Annual Affected Dispatch Interval Report

2023-24 Capacity Year

Prepared in accordance with
clause 7.11C.4 of the WEM Rules

1 Introduction

The Australian Energy Market Operator (AEMO) has prepared this report under clause 7.11C.4 of the Wholesale Electricity Market Rules (WEM Rules).

Clause 7.11C.4 of the WEM Rules requires AEMO to publish a report on the effectiveness of AEMO's Affected Dispatch Interval procedures at least once each year, including:

- A review of identified Affected Dispatch Intervals for the Capacity Year and whether these determinations are correct;
- MR 7.11C.5(i), (ii): a review of all Affected Dispatch Intervals that should not have been identified as Affected Dispatch Intervals and the reason(s) they were identified as such;
- MR 7.11C.5(iii): a review of the Dispatch Intervals that were not initially identified as Affected Dispatch Intervals but AEMO has subsequently found this determination to be incorrect;
- a review of the effectiveness of the Affected Dispatch Interval identification process; and
- recommendations for potential WEM Procedure and/or rule changes in the future, where required.

In this report:

- the reporting period covers the period specified on the title page;
- terms that are capitalised but not defined have the meaning given in the WEM Rules; and,
- date references are to Trading Days unless otherwise stated.

2 Summary

The Affected Dispatch Interval process is intended to allow AEMO to correct for manifestly incorrect Dispatch Inputs used in the Dispatch Algorithm. The process for identification of Affected Dispatch Intervals is outlined in WEM Procedure: Identification of Affected Dispatch Intervals. The underlying principle of the process is that a previous "good" forecast (a forecast for the Dispatch Interval that AEMO reasonably considers does not contain manifestly incorrect Dispatch Inputs) would provide more representative price and schedule data for the purpose of settlement.

Dispatch Inputs are consumed by the Dispatch Algorithm to produce the Dispatch, Pre-Dispatch and Week-Ahead Market Schedules, for the required Scenarios, as per the timeframes and provisions in chapter 7 of the WEM Rules, and the WEM Procedure: Dispatch Algorithm Formulation. Dispatch Inputs include but are not limited to:

- Forecast Unscheduled Operational Demand (and higher and lower load variations of this),
- Essential System Service (ESS) requirements,
- SCADA data from AEMO's Energy Management System (EMS) or Western Power's SCADA system via Inter Control Centre Protocol (ICCP) (or one of the allowed alternative sources where this data is available),
- ESS Trapezia values, Ramp Rates and ESS Maximum Provision Percentages,
- Unconstrained Injection Forecasts (UIF) and Unconstrained Withdrawal Forecasts,
- Registration data (including effective Facility Standing Data),
- Constraint Sets, Constraint Equations and associated Constraint Violation Penalties
- Dynamic Frequency Control Model (DFCM) and Facility Performance Factors,
- Transmission and Distribution Loss Factors,
- Market Service Price Ceilings and Floors,
- Fast Start Facility data, and
- Projected Facility Charge Levels.

Dispatch Inputs explicitly exclude Real-Time Market Submissions.

During the 2023-2024 Capacity Year AEMO assessed over 3,500 Dispatch Intervals and identified 1,246 Affected Dispatch Intervals associated with nine discrete events, representing 1.18% of total Dispatch Intervals (105,408). 80.1% (998) of all Affected Dispatch Intervals identified occurred in September 2024 (see **Figure 1**).

Figure 1 **Monthly split of total Affected Dispatch Intervals for the 2023-24 Capacity Year**
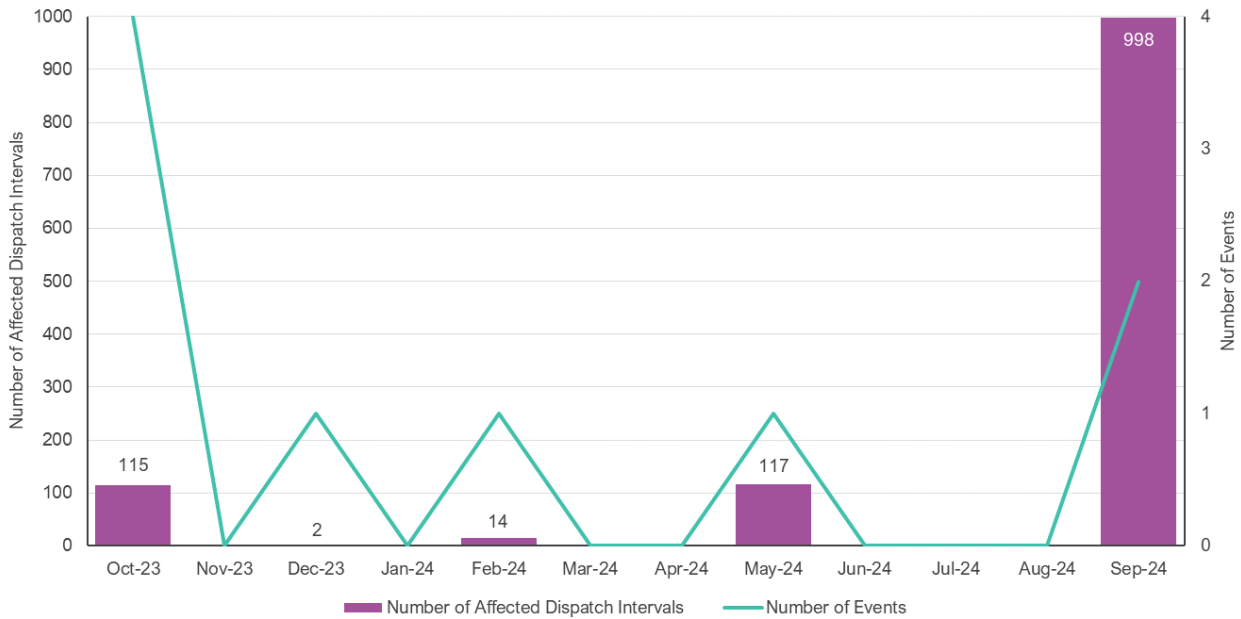
The mean difference between the original Dispatch Interval Market Clearing Price and the replacement interval was negative for all Market Services (see **Table 1**), indicating a reduction in price once the intervals were declared Affected Dispatch Intervals.

