

Reliability and Emergency Reserve Trader (RERT)

August 2022

Quarterly Report Q2 2022

1 April to 30 June 2022

A report for the National Electricity Market





Important notice

Purpose

AEMO publishes the Reliability and Emergency Reserve Trader (RERT) Quarterly Report under clause 3.20.6 of the National Electricity Rules.

Disclaimer

This document or the information in it may be subsequently updated or amended. This document does not constitute legal or business advice, and should not be relied on as a substitute for obtaining detailed advice about the National Electricity Law, the National Electricity Rules or any other applicable laws, procedures or policies. AEMO has made every reasonable effort to ensure the quality of the information in this document but cannot guarantee its accuracy or completeness.

Accordingly, to the maximum extent permitted by law, AEMO and its officers, employees and consultants involved in the preparation of this document:

- make no representation or warranty, express or implied, as to the currency, accuracy, reliability or completeness of the information in this document; and
- are not liable (whether by reason of negligence or otherwise) for any statements or representations in this document, or any omissions from it, or for any use or reliance on the information in it.

Copyright

© 2022 Australian Energy Market Operator Limited. The material in this publication may be used in accordance with the [copyright permissions on AEMO's website](#).

Version control

| Version | Release date | Changes |
|---------|--------------|-------------|
| 1 | 11/8/2022 | First issue |

Executive summary

The Reliability and Emergency Reserve Trader (RERT) is an intervention mechanism under the National Electricity Rules (NER) that allows AEMO to contract for emergency reserves, such as generation or demand response, that are not otherwise available in the market. AEMO uses RERT as one of a number of mechanisms in the event that a critical shortfall in reserves is forecast. RERT may be activated when it is the most suitable mechanism after market options have been exhausted, typically during periods when the supply demand balance is tight.

10 June to 24 June Market Suspension Incident

By Monday 13 June 2022, the cumulative price threshold had been exceeded for the Queensland, New South Wales, Victoria and South Australia regions. The exceedance of the cumulative price threshold triggered the application of the administered price cap in those regions. At the same time, reductions in the amount of generation bid into the market resulted in a requirement for AEMO to intervene by directing generation to bid into the market for system reliability, and implement manual processes to manage capacity and energy limitations on generating facilities. For more information on the situation and events between 10 June and 24 June, see the associated National Electricity Market (NEM) market suspension incident report and AEMO's website¹.

13 June 2022 RERT

Queensland

On 13 June 2022, in Queensland, AEMO contracted 49 megawatts (MW) of short notice reserves in response to a forecast Lack of Reserve 3 (LOR3). As AEMO did not pre-activate or activate these reserves, no costs were incurred.

14 June 2022 RERT

New South Wales

On 14 June 2022, New South Wales and the NEM were experiencing unique generation unavailability and energy limitations¹. These conditions resulted in a forecast LOR3 and actual Lack of Reserve 2 (LOR2).

To reduce the potential for involuntary load shedding, based on the forecast LOR3, AEMO procured short notice reserves. AEMO instructed the activation of 300 MW of RERT. The reserves were activated for 3 hours over the evening peak.

The total cost payable by AEMO for this RERT event was \$21.6 million. The cost per megawatt hour (MWh) was \$24,000, which is less than the average Value of Customer Reliability (VCR) of \$43,690 per MWh for New South Wales.

¹ Refer to the NEM market suspension incident report to be published mid-late August and <https://www.aemo.com.au/newsroom/news-updates/june-2022-series-of-events-and-reports>

Queensland

On 14 June 2022, in Queensland, AEMO contracted 52 MW of short notice reserves in response to a forecast LOR3. As AEMO did not pre-activate or activate these reserves, no costs were incurred.

15 June 2022 RERT

New South Wales

On 15 June 2022, New South Wales and the NEM were experiencing continued generation unavailability and energy limitations¹. These conditions resulted in a forecast LOR2 and 3 and actual LOR2.

To reduce the potential for involuntary load shedding, based on the forecast LOR2, AEMO procured short notice reserves. AEMO instructed the activation of 489 MW of RERT. The reserves were activated for 6.5 hours from 5.00 pm.

