AEMO
AUSTRALIAN ENERGY MARKET OPERATOR

STATUS REPORT

1 October 2019 to 31 December 2019

Prepared under clause 7.12 of the WEM Rules

Contents

1. Introduction

The Australian Energy Market Operator (AEMO) has prepared this report under clause 7.12 of the Wholesale Electricity Market Rules (WEM Rules).

Clause 7.12 of the WEM Rules requires AEMO to provide a report to the Economic Regulation Authority (ERA) once every three months on the performance of the market with respect to the dispatch process. The report must include details of:

- the incidence and extent of issuance of Operating Instructions and Dispatch Instructions;
- the incidence and extent of non-compliance with Operating Instructions and Dispatch Instructions;
- the incidence and reasons for the issuance of Dispatch Instructions to Balancing Facilities Out of Merit, including for the purposes of clause 7.12.1 of the WEM Rules, issuing Dispatch Orders to the Balancing Portfolio in accordance with clause 7.6.2 of the WEM Rules;
- the incidence and extent of transmission constraints;
- the incidence and extent of shortfalls in Ancillary Services, involuntary curtailment of load, High Risk Operating States and Emergency Operating States; and
- the incidence and reasons for the selection and use of LFAS Facilities under clause 7B.3.8 of the WEM Rules.

In this report:

- the reporting period is from 1 October 2019 to 31 December 2019;
- terms that are capitalised but not defined have the meaning given in the WEM Rules; and
- date references are to Trading Days, not calendar days, unless otherwise stated.

2. Issuance of Dispatch Instructions and Operating Instructions

AEMO issued 10,456 Dispatch Instructions to Market Participants during the reporting period.

Figure 1 shows the number of Dispatch Instructions issued during each Trading Month since 1 July 2018.

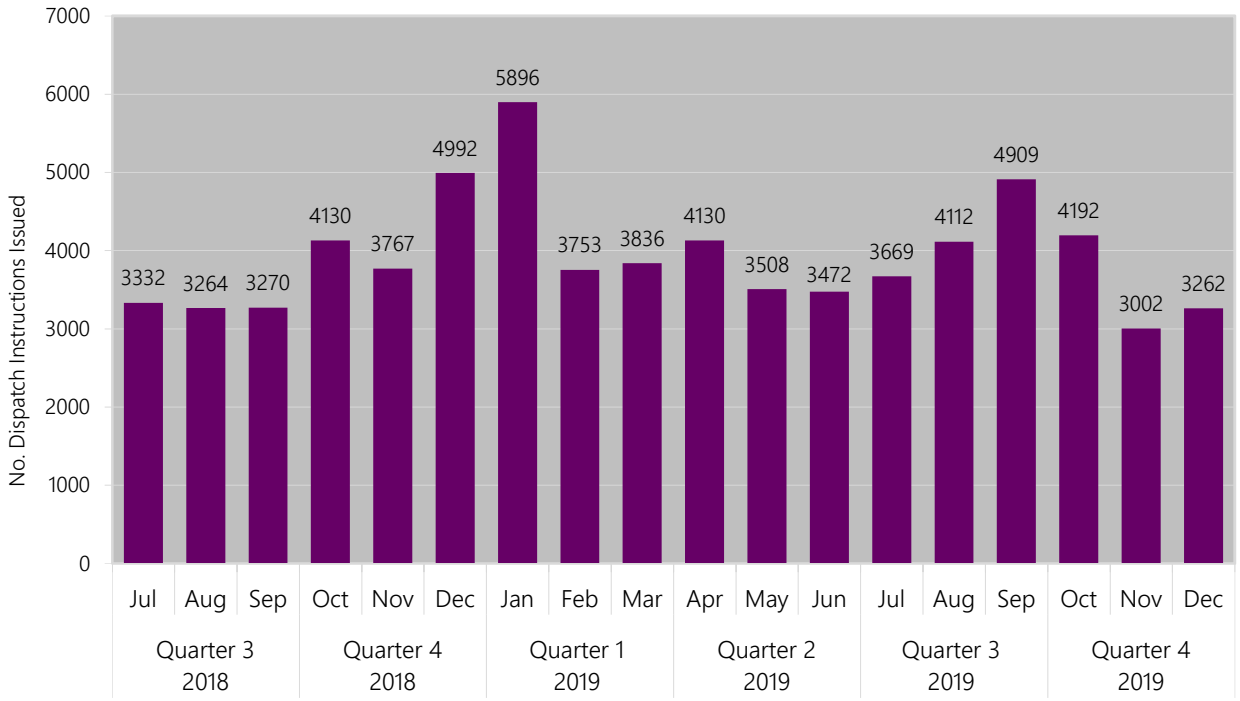

Figure 1: Dispatch Instructions per Trading Month

AEMO issued 910 Operating Instructions during the reporting period.