Table 1 **Affected Dispatch Interval identification statistics for the 2023-24 Capacity Year**

Market Clearing Price	Mean Difference ($/MWh)	Mean Absolute Difference ($/MWh)	Direction of Price Change Proportions (%)			Proportion of price differences > 10% (%)
			Increase	Decrease	No Change	
Energy	-99.5	101.89	7.05	72.06	20.66	46.87
Contingency Reserve Raise	-235.84	241.17	2.32	94.32	3.12	79.37
Contingency Reserve Lower	-16.86	25.74	25.94	15.13	58.69	20.79
Regulation Raise	-102.01	105.1	2.56	47.56	49.64	27.45
Regulation Lower	-17.26	27.09	38.11	24.74	36.91	27.05
RoCoF Control Service	-23.71	23.71	0	1.6	98.16	1.36

3 Identified Affected Dispatch Intervals

This section provides details of the Dispatch Intervals AEMO determined to be Affected Dispatch Intervals in accordance with clause 7.11C.1A. Note that, at the time of publication of the relevant Affected Dispatch Interval Reports (available on AEMO's website), AEMO considered all Affected Dispatch Interval determinations to be correct in accordance with clause 7.11C.3(b).

The Affected Dispatch Intervals were related to nine discrete events, detailed in **Table 2**.

Table 2 CY2023-24 identified Affected Dispatch Intervals

Month	Event Date(s)	Description	Count	Determination Outcome	Actions Taken
Oct 23	01/10/23, 02/10/23, 04/10/23, 06/10/23, 07/10/23, 08/10/23, 09/10/23, 10/10/23, 11/10/23	**AEMO System Error** Facilities providing ESS failed WEMDE Pre-Processing due to the Facilities' output being below their Minimum Enablement value of their submitted ESS trapezium due to droop response. This resulted in shortfalls and materially high prices in the Rate of Change of Frequency (RoCoF) Control Service and Contingency Raise markets. Facilities providing ESS were still online and there were sufficient quantities of ESS to meet the requirement (i.e. no actual shortfalls).	71	Correct. Market outcomes were based on manifestly incorrect information, directly resulting in material impacts to Market Clearing Prices.	A change to the WEMDE Pre-Processor was deployed to Production on 12 October 2023, introducing an ESS Pre-Processing tolerance range, mitigating this issue from re-occurring.
	01/10/23	**AEMO System Error** The RoCoF requirement in place during these intervals was found to be erroneous. This resulted in shortfalls and shortfall pricing in the RoCoF Control Service market.	2	Correct. AEMO has determined these are Affected Dispatch Intervals due to dispatch outcomes being based on a manifestly incorrect RoCoF requirement, directly resulting in material impacts to Market Clearing Prices.	AEMO has improved the IT system functionality and operational processes around determination of the RoCoF requirement.
	02/10/23	**AEMO Process Error** During these intervals the contingency size parameter in WEMDE was determined by a manual override. The manual override was not associated with a Facility, meaning WEMDE was unable to correctly optimise for the given conditions. This resulted in shortfalls and shortfall pricing in the Contingency Reserve Raise market.	17	Correct. AEMO determined these to be Affected Dispatch Intervals, as the contingency size parameter was manifestly incorrect due to not being associated with a Facility. This directly resulted in material impacts to Market Clearing Prices.	Training has been conducted with Power System Operations Controllers and operational processes updated for implementing manual overrides in WEMDE. In future, overrides on the contingency size parameter will be associated with specific Facility/ies to allow the dispatch engine to correctly optimise outcomes.
	05/10/23	**Third Party Input Error** Incorrect ramp rate limits were received from a Facility, resulting in WEMDE erroneously considering that facility unable to deliver ESS. This caused	25	Correct. AEMO determined these as Affected Dispatch Intervals, given dispatch outcomes were based on manifestly incorrect ramp rate limits, which directly	Ramp rate limits were corrected, and validation processes / alarms have been implemented to identify and/or quickly