The total cost payable by AEMO for this RERT event was \$29.6 million. The cost per MWh was \$19,933, which is less than the average VCR of \$43,690 per MWh for New South Wales.

Queensland

On 15 June 2022, Queensland and the NEM were experiencing continued generation unavailability and energy limitations¹. These conditions resulted in a forecast LOR2 and LOR3.

To reduce the potential for involuntary load shedding, based on the forecast LOR3, AEMO procured short notice reserves. AEMO instructed the activation of 51 MW of RERT. The reserves were activated for 5.5 hours from 6.00 pm.

The total cost payable by AEMO for this RERT event was \$3.7 million. The cost per MWh was \$15,500, which is less than the average VCR of \$41,520 per MWh for Queensland.

17 and 18 June 2022 RERT

New South Wales

On 17 June 2022, New South Wales and NEM issues regarding generation unavailability and energy limitations continued to present and these conditions¹ resulted in a forecast LOR2 and actual LOR2.

To reduce the potential for involuntary load shedding, based on the forecast LOR2, AEMO procured short notice reserves. AEMO instructed the activation of 463 MW of RERT. The reserves were activated for approximately 8 hours from 8.00 pm 17 June to 4.00 am 18 June.

The total cost payable by AEMO for this RERT event was \$26.5 million. The cost per MWh was \$17,687, which is less than the average VCR of \$43,690 per MWh for New South Wales.

Victoria

On 17 June 2022, in Victoria, AEMO contracted 666 MW of short notice reserves in response to a forecast LOR3. As AEMO did not pre-activate or activate these reserves, no costs were incurred.

AEMO's contracting and activation of RERT was consistent with the principles of having the least distortionary effect on the market, while maximising the effectiveness of reserve contracts at the least cost to end use consumers of electricity.

This report is published under clause 3.20.6 (b) of the NER, and accounts for reserve contracts entered into and activated by AEMO in the period from 1 April 2022 to 30 June 2022 (Q2 2022).

The end of financial year information specified under clause 3.20.6 (g) of the NER is reported on the AEMO Reliability and Emergency Reserve reporting web page².

² At <https://aemo.com.au/energy-systems/electricity/emergency-management/reliability-and-emergency-reserve-trader-rert/rert-reporting>.



Contents

| | |
|--------------------------------------------------------------------|----|
| Executive summary | 3 |
| 1 RERT activity Q2 2022 (1 April to 30 June) | 8 |
| 1.1 Procurement | 8 |
| 1.2 Costs incurred | 8 |
| 2 Reserve procurement | 9 |
| 2.1 Long notice and interim reserves | 9 |
| 2.2 Panel arrangements | 9 |
| 2.3 Short Notice reserves contracted | 9 |
| 2.4 AEMO's methodology for contracting RERT | 13 |
| NEM market suspension – | 15 |
| 3 10 June to 24 June | 15 |
| 4 RERT activation on Tuesday 14 June 2022 | 16 |
| 4.1 Pre-event conditions | 16 |
| 4.2 Assessment of market response and latest time to intervene | 16 |
| 4.3 Intervention event | 16 |
| 4.4 Intervention pricing | 18 |
| 4.5 Changes in dispatch outcomes | 19 |
| 4.6 Impact on reliability | 19 |
| 5 RERT activation on Wednesday 15 June 2022 | 20 |
| 5.1 Pre-event conditions | 20 |
| 5.2 Assessment of market response and latest time to intervene | 20 |
| 5.3 Intervention event | 21 |
| 5.4 Intervention pricing | 25 |
| 5.5 Changes in dispatch outcomes | 25 |
| 5.6 Impact on reliability | 26 |
| 6 RERT activation on Friday 17 June 2022 and Saturday 18 June 2022 | 27 |
| 6.1 Decision to intervene | 27 |
| 6.2 Assessment of market response and latest time to intervene | 27 |
| 6.3 Intervention event | 27 |
| 6.4 Intervention pricing | 29 |
| 6.5 Changes in dispatch outcomes | 30 |
| 6.6 Impact on reliability | 30 |
| 7 Cost of exercising RERT | 31 |

| | | |
|-----|--------------------------------------|----|
| 8 | AEMO's intervention process | 34 |
| A1. | Timelines for RERT events in Q2 2022 | 35 |
| | Glossary | 46 |