Four situations where AEMO may issue Operating Instructions under the WEM Rules are for Commissioning Tests, Reserve Capacity Tests, provision of services under the Network Control Service Contracts and issuance of retrospective Operating Instructions pursuant to clause 7.7.11.

Figure 2 below shows the number of Operating Instructions issued during each Trading Month since 1 July 2018.

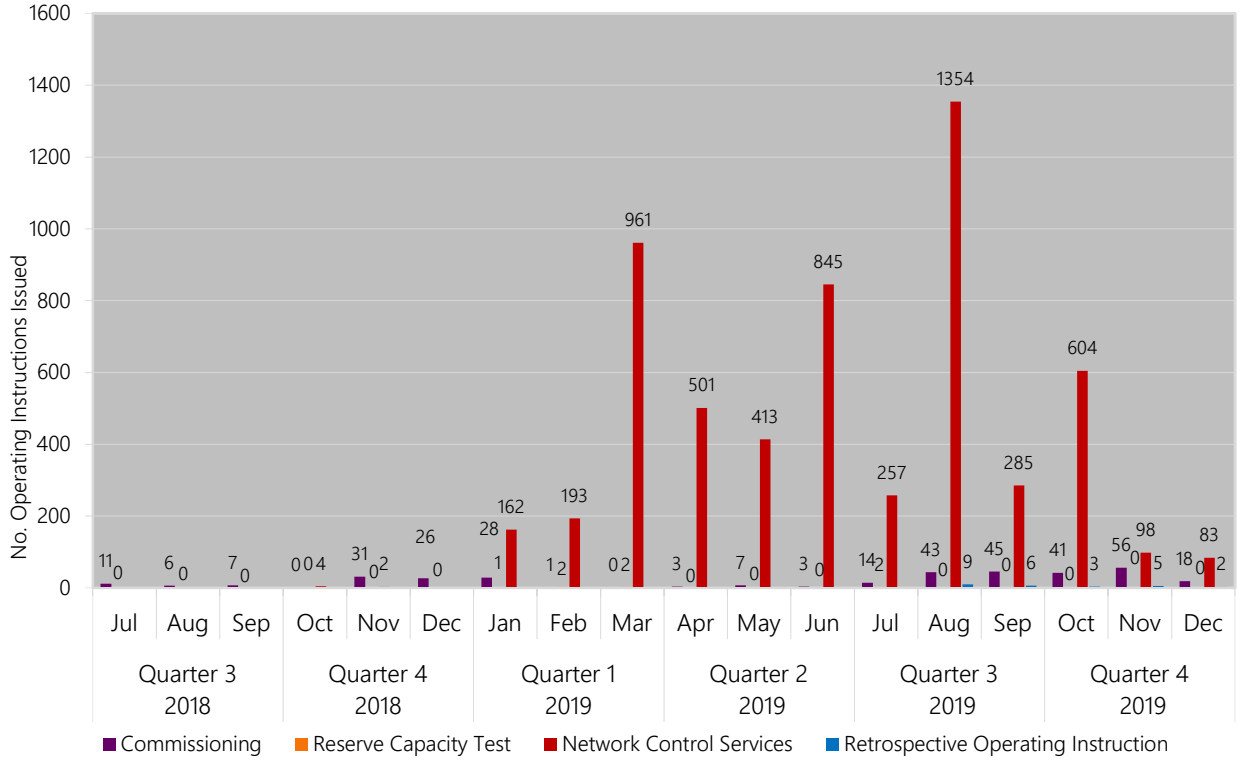

Figure 2: Operating Instructions per Trading Month

3. Non-Compliance with Dispatch Instructions and Operating Instructions[1]

During the reporting period, AEMO issued 11,712 one-minute non-compliance notifications to Market Participants for non-compliance with Dispatch Instructions, taking into account the Tolerance Range, and any Facility Tolerance Ranges, where applicable.

During the reporting period, AEMO issued 5 one-minute non-compliance notifications to Market Participants for non-compliance with Operating Instructions, taking into account the Tolerance Range, and any Facility Tolerance Ranges, where applicable.

