

# CONTROL ACTION OPERATING RESERVE (CAOR) PHASE 1

Public Information Session

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October 13, 2017

# Purpose

To present the IESO's proposal to reallocate Control Action Operating Reserve (CAOR) standing offers to better reflect system capabilities

- A review of the effectiveness of the overall CAOR mechanism will be launched in 2018

# Agenda

- 1) Background
- 2) Recommended Changes to CAOR Offers
- 3) Analysis of Potential Market Impacts
- 4) Next Steps and Implementation Timing

# Background

# Control Action Operating Reserve

- The IESO can take a number of out-of-market control actions to manage an OR shortage
  - The use of the control actions to meet the reserve requirement is permitted under NPCC Regional Reliability Reference Directory #5
- The IESO uses standing offers in the energy and OR market to represent 'out-of-market' control actions available called Control Action Operating Reserve (CAOR)<sup>1</sup>. Control actions include:
  1. Voltage reductions (which provides demand relief), and
  2. Disregarding the 30-minute reserve requirement

<sup>1</sup> Chapter 5, Section 4.5.6A of the Market Rules allows the use of CAOR to represent the control actions as standing offers in the Operating Reserve (OR) market.

# OR Representation of Control Actions

1. Voltage reductions:
  - Voltage reductions are implemented by the transmitter and can be implemented within 10 minutes
  - Accordingly, it can be used to satisfy both 10-minute and 30-minute OR
2. Disregarding the 30-Minute reserve requirement:
  - The IESO can be deficient in the 30-minute reserve requirement for up to 4 hours before further action is required to recover from the deficiency
  - Disregarding the 30-Minute reserve requirement can only be used to satisfy 30-minute OR

# Current CAOR Offer Structure

- CAOR is currently offered through 2 virtual resources in real time to represent a combination of the control actions:

Resource	Quantity	10N Offer	30R Offer
Richview 3VR	400 MW	\$30.10	\$30
Richview 5VR	200 MW	\$75	NA
	200 MW	\$100	