Tables

| | | |
|----------|-----------------------------------------------------------------------------|----|
| Table 1 | Amount paid to short notice reserve providers for Q2 2022 | 8 |
| Table 2 | Short notice reserve contracted | 10 |
| Table 3 | Costs associated with activating RERT in Q2 2022 | 31 |
| Table 4 | Breakdown of how costs were allocated to the Market Customers, RERT Q2 2022 | 32 |
| Table 5 | Largest credible contingency risk avoided, represented as a cost, Q2 2022 | 33 |
| Table 6 | Timeline of key events on 14 June 2022, New South Wales | 35 |
| Table 7 | Timeline of key events on 14 June 2022, Queensland | 38 |
| Table 8 | Timeline of key events on 15 June 2022, New South Wales | 39 |
| Table 9 | Timeline of key events on 15 June 2022, Queensland | 41 |
| Table 10 | Timeline of key events on 17 June 2022, New South Wales | 43 |
| Table 11 | Timeline of key events on 17 June 2022, Victoria | 45 |

Figures

| | | |
|----------|-------------------------------------------------------------------------------------------|----|
| Figure 1 | New South Wales Day-ahead forecast and actual operational demand, Tuesday 14 June 2022 | 17 |
| Figure 2 | RERT actual activation instruction, New South Wales, 14 June 2022 | 18 |
| Figure 3 | New South Wales Day-ahead forecast and actual operational demand, Wednesday 15 June 2022 | 22 |
| Figure 4 | RERT actual activation instructions, New South Wales, 15 June 2022 | 23 |
| Figure 5 | Queensland Day-ahead forecast and actual operational demand, Wednesday 15 June 2022 | 24 |
| Figure 6 | RERT actual activation instructions, Queensland, 15 June 2022 | 25 |
| Figure 7 | New South Wales Day-ahead forecast and actual operational demand, 17 June to 18 June 2022 | 28 |
| Figure 8 | RERT actual activation instruction, New South Wales 17 June to 18 June 2022 | 29 |

1 RERT activity Q2 2022 (1 April to 30 June)

1.1 Procurement

The 2021 *Electricity Statement of Opportunities* (ESOO) and April 2022 *Update to the 2021 ESOO* presented reliability forecasts against the 0.002% reliability standard and against the Interim Reliability Measure (IRM) of 0.0006%.

For summer 2021-22, the 2021 ESOO and *Update to the 2021 ESOO* did not forecast expected unserved energy (USE) to exceed the reliability standard nor to exceed the IRM in any NEM region. As a result, no Long Notice Reserve or Interim Reserve was contracted in the National Electricity Market (NEM).

The 2022 ESOO is to be published in August 2022, and will provide an updated reliability and indicative reliability forecast from 2022-23 to 2031-32 for the NEM.

AEMO established a panel of providers, in consultation with the relevant governments, for the provision of reserves at short notice. At the start of Q2 2022, up to 2,030 megawatts (MW) of potential reserve capacity was in place through panel agreements. Under the panel agreements, no capacity is contracted until required and the total reserves available may vary. No payments for short notice reserves are made until a reserve shortfall is forecast or arises and reserves are contracted and pre-activated or activated.

In Q2 2022, short notice reserves were contracted; see Section 2.3.

In Q2 2022, AEMO intervened in the market by activating Reliability and Emergency Reserve Trader (RERT) on several occasions. These activations will be covered in this report.

1.2 Costs incurred

The total amount paid by AEMO for RERT in Q2 2022 was \$79.97 million. Table 1 shows a breakdown of the amounts paid including payment type for all contracts activated in Q2 2022. Additional RERT costs can be incurred in Q2 2022 through the settlement revision process and are payable in November 2022. AEMO has estimated that additional costs payable in November 2022 could total \$1.4 million in additional activation costs, however the total RERT costs payable are subject to change based on reserve provider performance and review of amounts paid.

