AEMO
AUSTRALIAN ENERGY MARKET OPERATOR

STATUS REPORT

1 July 2019 to 30 September 2019

Prepared under clause 7.12 of the WEM Rules

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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 July 2019 to 30 September 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.

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2. Issuance of Dispatch Instructions and Operating Instructions

AEMO issued 12,690 Dispatch Instructions to Market Participants during the reporting period.

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

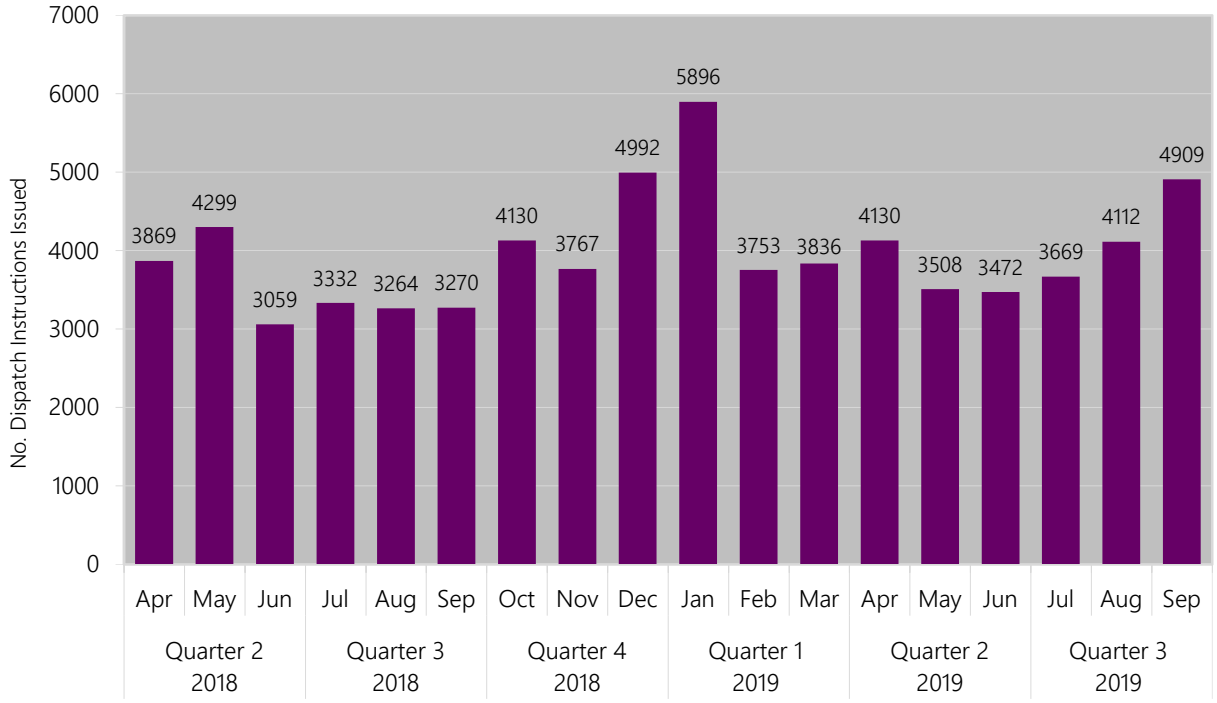

Figure 1: Dispatch Instructions per Trading Month

AEMO issued 2015 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 shows the number of Operating Instructions issued during each Trading Month since 1 April 2018.

