

### ISSUE 13: Control Action Operating Reserve (CAOR)

#### Objective:

This description paper provides a summary of the possible options formulated to address the issues identified by the Market Pricing Working Group (MPWG) with respect to Control Action Operating Reserve (CAOR). The paper outlines the principle, proposed analysis for evaluation and possible implications of each option. The intent of this paper is to solicit MPWG feedback to determine the feasibility of each option in addressing market pricing issues.

#### Background:

On September 5, 2008, the IESO Board approved the removal of CAOR offers from pre-dispatch. The decision was taken in response to NYISO and MISO no longer accepting Ontario exports which the IESO made recallable in pre-dispatch. These exports were made recallable to back the CAOR scheduled in pre-dispatch. Therefore, in order to manage the operational impacts and potential reliability concerns due to export failures (recallable exports cancelled by NYISO & MISO), CAOR offers were removed from pre-dispatch.

At present, the CAOR structure includes offers only in real-time for 10 minute non-synchronized (10N) and 30 minute (30R) operating reserve (OR). There are two concerns with the current CAOR structure. First, without CAOR in pre-dispatch, there is a potential for increased divergence between pre-dispatch and real-time prices. Second, there is a concern that the original method for assigning prices to CAOR may be outdated and it may be inducing inefficient outcomes whereby CAOR is being scheduled ahead of market resources.

Current Control Action Operating Reserve in Market - Resource Offers						
Resource	Total Quantity (MW)	30 min OR Price (\$/MW/Hr)	10 min Non Sync OR Price (\$/MW/Hr)	Resource OR Scheduling Ramp Rate (MW/Min)	Energy Bid (\$/MWh)	Resource Energy Ramp Rate (MW/Min)
RICHVIEW-230.G_3VR	400 RT	30.00	30.10	999	2000.00	4 up, 999 down
RICHVIEW-230.G_5VR	200 RT	N/A	75.00	999	2000.00	4 up, 999 down
RICHVIEW-230.G_5VR	200 RT	N/A	100.00	999	2000.00	4 up, 999 down

### Options:

The following is a list of possible options to address the issues identified with the current CAOR structure:

1. *NYISO model*

Proposal: Under this option, prices of CAOR would be set based on the methodology used by NYISO to set prices for their OR demand curves. The NYISO method of pricing demand curves is based on the following principles:

- Prices are set at a level so that all available market sources of operating reserve would, with high certainty, be selected first;
- Prices are consistent with the \$500 value for NYISO EDRP (Emergency Demand Response program) and NYISO \$1000 10-minute reserve shortage cost;
- Enable market to clear with rational, defined prices even without enough reserves available to meet the reserve requirement; and
- No set procedure in place to back demand curves with any resources such as control actions.

Motivation: Maintaining the last MW of reserve may not be worth the Maximum Market Clearing Price (MMCP). CAOR should achieve “rational pricing” by establishing defined prices when market is short of OR offers.

### Expected Implications:

- The NYISO pricing principle would mean that there would be an increase in the CAOR offer prices. This would place an upward pressure on the market prices.
- If the CAOR was offered in pre-dispatch as 10N, the issue related to recallable exports would be mitigated to an extent since the higher offer price would reduce the amount of time CAOR was scheduled in pre-dispatch.
- The prices should reduce the instances where CAOR is scheduled ahead of the available market offers.

### Proposed Analysis:

- To establish CAOR prices:
  - ◆ Simulate shortage pricing: Run simulations to create shortage conditions and determine shortage prices. Establish CAOR prices with reference to these prices. For example, when we are within X MW of shortage, prices tend to be \$Y. Therefore, set the CAOR price at \$Y<sup>1</sup>.
  - ◆ Ontario OR supply curve: Evaluate available offers in the supply curve to set CAOR prices. What are the highest OR offer prices? At what price would

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<sup>1</sup> Depending on amount of shortage, there will be different prices i.e. price Y will vary with quantity X.  
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CAOR have to be offered to ensure it was selected only after other resources in the market were selected?

- ◆ NYISO prices: Use NYISO demand curve prices to set CAOR prices.
- ◆ DR programs: Are there any reliability based DR programs that can be used to benchmark CAOR prices?
- To establish impact on stakeholders including an analysis on price changes:
  - ◆ Simulations: Depending on the method selected for pricing CAOR, simulations are proposed to analyse the price impacts on the market.
  - ◆ Impacts on stakeholders will be evaluated relative to status quo<sup>2</sup>.