Table 1 Amount paid to short notice reserve providers for Q2 2022

| NEM region | Availability costs (\$) ^A | Pre-activation costs (\$) | Activation costs (\$) | Intervention costs (\$) ^B | Total cost (\$) |
|-----------------|--------------------------------------|---------------------------|-----------------------|--------------------------------------|---------------------|
| New South Wales | \$- | \$27,140,479 | \$49,089,801 | \$- | \$76,230,280 |
| Queensland | \$- | \$696,634 | \$3,038,776 | \$- | \$3,735,410 |
| Totals | \$- | \$27,837,113 | \$52,128,577 | \$- | \$79,965,690 |

A. Availability payments do not apply for short notice contracts. NER 3.20.6(d)(1) requires average values per region, which in the case of a single event in a region are the same values as calculated for that event.

B. Please refer to Affected Participant Compensation Fact Sheet on the reason for no compensation determination, at <https://aemo.com.au/-/media/files/electricity/nem/data/mms/2022/affected-participant-compensation-fact-sheet.pdf?la=en>.

2 Reserve procurement

2.1 Long notice and interim reserves

The 2021 ESOO and April 2022 *Update to the 2021 ESOO* determined that in 2021-22 expected USE was not forecast to exceed the reliability standard nor to exceed the IRM in any NEM region. As a result, no long notice reserve or interim reserve was contracted in the NEM for 2021-22.

2.2 Panel arrangements

Through open tendering processes under the NER and in consultation with relevant state governments, in 2021 AEMO established a panel of providers representing estimated additional reserves of up to 2,030 megawatts (MW) in total across the NEM under short notice panel agreements. This short notice RERT panel was in place for Q2 2022.

These agreements enable potential RERT providers to offer reserves in short notice situations on pre-negotiated contract terms. The short notice RERT panel is one of the tools AEMO can use to reduce the risk of exceeding the reliability standard. Short notice reserve panel agreements were entered into in South Australia, Victoria, New South Wales, and Queensland.

RERT resources can have different response lead times, activation conditions, costs and response capability; as a result, not all resources will necessarily be suitable for activation for a given shortfall event.

Under the short notice panel agreements, there are no fixed costs incurred, and payments will only be made based on pre-activation and/or actual megawatt hours (MWh) activated. There is no cost to consumers unless the reserve is pre-activated and/or activated.

AEMO did not enter into panel arrangements for medium notice Reserve in Q2 2022.

2.3 Short Notice reserves contracted

AEMO may enter into reserve contracts at short notice to ensure that the reliability of supply in a region meets the reliability standard for the region. In short notice situations, contracts may be entered into if there is a forecast or actual Lack of Reserve (LOR) 2 or LOR3. The Reserve Level Declaration Guidelines published by AEMO provide guidance for determining the term and quantity associated with a reserve shortfall.

In addition to forecast or actual LOR2 and/or LOR3 conditions, other factors such as projected assessment of system adequacy (PASA) generator availability may also be considered as inputs into the decision-making process for contracting short notice reserves.

Under AEMO's panel arrangements, AEMO can contract for short notice reserves with no cost to consumers (unless the reserve is pre activated or activated). RERT contracting occurs in the context of highly uncertain and complex power system conditions, where actual and projected reserve levels can change at short notice.