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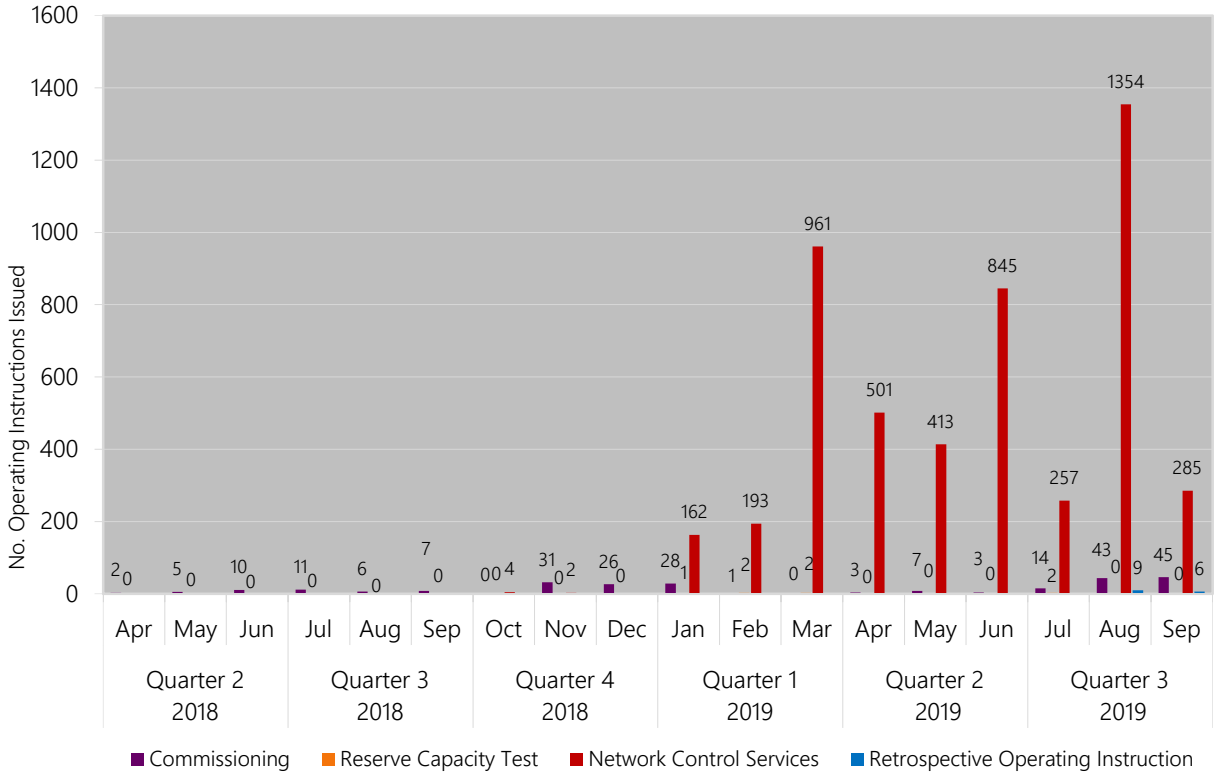

Figure 2: Operating Instructions per Trading Month

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

During the reporting period, AEMO issued 9,882 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 8 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 460 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 441 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 April 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.