During the reporting period, there were 118 instances where a Market Participant did not confirm receipt of a Dispatch Instruction when required to do so under the WEM Rules and the Dispatch Power System Operation Procedure.

During the reporting period, there were 25 instances where a Market Participant did not confirm receipt of an Operating Instruction when required to do so under the WEM Rules and the Dispatch Power System Operation Procedure.

Figure 3 below provides historical non-compliance data since 1 July 2018.

[1] Instances of non-compliance are calculated using information AEMO has at hand at the time of creation of the 7.12 report. Actual instances may differ once reviewed and determined by the ERA.

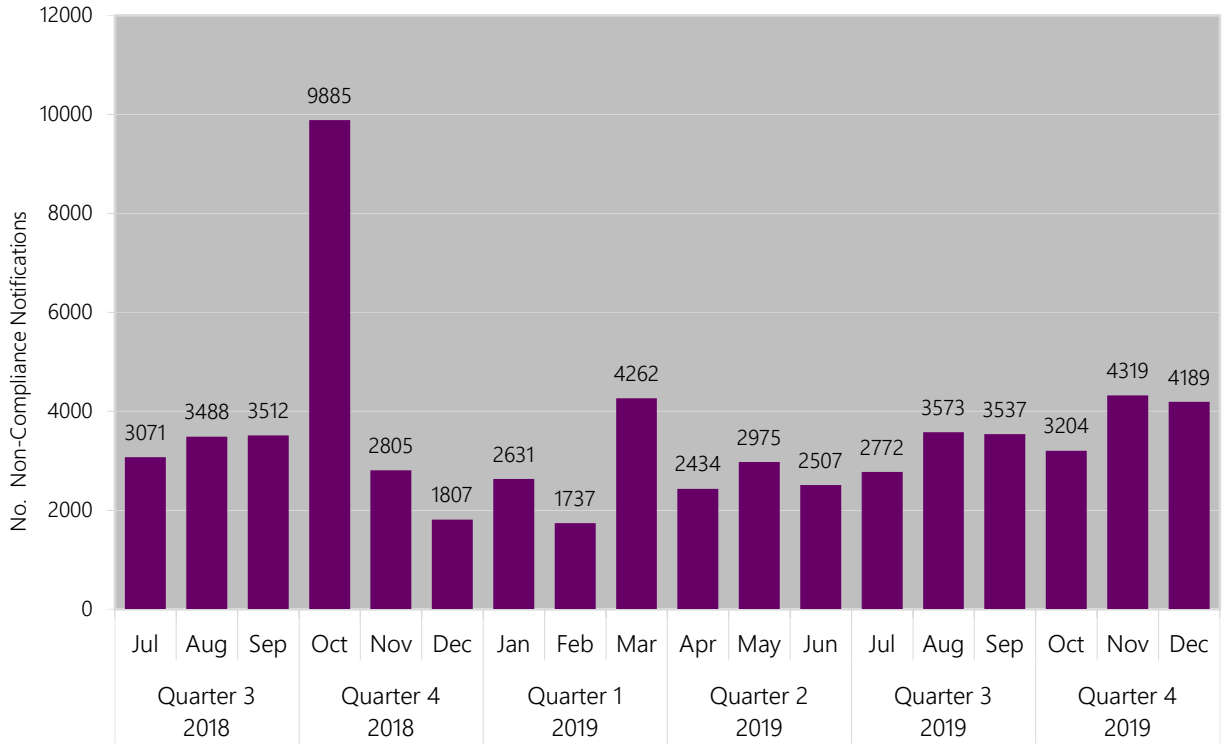

Figure 3: Dispatch Instruction non-compliance notifications

Figure 4 provides historical data for non-acknowledgement of Dispatch Instructions since 1 July 2018.

