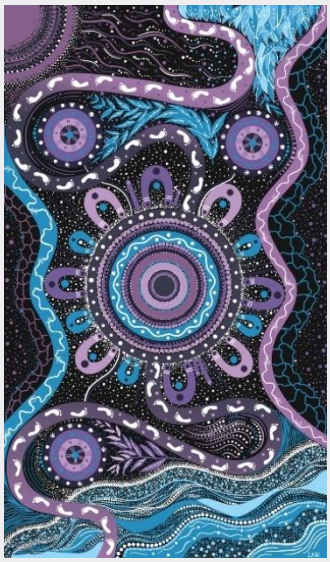
AEMO
AUSTRALIAN ENERGY MARKET OPERATOR

Low Reserve Condition Report

March 2025

WEM Low Reserve Conditions for 6 Month Interval

1st October 2024 to 31st March 2025



We acknowledge the Traditional Custodians of the land, seas and waters across Australia. We honour the wisdom of Aboriginal and Torres Strait Islander Elders past and present and embrace future generations.

We acknowledge that, wherever we work, we do so on Aboriginal and Torres Strait Islander lands. We pay respect to the world's oldest continuing culture and First Nations peoples' deep and continuing connection to Country; and hope that our work can benefit both people and Country.

'Journey of unity: AEMO's Reconciliation Path' by Lani Balzan

AEMO Group is proud to have launched its first Reconciliation Action Plan in May 2024. 'Journey of unity: AEMO's Reconciliation Path' was created by Wiradjuri artist Lani Balzan to visually narrate our ongoing journey towards reconciliation - a collaborative endeavour that honours First Nations cultures, fosters mutual understanding, and paves the way for a brighter, more inclusive future.

Important notice

Purpose

This Low Reserve Conditions Report is produced and published in accordance with clauses 3.17.2 and 3.17.3 of the Electricity System and Market Rules (ESM Rules), using information available as at [2 September 2025], unless otherwise specified.

Disclaimer

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Executive Summary

The March 2025 Low Reserve Condition Report outlines the frequency, causes, and responses to Low Reserve Condition (LRC) events in the Wholesale Electricity Market (WEM) during the reporting period from 1 October 2024 to 31 March 2025. Low Reserve Condition Declarations (LRCDs) were notably more frequent during the summer months, primarily due to extreme weather conditions, elevated system demand, and delays in commissioning new generation resources.

A representative analysis from 20 January 2025 illustrates how tropical cyclone activity and persistent high temperatures led to reduced solar generation and increased electricity demand, resulting in multiple LRCDs. In response, AEMO maintained Power System Reliability by activating operational measures including Supplementary Capacity (SC), Demand Side Participation (DSP), and Non-Co-optimised Essential System Services (NCESS).

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1 Introduction

This report provides an overview of Low Reserve Condition Declarations (LRCDs) during the October 2024 – March 2025 period. AEMO has also analysed a specific day, 20 January 2025, to illustrate the causes and response measures related to LRC events.

A Low Reserve Condition (LRC) occurs when AEMO considers that, for a particular period, there is a risk of insufficient capacity to meet expected energy demand, that there is a risk of load shedding to maintain Power System Security, or that there is a risk of an Essential System Service shortfall that compromises AEMO's ability to maintain Power System Security or Power System Reliability.

Terms defined in the *Electricity Industry Act 2004* (WA), the Electricity System and Market Regulations and the ESM Rules have the same meanings in this report unless the context requires otherwise.

1.1 Low Reserve Condition Declarations

Table 1 contains a summary of LRCDs issued between 1 October 2024 and 31 March 2025.