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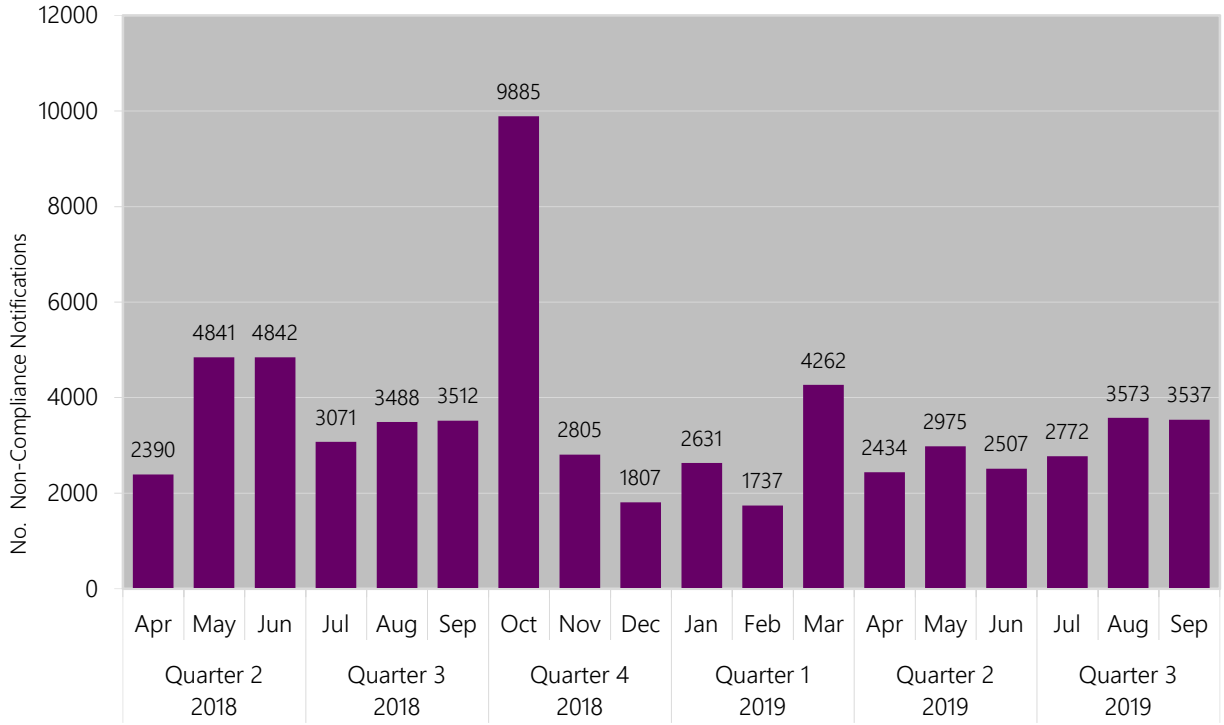