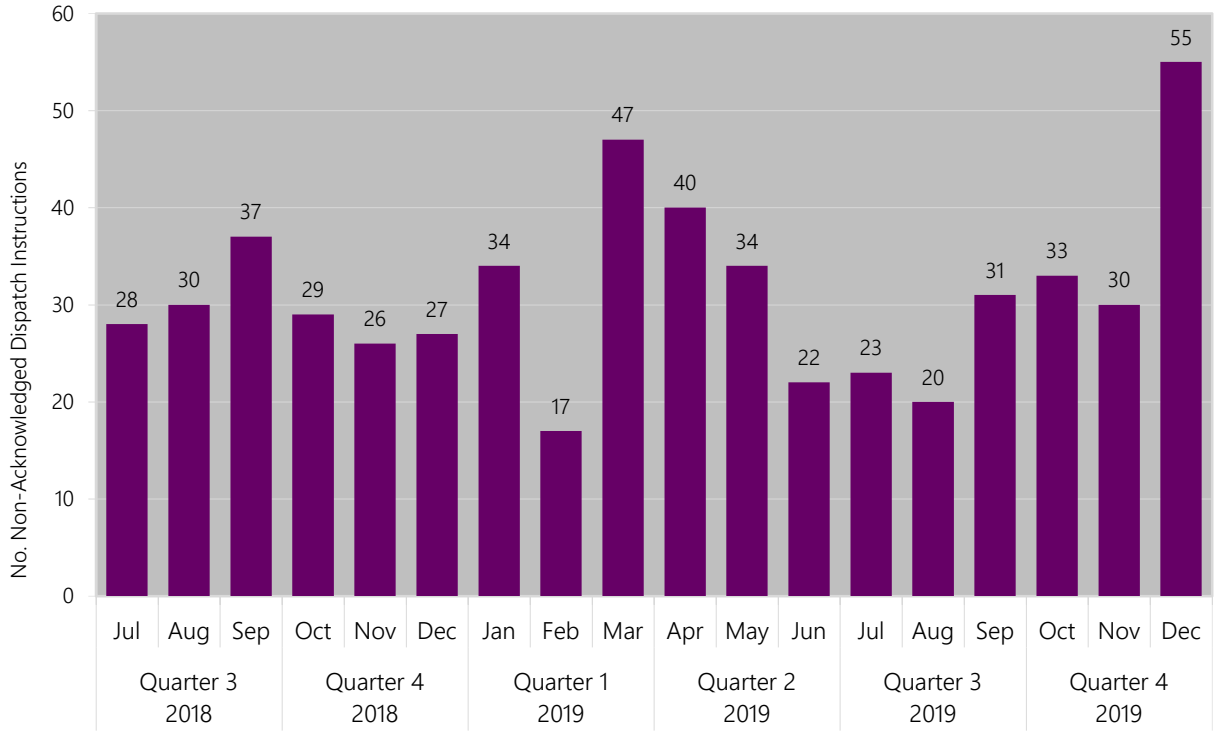

Figure 4: Non-acknowledged Dispatch Instructions

4. Issuance of Dispatch Instruction to Balancing Facilities Out of Merit

4.1 Instances of Out of Merit dispatch identified by AEMO

During the reporting period, no instances were identified where Dispatch Instructions were issued to Balancing Facilities Out of Merit[2].

4.2 Other instances of Out of Merit dispatch

Section 5 of this report includes information regarding instances of Out of Merit dispatch due to transmission network constraints. AEMO Issues Dispatch Advisories when these situations occur.

Section 6 of this report describes occasions of High Risk and Emergency Operating States that occurred during the reporting period. During elevated Operating States, there may be a need to dispatch Facilities Out of Merit to enable the SWIS to be returned to a Normal Operating State.

5. Transmission Constraints

A "transmission constraint" refers to the configuration of the transmission network that has an effect or potential effect of constraining or otherwise varying the output of a generation Facility. As a result of the transmission constraint, the generation Facility is required to increase or decrease output, depending on the relevant circumstances.

AEMO has identified the following transmission constraints during the reporting period:

- From Trading Interval 9:1 to Trading Interval 10:2 on 15 October 2019, unplanned network issues resulted in the need to constrain the STHRNCRS_EG Facility (no Dispatch Advisory was issued).
- From Trading Interval 8:2 to Trading Interval 8:2 on 29 October 2019, a planned network outage resulted in the need to constrain the INVESTEC_COLLGAR_WF1 Facility (Dispatch Advisory 206456).
- From Trading Interval 8:2 to Trading Interval 9:1 on 29 October 2019, a trip on the 220KV line resulted in the need to constrain the STHRNCRS_EG Facility (Dispatch Advisory 206456).
- From Trading Interval 8:2 to Trading Interval 9:1 on 29 October 2019, a trip on the 220KV line resulted in the need to constrain the PRK_AG Facility (Dispatch Advisory 206456).
- From Trading Interval 10:1 to Trading Interval 11:1 on 31 October 2019, a planned network outage resulted in the need to constrain the ALBANY_WF1 Facility (Dispatch Advisory 206458).
- From Trading Interval 7:1 to Trading Interval 20:2 on 20 November 2019, a planned network outage resulted in the need to constrain the PRK_AG Facility (Dispatch Advisory 206517).
- From Trading Interval 7:1 to Trading Interval 20:2 on 20 November 2019, a planned network outage resulted in the need to constrain the STHRNCRS_EG Facility (Dispatch Advisory 206517).
- From Trading Interval 5:1 to Trading Interval 6:1 on 21 November 2019, a planned network outage resulted in the need to constrain the PRK_AG Facility (Dispatch Advisory 206519).

