

Improving Accessibility of Operating Reserve

Webinar – December 10, 2019

Meeting Participation

- Webinar participation (including audio):
 - <https://www.meetview.com/ieso20191210/>
 - Use the “Ask a Question” function to submit a question during the webinar
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 - Local (+1) 416 764 8640; Toll Free (+1) 888 239 2037
 - Press *1 to alert the operator that you have a question
- When asking a question, please state your name and who you represent so those participating are aware
- This webinar is conducted according to the IESO [Engagement Principles](#)

Agenda

- Recap of last webinar
- Review stakeholder feedback and IESO response
- Recommended solution
 - Market rule clarification
 - High-level design of claw-back mechanism
- Next steps

Objective

- Ensure stakeholders understand the details of the recommended solution to address the Operating Reserve (OR) accessibility issue
- Seek feedback from stakeholders on the design of the recommended solution

Stakeholder Feedback From Last Webinar

July 31 Webinar - Overview

- Presented potential solutions to address the OR accessibility issue
- Presented the proposed framework to evaluate the potential solutions
- Requested stakeholder feedback on the potential solutions and the evaluation framework

July 31 Webinar – Proposed Solutions Presented

Option 1
Market Rule
Amendments

Option 2
Modify Operating
Reserve
Activation(ORA)
Dispatch Signal

Option 3
Enhance OR
Scheduling
and
Dispatching

July 31 Webinar - Stakeholder Feedback

- Stakeholder feedback was requested by August 15, 2019
- IESO provided a detailed response to all stakeholder comments on September 13, 2019
- Stakeholder feedback and IESO response are posted on the engagement webpage
- High-level summary of the feedback and the IESO response are provided in the following slides

Feedback Theme – Market Rule Amendments Option

Stakeholder Feedback

- Stakeholders expressed general support for the market rule amendments option with requests for additional clarity and revision

IESO Response

- Further details on the proposed solution recommended by the IESO are included in the following slides

Feedback Theme - Compliance

Stakeholder Feedback

- Stakeholders provided feedback on various aspects related to compliance with the proposed solutions including: compliance deadbands, Interpretation Bulletins and compliance aggregation

IESO Response

- Changes to Interpretation Bulletin ([IMO MKRI 0001](#)) related to compliance deadbands are not within the scope of this stakeholder engagement
- The IESO is not looking to make any changes to compliance aggregation as it relates to this issue
- Details on how to measure compliance in relation to the recommended solution are summarized in the following slides

Feedback Theme - Claw-back Mechanism

Stakeholder Feedback

- Stakeholders had various recommendations for how the claw-back should be triggered and applied

IESO Response

- The IESO has taken these comments into consideration when developing the claw-back mechanism which is summarized on the following slides

Evaluation of Options

Evaluation Framework

All potential options presented during the July 31 webinar were evaluated against the following framework

Reliability

- Ability to reduce/eliminate reliability risk associated with inaccessible OR

Market Efficiency

- Meeting OR needs cost-effectively
- Addressing Market Surveillance Panel (MSP) recommendations

Implementability

- Complexity of the solution and its impact on IESO and Market Participant (MP) processes
- Dependencies with other IESO initiatives

Compliance Monitoring

- Ability to measure and monitor compliance

Option 2: Modify ORA Dispatch Signal - Summary

- ORA dispatch change:
 - Modify ORA dispatch targets to account for the resource's output/consumption at the time of the activation
- Review/revise the market rules and market manuals
- Implement an after-the-fact settlement process to claw back OR payments for inaccessible OR

Option 2: Modify ORA Dispatch Signal - Evaluation

- **Reliability**
 - Reduces the reliability risk of not being able to recover demand-supply balance from a contingency
- **Market Efficiency**
 - Ensures the IESO is receiving the OR service it is procuring and incepts OR providers to ensure they are capable of providing the OR scheduled
- **Implementability**
 - Material changes required to IESO dispatch tools
 - Costly and lengthy implementation for the IESO
 - May require market participant (MP) tool/process changes
 - Material IESO resource commitment required which may conflict with other ongoing IESO priorities
 - May not align with Market Renewal Program (MRP)
 - Requires complex energy and OR congestion management settlement credit (CMSC) claw-backs
- **Compliance Monitoring**
 - May require compliance monitoring changes to enforce any new/revised market rules

Option 3: Enhance OR Scheduling and Dispatching - Summary

- OR scheduling change
 - Modify scheduling tool to only schedule OR that can be accessed by accounting for the flexibility available to OR providers through compliance deadbands
- ORA dispatch change
 - Modify ORA dispatch targets to account for the resource's output/consumption at the time of the activation
- Explore the potential to update tools to enable dispatchable loads (DLs) to de-rate in real time
- Develop a process to claw back CMSC