Figure 3: Dispatch Instruction non-compliance notifications

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

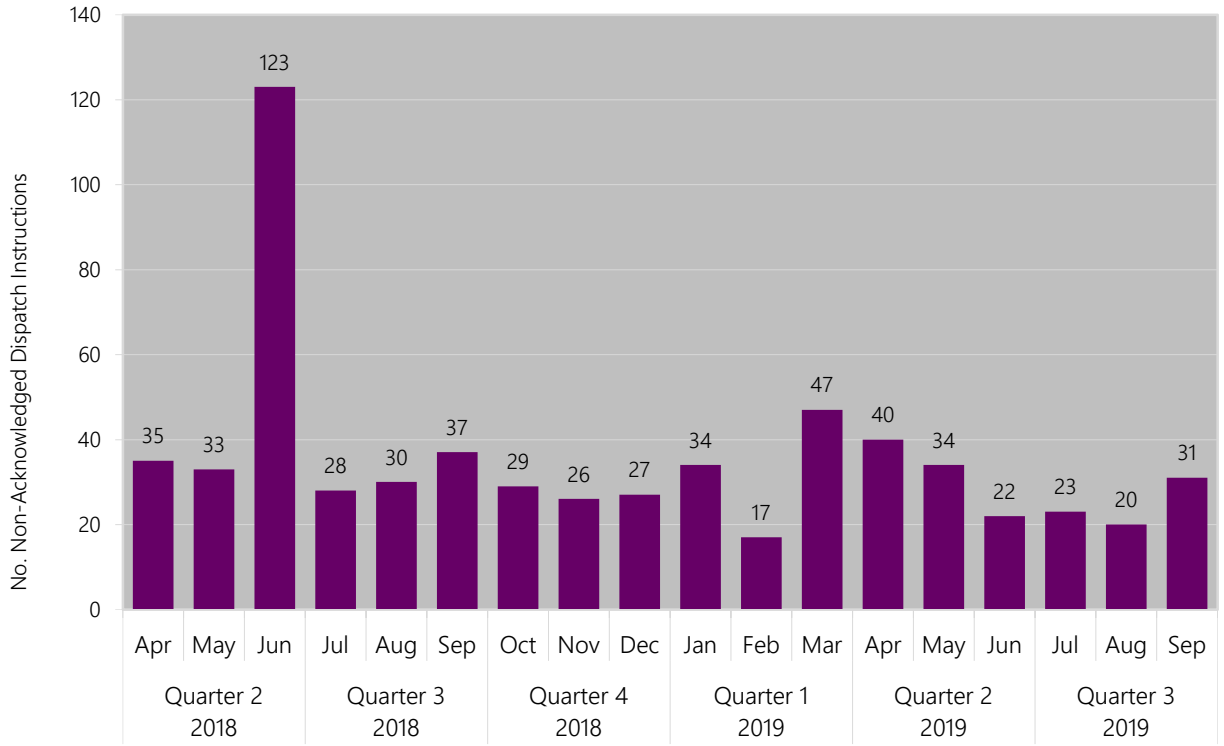

Figure 4: Non-acknowledged Dispatch Instructions

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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 12:1 to Trading Interval 12:2 on 01 August 2019, commissioning on the BADGINGARRA_WF1 Facility resulted in the need to constrain the Facility until maximum generation was reached (Dispatch Advisory 18969).
  - The BADGINGARRA_WF1 Facility was constrained to 50MW for 2 Trading Intervals.
- From Trading Interval 5:2 to Trading Interval 8:1 on 06 August 2019, a planned network outage resulted in the need to constrain the GRASMERE_WF1 Facility (Dispatch Advisory 19008).
  - The GRASMERE_WF1 Facility was constrained to 0MW for 6 Trading Intervals.
- From Trading Interval 5:2 to Trading Interval 8:1 on 06 August 2019, a planned network outage resulted in the need to constrain the ALBANY_WF1 Facility (Dispatch Advisory 19008).
  - The ALBANY_WF1 Facility was constrained to 0MW for 6 Trading Intervals.
- From Trading Interval 8:1 to Trading Interval 22:1 on 08 August 2019, a planned network outage resulted in the need to constrain the ALBANY_WF1 Facility (Dispatch Advisory 19010).
  - The ALBANY_WF1 Facility was constrained to 13MW for 29 Trading Intervals.
- From Trading Interval 22:1 to Trading Interval 23:2 on 08 August 2019, a planned network outage resulted in the need to constrain the GRASMERE_WF1 Facility (Dispatch Advisory 19011).
  - The GRASMERE_WF1 Facility was constrained to 0MW for 4 Trading Intervals.

[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.

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- From Trading Interval 22:1 to Trading Interval 23:2 on 08 August 2019, a planned network outage resulted in the need to constrain the ALBANY_WF1 Facility (Dispatch Advisory 19011).
  - The ALBANY_WF1 Facility was constrained to 0MW for 4 Trading Intervals.
- From Trading Interval 6:2 to Trading Interval 17:1 on 17 August 2019, a planned network outage resulted in the need to constrain the ALBANY_WF1 Facility (Dispatch Advisory 19028).
  - The ALBANY_WF1 Facility was constrained to 0MW for 22 Trading Intervals.
- From Trading Interval 6:2 to Trading Interval 8:1 on 23 September 2019, a planned network outage resulted in the need to constrain the GRASMERE_WF1 Facility (Dispatch Advisory 19111).
  - The GRASMERE_WF1 Facility was constrained to 0MW for 4 Trading Intervals.
- From Trading Interval 6:2 to Trading Interval 8:1 on 23 September 2019, a planned network outage resulted in the need to constrain the ALBANY_WF1 Facility (Dispatch Advisory 19111).
  - The ALBANY_WF1 Facility was constrained to 15MW for 4 Trading Intervals.
- From Trading Interval 8:1 on 23 September to Trading Interval 15:1 on 25 September 2019, a planned network outage resulted in the need to constrain the ALBANY_WF1 Facility (Dispatch Advisory 19111).
  - The ALBANY_WF1 Facility was constrained to 0MW for 111 Trading Intervals.

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

6.1 High Risk Operating State

There were seven 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 April 2018.

