

NEM Event Directions Report 5 July 2022

August 2023





Important notice

Purpose

Where the Australian Energy Market Operator (AEMO) intervenes in the National Electricity Market (NEM) through the use of directions, AEMO must publish a report in accordance with National Electricity Rules (NER) clauses 4.8.9(f) and 3.13.6A(a). This report satisfies those NER obligations and is based on information available to AEMO as at 16 August 2023.

Unless otherwise indicated, terms in this report have the same meanings as those defined in the NER.

All references to time in this report are based on Australian Eastern Standard Time (AEST).

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Abbreviations

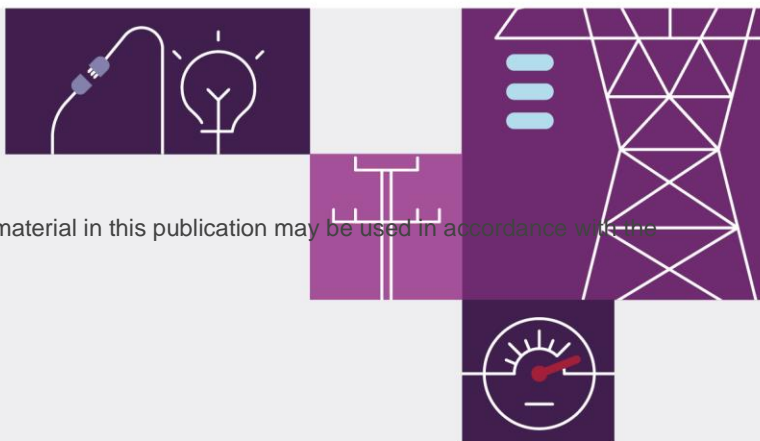
Abbreviation	Expanded name
B2PS	Arrow Southern Generation Pty Ltd And Arrow Braemar 2 Pty Ltd
CleanCo	CleanCo Queensland Limited
CRA	Compensation recovery amount
LOR	lack of reserve
MN	Market Notice
MW	megawatt/megawatts
NEM	National Electricity Market
NER	National Electricity Rules
RERT	Reliability and Emergency Reserve Trader
TI	Trading Interval

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1 Summary

Clause 4.8.9 of the National Electricity Rules (NER) allows AEMO to intervene in the market by issuing directions or clause 4.8.9 instructions, if AEMO is satisfied that it is necessary to maintain or re-establish the power system to a secure, satisfactory, or reliable operating state. Section 116 of the National Electricity Law allows AEMO to issue directions to take certain action if AEMO considers that it is necessary to maintain power system security or for reasons of public safety.

After it issues a direction, AEMO is required to publish a report outlining the matters specified in NER 3.13.6A.

On 5 July 2022, AEMO issued three directions to Queensland Market Participants to maintain the power system in a reliable operating state during actual and forecast lack of reserve (LOR) conditions in Queensland. These directions are summarised in Table 1.

Table 1 Summary of the Queensland directions on 5 July 2022

Directed plant	Directed participant	Event no.	Issue time	Direction	Cancellation time
Wivenhoe Pump 2	CleanCo Queensland Limited	1	0810 hrs, 5 July 2022	To make 243 MW of additional capacity available for dispatch and follow dispatch targets from 0820 hrs 5 July 2022	0850 hrs, 5 July 2022
Wivenhoe Pump 1	CleanCo Queensland Limited	1	0810 hrs, 5 July 2022	To make 243 MW of additional capacity available for dispatch and follow dispatch targets from 0850 hrs 5 July 2022	1530 hrs, 5 July 2022
Braemar 2 Power Station Unit 5	Arrow (Southern Generation) Pty. Ltd. and Arrow Braemar 2 Pty Ltd	1	0910 hrs, 5 July 2022	To make 163 MW of additional capacity available for dispatch and follow dispatch targets from 1700 hrs 5 July 2022	2015 hrs, 5 July 2022

To manage the reserve shortfalls, AEMO took the following steps:

- At 0810 hrs, AEMO issued two reliability directions to CleanCo's pumped hydro units to consume energy to alleviate forecast supply reserve shortfalls and ensure availability for the relevant generating units to later provide generation as required. These two directions affected dispatch quantities for intervention pricing purposes, discussed later in Section 4.2.
 - The first direction was in respect of Wivenhoe Pump 2, requiring the unit to make 243 MW of additional capacity available for dispatch and follow dispatch targets from trading interval (TI) ending 0820 hrs. The direction however ended earlier than expected and was cancelled at 0850 hrs due to unit tripping while synchronising.
 - The second direction was in respect of Wivenhoe Pump 1, requiring the unit to make 243 MW of additional capacity available for dispatch and follow dispatch targets from TI ending 0850 hrs. Direction was subsequently cancelled at TI ending 1530 hrs on the same day.
- At 0910 hrs, AEMO issued a reliability direction to B2PS effective from TI ending 1700 hrs to TI ending 2015 hrs on 5 July. The direction required Braemar 2 Power Station Unit 5 to make 163 megawatts (MW) of additional capacity available for dispatch and follow dispatch targets.

On the same day, AEMO also activated Reliability and Emergency Reserve Trader (RERT) contracts in Queensland from TI ending 1700 hrs to 1800 hrs in response to a forecast LOR 2. The RERT activation affected dispatch quantities for intervention pricing purposes (advised by Market Notice (MN) 99992 issued at 1400 hrs).

This report is limited to the directions to CleanCo and B2PS. Information about the RERT contract activation is provided in a separate report¹.

2 Intervention assessment

2.1 The need for intervention

On 5 July 2022, low solar irradiance in Queensland due to heavy cloud cover over the region greatly reduced distributed PV output. This combined with an unusually cold period saw demand in the region increase sharply, with several forecast LOR 1 and 2 notices issued in the lead up to the day for the afternoon and evening peak period.

2.2 Assessment of market response and latest time to intervene

Under NER 4.8.5A(a) and (c), AEMO must notify the market of any foreseeable circumstances that may require intervention (through direction or RERT activation), and the latest time for market response before AEMO would need to intervene.

AEMO contacted Market Participants who operate suitable generating units in Queensland to confirm their availability and the latest time to intervene for the morning LOR 2 period (MN 99965). One participant indicated that it would not be available in the morning to be directed, while the other participant indicated that no market response would be provided but identified units that would be available if directed.

In the lead up to 5 July 2022, AEMO issued several market notices from 2 July 2022 advising the market of the forecast and actual LOR conditions and the time at which they were anticipated to arise (Table 2). The latest time to intervene as determined by AEMO in respect to the directions given to CleanCo and B2PS were issued in pre-dispatch Projected Assessment of System Adequacy (PDPASA) market notices.

Table 2 Relevant market notices issued from 2 July 2022

Notice issued	Summary
MN 99811 2 July 2022 at 1508 hrs	Forecast LOR 1 declared for 5 July 2023 from 1730 to 1900 hrs.
MN 99818 3 July 2022 at 1221 hrs	Forecast LOR 2 declared for 5 July 2023 from 1830 to 1900 hrs.
MN 99822 3 July 2022 at 1441 hrs	Cancellation of Forecast LOR 2 (MN 99818) at 1400 hrs.
MN 99877 4 July 2022 at 1257 hrs	Forecast LOR 2 declared for 5 July 2023 from 1730 to 1930 hrs and from 2000 to 2030 hrs. Also refer to MN 99902, MN 99906, MN 99910, MN 99921, MN 99941, MN 99965, MN 99967, MN 99981, MN 99988, MN 99991, MN 100012 for updates issued between 4 and 5 July 2023.
MN 99879 4 July 2022 at 1302 hrs	Forecast LOR 1 declared for 5 July 2023 from 1700 to 1730 hrs, from 1930 to 2000 hrs and from 2030 to 2130 hrs. Also refer to MN 99926, MN 99927, MN 100018 for updates issued between 4 and 5 July 2023.
MN 99969 5 July 2022 at 0818 hrs	Actual LOR 1 declared in Queensland region from 0800 hrs, forecast to exist until 1000 hrs.
MN 99972 5 July 2022 at 0849 hrs	Actual LOR 2 declared in Queensland region from 0830 hrs, forecast to exist until 0900 hrs. AEMO is seeking immediate market response.

¹ AEMO, RERT Reporting, <https://aemo.com.au/energy-systems/electricity/emergency-management/reliability-and-emergency-reserve-trader-rert/rert-reporting>.