Table 1 Summary of LRC Declarations

Date	Market Advisory number
26/03/2025	211407
24/03/2025	211402
06/03/2025	211373
23/01/2025	211244
21/01/2025	211239
21/01/2025	211236
20/01/2025	211228
20/01/2025	211227
11/12/2024	211160
10/12/2024	211158
10/12/2024	210376

1.2 Analysis of causes

This section highlights the observed trends in LRCDs, focusing on the factors influencing their occurrence and timing:

- **Energy transition:** The decommissioning of coal facilities reduced the availability of dispatchable, non-intermittent energy sources[1].
- **Weather and seasonality:** LRCDs were observed during extreme weather events such as heatwaves and cyclones. The summer months consistently show a higher frequency of LRC events due to elevated temperatures and demand. Multiple heatwaves and Tropical Cyclone Sean were particularly significant drivers during this reporting period.
- **Load growth:** Increasing electricity consumption within the SWIS[2] is placing additional pressure on system resources.
- **Commissioning delays:** Inability to maintain required reserve margins due to delays in the commissioning of new generation resources.

1.3 Actions taken

Table 2 displays the LRCDs, and the actions taken by AEMO to resolve the LRC.

Operational actions for a LRC day:

- Declare LRC by issuing a Market Advisory.
- Dispatch all available market generation.
- Activate Demand Side Programme (DSP) and Supplementary Capacity (SC).
- Declare priority Essential System Service (ESS) providers.

Table 2 Summary of actions taken

Date and time	Declaration (Market Advisory number)	LRC period	Actions taken AEMO has declared LRC
26/3/2025	211407	16:00-18:00	- All generators requested to be available over peak.
24/3/2025	211402	16:00-19:30	- All generators requested to be available over peak.

[1] WAECF 16 September 2024: https://aemo.com.au/-/media/files/stakeholder_consultation/working_groups/wa_meetings/waecf/2024/waecf-48-meeting-papers.pdf?la=en

[2] ESOO 18 June 2024: https://aemo.com.au/-/media/files/electricity/wem/planning_and_forecasting/esoo/2024/2024-wem-electricity-statement-of-opportunities.pdf?la=en&hash=6B9DD8B889C7EE8B280475DEC8F655FA

Date and time	Declaration (Market Advisory number)	LRC period	Actions taken AEMO has declared LRC
6/03/2025	211373	15:00 - 22:00	- Constrain on MUJA_G6 to a minimum of 120MW[3]. - Network outages that constrain generation may be recalled - All generators requested to be available over peak.
23/01/2025	211244	13:00 - 20:30	- SC was dispatched - All generators requested to be available over peak.
21/01/2025	211239	11:25 20:30	- SC was dispatched - NCESS contract activated - All generators requested to be available over peak.
21/01/2025	211236	14:30- 20:30	- SC was dispatched - NCESS contract activated - All generators requested to be available over peak.
20/01/2025	211228	15:00 - 21:30	- SC was dispatched - NCESS was activated - All generators requested to be available over peak.
20/01/2025	211227	15:00 - 21:30	- Stage 2 SC/NCESS/DSP was activated - SC was dispatched - DSPs received Dispatch Instructions for maximum curtailment capacity - NCESS contract activated - All generators requested to be available over peak.
11/12/2024	211160	15:00 - 20:30	- SC was dispatched - NCESS was activated - All generators requested to be available over peak.
10/12/2024	211158	12:25- 20:00	- SC was dispatched - All generators requested to be available over peak.
10/12/2024	210376	9:30-20:00	- SC was dispatched - All generators requested to be available over peak.

1.4 Detailed analysis of 20 January 2025

AEMO assesses the probability of a shortfall in available capacity reserves, which may lead to a potential LRC. A LRC occurs when AEMO considers that there is a risk of the circumstances specified in clause 3.17.1 of the ESM Rules which may result in a LRCD. These circumstances include forecast reserve margins falling below the Reliability Standard, significant uncertainty in demand or generation availability, planned or unplanned Outages reducing Available Capacity, or other events that may impact Power System Security and Power System Reliability. AEMO will then publish notices to inform the market about LRCs and any potential AEMO Intervention Events.