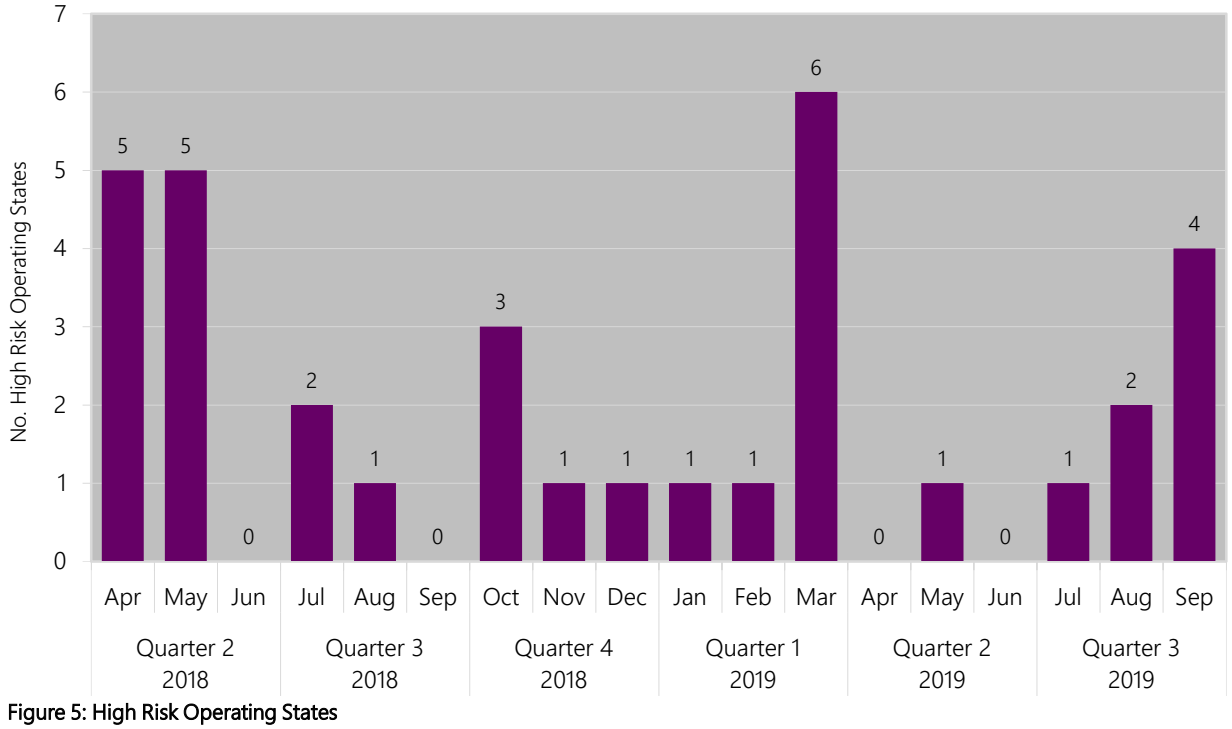

Figure 5: High Risk Operating States

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Date/Interval/s	31 July 2019 / Trading Interval 10:1
Dispatch Advisory Number	18968
Details	AEMO experienced issues with the SCADA XA21 Network.
AEMO action	AEMO was required to manage real time Power System Security and Power System Reliability. Outages were recalled where required.

Date/Interval/s	17 August 2019 / Trading Interval 8:1
Dispatch Advisory Number	19029
Details	The Muja Facility experienced significant fuel supply restrictions, resulting in the need to reduce the Facility's generation.
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	30 August 2019 / Trading Interval 22:1
Dispatch Advisory Number	19071
Details	At 22:09, the PIC-PNJ/BSN/KEM81 line tripped, resulting in a load rejection of approximately 200MW and a frequency deviation to 50.23HZ. Frequency returned to a normal operating level within two minutes seconds of the line 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	02 September 2019 / Trading Interval 13:1
Dispatch Advisory Number	19076
Details	AEMO experienced system issues affecting the Real Time Dispatch Engine (RTDE) and real time data.
AEMO action	AEMO was required to manually dispatch according to the latest Balancing Merit Order to maintain Power System Security and Power System Reliability.

Date/Interval/s	03 September 2019 / Trading Interval 0:1
Dispatch Advisory Number	19078
Details	AEMO experienced system issues affecting the Real Time Dispatch Engine (RTDE) and real time data.

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AEMO action	AEMO was required to manually dispatch according to the latest Balancing Merit Order to maintain Power System Security and Power System Reliability.