[2] 7.6.1D of the WEM Rules provides for Out of Merit dispatch to avoid a High Risk Operating State or an Emergency Operating State or, if the SWIS is in a High Risk Operating State or an Emergency Operating State, to enable the SWIS to be returned to a Normal Operating State.

- From Trading Interval 7:1 to Trading Interval 8:2 on 21 November 2019, issues as a result of a planned network outage resulted in the need to constrain the STHRNCRS_EG Facility (Dispatch Advisory 206520).
- From Trading Interval 10:1 to Trading Interval 21:1 on 21 November 2019, a planned network outage resulted in the need to constrain the INVESTEC_COLLGAR_WF1 Facility (Dispatch Advisory 206518).
- From Trading Interval 6:1 to Trading Interval 17:1 on 22 November 2019, a planned network outage resulted in the need to constrain the INVESTEC_COLLGAR_WF1 Facility (Dispatch Advisory 206521).
- From Trading Interval 15:1 to Trading Interval 21:1 on 28 November 2019, an unplanned network outage resulted in the need to constrain the TIWEST_COG1 Facility (Dispatch Advisory 206539).
- From Trading Interval 16:2 to Trading Interval 21:1 on 03 December 2019, a Forced Outage resulted in the need to constrain the ALCOA_WGP Facility (Dispatch Advisory 206558).
- From Trading Interval 18:2 to Trading Interval 19:2 on 03 December 2019, a Power System Security issue resulted in the need to constrain the ALINTA_WGP_GT Facility (no Dispatch Advisory was issued).
- From Trading Interval 11:2 to Trading Interval 13:2 on 08 December 2019, low system load resulted in the need to constrain the EDWFMAN_WF1 Facility (Dispatch Advisory 206562).
- From Trading Interval 11:2 to Trading Interval 13:1 on 08 December 2019, low system load resulted in the need to constrain the GREENOUGH_RIVER_PV1 Facility (Dispatch Advisory 206562).
- From Trading Interval 13:1 to Trading Interval 15:1 on 09 December 2019, a Forced Outage resulted in the need to constrain the ALINTA_WWF Facility (Dispatch Advisory 206563).

6. Operating States, Shortfalls in Ancillary Services and Involuntary Curtailment of Load

6.1 High Risk Operating State

There were four instances of a High Risk Operating State during the reporting period.

Figure 5 provides historical data for High Risk Operating States that have occurred since 1 July 2018.