Option 3: Enhance OR Scheduling and Dispatching - Evaluation

- **Reliability**
 - Eliminates the reliability risk of not being able to recover demand-supply balance from a contingency
- **Market Efficiency**
 - Ensures the IESO is receiving the OR service that it is procuring
 - Does not drive efficient MP behaviour
- **Implementability**
 - Significant changes required to IESO dispatch and scheduling tools
 - Costly and lengthy implementation for the IESO
 - Substantial IESO resource commitment required which will conflict with other ongoing IESO priorities
 - May not align with MRP
 - Requires complex energy and OR CMSC claw-back
- **Compliance Monitoring**
 - May not require new compliance monitoring changes to enforce any new/revised market rules as there might not be market rule amendments required

Recommended Solution

Option 1: Market Rule Amendments

- Review/revise/clarify the market rules and update applicable market manuals to ensure ORA performance will be based on incremental energy provided during activation
- Implement an after-the-fact settlement process to claw-back OR payments for inaccessible OR
 - IESO has the authority to claw-back OR payments for inaccessible OR

IESO recommends proceeding with this option to address the OR accessibility issue

Recommended Solution – Evaluation

Reliability

- Reduces the reliability risk of not being able to recover demand-supply balance following a contingency
- Market rule clarifications should drive desired MP behaviour:
 - Being off dispatch can impact a resource's ability to comply with ORA performance requirement

Recommended Solution - Evaluation

Market Efficiency

- Ensures that the IESO is receiving the OR service that it is procuring and incentivizes OR providers to ensure that they are always capable of providing the OR scheduled
- Drives desired MP behaviour and improves market efficiency by clawing back OR payments related to inaccessible OR and measuring ORA compliance based on the incremental energy provided

Recommended Solution - Evaluation

Implementability

- Lowers IESO implementation cost as no scheduling or dispatching tool changes are required
 - May require updates to internal IESO processes and support tools
- Shorter timeline for the IESO to implement market rule clarifications relative to other options
- Alignment with MRP
 - No scheduling/dispatching tool changes required

Recommended Solution - Evaluation

Compliance Monitoring

- Compliance monitoring changes may be required to enforce clarifications in market rules
- May require changes to the Interpretation Bulletin ([IMO MKRI 0001](#))

Recommended Solution – High Level Design

Providing Incremental Energy

- When MPs receive an ORA dispatch, they will need to compare the ORA dispatch to their previous energy dispatch to determine the incremental amount of energy they are required to provide
 - In some instances, when MPs are utilizing their deadbands, they may need to increase their outputs above (for generators) or reduce their consumption below (for DLs) their ORA dispatch targets in order to provide the incremental energy required to comply with the ORA
- MPs must provide both the incremental energy and meet their ORA dispatch targets (at or above the targets for generators and at or below the targets for DLs) to be compliant

Example Scenario: Providing Incremental Energy for a Generator

- Maximum Generator capability = 100 MW
- IESO activates OR at 10:06

	A	B	C	D	E	F
	Energy Dispatch at 10: 05	Output at 10:06	Energy Dispatch Schedule for 10:10 (Received by MP at 10:05)	OR dispatch schedule for 10:10 (Received by MP at 10:05)	ORA Dispatch Target Sent at 10:06	Incremental Energy expected
No change (MW)	70	80	70	30	100	$E-C=100-70=30$
Ramping up (MW)	50	60	70	30	100	$E-C=100-70=30$
Ramping down (MW)	70	60	50	30	80	$E-C=80-50=30$

Expected incremental energy = difference between the last sent energy dispatch (Column C) and the new ORA target amount (Column E)

Example Scenario: Providing Incremental Energy for a DL

- Maximum dispatchable load capability = 100 MW
- IESO activates OR at 10:06

	A	B	C	D	E	F
	Energy Dispatch at 10:05	Consumption at 10:06	Energy Dispatch Schedule for 10:10 (Received by MP at 10:05)	OR Dispatch Schedule for 10:10 (Received by MP at 10:05)	ORA Dispatch Target Sent at 10:06	Incremental Energy expected
No change (MW)	70	60	70	30	40	$E-C=40-70=-30$
Ramping Down (MW)	70	60	50	30	20	$E-C=20-50=-30$
Ramping Up (MW)	50	60	70	30	40	$E-C=40-70=-30$

Expected incremental energy = difference between the last sent energy dispatch(column C) and the new ORA target amount (column E)

Providing Incremental Energy

- ORA is deemed successful when the incremental energy provided during an ORA is equal to or greater than the OR activated and when the ORA dispatch is met (at or above the targets for generators and at or below the targets for DLs)
 - Expected incremental energy = difference between the last sent energy dispatch and the new ORA target amount

Recommended Solution – ORA Compliance Example Scenarios

ORA Compliance – Generator

	Last Energy Schedule Received	OR Schedule	Output	Compliance Deadband	OR Activated	ORA Dispatch	Output After ORA	Incremental Energy Provided	Compliant to ORA?
A →	100	50	100	±15	50	150	160	60	Yes
	100	50	100	±15	50	150	150	50	Yes
	100	50	90	±15	50	150	150	60	Yes
	100	50	90	±15	50	150	140	50	No
B →	100	50	110	±15	50	150	160	50	Yes
	100	50	110	±15	50	150	150	40	No