Date/Interval/s	20 September 2019 / Trading Interval 12:2 to Trading Interval 14:1
Dispatch Advisory Number	19109
Details	AEMO experienced system issues, affecting the System Operations Control Centre User Interface and other automated systems.
AEMO action	AEMO was required to dispatch according to the latest Balancing Merit Order to maintain Power System Security and Power System Reliability.

Date/Interval/s	25 September 2019 / Trading Interval 22:1
Dispatch Advisory Number	19113
Details	AEMO experienced intermittent SCADA degradation, resulting in some loss of visibility of the SWIS.
AEMO action	AEMO prepared to relocate to the back up control Facility, however, SCADA became available prior to relocation.

6.2 Emergency Operating State

There were no instances of an Emergency Operating State during the reporting period.

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

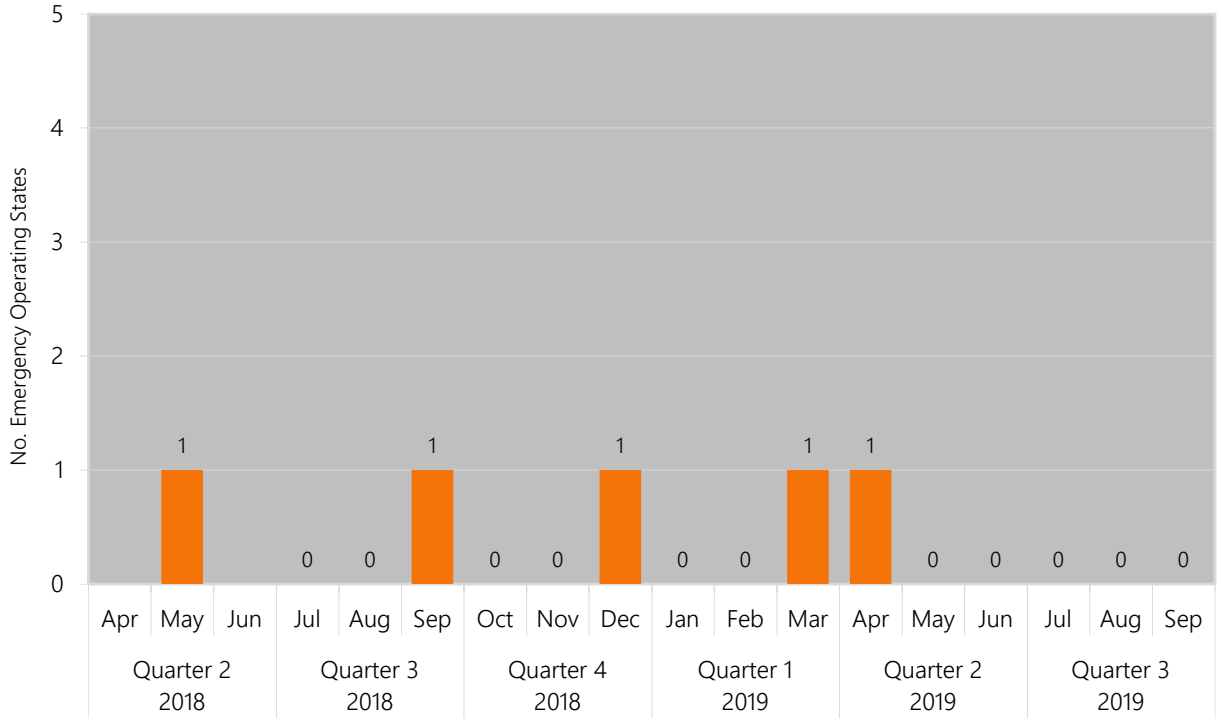

Figure 6: Emergency Operating States

6.3 Shortfalls in Ancillary Services

During the reporting period there were 63 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.