- There is a total of 800 MW offered into 10N, and 400 MW offered into 30R

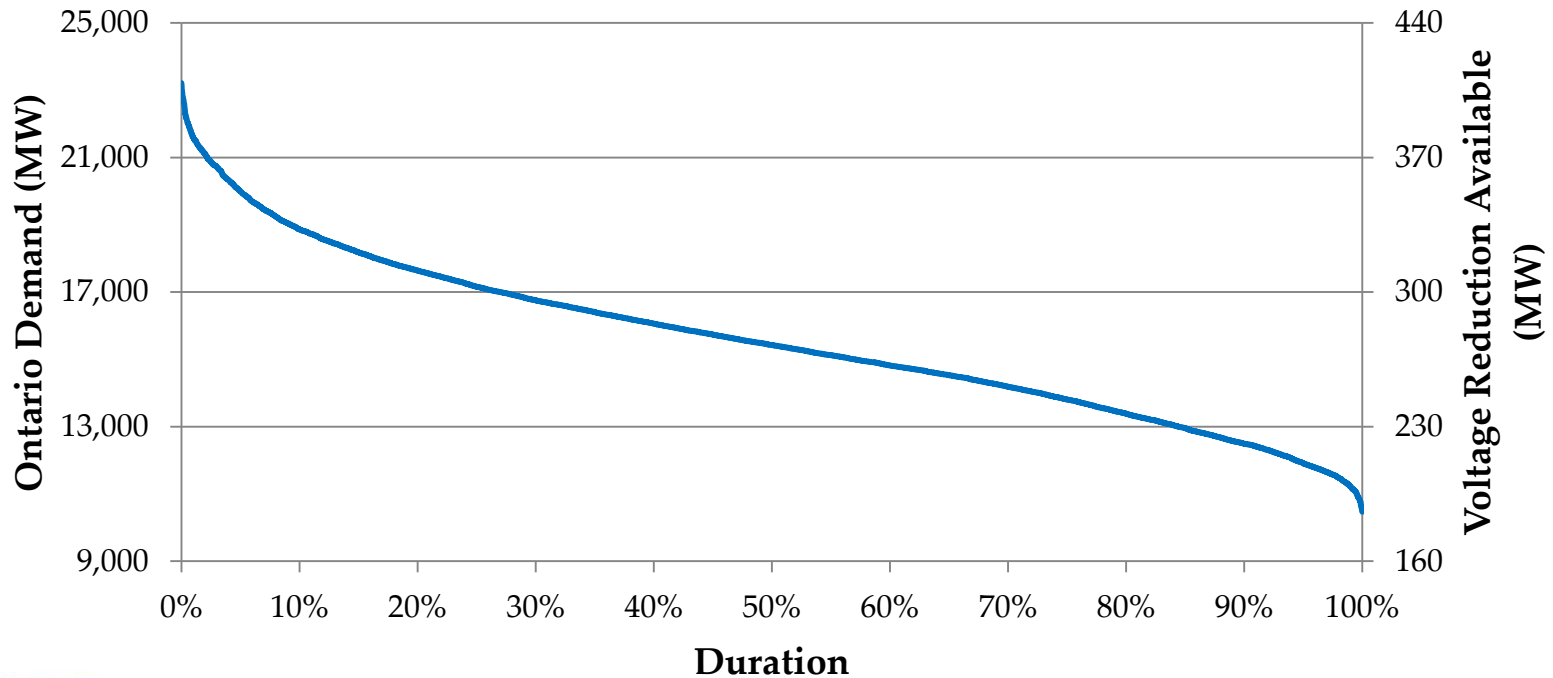
# Current CAOR Offer Structure Issues

- The current offer structure of CAOR does not:
  1. Reflect the actual capability of the control actions
    - In order to achieve 800 MW of 10N CAOR from voltage reductions, Ontario demand needs to be greater than 45,000 MW
      - Highest Ontario demand in 2016 was 23,213 MW
  2. Separate the two individual control actions
    - The actions are bundled together in their offers



# Load Duration Curve for 2016

- Graph below shows the duration curve for 2016 Ontario demand and the corresponding amount of demand relief achievable from voltage reductions
- CAOR was de-rated 96% of the time in 2016 to reflect the capability of voltage reductions



# CAOR De-rates

- As a result, de-rates are required to ensure the amount of CAOR scheduled does not exceed the amount of control actions available
- Managing and de-rating CAOR can understate the quantity available from disregarding the 30-minute requirement
- De-rates are applied when CAOR is scheduled in the constrained sequence
  - May still result in overstating the amount of voltage reductions available in the market schedule

# Recommended Changes to CAOR Offers

# Proposed Solution – Change in Offer Structure

- The current offer structure:

Resource	Quantity	10N Offer	30R Offer
Richview 3VR	400 MW	\$30.10	\$30
Richview 5VR	200 MW	\$75	NA
	200 MW	\$100	

- The proposed change in offer structure:

Resource	Quantity	10N Offer	30R Offer
Richview 3VR	400 MW	\$30.10	\$30
Richview 5VR	200 MW	NA	\$75
	200 MW		\$100

*The proposed solution reallocates the Richview 5VR offer to 30R. This will ensure CAOR is offered in a way that accurately reflects the control actions available.*

# Proposed Solution

- The change to the offer structure will offer Richview 5VR into 30R instead of 10N
  - Reducing the quantity offered into 10N to 400 MW which better reflects the capability and reduces the need to de-rate
- This effectively assigns 1 control action to 1 CAOR resource.
  - Richview 3VR will represent voltage reductions in 10N and 30R; and
  - Richview 5VR will represent disregarding the 30R reserve requirement in 30R.
- The proposed solution ensure CAOR is offered in a way that accurately reflects the control actions available.