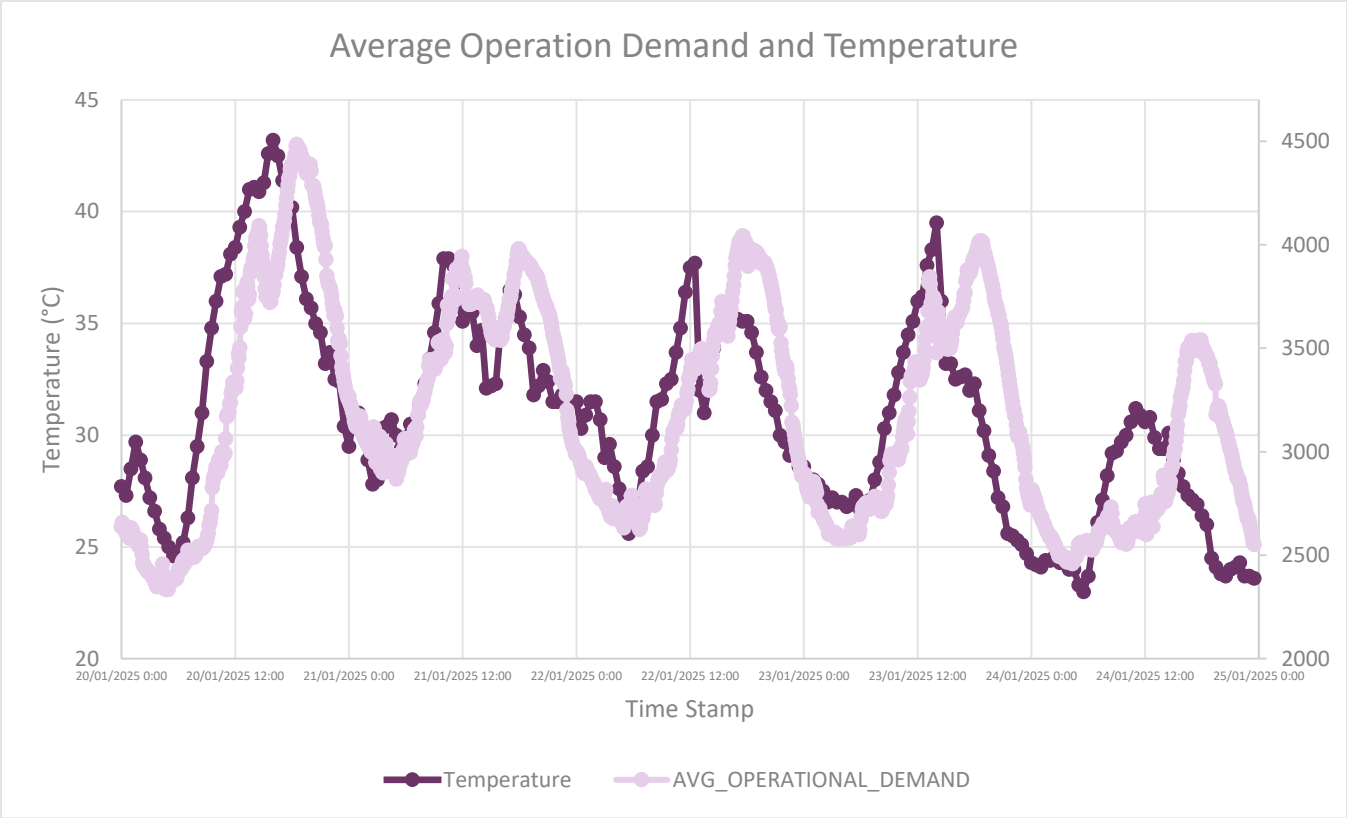
[3] MUJA G6 operated in reserve mode during summer 2024–25, enabling AEMO to return the unit when required to support Power System Reliability.

On 20 January 2025, substantial cloud cover caused by a cyclone led to higher humidity and a low amount of solar energy generation from grid connection, as shown in Table 3. Furthermore, the hot and humid weather persisted for multiple days as shown in Figure 1, preventing homes from cooling down and resulting in increased demand. Due to these conditions, there was a lack of Reserve Capacity, leading to a LRCD. Such situations are a common cause of LRCDs during the warmer seasons.