### 2. Restructuring CAOR

Proposal: To re-structure the current CAOR offers in the market by adding 400MW 30R offer in the pre-dispatch and removing 10N offer from first 400MW tranche of CAOR in both the pre-dispatch and real-time. Therefore, the 10N and 30R offers will be entirely separated as opposed to present cascaded structure (of 10N & 30R) in real-time. Also, to determine if there is a need to change the current prices and/or quantities of CAOR offered in the market.

Restructured Control Action Operating Reserve - Resource Offers						
Resource	Total Quantity (MW)	30 min OR Price (\$/MW/Hr)	10 min Non Sync OR Price (\$/MW/Hr)	Resource OR Scheduling Ramp Rate (MW/Min)	Energy Bid (\$/MWh)	Resource Energy Ramp Rate (MW/Min)
RICHVIEW-230.G_3VR	400 PD & RT	30.00	N/A	999	2000.00	4 up, 999 down
RICHVIEW-230.G_5VR	200 RT	N/A	75.00	999	2000.00	4 up, 999 down
RICHVIEW-230.G_5VR	200 RT	N/A	100.00	999	2000.00	4 up, 999 down

Motivation: Current procedure requires the IESO to make exports recallable if CAOR is scheduled for 10N in pre-dispatch; if CAOR is scheduled for 30R only, the IESO does not make any exports recallable. Therefore, under this proposal, exports would no longer be made recallable to back CAOR scheduled in pre-dispatch<sup>3</sup>.

<sup>2</sup> Status Quo is the current market structure of CAOR. For more details, refer to Option 3 – Status Quo.

<sup>3</sup> In this proposal, only 400 MW of 30R offer are available in pre-dispatch, when scheduled does not require exports to be made recallable.

### Expected Implications:

- It should improve convergence between pre-dispatch and real-time prices.
- It would resolve the issues identified with recallable exports.
- It would place an upward pressure<sup>4</sup> on 10N CAOR price and the energy price since there would be less 10NS CAOR offers available.
- It should result in less frequent scheduling of CAOR in real-time.
- Does this proposal address the efficient pricing concern raised in MPWG?

### Proposed Analysis:

- To establish impact on stakeholders:
  - ◆ Simulations: To ascertain the price impacts on the market.
  - ◆ Impacts on stakeholders will be evaluated relative to status quo

### 3. *Status Quo*

Proposal: Under this option, no changes will be made to the current structure of CAOR. In the current structure, there are no CAOR offers available in pre-dispatch sequence.

Motivation: Under the current market design, exports are not made recallable as there is no CAOR offer present in the pre-dispatch sequence. So far, since the implementation of the design, we have no evidence that the change has led to any unintended consequences.

### Expected Implications:

- It may lead to increased divergence between pre-dispatch and real-time prices.
- However, the issues identified with recallable exports are resolved.

### Proposed Analysis:

- A detailed study to determine if the implementation of current design has had any unintended consequences:
  - ◆ Pre-dispatch vs. Real-time divergence: Comparing hour ahead pre-dispatch and real-time prices.
  - ◆ Price impacts: Assessing price impacts on the market.
  - ◆ Impact on export transactions: Fewer failed exports are expected.

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<sup>4</sup> Under this proposal, 10NS offer will no longer be available at \$30.10 in real-time.  
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### 4. *Value of Control Actions*

Proposal: To determine the true social value of the latent reserves to the consumers available in the form of control actions (e.g. 3% and 5% voltage reductions, recalling exports).

Motivation: To determine the actual cost based on true social value of using these sources of reserve and the potential to actually activate them as energy as a result of using them as reserve. Also, determining the actual social cost of utilizing these assets would lead to the most efficient pricing and use of these control actions as reserve.

Expected Implications:

- The social cost may vary for each control action and according to different situations. This may require a complex pricing arrangement for the CAOR.
- It is a complex and potentially groundbreaking analysis for pricing CAOR which may not be IESO's expertise. It may also take considerable time to study.

Proposed Analysis:

- Reviewing the literature.