Month	Event Date(s)	Description	Count	Determination Outcome	Actions Taken
		shortfalls and shortfall pricing in the Contingency Reserve Raise ESS market.		resulted in material impacts on Market Clearing Prices.	mitigate a similar issue in future.
Nov 23	No Affected Dispatch Intervals				
Dec 23	07/12/23	**Third Party Input Error** Injection testing processes impacted the SCADA data received from KEMERTON_GT11 and KEMERTON_GT12. This meant that the sent-out data received from these Facilities was manifestly incorrect resulting in WEMDE not representing reasonable outcomes for Dispatch Schedules or Market Clearing Prices. This also resulted in errors in the forecasting system due to incorrect calculation of Operational Demand resulting in WEMDE being placed into monitor mode until this could be corrected.	2	Correct. AEMO has determined these are Affected Dispatch Intervals as the market outcomes were based on manifestly incorrect information, directly resulting in material impacts to Market Clearing Prices.	Additional reasonability limits applied to Facility SCADA data.
Jan 24	No Affected Dispatch Intervals				
Feb 24	06/02/24	**AEMO Process Error** Two Constraint Equations were invoked that contained an erroneous parameter and therefore resulted in manifestly incorrect data being used in the Dispatch Algorithm solution process. When binding, these constraint equations incorrectly influenced Dispatch Schedules and Market Clearing Prices.	14	Correct. AEMO has determined these are Affected Dispatch Intervals as the market outcomes were based on manifestly incorrect information, directly resulting in material impacts to Market Clearing Prices.	The Constraint Equations were corrected, and short-term updates were made to include additional controls and quality assurance processes. An investigation into long term solutions to mitigate similar issues is being progressed.
Mar 24	No Affected Dispatch Intervals				
Apr 24	No Affected Dispatch Intervals				
May 24	02/05/24, 03/05/24	**AEMO System Error** An implementation bug in WEMDE 3.0, which deployed on 2/5/2024, resulted in the Pure Storage Constraint defaulting to zero in the Case File, therefore causing issues with the dispatch of ESR Facilities.	117	Correct. AEMO has determined these are Affected Dispatch Intervals as the market outcomes were based on manifestly incorrect information, directly resulting in material impacts to Market Clearing Prices.	Temporary workaround implemented on 3/5/2024, then permanently rectified in WEMDE 3.0.2 deployment on 20/5/2024.
Jun 24	No Affected Dispatch Intervals				
Jul 24	No Affected Dispatch Intervals				
Aug 24	No Affected Dispatch Intervals				
Sep 24	18/09/24 – 24/09/24	**AEMO System Error** Estimated distributed PV is an input to the WEM Dispatch Engine (WEMDE) and is primarily used by the Dynamic Frequency Control Model (DFCM) in determining the Contingency Reserve Raise requirement. AEMO identified an IT system issue that caused the distributed PV input used in the Primary Dispatch Interval between 13:20 18/09/2024 - 08:50 24/09/2024 to be	992	AEMO has determined that 991 of the total 992 intervals identified are Affected Dispatch Intervals as the market outcomes were based on manifestly incorrect information, directly resulting in material impacts to Market Clearing Prices. 1 of the intervals was subsequently	Immediate action upon identification was to create a new calculation that input accurate distributed PV values into WEMDE. • Developed situational awareness tools that increased visibility of distributed PV input calculation to the AEMO

Month	Event Date(s)	Description	Count	Determination Outcome	Actions Taken
		frozen at 1,906.3 MW. AEMO assessed the 1,675 intervals during this period and identified 992 intervals where this erroneous distributed PV input caused manifestly incorrect Market Clearing Price outcomes in the Contingency Reserve Raise and/or, by extension, Energy markets exceeding the 10% threshold defined in the WEM Procedure: Identification of Affected Dispatch Intervals.		determined as an incorrectly identified Affected Dispatch Intervals under clause 7.11C.5(c)(i) (see section 5 of this report).	Control Room as a detective control. • Technical root cause analysis performed and made required changes to IT systems to prevent issue recurring.
	25/09/24	**Third Party Input Error** Erroneous SCADA inputs for COLLIE_ESR1 were received by AEMO, affecting both the COLLIE_ESR1 sent out value and Unscheduled Operational Demand value (which relies on Facility level data) in WEMDE. The errors in Unscheduled Operational Demand resulted in flow-on errors in WEMDE's forecast Energy requirement, affecting pricing in both Energy and ESS markets.	6	Correct. AEMO has determined these are Affected Dispatch Intervals as the market outcomes were based on manifestly incorrect information, directly resulting in material impacts to Market Clearing Prices.	Market Participants resolved this issue and therefore resolved the SCADA data inaccuracy.

4 Unidentified Affected Dispatch Interval(s)

This section provides details of the Dispatch Intervals that were not initially identified as Affected Dispatch Intervals which AEMO has subsequently determined should have been identified as such, in accordance with 7.11C.5(c)(iii) (223 intervals in total).