Table 3 Fuel mix at peak interval 18:30 to 18:35, 20 January 2025

Fuel type	Power (MW)	Percentage (%)
Gas	2526.3	56.3
Coal	1334.6	29.8
Battery	296.3	6.6
Wind	187.6	4.2
Hybrid	72.2	1.6
Distillate	51.9	1.2
Solar (Grid connected)	8.9	0.2
Biomass	8.3	0.2
TOTAL	**4486**	**100%**

Figure 1 SWIS Operational Demand and temperature, 20 to 24 January 2025



As shown above:

- Figure 1 represents a time series showing Operational Demand alongside corresponding daily temperatures from 20 January 2025 to 24 January 2025.
- Figure 1 clearly demonstrates a positive correlation between high temperatures and increased electricity demand.
- As temperatures rose, so did the demand on the SWIS, further emphasising the grid stress caused by sustained hot weather and low levels of renewable generation.

Table 4 displays the minimum and maximum temperature on 20 January 2025, and the average minimum and maximum temperatures for January 2024 and January 2025.

Table 4 January temperatures comparison

Temperature (°C)		
	Min	Max
20 January 2025	24.5	43.6
Average temperatures in January 2025	20.1	32.8
Average temperatures in January 2024	26.8	41.9

Key drivers of high temperatures:

- Tropical Cyclone Sean led to increased cloud cover and dew points.
- The formation of a southern ridge led to easterly winds, making heat stress worse across the region. These winds pushed hot air from inland areas and weakened sea breezes that would normally have helped to cool the coast.
- Heatwaves typically last around three days, however on and from 20 January 2025 this extended to five days, making its impact more severe.

Figure 2 illustrates the timeline of remaining reserve headroom on 20 January 2025. Unlike typical daily patterns, there was no midday trough, where demand would usually decrease. Throughout the day, gas was heavily utilised for power generation, replacing what would normally be supplied by rooftop solar.