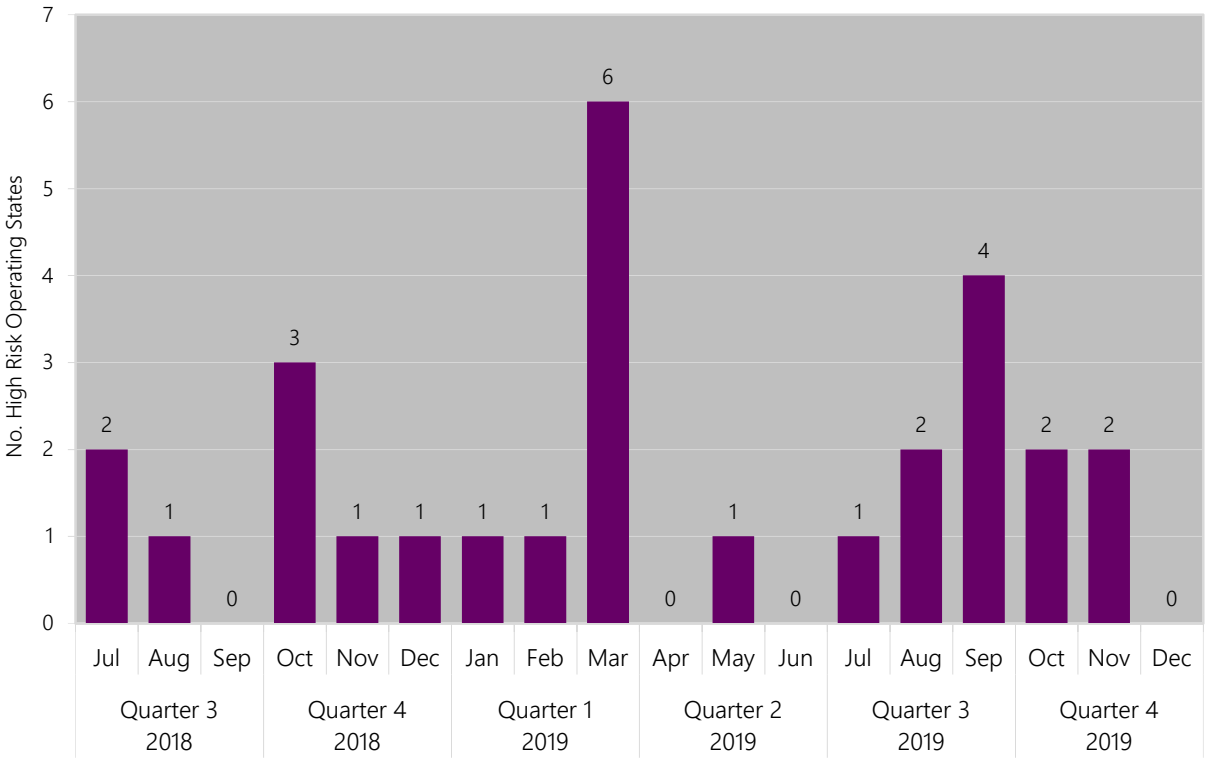

Figure 5: High Risk Operating States

Date/Interval/s	17 October 2019 / Trading Interval 10:2 to Trading Interval 12:1
Dispatch Advisory Number	19173
Details	Multiple RTUs failed as a result of a Planned Network Outage. AEMO consequently lost visibility of some Facilities.
AEMO action	AEMO's IT service provider was required to investigate the issue and restore visibility of the affected Facilities.

Date/Interval/s	Trading Interval 19:1 on 29 October 2019 to Trading Interval 5:2 on 30 October 2019
Dispatch Advisory Number	206457
Details	AEMO experienced a failure with the SCADA XA/21 Network Contingency Analysis Software.
AEMO action	AEMO was required to manage real-time Power System Security and Power System Reliability and recall/postpone outages where necessary. No outages were recalled or postponed.

Date/Interval/s	11 November 2019 / Trading Interval 21:1
Dispatch Advisory Number	206498

Details	At 21:08, the INVESTEC_COLLGAR_WF1 Facility tripped, resulting in a loss of approximately 97MW and a frequency deviation to 49.60HZ. Frequency returned to a normal operating level within two minutes of Facility tripping.
AEMO action	AEMO was required to dispatch according to the latest Balancing Merit Order to maintain Power System Security and Power System Reliability. There was no Out of Merit generation required.

Date/Interval/s	27 November 2019 / Trading Interval 19:1
Dispatch Advisory Number	206538
Details	At 19:17, the BW1_BLUEWATERS_G2 Facility tripped, resulting in a loss of approximately 175MW and a frequency deviation to 49.635HZ. Frequency returned to a normal operating level within two minutes of the Facility tripping.
AEMO action	AEMO was required to dispatch according to the latest Balancing Merit Order to maintain Power System Security and Power System Reliability. There was no Out of Merit generation required.

6.2 Emergency Operating State

There were three instances of an Emergency Operating State during the reporting period.

Figure 6 provides historical data for Emergency Operating States that have occurred since 1 July 2018.