Notice issued	Summary
MN 99976 5 July 2022 at 0920 hrs	Cancellation of LOR 2 (MN 99972) at 0920 hrs.
MN 99987 5 July 2022 at 1239 hrs	Update to MN 99969, actual LOR 1 forecast to exist until 1700 hrs.
MN 99982 5 July 2022 at 1302 hrs	Cancellation of actual LOR 1 (MN 99987) at 1300 hrs.
MN 100010 5 July 2022 at 1506 hrs	Actual LOR 1 declared in Queensland region from 1430 hrs, forecast to exist until 1900 hrs.
MN 100016 5 July 2022 at 1531 hrs	Cancellation of actual LOR 1 (MN 100010) at 1530 hrs.
MN 100017 5 July 2022 at 1536 hrs	Cancellation of forecast LOR 2 (MN 100012) at 1530 hrs.
MN 100023 5 July 2022 at 1747 hrs	Actual LOR 1 declared in Queensland region from 1730 hrs, forecast to exist until 1900 hrs.
MN 100029 5 July 2022 at 1924 hrs	Cancellation of actual LOR 1 (MN 100023) at 1900 hrs.
MN 100031 5 July 2022 at 2002 hrs	Cancellation of forecast LOR 1 (MN 100018) at 2000 hrs.

3 Intervention process

3.1 Market information

AEMO considers that it followed all applicable processes under NER 4.8 for the management of the directions on 5 July 2022².

3.2 Adequacy of responses to AEMO inquiries

NER 4.8.5A(d) permits AEMO to request information from Scheduled Network Service Providers, Scheduled Generators, Semi-Scheduled Generators, and Market Customers. AEMO is satisfied with the timeliness, adequacy, and effectiveness of all responses to its requests for information prior to issuing the directions on 5 July 2022.

3.3 Participant ability to comply with the intervention

NER 4.8.9(d) requires that a Registered Participant must immediately notify AEMO of its inability to comply, or intention not to comply, with a direction or clause 4.8.9 instruction.

AEMO received a notification from CleanCo that Wivenhoe Pump 2 tripped on run up and would not comply with the direction issued at 0810 hrs. As a result, the direction was cancelled at 0850 hrs and swapped to Wivenhoe Pump 1, with constraints updated accordingly.

AEMO is otherwise satisfied CleanCo and B2PS complied with direction instructions and is not aware of any other failure by any Registered Participant to comply with NER 4.8.9(d).

² AEMO, Power system operating procedure SO_OP 3707, "Procedures For Issue Of Directions And Clause 4.8.9 Instructions", 6 September 2019, available at https://aemo.com.au/-/media/files/electricity/nem/security_and_reliability/power_system_ops/procedures/so_op_3707-procedures-for-issue-of-directions-and-clause-4-8-9-instructions.pdf?la=en.

4 Dispatch and pricing outcomes

4.1 Changes to dispatch and pricing outcomes due to the directions

The direction to Wivenhoe Pump 1 during this reporting period resulted in 1,504 megawatt hours (MWh) of energy consumption, while no energy was consumed by Wivenhoe Pump 2 as the unit tripped upon synchronising. The direction to B2PS Unit 5 to make capacity available did not result in any changes to dispatch.

4.2 Application of intervention pricing

Intervention pricing does not apply in circumstances where the reason for the intervention is to obtain a service which is not market-traded, such as system security, voltage control or inertia. However, when an intervention is for the purpose of obtaining energy or market ancillary services, intervention pricing (with some exceptions) is used to set prices across the NEM to preserve market scarcity signals that would have existed had the intervention not occurred³.

AEMO declares intervention pricing for periods subject to an applicable AEMO intervention event. Under intervention pricing, NER 3.9.3(b) requires that AEMO set the dispatch price and ancillary service prices at the value which AEMO, in its reasonable opinion, considers would have applied had the intervention event not occurred. AEMO determines and publishes these prices in accordance with the Intervention Pricing Methodology⁴.

On 5 July 2022, AEMO issued two directions to Wivenhoe Pump 1 and Pump 2 for market-traded services (units to follow dispatch instructions to consume energy). Table 3 contains the periods when intervention pricing was active in dispatch as a result of the directions.