Figure 2 WEM Operational Demand and fuel mix, 20 January 2025

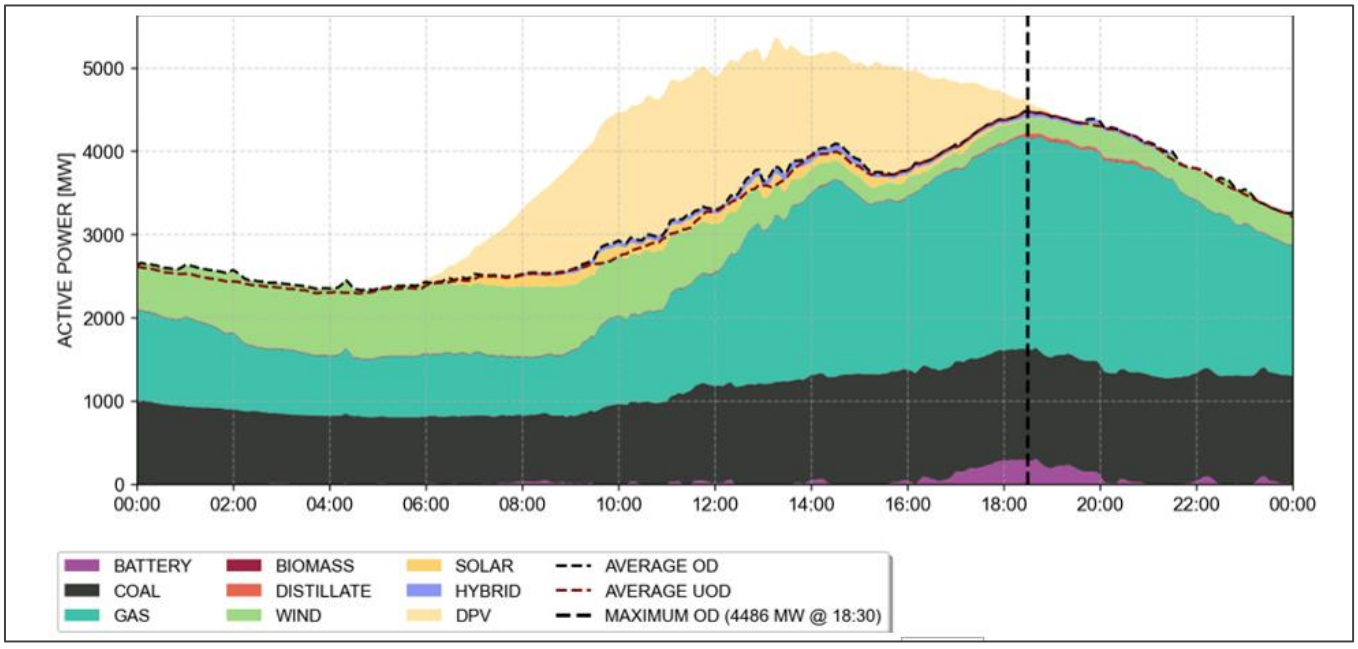


Figure 3 details the activation points for emergency measures including:

- Supplementary Capacity (SC).
- Non-Co-optimised Essential System Services (NCESS).
- Demand Side Programme (DSP).

Figure 3 Notification and activation

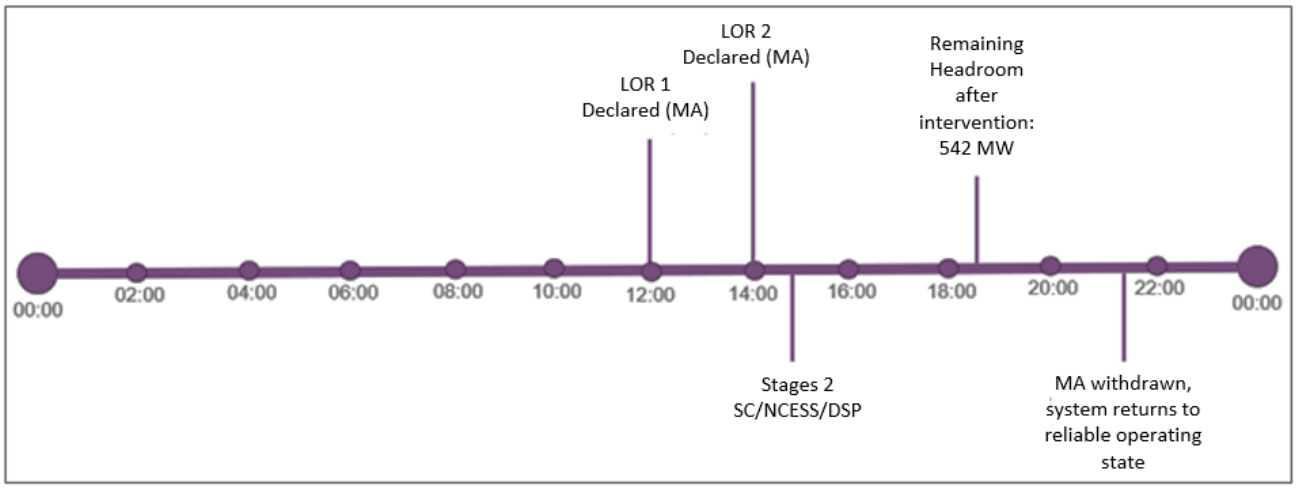


Figure 3 shows the sequence of events on 20 January 2025, including the declaration of Lack of Reserves 1 (LOR1) and Lack of Reserves 2 (LOR2) conditions and the subsequent interventions. For context, LOR1 is declared when forecast reserve headroom falls below 518 MW, representing the minimum acceptable margin to maintain Power System Reliability. LOR2 is declared when reserves are equal to or below 231 MW, indicating a more critical level of reserve shortfall. The remaining headroom after intervention was 542 MW.