- Scenario A: If a generator's output is equal to or less than its energy schedule when an ORA dispatch signal is received, its output needs to be at or above its ORA target in order to meet the ORA performance requirement (as highlighted in red)
- Scenario B: If a generator's output is greater than its energy schedule when an ORA dispatch signal is received, its output needs to be above its ORA target in order to meet the ORA performance requirement (as highlighted in yellow)

ORA Compliance - Dispatchable Loads

	Last Energy Schedule Received	OR Schedule	Consumption	Compliance Deadband	OR Activated	ORA Dispatch	Consumption After ORA	Incremental Energy Provided	Compliant to ORA?
	100	100	100	±15	90	10	10	90	Yes
	100	100	100	±15	90	10	0	100	Yes
A	100	100	110	±15	90	10	0	110	Yes
	100	100	110	±15	90	10	10	100	Yes
	100	100	110	±15	90	10	20	90	No
	100	100	90	±15	90	10	0	90	Yes
B	100	100	90	±15	80	20	10	80	Yes
	100	100	90	±15	80	20	20	70	No
	100	100	90	±15	100	0	0	90	No

- Scenario A: If a dispatchable load's consumption is equal to or greater than its OR schedule, when an ORA dispatch signal is received, its consumption needs to be at or below its ORA target in order to meet the ORA performance requirement (as highlighted in red)
- Scenario B: If a dispatchable load's consumption is less than its OR schedule when an ORA dispatch signal is received, its output needs to be below its ORA target in order to meet the ORA performance requirement (as highlighted in yellow)

For DLs, existing market rule exemptions will be evaluated to assess their impact on DLs compliance with ORA

Settlement Claw-back

OR Payment Claw-back

- Claw-back amount based only on the inaccessible OR
- Not triggered by OR activations
- Claw-back trigger
 - For generators, if the difference between a resource's output and its maximum capability* is less than the OR scheduled
 - For DLs, if the consumption is less than the OR scheduled

*Maximum capability is determined based on a resource's maximum energy offer/bid while factoring in any known de-rates

OR Payment Claw-back

- To be applied as a new charge in settlement statements
- Based on a preliminary assessment, claw-backs to OR payments could impact OR standby payments, OR CMSC payments and the OR component of the Day-ahead Production Cost Guarantees (DA-PCGs)
 - Further information will be provided through this stakeholder engagement when a more thorough assessment is completed

OR Payment Claw-back Example

	A	B	C	D	E		F
	Maximum Cap ability	Energy Schedule	OR Schedule	Output/Consumpti on	Compliance Deadband	Claw-back triggered(Y/N)	Proposed Claw-back Payments based on MW amount
	200	100	50	110	±15	N	0
Gen.	200	100	50	90	±15	N	0
	150	100	50	110	±15	Y	D-B=110-100=10
	150	100	50	90	±15	N	0
	200	100	100	90	±15	Y	C-D=100-90=10
Dis. Load	200	100	100	110	±15	N	0
	100	100	100	90	±15	Y	C-D=100-90=10

For DLs, existing market rule exemptions will be evaluated to assess their impact on OR payment claw-backs

Next Steps

Questions for Consideration

- General feedback on the proposed solution
 - Is the high-level design of the proposed solution clear and understandable?
 - Is there any other information you require to understand the scope and impact of the proposed solution?
 - How will the proposed solution result in changes to your OR participation, if any?
 - Are there modifications to the design of the proposed solution that the IESO should consider?

Questions for Consideration

- Providing the required amount of incremental energy
 - Are there MP tool or process changes needed to determine the amount of incremental energy required during an ORA? If changes are required, please provide high-level estimates on the timeline for the changes
- Claw-back mechanism
 - Is the claw-back mechanism clear and understandable?
 - Is there anything the IESO should consider when undergoing a more thorough assessment of the impacts of the claw-back mechanism?

Next Steps

- Please submit your feedback to engagement@ieso.ca using the feedback form on the engagement webpage by January 10, 2020
- IESO will review and respond to stakeholder feedback by February 10, 2020

Next Steps

- Following review and consideration of stakeholder feedback, IESO will conduct a review of market rules, market manuals and Interpretation Bulletin ([IMO MKRI 0001](#)) that may require clarification
- Discuss the implementation details at next webinar/meeting in Q2 2020
 - Complete review of market rules, market manuals and Interpretation Bulletin for clarification
 - Further details of new charge type to claw back payments for inaccessible OR

Relevant Information

Compliance Aggregation:

<http://www.ieso.ca/-/media/Files/IESO/Document-Library/training/QT-Compliance-Aggregation.pdf>

Interpretation Bulletins:

http://www.ieso.ca/-/media/Files/IESO/Document-Library/mr-interpret-bulletin/ib_IMO_MKRI_0001.pdf?la=en

IESO Training Guide – Guide to Operating Reserve:

<http://www.ieso.ca/-/media/Files/IESO/Document-Library/training/ORGuide.pdf?la=en>