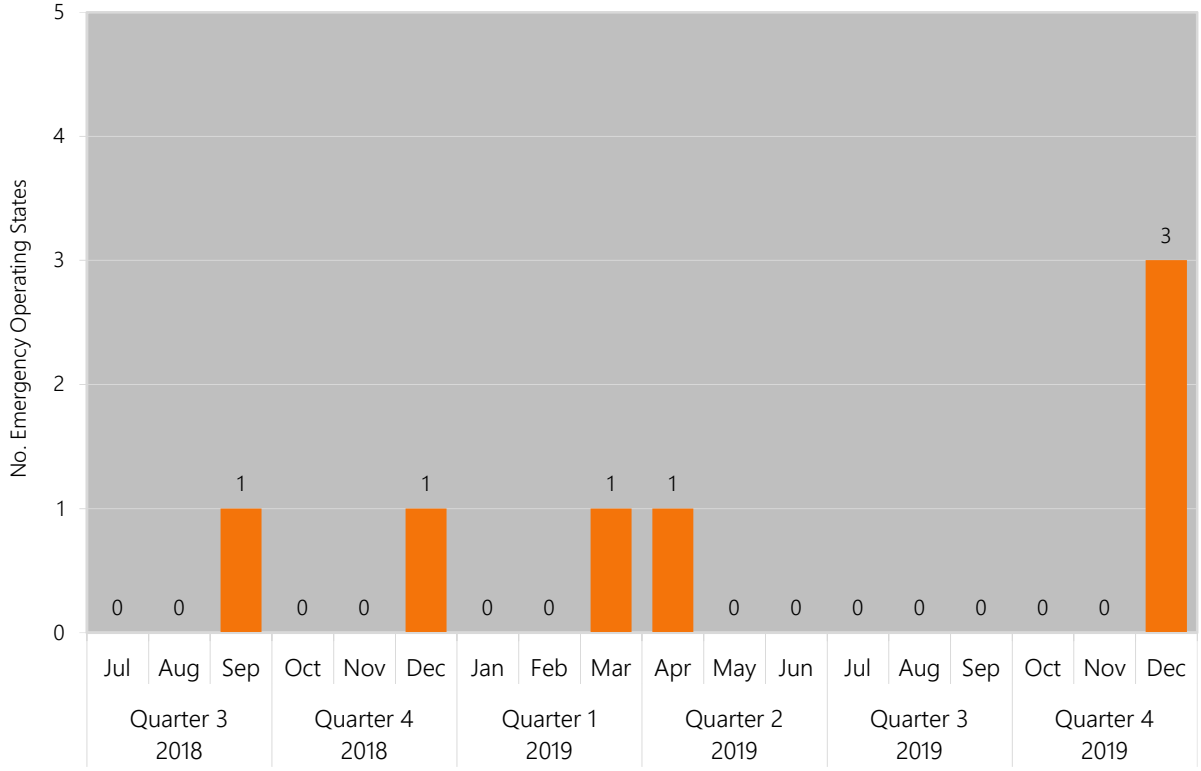

Figure 6: Emergency Operating States

Date/Interval/s	14 December 2019 / Trading Interval 18:1
Dispatch Advisory Number	206567
Details	AEMO was required to evacuate the primary operational facility as a result of an activation of building fire alarm systems.
AEMO action	AEMO was required to hand over frequency control whilst evacuating. AEMO was not required to relocate to the backup Facility.

Date/Interval/s	16 December 2019 / Trading Interval 2:0 to Trading Interval 3:2
Dispatch Advisory Number	206568
Details	AEMO was required to evacuate the primary operational facility as a result of an activation of building fire alarm systems.
AEMO action	AEMO was required to hand over frequency control and relocate to the backup Facility.

Date/Interval/s	20 December 2019 / Trading Interval 12:2
Dispatch Advisory Number	206580
Details	AEMO was required to evacuate the primary operational facility as a result of an activation of fire alarm systems.
AEMO action	AEMO was required to hand over frequency control whilst evacuating. AEMO was not required to relocate to the backup Facility.

6.3 Shortfalls in Ancillary Services

During the reporting period there were 68 instances of a shortfall in Ancillary Services. A shortfall occurs when the Ancillary Service Requirements are not met within a Trading Interval.

AEMO's primary function as the system operator in the SWIS is to ensure the SWIS operates in a secure and reliable manner (clause 2.2.1 of the WEM Rules). The Load Rejection Reserve Service is (relevantly) the service of holding capacity associated with a Scheduled Generator in reserve so that the Scheduled Generator can reduce output rapidly in response to a sudden decrease in SWIS load.

67 instances during the reporting period related to shortfalls of Load Rejection Reserve Service[3]. Most shortfalls occurred during periods of high volatility of wind and rooftop PV systems. In these situations, maintaining the required level of Load Rejection Reserve is difficult, and maintaining Power System Security and Power System Reliability while minimising costs to the Wholesale Electricity Market often means no action is the best response.

For every Trading Interval, System Management must activate each LFAS Facility for its full upward and downward LFAS Enablement to satisfy the LFAS Enablement Schedule. During the reporting period 1 instance

[3] Data is based on the number of Trading Intervals where Load Rejection Reserve of less than 90MW occurred, calculated using five-minute averages.

of LFAS Enablement shortfall was reported (down from 36 in the previous quarter). This indicates increased awareness of the changing LFAS Enablement requirement introduced in AEMO's 2019 Ancillary Services Report[4] published June 2019.