Trading Day(s)	
	4 January 2024 7 January 2024 18 January 2024 28 May 2024

Dispatch Interval(s)		
	Dispatch Interval(s)	Determination
	04/01/2024 9:25	Affected
	04/01/2024 9:30	Affected
	07/01/2024 10:55	Affected
	07/01/2024 11:00	Affected
	07/01/2024 11:05	Affected
	18/01/2024 13:30	Affected
	18/01/2024 13:35	Affected
	18/01/2024 13:40	Affected
	18/01/2024 13:45	Affected
	18/01/2024 13:50	Affected
	18/01/2024 13:55	Affected
	18/01/2024 14:00	Affected
	18/01/2024 14:05	Affected
	28/05/2024 08:00	Affected
	28/05/2024 08:35	Affected
	28/05/2024 08:40	Affected
	28/05/2024 08:45	Affected
	28/05/2024 08:50	Affected
	28/05/2024 08:55	Affected
	28/05/2024 09:00	Affected
	28/05/2024 09:05	Affected
	28/05/2024 09:10	Affected
	28/05/2024 09:15	Affected
	28/05/2024 09:20	Affected
	28/05/2024 09:25	Affected
	28/05/2024 09:30	Affected
	28/05/2024 09:35	Affected
	28/05/2024 09:40	Affected
	28/05/2024 09:45	Affected
	28/05/2024 09:50	Affected
	28/05/2024 09:55	Affected
	28/05/2024 10:00	Affected

Reasons for Determination	Estimated distributed PV is an input to the WEMDE Dispatch Engine (WEMDE) and is primarily used by the Dynamic Frequency Control Model (DFCM) in determining the Contingency Reserve Raise Requirement.
	AEMO identified intermittent periods over the 2023-24 Capacity Year where the distributed PV input used in the Primary Dispatch Interval faultily decreased significantly.
	AEMO has identified 32 intervals where this erroneous distributed PV input caused manifestly incorrect Market Clearing Price outcomes in the Contingency Reserve Raise and/or, by extension, Energy markets exceeding the 10% threshold defined in the WEM Procedure: Identification of Affected Dispatch Intervals.
	AEMO has determined these 32 intervals are Affected Dispatch Intervals as the market outcomes were based on manifestly incorrect information, directly resulting in material impacts to Market Clearing Prices.
	These Affected Dispatch intervals were identified in excess of the timeframes contemplated under clause 7.11C.2. As a result, these were not replaced by intervals from the most recent Market Schedule that AEMO reasonably considered did not include manifestly incorrect data.

Actions Taken	AEMO are actively reviewing the DPV forecast and actual values as part of the Dispatch Uplift Project. This is expected to improve the accuracy and reliability of both the forecast and actual DPV values used in WEMDE.

Trading Day(s)	6 September 2024 – 16 September 2024 (218 intervals total)
Dispatch Interval(s)	All Dispatch Intervals identified and the corresponding Shadow Price are listed in appendix A1 of this report.
Reasons for Determination	During these intervals a non-network constraint was invoked (and binding) to indirectly co-optimise Contingency Reserve Lower to account for the scheduling of Electric Storage Resource (ESR) Facility. The constraint was implemented to prevent WEMDE from procuring insufficient Contingency Reserve Lower service to cover the load risk of an ESR while withdrawing. This resulted in the procured Contingency Reserve Lower quantity being higher than the officially published market requirements for some intervals, and the Contingency Reserve Lower Market Clearing Price being set at a manifestly incorrect value of $0/MW due to the shadow price of the Contingency Reserve Lower requirement constraint being $0/MW. AEMO determined these intervals to be Affected Dispatch Intervals, as due to the invoked constraint set the Contingency Reserve Lower Market Clearing Price was set to $0/MW. NOTE: Although AEMO did not identify the impact of this constraint in a timely manner it would not have been possible to replace the intervals with a previous good forecast as all forecasts contained the same constraint set. The Contingency Reserve Lower Market Clearing Price for each of the Affected Dispatch Intervals should have been set to the corresponding Shadow Price (shown in appendix A1) of the binding constraint equation.
Actions Taken	Additional review steps implemented before non-network constraints or constraints which are not related to Western Power Limit Advice are invoked in WEMDE. The Wholesale Electricity Market Amendment (Miscellaneous Amendments No. 3) Rules come into effect on 1 January 2025 08:00. In accordance with clause 7.11B.1B(bA) of these rules, if AEMO is unable to identify a replacement Market Schedule, it must use the Dispatch Algorithm with corrected Dispatch Inputs to determine a replacement Market Schedule for the relevant interval(s). From 1 January 2025 onwards this will allow AEMO to re-run the relevant Case File(s) for similar situations.

5 Incorrectly Identified Affected Dispatch Interval(s)

This section provides details of the Dispatch Intervals which should not have been identified as Affected Dispatch Intervals as per clauses 7.11C.5(c)(i), and the reasons for this in accordance with clause 7.11C.5(c)(ii).

There were three Dispatch Intervals (0.24% of all identified Affected Dispatch Intervals) in which none of the Energy nor ESS Market Clearing Prices exceeded the 10% price variance threshold set under the WEM Procedure: Identification of Affected Dispatch Intervals.