- AEMO contracted 49 MW of short notice RERT in Queensland on 13 June in response to a forecast LOR3 condition. AEMO contracted these reserves based on the maximum load forecast to be interrupted of 1,454 MW.
- AEMO contracted 300 MW of short notice RERT in New South Wales on 14 June in response to a forecast LOR3 condition. AEMO contracted these reserves based on the maximum load forecast to be interrupted of 1,748 MW.
- AEMO contracted 52 MW of short notice RERT in Queensland on 14 June in response to a forecast LOR3 condition. AEMO contracted these reserves based on the maximum load forecast to be interrupted of 1,537 MW.
- AEMO contracted 567 MW of short notice RERT in New South Wales on 15 June in response to a forecast LOR2 condition. AEMO contracted these reserves based on the forecast capacity reserve requirement of 741 MW.
- AEMO contracted 51 MW of short notice RERT in Queensland on 15 June in response to a forecast LOR3 condition. AEMO contracted these reserves based on the maximum load forecast to be interrupted of 932 MW.
- AEMO contracted 622 MW of short notice RERT in New South Wales on 17 June in response to a forecast LOR2 condition. AEMO contracted these reserves based on the forecast capacity reserve requirement of 765 MW.
- AEMO contracted 666 MW of short notice RERT in Victoria on 17 June in response to a forecast LOR2 condition. AEMO contracted these reserves based on the maximum load forecast to be interrupted of 586 MW.

These short notice reserves were contracted in case they would be required to maintain reserves, thereby reducing the potential risk of load shedding. No costs were incurred at the point of contracting because short notice panel agreements utilise contracts that have no ongoing fixed costs and payments are only made based on pre-activation and/or actual MWh activated. For more information on the events between 10 June and 24 June, see the associated NEM market suspension incident report and AEMO's website³.

Table 2 below shows short notice reserve contracts entered into by AEMO in Q2 2022. The 'Time' column in Table 2 sets out the initial term (reserve period) of each contract. This is the period that was considered reasonably necessary at the time of contracting to cover the period of the forecast LOR conditions and to cover operational requirements such as forecast uncertainty, pre-activation periods, activation periods, deactivation periods, and minimum activation durations.

Table 2 Short notice reserve contracted

| Provider | Location of reserve | Contracted reserve capacity | Time ⁴ | Date | Basis for contract |
|-----------------------------|---------------------|-----------------------------|-------------------|--------------|--------------------|
| AGL Energy Services Pty Ltd | Queensland | 3 | 15:30 to 21:00 | 13 June 2022 | Forecast LOR3 |
| Enel X Australia Pty Ltd | Queensland | 15 | 14:30 to 21:00 | 13 June 2022 | Forecast LOR3 |
| Shell Energy Retail Pty Ltd | Queensland | 12 | 15:30 to 21:00 | 13 June 2022 | Forecast LOR3 |

³ Refer to the associated Reviewable Incident Report to be published in August and <https://www.aemo.com.au/newsroom/news-updates/june-2022-series-of-events-and-reports>

⁴ Please note AEMO contracts for short notice reserve at no cost. These contracts may, or may not, be subsequently activated. If activated, the initial contracted times may not align with eventual activation times, as activation times may be refined as conditions evolve.