27 instances during the reporting period related to shortfalls of Load Rejection Reserve Service[3]. Shortfalls occurred during periods of high volatility of 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 36 instances of LFAS Enablement shortfall were reported. In June 2019, AEMO amended the LFAS Enablement requirement following the publication of AEMO's 2019 Ancillary Services Report[4]. The report revealed that increases in Non-Scheduled generation and rooftop PV systems had reduced the effectiveness of the average LFAS Enablement requirement; previously static at 72MW Upwards and Downwards. On the 28th of August the LFAS Enablement requirement was changed to 85 MW LFAS Upwards and LFAS Downwards between 5.30 AM and 7.30 PM, and 50 MW between 7.30 PM and 5.30 AM. The shortfalls during the quarter appear to be a result of a transitional period, while AEMO moves towards increasing real-time visibility of the newly implemented LFAS Enablement requirement.

19 instances of a shortfall in LFAS Enablement was identified outside of the reporting period (13, February; 6, March). This has been included in this report as it was not previously captured.

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 April 2018.

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

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

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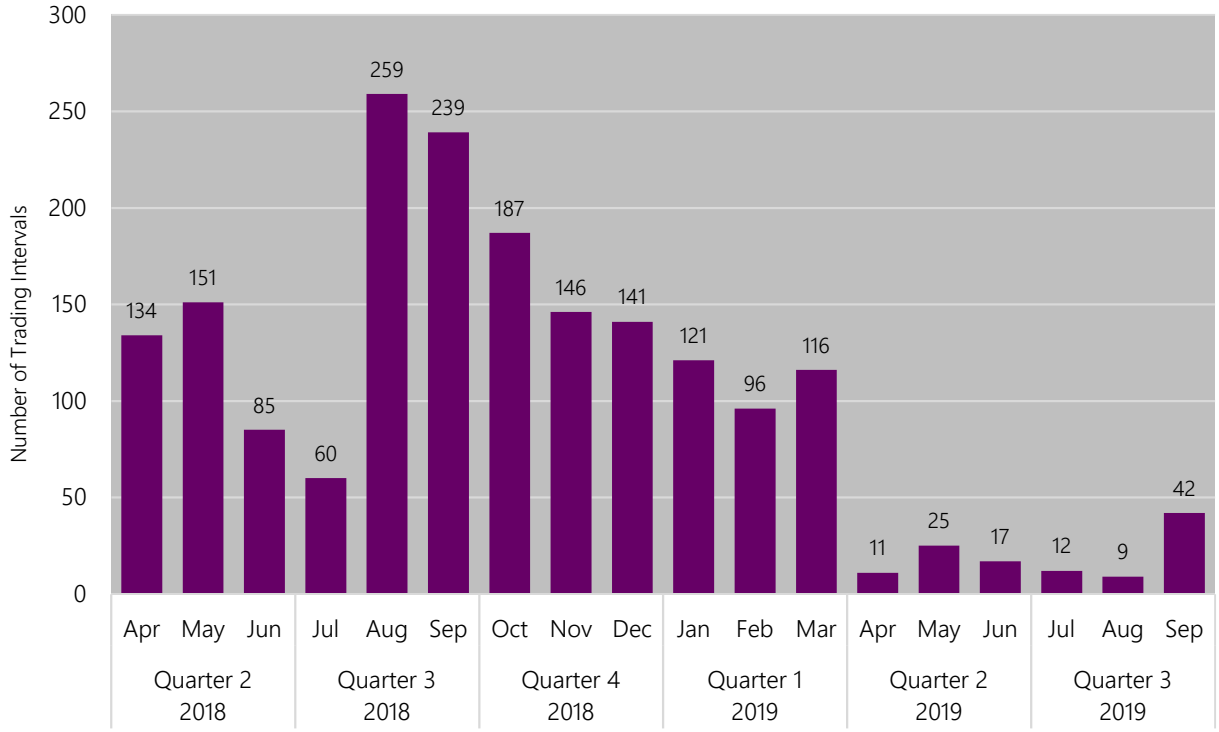

Figure 7: Number of Shortfalls in Ancillary Services

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 no instances where AEMO was required to use LFAS Facilities outside of the LFAS Merit Order to operate the SWIS in a reliable and safe manner under clause 7B.3.8 of the WEM Rules.

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