AEMO identifies Affected Dispatch Intervals in accordance with paragraph 2.1.1 of the aforementioned WEM Procedure. This paragraph states that AEMO will identify a Dispatch Interval as Affected if:

- Manifestly incorrect data was used as an input to the Dispatch Algorithm, and;

- One or more of the Market Clearing Prices varied by more than 10% from a counterfactual scenario where the manifestly incorrect data was not used by the Dispatch Algorithm.

The following tables detail the incorrectly identified Affected Dispatch Intervals and the events that each related to.

Trading Day	6 February 2024	
Dispatch Interval(s)	**Affected Dispatch Interval**	**Replacement Market Schedule Run**
	06/02/2024 19:10	06/02/2024 18:55
Details [7.11C.5(c)(i)]	Two Constraint Equations were invoked that contained an erroneous parameter and therefore resulted in manifestly incorrect data being used in the Dispatch Algorithm solution process. When binding, these constraint equations incorrectly influence Dispatch Schedules and Market Clearing Prices.	
Reason for incorrect determination [7.11C.5(c)(ii)]	AEMO has determined that 13 of the total 14 intervals identified are Affected Dispatch Intervals as the market outcomes were based on manifestly incorrect information, directly resulting in material impacts to Market Clearing Prices. One of the intervals was subsequently determined as an incorrectly identified Affected Dispatch Interval under clause 7.11C.5(c)(i), as none of the resulting Market Clearing prices varied by more than 10% from the counterfactual scenario. However, the Market Clearing Prices for the interval were still determined using a manifestly incorrect constraint parameter as an input to WEMDE.	

Trading Day	3 May 2024	
Dispatch Interval(s)	**Affected Dispatch Interval**	**Replacement Market Schedule Run**
	03/05/2024 07:25	03/05/2024 07:20
	03/05/2024 08:20	03/05/2024 08:15
Details [7.11C.5(c)(i)]	An implementation bug in WEMDE 3.0, which was deployed on 2/5/2024, resulted in the Pure Storage Constraint defaulting to zero in the Case File, therefore causing issues with the dispatch of ESR Facilities.	
Reason for incorrect determination [7.11C.5(c)(ii)]	AEMO has determined that 115 of the total 117 intervals identified are Affected Dispatch Intervals as the market outcomes were based on manifestly incorrect information, directly resulting in material impacts to Market Clearing Prices. Two of the intervals were subsequently determined as incorrectly identified Affected Dispatch Intervals under clause 7.11C.5(c)(i), as none of the resulting Market Clearing prices varied by more than 10% from the counterfactual scenario. However, the Market Clearing Prices for the interval were still determined using manifestly incorrect Pure Storage Constraint data as an input to WEMDE.	

6 Affected Dispatch Interval Determination Process Review and Analysis

In accordance with clause 7.11C.1A, AEMO must use its developed WEM Procedures (clause 7.11C.1) to determine whether each Dispatch Interval is an Affected Dispatch Interval. Under the current WEM Procedure: Identification of Affected Dispatch Intervals, AEMO will identify a Dispatch Interval as such if manifestly incorrect data is used as an input to the Dispatch Algorithm, and one or more the Market Clearing Prices varies by more than 10% from a counterfactual scenario where the manifestly incorrect data is not used by the Dispatch Algorithm.

If AEMO identifies an Affected Dispatch Interval, in accordance with clause 7.11C.2 by noon on the first Business Day following the end of the Trading Day which contains the Dispatch Interval, AEMO must replace the Market Clearing Prices with those from the Dispatch Interval in the replacement Market Schedule in accordance with clause 7.11B.1B. AEMO must also undertake downstream processes such as recalculating the Reference Trading Price for the relevant Trading Interval.

AEMO's review process for identifying Affected Dispatch Intervals over the previous 12 months has been focused on operational awareness of Dispatch Inputs and feedback provided through operational teams. This has led to timely identification of 1,246 Dispatch Intervals which were replaced under MR 7.11C.2.

7 Future Recommendations

AEMO recommends that an update is made to the price differential that would trigger a Dispatch Interval to be deemed an Affected Dispatch Interval. The level is currently set at a 10% variance from a counterfactual scenario where the manifestly incorrect data is not used as an input to the Dispatch Algorithm. This leads to inconsistency in application depending on the magnitude of the comparative price.

Therefore, AEMO proposes to adopt an absolute threshold to enable consistent application irrespective of the magnitude of the Market Clearing Price. An "Affected Dispatch Interval Energy Price Materiality Threshold" and "Affected Dispatch Interval FCESS Price Materiality Threshold" would be defined for Energy Market Clearing Prices and FCESS Market Clearing Prices respectively.

The Affected Dispatch Interval Energy Price Materiality Threshold is proposed to be set equal to a percentage of the difference between the Energy Offer Price Floor and Ceiling. The Affected Dispatch Interval FCESS Price Materiality Threshold is proposed to be set equal to a percentage of the FCESS Clearing Price Ceiling. The final threshold percentage values would be determined through consultation with Market Participants.