# Analysis of Potential Market Impacts

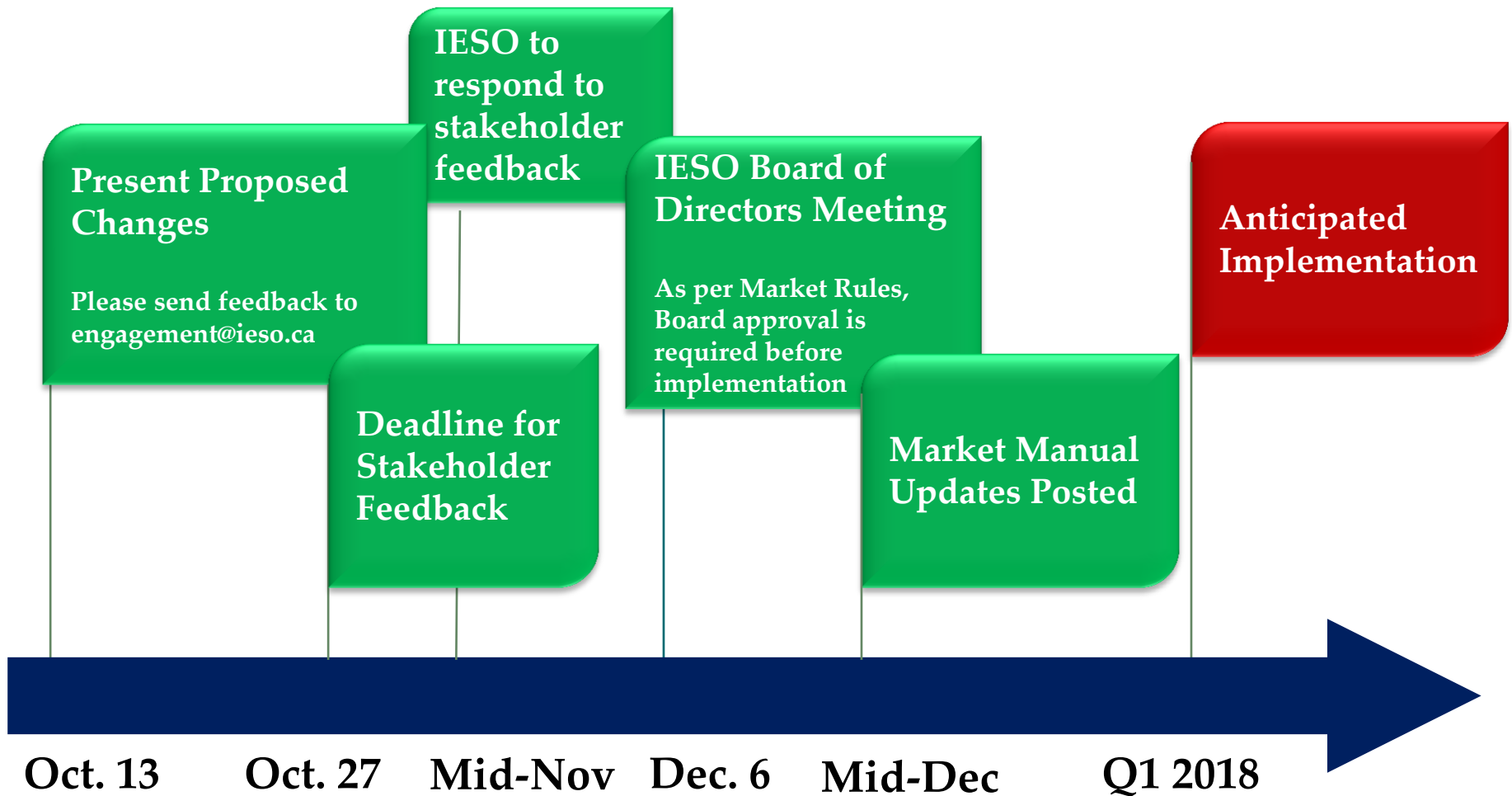
# Estimate of Potential Market Impacts

- Market impacts from the proposed change are expected to be marginal
  - By using a more accurate reflection of voltage reduction available, the proposed lower amount of 10N offered as CAOR may result in a higher frequency of OR price spikes
  - Based on simulating 2016 market outcomes with proposed changes, there would be a total OR uplift increase of less than \$1.5M annually or on average ~\$0.05 increase to OR prices

# Next Steps and Implementation Timing



# Timing of CAOR Phase 1 Implementation



# Next Steps

- Stakeholder feedback on the proposed changes is due: October 27
- Please submit feedback to: [engagement@ieso.ca](mailto:engagement@ieso.ca)
- CAOR Phase II (initiative to review of the effectiveness of the CAOR mechanism) is expected to be launched in mid-2018