Table 3 Intervention pricing application

Intervention pricing event	Intervention pricing start (trading interval ending)	Intervention pricing end
1	0825 hrs, 5 July 2022	1530 hrs, 5 July 2022

4.3 Direction costs

The compensation recovery amount (CRA)⁵ in respect of the directions on 5 July 2022 was -\$1,479,535⁶ (Table 4). There was no compensation payable to Directed Participants for the provision of energy or market ancillary services, however AEMO recovered \$1,479,535 from Affected Participants and Market Customers that were

³ NER 3.9.3(b2)(1)

⁴ AEMO, https://aemo.com.au/-/media/files/electricity/nem/security_and_reliability/dispatch/policy_and_process/intervention-pricing-methodology.pdf?la=en

⁵ NER 3.15.8(a)

⁶ Negative CRA refers to amount payable to AEMO by participants, while positive CRA refers to amount payable to participants by AEMO

dispatched differently due to the intervention event. There were no additional claims made by Directed Participants or Affected Participants.

Table 4 Total directions CRA on 5 July 2022

	Compensation recovery amount (CRA)
Reliability directions (other compensable services)	\$0
Reliability directions (energy)	\$0
Compensation to Affected Participants and Market Customers – see Table 5	-\$1,479,535
Total	-\$1,479,535

Reliability directions (other compensable services)

AEMO issued directions to Wivenhoe Pump 1 and Pump 2 to consume energy to ensure availability for the hydro generating unit to later provide generation as required. AEMO determined that the directions for pumped hydro storage were to provide ‘other compensable services’ under NER 3.15.7A (being a service that is neither the provision of energy or market ancillary services, nor a direct substitute for them).

Directed participants for other compensable services are entitled to claim fair payment compensation under NER 3.15.7A. However, no compensation was payable, as CleanCo withdrew its claim in relation to the directions and requested to be excluded from the fair payment process.

Reliability directions (energy)

In addition to the direction for ‘other compensable services’, AEMO also issued a direction to B2PS in respect of Braemar 2 Power Station Unit 5 to make capacity available and follow dispatch targets. Directed Participants for the provision of energy are entitled to compensation under NER 3.15.7, however, no compensation was payable to B2PS because no energy was dispatched, and no additional compensation was claimed by the Directed Participant.

Compensation to Affected Participants and Market Customers

In accordance with NER 3.12.2, Affected Participants and Market Customers may also be entitled to compensation, or be required to pay compensation, in respect of an AEMO intervention pricing event. As discussed above, AEMO recovered \$1,479,535 across the intervention pricing event between 0825 hrs and 1530 hrs; \$1,700,981 was payable to AEMO by Affected Participants while \$221,446 was payable to Affected Participants (eligible person) by AEMO. (Table 5). Affected Participant compensation was payable to AEMO due to higher level of dispatch in MW for scheduled network services or scheduled generating units, than had the intervention event not occurred.

Table 5 Compensation to Affected Participants and Market Customers in relation to AEMO intervention

	Compensation recovery amount (CRA)
Affected Participant	-\$1,700,981
Affected Participant (eligible person)	\$221,446
Affected Participant (Market Network Service Provider)	\$0
Market Customer	\$0
Total	-\$1,479,535

Regional benefit factor determination

Compensation cost recovery arising from compensation payable to Affected Participants and Market Customers is allocated to NEM regions using a regional benefit calculation determined by AEMO in accordance with NER 3.15.8(b1).

As all directions were issued to participants in Queensland and the region was the sole beneficiary, total CRA of -\$1,479,535 was allocated to Queensland in accordance with NER 3.15.8(g), with compensation payable to Market Customers, Market Generators and Market Small Generation Aggregators (Table 6).

Table 6 Compensation recovery amount by Registered Participant category – 5 July 2022

Registered Participant category	Queensland
Market Customer	-\$729,198
Market Generator	-\$749,031
Market Small Generation Aggregator	-\$1,306
Total	-\$1,479,535

5 Conclusions and further actions

On 5 July 2022, AEMO issued three directions to Queensland Market Participants to maintain the power system in a reliable operating state, in response to consistent forecasts of low reserves in the region.

AEMO is satisfied that all applicable procedures and processes were followed in assessing the need for intervention, determining the latest time to intervene, enacting and managing the intervention and seeking market response from all generators capable of meeting the system strength requirements. The market was informed after each direction was issued.

AEMO is also satisfied with the timeliness and adequacy of participant responses and communication throughout.