As an example, materiality thresholds using difference values of 1% are outlined in **Table 3**. By setting the materiality thresholds at this level, AEMO would have replaced 72.5% of all identified Affected Dispatch Intervals in

Capacity Year 2023-24, (**Figure** 2). AEMO notes that the setting of this threshold is a trade-off between accuracy and certainty of price and schedule outcomes.

Affected Dispatch Interval Energy Price Materiality Threshold	$17.38/MWh
Affected Dispatch Interval FCESS Price Materiality Threshold	Regulation Raise: $19.88/MW Regulation Lower: $19.88/MW Contingency Raise: $19.88/MW Contingency Lower: $19.88/MW RoCoF Control Service: $17.38/MW

Figure 2   Proportion of CY2023-25 Affected Dispatch Intervals captured by different "Energy Price Materiality Thresholds"
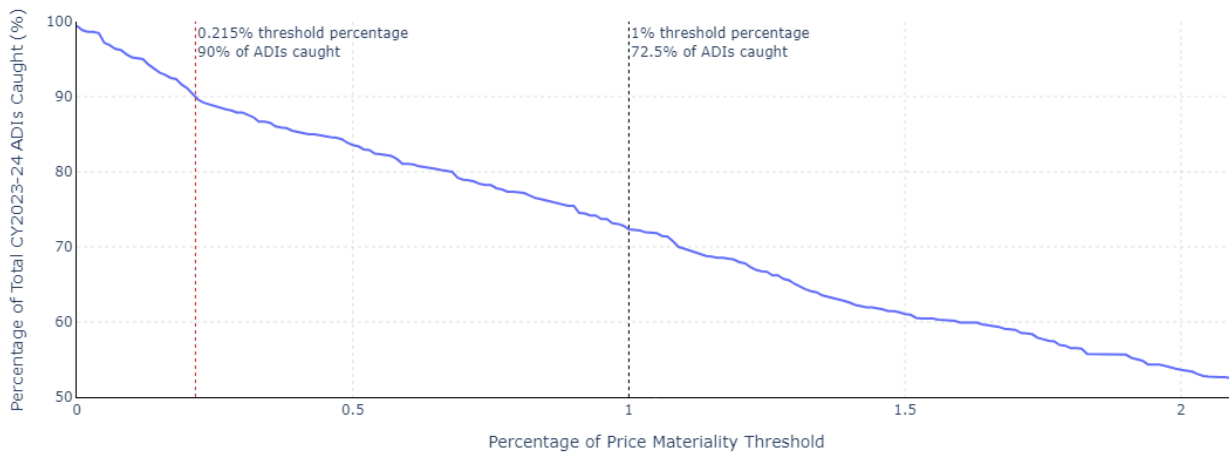

AEMO has also identified that relying on operational awareness to identify Affected Dispatch Intervals) carries the risk that potential Affected Dispatch Intervals (such as those identified in Section 4) would be missed.

AEMO therefore recommends that structured and regular review processes be put in place for Dispatch Inputs known to have previously resulted in declaration of an Affected Dispatch Interval and Dispatch Inputs known to have a highly material impact to Market Clearing Prices.

In addition to the proposed Price Materiality Thresholds, AEMO has also assessed the viability of a fixed manual review trigger threshold to proactively identify Affected Dispatch Intervals. This was tested based on the difference in price between the 5-minute forecast and the actual final Market Clearing Price. AEMO identified that to capture 90% of all Affected Dispatch Intervals a threshold would have to be set at $3.74/MWh for Energy and $4.38/MWh for FCESS (equivalent to a materiality threshold of 0.215%, **Figure** 2). This would have resulted in AEMO Analysts reviewing a total of 49,793 Dispatch Intervals or almost half of all Dispatch Intervals in Capacity Year 2023-24 (**Figure 3**). This would be a significant burden for analysis on AEMO.

Figure 3   Percentage of total CY2023-24 Dispatch Intervals captured with manual review trigger
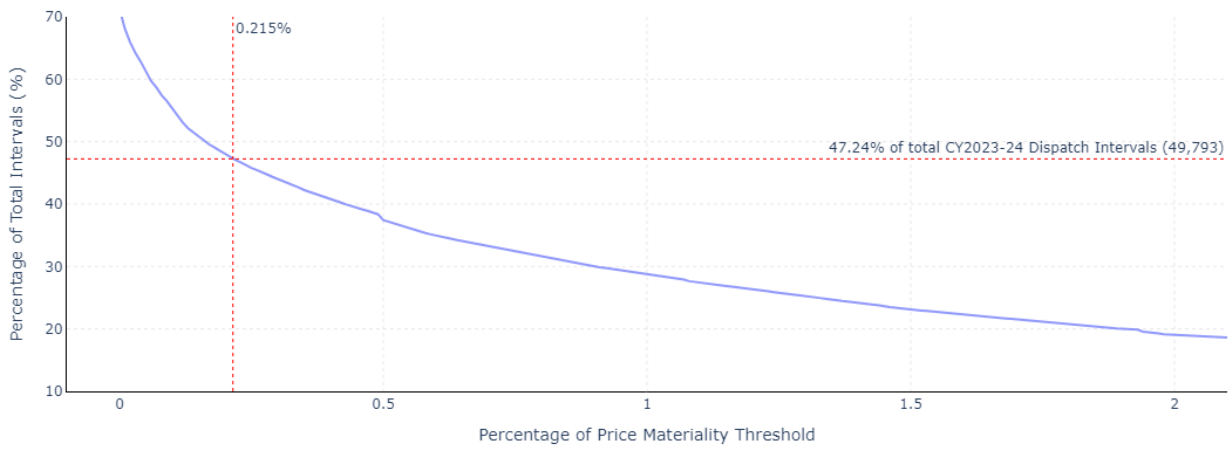
Therefore, AEMO proposes a simple approach of assessing the 5 Dispatch Intervals in each Trading Day that have the greatest difference between the 5-minute forecast and the actual final Market Clearing Price. This criterion would have identified seven of the nine identified events resulting in Affected Dispatch Intervals (and one of two unidentified events). Note that this process would be applied in addition to proactive monitoring of high-risk Dispatch Inputs and reviewing additional Dispatch Intervals based on operational awareness.

