

ISSUE 08: SYSTEMIC DIFFERENCES BETWEEN THE DAY-AHEAD AND REAL-TIME MARKETS

Please Note: *This is a draft document that may undergo substantial revision following discussion at the October 01, 2004 Market Pricing Working Group meeting.*

Date Raised

Raised in August 2004 by the IMO Market Pricing Working Group in recognition of questions raised early in the deliberations of the Day Ahead Market Working Group.

Description

Market Pricing Working Group members have expressed concern that design differences between the Day-Ahead Market (DAM) currently being developed by the IMO and the existing real-time market (RTM) may create systemic price differences between the markets, possibly resulting in and perpetuating inefficient and unfair outcomes and behaviours.

Background

While day-ahead offers and bids for energy should reflect participants' expectations of real-time prices, prices between the two markets may nonetheless differ for a variety of reasons, including misestimations made by participants prior to discovering actual real-time conditions, risk averse offer and bid behaviour, varying supply and demand conditions between the markets, market power on the part of physical and/or virtual participants, and market design differences. In other words, day-ahead prices may be biased relative to real-time prices as a consequence of "contextual" or circumstantial factors (such as the first three factors mentioned above), or may be the result of more systemic factors (such as the last two factors mentioned above).

The Market Pricing Working Group has expressed concern with respect to:

- (a) Whether the proposed Ontario DAM design or RTM is biased relative to the other; and moreover
- (b) Whether any such bias would be systemic in nature; and
- (c) Whether any such systemic bias would generate and reinforce inefficient and unfair market outcomes and behaviours.

For clarity, efficiency in this context refers to output being produced by the least-cost suppliers, output being consumed by those most willing to pay for it, and the right amount of output being produced. Thus, efficiency relates to the size of

ISSUE 08: SYSTEMIC DIFFERENCES BETWEEN THE DAY-AHEAD AND REAL-TIME MARKETS

consumer and producer surplus, or “gains from trade”, such that an increase in the combined surpluses (i.e. “value”) is an efficient increase.

Fairness in the context of this issue means that the price determination process results in transfers of wealth between stakeholders that are no more or no less than needed to induce the efficient outcomes, including considerations of cost causality and cost allocation¹.

Design differences exist between the DAM and RTM that might result in price differences between the two markets and, more importantly, that might result in inefficient and unfair outcomes and behaviours. In this regard, Table 1 lists a number of identified design differences between the proposed DAM and current RTM.

Table 1. Differences Between DAM and RTM Designs & Possible Implications

	DAY-AHEAD MARKET	REAL-TIME MARKET	IMPLICATIONS OF DIFFERENCES	REMARKS
1	Multi-Part Offers & Bids	No Multi-Part Offers & Bids	TBD	Input Data Difference
2	Block Imports & Exports Offers & Bids	No Block Imports & Exports Offers & Bids	TBD	Input Data Difference
3	Imports Setting Price	No Imports Setting Price	TBD	Marginal Price Formulation Difference
4	1x Ramp Rate in Unconstrained Pass (5)	12x Ramp Rate in Unconstrained Sequence	TBD	Price Formulation Difference
5	Hourly Dispatch Interval	5-Minute Dispatch Interval	TBD	Price Formulation Difference
6	Production Cost Guarantee	No Production Cost Guarantee, but IOG	TBD	Input Data Difference
7	No Control Action Operating Reserve	Control Action Operating Reserve	TBD	Input Data Difference
8	Virtual Participation	No Virtual Participation	TBD	Input Data Difference

¹ IMO Market Pricing Working Group. *Guiding Principles*. July, 2004

ISSUE 08: SYSTEMIC DIFFERENCES BETWEEN THE DAY-AHEAD AND REAL-TIME MARKETS

Similarly, Table 2 lists various market design areas where differences *may* exist between the DAM and RTM, though the exact nature of any such differences remains to be explored and determined.

Table 2. Areas of Potential Differences between DAM and RTM Design and Possible Implications

UNKNOWN DIFFERENCES RE:	DAY-AHEAD MARKET	REAL-TIME MARKET	REMARKS
Energy Limited Resources	TBD	TBD	
Automatic Generation Control Resources	TBD	TBD	
Self-Scheduling Resources	TBD	TBD	
Price-Sensitive, Non-Dispatchible Loads	TBD	TBD	
Quick-Start & Hourly Committable Resources	TBD	TBD	
Reliability Must-Run Resources	TBD	TBD	
Aggregated Resources	TBD	TBD	
Standing Bids & Offers in Day-Ahead	TBD	TBD	
Block Offers & Bids (non-import/export)	TBD	TBD	
Locational Operating Reserve	TBD	TBD	
Pre-Scheduling of Imports/Exports	TBD	TBD	
Uplift and Uplift Allocation	TBD	TBD	

Why a Pricing Issue

Certain systematic biases between the DAM and RTM might result in outcomes and behaviours whereby prices, production, and consumption may be greater or lesser than would be the case in an efficient equilibrium such as at the point at which gains from trade were maximized. Further, inefficient systematic biases might unfairly allocate costs to those who did not incur them, or cannot avoid or manage them and correspondingly might allocate benefits to those who did not earn them or cannot avoid them.

Impacts of Issue

Market Impact

Systemic design differences between the proposed DAM and RTM may potentially result in prices that are economically unjustifiable and that may cause inappropriate and inefficient wealth transfers.

ISSUE 08: SYSTEMIC DIFFERENCES BETWEEN THE DAY-AHEAD AND REAL-TIME MARKETS

Participant Impact

[To be developed]

IMO Processes and Procedures Impact

[To be developed]

Related Issues

- 001: Pre-Dispatch Price Uncertainty
- 004: Use of 12-times Ramp Rate in the Dispatch Unconstrained Algorithm
- 005: Simultaneous Use of Ramping Generation Units for Energy and Operating Reserve
- 007: Imports and Exports Setting Price
- 013: Impact of Out of Market Sources of Operating Reserve on the Market
- 034: Rules Concerning the Breaker Status of Quick-Start Facilities

Options Considered

[To be developed]

Selected References

Day Ahead Market Design Strawman - Release 4.0

http://www.theimo.com/imoweb/pubs/consult/mep/DAM_WG_Strawman-4_0.pdf

Day Ahead Market Detail Design: Offers, Bids and Data Input

http://www.theimo.com/imoweb/pubs/consult/mep/dam_wg_IMO_DES_0010_DAM_Offers-Bids-DataInput.pdf

Day Ahead Market Detail Design: Calculation Engine

http://www.theimo.com/imoweb/pubs/consult/mep/dam_wg_IMO_DES_0011_DAM_CalcEngine.pdf

Day Ahead Market Detail Design: Dam and RTM Integration

http://www.theimo.com/imoweb/pubs/consult/mep/dam_wg_IMO_DES_0015_DAM_RTM_Integration.pdf

Day Ahead Market Detail Design: Market Surveillance, Assessment and Compliance

http://www.theimo.com/imoweb/pubs/consult/mep/dam_wg_IMO_DES_0020_MarketSurveillance.pdf