AUTOMATED PROCEDURES FOR IDENTIFYING DISPATCH INTERVALS SUBJECT TO REVIEW

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IMPORTANT NOTICE

Purpose

AEMO has prepared this document to provide information AEMO's automated procedures for identifying dispatch intervals that may contain manifestly incorrect inputs, using information available as at the date of publication.

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1.   THE AUTOMATED PROCEDURE

The National Electricity Rules section 3.9.2B requires AEMO to apply automated procedures to identify dispatch intervals (DIs) that are subject to review. AEMO must then determine whether a DI subject to review contained a manifestly incorrect input (MII) to the dispatch algorithm.

For each DI, the dispatch price in each region and the interconnector flows into or out of that region are compared to the dispatch price and flows from the previous DI. If the changes in dispatch price and any interconnector flow breach specified thresholds, the dispatch price for the latest DI in that region is subject to review.

An exception is made if the interconnector flows are zero for current and previous DIs – in other words, if the region is electrically "islanded" from the rest of the National Electricity Market (NEM). In this case, only the dispatch prices between consecutive DIs are compared. If the change in those dispatch prices breaches the specified threshold, the latest dispatch price in that region is subject to review.

The automated procedures are shown schematically in Figure 1.

Figure 1: The automated procedure for detecting dispatch intervals subject to review
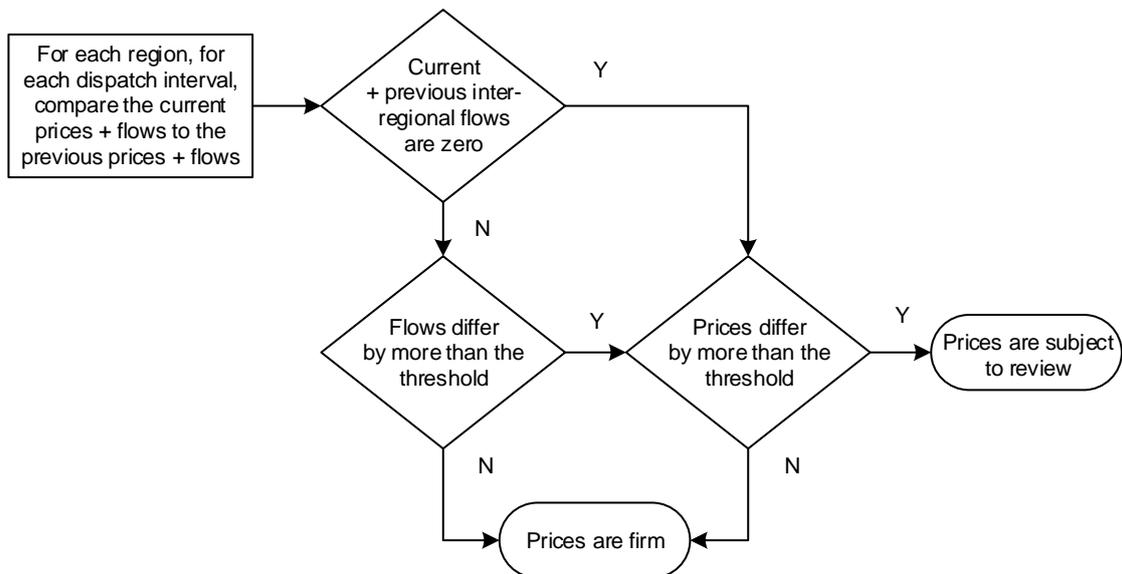
2.   PRICE AND FLOW THRESHOLDS

2.1 Price thresholds

Price thresholds are based on two parameters: an absolute number X and a relative number Y. The parameters are specific to each region.

If the dispatch prices for the current and previous DIs both exceed X, the threshold is breached if the difference between them, expressed as a multiple of the smaller dispatch price, exceeds Y.

