OPG does not believe they transfer into the current calculation engines. In the current market, outages or derates impact both energy and OR. Hydroelectric stations face water management and physical constraints that allow energy production but make stations unavailable for OR.

Section 3.15 Conduct and Impact Test

Detailed Comment: Need clarity on IESO setting of reference levels in advance of DAM trading day

The first paragraph of Section 3.15 states:

"As discussed in Section 3.13: Reference Levels, the IESO will set the cost-based reference levels for financial offers in advance of the day-ahead market trading day. The IESO will provide market participants with an opportunity to update certain cost values that will be used to set the reference level for a resource prior to running the DAM, PD and the RT calculation engines as described in Section 3.13.1."

OPG would like some clarity on how these reference levels will be reported and at what time. OPG proposes that Reference Levels are published prior to DAM submission deadline and hourly during the Pre-dispatch timeframe for market participants to review and update their offers/bids accordingly.

Section 3.15.1 Conduct and Impact Test

Detailed Comment: Propose 5-day turnaround time for IESO to respond to eligibility requests

Section 3.15.1 states:

“A market participant will be able to submit an ex-post cost recovery request for a resource when:

- The IESO has applied market power mitigation to this resource for all or part of one or more trading days; and
- The market participant believes that the reference level for a financial parameter used during the mitigation process did not reflect the allowable short-run marginal costs the market participant incurred.”

OPG would like the IESO to provide a firm 5 day commitment to respond to these eligibility requests following submission by a market participants.