AEMO does not consider that any of the shortfalls threatened Power System Security or Power System Reliability or were significant enough to place the SWIS in a High Risk Operating State or an Emergency Operating State.

Figure 7 below provides data for shortfalls in Ancillary Services that have occurred since 1 July 2018.

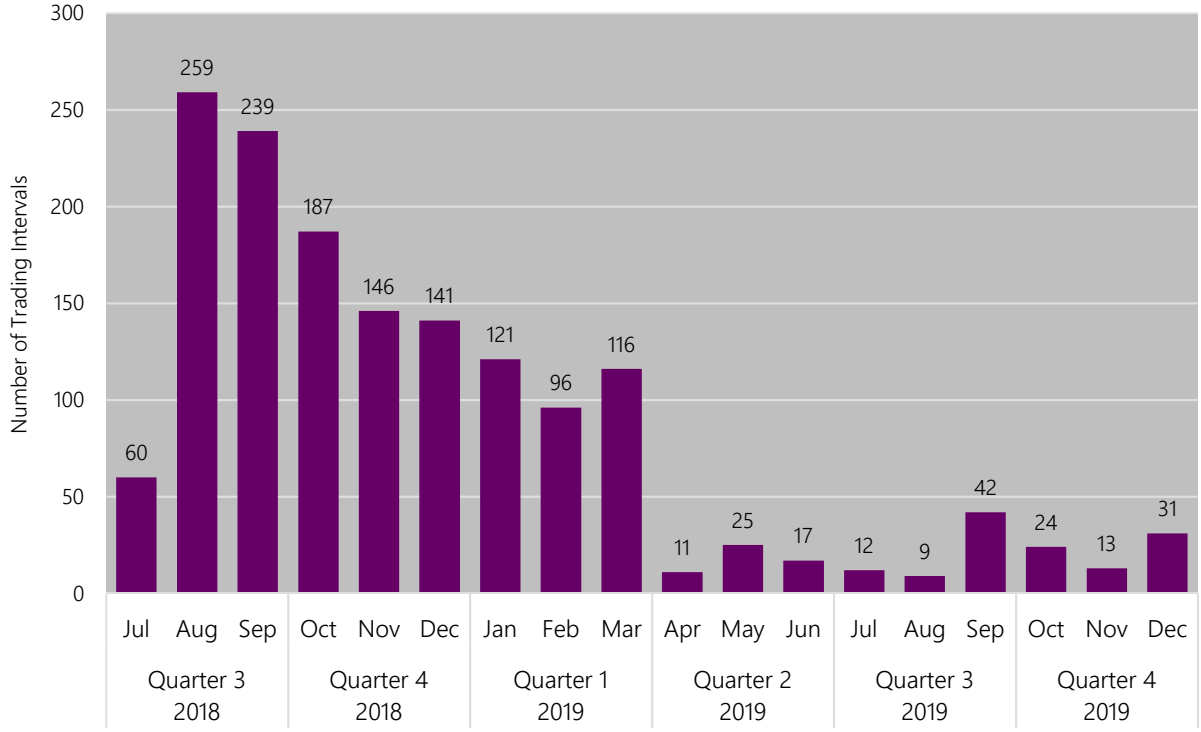

Figure 7: Number of Shortfalls in Ancillary Services

6.4 Involuntary curtailment of load

There were no instances of involuntary curtailment of load during the reporting period.

7. Selection and use of LFAS Facilities other than in accordance with LFAS Merit Order

During the reporting period, there were two instances where AEMO was required to use LFAS Facilities outside of the LFAS Enablement Schedule to operate the SWIS in a reliable and safe manner under clause 7B.3.8 of the WEM Rules.

Date/Interval/s	04 October 2019 / Trading Interval 10:2 to Trading Interval 16:2
Dispatch Advisory Number	19133

[4] https://www.aemo.com.au/-/media/Files/Electricity/WEM/Data/System-Management-Reports/2019-Ancillary-Services-Report.pdf

Details	AEMO required additional Load Following Ancillary Services due to high volatility of wind and PV generation.
AEMO action	AEMO was required to activate Load Following Ancillary Services from the Backup LFAS Provider to maintain Power System Security and Power System Reliability.

Date/Interval/s	31 October 2019 / Trading Interval 10:2 to Trading Interval 15:2
Dispatch Advisory Number	206461
Details	AEMO required additional Load Following Ancillary Services due to high volatility of wind and PV generation.
AEMO action	AEMO was required to activate Load Following Ancillary Services from the Backup LFAS Provider to maintain Power System Security and Power System Reliability.