8 Conclusions

AEMO has administered the Affected Dispatch Intervals process in the first year of operation of the Real-Time Market resulting in the identification of nine events and 1,243 Affected Dispatch Intervals in a manner relying on operational awareness. This process has encouraged proactive engagement across operational teams and resolved several system and process issues that may otherwise have gone unresolved.

However, it has been identified that there are improvements that can be made to the process:

- Introduction of an absolute materiality threshold to ensure declaring a Dispatch Interval an Affected Dispatch Interval to enable a consistent assessment of materiality regardless of price outcome.

- Implementation of processes to automatically flag significant variation in Dispatch Inputs known to carry higher risk of error.

- A daily review trigger to ensure proactive review of the most volatile price outcomes.

AEMO will initiate the WEM Procedure update process as soon as reasonably practicable to allow formal consultation to occur for the above recommendations.

A1 Details of Unidentified Affected Dispatch Intervals

Affected Dispatch Interval(s)	Shadow Price ($/MW)
6/09/2024 16:30	2.63
6/09/2024 16:35	1.71
6/09/2024 16:40	29.62
6/09/2024 16:45	29.11
6/09/2024 16:50	32.49
6/09/2024 16:55	0
6/09/2024 17:00	30.65
6/09/2024 17:05	0
6/09/2024 17:10	14.31
6/09/2024 17:15	0.8
6/09/2024 17:25	94.05
6/09/2024 17:30	127.71
6/09/2024 17:35	25.46
6/09/2024 17:45	24.95
6/09/2024 17:50	20.75
6/09/2024 17:55	21.77
6/09/2024 18:00	6.51
6/09/2024 18:05	93.25
6/09/2024 18:10	93.25
6/09/2024 18:15	29.66
6/09/2024 18:20	94.05
8/09/2024 15:20	9.89
8/09/2024 15:25	33.43
8/09/2024 15:30	0
8/09/2024 15:35	28.72
8/09/2024 15:40	28.64
8/09/2024 15:45	40.35
8/09/2024 15:50	34.84
8/09/2024 15:55	34.84
8/09/2024 16:00	40.35
8/09/2024 16:05	24.63
8/09/2024 16:10	35.35
8/09/2024 16:15	40.35
8/09/2024 16:20	37.71
8/09/2024 16:30	12.64
8/09/2024 16:35	0.24
8/09/2024 16:40	39.45
8/09/2024 16:45	9.75
8/09/2024 16:50	8.99
8/09/2024 16:55	0.8
10/09/2024 21:20	136.94
10/09/2024 21:25	136.94
10/09/2024 21:30	136.94
10/09/2024 21:35	139.77

Affected Dispatch Interval(s)	Shadow Price ($/MW)
10/09/2024 21:40	147.05
10/09/2024 21:45	145.75
10/09/2024 21:50	145.75
10/09/2024 21:55	145.75
10/09/2024 22:00	145.75
10/09/2024 22:05	145.75
10/09/2024 22:10	145.75
10/09/2024 22:15	137.74
10/09/2024 22:25	137.74
10/09/2024 22:30	137.74
10/09/2024 22:35	137.74
10/09/2024 22:40	137.74
10/09/2024 22:45	137.74
10/09/2024 22:50	137.74
10/09/2024 22:55	137.74
10/09/2024 23:00	137.74
10/09/2024 23:05	128.22
10/09/2024 23:10	127.71
10/09/2024 23:15	94.05
10/09/2024 23:20	94.05
10/09/2024 23:25	94.05
10/09/2024 23:30	94.05
10/09/2024 23:35	94.05
10/09/2024 23:40	96.92
10/09/2024 23:45	96.92
10/09/2024 23:50	96.92
11/09/2024 15:20	0
11/09/2024 15:25	0
11/09/2024 15:30	1.91
11/09/2024 15:45	103.94
11/09/2024 18:15	144.95
11/09/2024 18:20	145.75
11/09/2024 18:25	173.1
11/09/2024 18:30	173.1
11/09/2024 18:35	176.06
11/09/2024 18:40	176.06
11/09/2024 18:45	176.06
11/09/2024 18:50	176.06
11/09/2024 18:55	301.76
11/09/2024 19:00	292.21
11/09/2024 19:05	738
11/09/2024 20:15	738
11/09/2024 20:20	738
11/09/2024 20:25	738
11/09/2024 20:30	738
11/09/2024 20:35	738
11/09/2024 20:40	738
11/09/2024 20:45	355.12
11/09/2024 20:50	291.41
11/09/2024 20:55	738