If one of the dispatch prices for the current and previous DIs does not exceed X, the threshold is breached if the difference between them exceeds X*Y.[1]

This can be expressed mathematically as:

The price threshold is breached if

$$Min(|P_i|, |P_{i-1}|) > X \text{ and } |P_i - P_{i-1}|/Min(|P_i|, |P_{i-1}|) > Y$$

or

$$Min(|P_i|, |P_{i-1}|) \leq X \text{ and } |P_i - P_{i-1}| > X * Y$$

where

P_i = price in the current dispatch interval

P_{i-1} = price in the previous dispatch interval

The parameters for each region are:

Region	X ($/MWh)	Y
NSW	20	3
QLD	20	3
SA	20	3
TAS	20	4
VIC	20	3

2.2 Flow thresholds

Flow thresholds are based on a single parameter Z. The flow thresholds are specific to the directional flow on each interconnector.

The flow threshold is breached if the difference between the flows for the current and previous dispatch intervals exceeds Z.[2]

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[1] The prices used in these comparisons are the Regional Original Price (ROP) for each DI. The ROP includes the cost of any constraint violations, and can exceed the Market Price Cap (MPC), in which case it will be automatically revised before it is published as the Regional Reference Price (RRP) for the DI.
[2] The flows used in these comparisons are the interconnector targets for each DI.

This can be expressed mathematically as:

The flow threshold is breached if

$$|F_i - F_{i-1}| > Z$$

where

$F_i = flow\ in\ the\ current\ dispatch\ interval$

$F_{i-1} = flow\ in\ the\ previous\ dispatch\ interval$

The parameters for each interconnector are:

Interconnector	Direction	Z (MW)
NSW1-QLD1 (QNI)	NSW ⇨ QLD	450
	QLD ⇨ NSW	240
N-Q-MNSP1 (Terranora)	NSW ⇨ QLD	80
	QLD ⇨ NSW	80
T-V-MNSP1 (Basslink)	TAS ⇨ VIC	190
	VIC ⇨ TAS	190
VIC1-NSW1	VIC ⇨ NSW	500
	NSW ⇨ VIC	500
V-SA (Heywood)	VIC ⇨ SA	150
	SA ⇨ VIC	150
V-S-MNSP1 (Murraylink)	VIC ⇨ SA	100
	SA ⇨ VIC	100

3.   THE MII PRICE REVIEW PROCESS

Automated procedures to detect DIs that might contain MII were developed in consultation with participants. These procedures are based on changes to dispatch prices within – and interconnector flows to or from – a region. A DI identified by the automated procedures is flagged as "subject to review".

A Market Notice is then generated that identifies the DI and dispatch prices under review. Subsequent DIs are also flagged as subject to review until the dispatch prices in the original DI have been either accepted or rejected.

AEMO has a short time to reject the dispatch prices from any DI that is subject to review. The dispatch prices will be rejected only if AEMO considers that the DI contained MII. In other words, dispatch prices will be rejected only if one or more of the inputs used in the dispatch algorithm appears clearly wrong. If the dispatch prices have been neither rejected nor accepted after 30 minutes they are automatically accepted.

If dispatch prices are rejected, they are replaced with the dispatch prices from the most recent DI that was not subject to review. In this case a Market Notice is automatically generated that identifies the DI, the original dispatch prices, and the revised dispatch prices.

If the dispatch prices from a DI subject to review are accepted, a Market Notice is automatically generated that identifies the DI and states that the original dispatch prices have been confirmed.

The entire MII price review process is detailed in Power System Operating Procedure 3705, which covers market operation.[3]

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[3] Available at https://www.aemo.com.au/-/media/Files/Electricity/NEM/Security_and_Reliability/Power_System_Ops/Procedures/SO_OP_3705---Dispatch.pdf. The relevant parts are section 19 and Appendix B.

GLOSSARY

Term	Definition
DI	Dispatch Interval
MII	Manifestly Incorrect Input
MPC	Market Price Cap
NEM	National Electricity Market
ROP	Regional Original Price
RRP	Regional Reference Price
Rules	National Electricity Rules