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Date Raised

July 2004.

Description

On July 3, 2003, the IMO Board approved market rule amendment (MR-00235-R00-R05) that introduces control action operating reserve in the market (CAOR). CAOR represents sources of reserve that were previously deemed to be “out-of-market” sources of reserve. In particular, the market rule amendment authorizes the IMO to include standing operating reserve offers in the market for the following control action sources:

- the load that would be reduced if the IMO implemented a 3% voltage reduction;
- the load that would be reduced if the IMO implemented a 5% voltage reduction; and
- not meeting the thirty-minute reserve requirements in accordance with reliability standards.

The IMO initiated the market rule amendment in response to what were determined to be the adverse pricing impacts of the manual use of “out-of-market” sources of reserve.

There are three aspects of the current implementation of CAOR that represent market pricing issues. First, is the current pricing of the CAOR appropriate? Second, is it appropriate for the IMO to make exports recallable whenever CAOR is scheduled in the pre-dispatch constrained sequence? Should the remaining 400 MW of ‘out-of-market’ reserve be implemented as CAOR and if so at what price(s)? Each of these issues is discussed in more detail below.

Background

In 2003, the IMO’s Market Pricing Issues team studied the implications of the manual use of ‘out-of-market’ control actions (See Issue #6). The Pricing Team determined that the manual use of these ‘out-of-market’ control actions had the following impact on market prices and market signals. First, the use of these control actions had contributed to differences between the pre-dispatch and real time prices as they were employed in real-time only. Second, the use of these control actions had caused the real-time prices to fall, even at times when demand was increasing; the ‘out-of-market’ sources of operating reserve may have needed to be carried only in the constrained sequence yet, its implementation also affected the unconstrained sequence where prices are

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determined. At times the price decrease significantly understated the actual conditions in the market.

To address these issues, the Pricing Team identified two potential resolutions: one, allowing the Dispatch Scheduling Algorithm (DSO) to use its existing capability to automatically utilize 'out of market' resources when a shortage exists in real-time; or two, applying a price to each of the 'out of market' resources and directly inserting these resources into the market as operating reserve offers. The IMO, in consultation with market participants decided on the latter approach. The Pricing team did not recommend the first resolution as it was expected to "result in a higher incidence of price spikes in Real-time" and that these price spikes would not "materially improve the ability of the Pre-dispatch price to signal changes in the Real-time price."

The Market Rules Chapter 5 section 4.5.6A authorizes the IMO create standing offers for the CAOR and to determine the amounts of and the prices of these offers. Current implementation of these standing offers is limited to the inclusion of 400 MW of 3% and 5% voltage reduction as an operating reserve source. The IMO has implemented the 400MW of CAOR as both 10-minute non-spinning reserve and 30 minute reserve. The 10-minute reserve is offered at a price of \$30.01/MW while the 30 minute reserve at \$30.00/MW. There is roughly an additional 400 MW of "out-of-market" sources of reserve in the form of disregarding the thirty-minute reserve requirements that could be introduced into the market as CAOR via a standing offer.

The prices applied to the CAOR were chosen using the following objective: CAOR should be in the future at roughly the same frequency in which the 'out-of-market' sources of reserve were used via manual intervention during the first year of the market. After some analysis and consultation with market participants, the \$30.00/MW for 30 minute reserve was chosen. The \$30.01/MW was chosen for 10-minute reserve to ensure that CAOR was typically used first as 30-minute reserve rather than as 10 minute reserve.

The CAOR offers are made in both the pre-dispatch and the real-time constrained and unconstrained sequences. Within each of the sequences, the CAOR will be scheduled automatically by the DSO (and in potentially different amounts in each sequence) based on its offer prices compared to the offer prices of other market sources.