Affected Dispatch Interval(s)	Shadow Price ($/MW)
11/09/2024 21:00	738
11/09/2024 21:05	738
11/09/2024 21:10	738
11/09/2024 21:15	176.06
11/09/2024 21:20	176.06
11/09/2024 21:25	176.86
11/09/2024 21:30	145.75
11/09/2024 21:35	145.75
11/09/2024 21:40	144.95
11/09/2024 21:45	144.95
11/09/2024 21:50	144.95
11/09/2024 21:55	144.95
11/09/2024 22:00	144.95
11/09/2024 22:05	144.95
11/09/2024 22:10	144.95
11/09/2024 22:15	127.42
11/09/2024 22:20	126.91
11/09/2024 22:25	127.71
11/09/2024 22:30	126.91
11/09/2024 22:35	126.91
11/09/2024 22:40	127.71
11/09/2024 22:45	127.71
11/09/2024 22:50	127.71
11/09/2024 22:55	127.71
11/09/2024 23:00	127.71
11/09/2024 23:05	94.05
11/09/2024 23:10	127.71
11/09/2024 23:15	11.32
11/09/2024 23:20	4.28
12/09/2024 14:45	0
16/09/2024 12:35	8.78
16/09/2024 12:40	1.91
16/09/2024 12:45	1.91
16/09/2024 12:50	32.66
16/09/2024 12:55	32.16
16/09/2024 13:00	32.66
16/09/2024 13:05	32.66
16/09/2024 13:10	0
16/09/2024 13:15	0
16/09/2024 13:20	0
16/09/2024 13:25	0
16/09/2024 13:30	1.52
16/09/2024 13:35	0
16/09/2024 13:40	44.54
16/09/2024 13:45	9.01
16/09/2024 13:50	9.01
16/09/2024 13:55	2.74
16/09/2024 14:00	0
16/09/2024 14:05	0
16/09/2024 14:10	0

Affected Dispatch Interval(s)	Shadow Price ($/MW)
16/09/2024 14:15	0
16/09/2024 14:20	0
16/09/2024 14:25	0
16/09/2024 14:30	0
16/09/2024 14:35	0
16/09/2024 14:40	0
16/09/2024 14:45	0
16/09/2024 14:50	0.2
16/09/2024 14:55	0
16/09/2024 15:00	0
16/09/2024 15:05	0
16/09/2024 15:10	0
16/09/2024 15:15	0
16/09/2024 15:20	26.32
16/09/2024 15:25	103.04
16/09/2024 15:30	103.04
16/09/2024 15:35	103.04
16/09/2024 15:40	106.68
16/09/2024 15:45	106.68
16/09/2024 15:50	106.68
16/09/2024 15:55	94.05
16/09/2024 16:00	94.05
16/09/2024 16:05	94.05
16/09/2024 16:10	94.05
16/09/2024 16:15	94.05
16/09/2024 16:20	94.05
16/09/2024 16:25	94.05
16/09/2024 16:30	94.05
16/09/2024 16:35	93.25
16/09/2024 16:40	93.25
16/09/2024 16:45	93.25
16/09/2024 16:50	122.79
16/09/2024 16:55	94.05
16/09/2024 17:00	94.05
16/09/2024 17:05	94.05
16/09/2024 17:10	125.2
16/09/2024 17:15	127.71
16/09/2024 17:20	128.22
16/09/2024 17:25	128.22
16/09/2024 17:30	128.22
16/09/2024 17:35	129.29
16/09/2024 17:40	148.78
16/09/2024 17:45	148.43
16/09/2024 17:55	151.07
16/09/2024 18:00	164.62
16/09/2024 18:05	151.08
16/09/2024 18:10	151.08
16/09/2024 18:15	151.08
16/09/2024 18:20	151.07
16/09/2024 18:25	166.63

Affected Dispatch Interval(s)	Shadow Price ($/MW)
16/09/2024 19:10	156.85
16/09/2024 19:15	154.04
16/09/2024 19:30	153.96
16/09/2024 19:45	157.36
16/09/2024 19:55	157.78
16/09/2024 20:00	157.78
16/09/2024 20:10	157.78
16/09/2024 20:15	157.78
16/09/2024 20:25	157.78
16/09/2024 20:45	156.86
16/09/2024 20:50	156.86
16/09/2024 20:55	156.86
16/09/2024 21:00	156.86
16/09/2024 21:05	156.86
16/09/2024 21:10	156.86
16/09/2024 21:15	156.86
16/09/2024 21:20	157.24
16/09/2024 21:25	157.25
16/09/2024 21:30	167.61
16/09/2024 21:35	157.25
16/09/2024 21:40	157.25
16/09/2024 21:45	149.93
16/09/2024 21:50	150.94
16/09/2024 21:55	139.71