When CAOR is scheduled in pre-dispatch, it typically implies that fewer imports (more exports) will be scheduled. It may also mean that the start of a fossil generation facility is prevented. As a result, the scheduling of CAOR in pre-dispatch can mean an increase in the probability that a real-time contingency

would require the actual implementation of voltage reductions. To reduce the probability of this event (or for added assurance against the event), the IMO has adopted a procedure where by when at least a portion of the CAOR is scheduled in the pre-dispatch constrained sequence, IMO make exports recallable in the amount of the CAOR scheduled. These exports will then be available as reserve (the exports can be cut) in real-time in the event that a contingency occurred that would otherwise require the IMO to activate the voltage reductions. Exports that are made recallable are not eligible to receive operating reserve payments.

Why a Pricing Issue

The implementation of CAOR raises there pricing issues. The first issue relates to the pricing of the CAOR. The Pricing Team estimated that prior to the implementation of CAOR, the IMO used 'out-of-market' sources of reserve in roughly 7% of the 5-minute intervals. Since its implementation, CAOR has been scheduled in the real-time constrained sequence in 14.6% of the 5-minute intervals and in the real-time unconstrained sequence in 4.6% of the intervals. If one also recognizes that in several intervals, the IMO continues to manually implement other forms of 'out-of-market' control actions (the disregarding of 30 minute reserve) the total us of these reserves has increased. This is in conflict to the IMO's stated objective in pricing the CAOR and suggests that the CAOR may be currently priced too low relative in light of this objective. On related note, the CAOR has been scheduled in roughly 14.5% of the constrained pre-dispatch sequences and 7.9% of the unconstrained pre-dispatch sequences. Scheduling the CAOR in pre-dispatch generally leads to less actual energy (imports or fossils starts) being scheduled in pre-dispatch and hence being available in real-time; a factor contributing to the increased use of CAOR relative to the prior use of 'out-of-market' sources of reserve.

The second issue relates to the IMO's procedure to use exports (make them recallable) as a potential form of reserve to back the CAOR when ever it is scheduled in the constrained pre-dispatch sequence. Making these exports recallable provides the market with additional reserve for which the exporters receive no compensation. Exports are unlikely to know at the time that they place their bid that their export may be made recallable and hence cut in real-time. Cutting the export may result in potential financial losses to the exporter that, without the knowledge of this potential he/she may not have factored into the bid price.

The third issue relates to the potential implementation of the third form of 'out-of-market' control actions, the disregarding of 30-minute reserve requirement. Under NPCC standards, The IMO is permitted to forgo the acquisition of 30 minute reserve for up to four hours, provided it can replace the required reserve within the four hour period. Furthermore, the IMO cannot plan itself into the use

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of this control action; it can use it in the event that it identifies a sudden shortfall of reserve. These conditions on the use of this control action distinguish its implementation as CAOR from other control actions such as voltage reductions. In particular, the IMO cannot just place an offer price on the reserve and run the risk of using it for reserve (disregarding the requirement) for more than four hours. Secondly, the scheduling of this control action in pre-dispatch based on an offer price can be interpreted as planning oneself into the use of the control action. As a result, the IMO has not yet proceeded to implement this control action as CAOR and are currently considering alternative options for its implementation.

Impacts of Issue

Market Impact

The pricing of CAOR impacts the guiding principle of efficiency, fairness and transparency.

Participant Impact

TBD

IMO Processes and Procedures Impact

No significant impact identified. The market rules do not describe the approaches or algorithm to derive the amount and/or the price of CAOR. Therefore a change in the price and/or the amount of CAOR does not require a change in the market rules.

Options considered

TBD

Related Issues

- 006: Effects of Emergency Control Actions on Market Clearing Prices
- 013: Impact of Out of Market Resources on the Market

Selected References

1. The Market Surveillance Panel Report of June 2004,
http://www.theimo.com/imoweb/pubs/marketSurv/ms_mspReport-20040614.pdf
MARKET PRICING ISSUES Discussion Paper prepared by the Market Pricing Issues Team May 28th, 2003
http://www.theimo.com/imoweb/pubs/consult/mktOps/mo_paper_PricingIssues_20030528.pdf