| Provider | Location of reserve | Contracted reserve capacity | Time ⁴ | Date | Basis for contract |
|-----------------------------------------------|---------------------|-----------------------------|-------------------|--------------|--------------------|
| EnergyAustralia Pty Ltd | Queensland | 12 | 16:00 to 21:00 | 13 June 2022 | Forecast LOR3 |
| Visy Industries Australia Pty Ltd | Queensland | 7 | 16:30 to 21:00 | 13 June 2022 | Forecast LOR3 |
| Sub Total | | 49 | | | |
| Tomago Aluminium Company Pty Ltd | New South Wales | 300 | 16:00 to 21:00 | 14 June 2022 | Forecast LOR3 |
| Sub Total | | 300 | | | |
| AGL Energy Services Pty Ltd | Queensland | 3 | 16:00 to 21:00 | 14 June 2022 | Forecast LOR3 |
| Enel X Australia Pty Ltd | Queensland | 18 | 16:00 to 21:00 | 14 June 2022 | Forecast LOR3 |
| EnergyAustralia Pty Ltd | Queensland | 12 | 16:00 to 21:00 | 14 June 2022 | Forecast LOR3 |
| Shell Energy Retail Pty Ltd | Queensland | 12 | 16:00 to 21:00 | 14 June 2022 | Forecast LOR3 |
| Visy Industries Australia Pty Ltd | Queensland | 7 | 16:30 to 21:00 | 14 June 2022 | Forecast LOR3 |
| Sub Total | | 52 | | | |
| AGL Energy Services Pty Ltd | Queensland | 3 | 16:00 to 20:00 | 15 June 2022 | Forecast LOR3 |
| Enel X Australia Pty Ltd | Queensland | 17 | 14:30 to 23:30 | 15 June 2022 | Forecast LOR3 |
| EnergyAustralia Pty Ltd | Queensland | 12 | 16:30 to 23:30 | 15 June 2022 | Forecast LOR3 |
| Shell Energy Retail Pty Ltd | Queensland | 12 | 16:00 to 21:00 | 15 June 2022 | Forecast LOR3 |
| Visy Industries Australia Pty Ltd | Queensland | 7 | 17:00 to 23:00 | 15 June 2022 | Forecast LOR3 |
| Sub Total | | 51 | | | |
| AGL Energy Services Pty Ltd | New South Wales | 3 | 15:30 to 21:30 | 15 June 2022 | Forecast LOR2 |
| AGL Energy Services Pty Ltd | New South Wales | 10 | 15:30 to 20:00 | 15 June 2022 | Forecast LOR2 |
| BlueScope Steel Limited | New South Wales | 8 | 16:15 to 21:30 | 15 June 2022 | Forecast LOR2 |
| BlueScope Steel Limited | New South Wales | 30 | 16:30 to 19:30 | 15 June 2022 | Forecast LOR2 |
| Cadia Holdings Pty Ltd | New South Wales | 60 | 16:35 to 22:30 | 15 June 2022 | Forecast LOR2 |
| Endeavour Energy Network Operator Partnership | New South Wales | 30 | 17:15 to 21:30 | 15 June 2022 | Forecast LOR2 |
| Enel X Australia Pty Ltd | New South Wales | 3 | 14:30 to 21:00 | 15 June 2022 | Forecast LOR2 |
| Enel X Australia Pty Ltd | New South Wales | 32 | 14:30 to 21:00 | 15 June 2022 | Forecast LOR2 |
| EnergyAustralia Pty Ltd | New South Wales | 5 | 16:00 to 22:30 | 15 June 2022 | Forecast LOR2 |
| Origin Energy Electricity Limited | New South Wales | 4 | 13:30 to 20:00 | 15 June 2022 | Forecast LOR2 |

| Provider | Location of reserve | Contracted reserve capacity | Time ⁴ | Date | Basis for contract |
|-------------------------------------------------|---------------------|-----------------------------|-------------------|--------------|--------------------|
| Paper Australia Pty Ltd | New South Wales | 19 | 16:28 to 23:30 | 15 June 2022 | Forecast LOR2 |
| Progressive Green Pty Ltd trading as Flow Power | New South Wales | 21 | 15:30 to 21:30 | 15 June 2022 | Forecast LOR2 |
| Reposit Power Pty Ltd | New South Wales | 10 | 15:30 to 20:30 | 15 June 2022 | Forecast LOR2 |
| Tomago Aluminium Company Pty Ltd | New South Wales | 300 | 15:23 to 20:30 | 15 June 2022 | Forecast LOR2 |
| Visy Industries Australia Pty Ltd | New South Wales | 12 | 16:30 to 23:00 | 15 June 2022 | Forecast LOR2 |
| Visy Industries Australia Pty Ltd | New South Wales | 20 | 16:30 to 23:00 | 15 June 2022 | Forecast LOR2 |
| Sub Total | | 567 | | | |
| AGL Energy Services Pty Ltd | New South Wales | 3 | 14:00 to 22:00 | 17 June 2022 | Forecast LOR2 |
| AGL Energy Services Pty Ltd | New South Wales | 10 | 14:00 to 22:00 | 17 June 2022 | Forecast LOR2 |
| BlueScope Steel Limited | New South Wales | 8 | 14:35 to 20:00 | 17 June 2022 | Forecast LOR2 |
| BlueScope Steel Limited | New South Wales | 30 | 14:50 to 18:00 | 17 June 2022 | Forecast LOR2 |
| Cadia Holdings Pty Ltd | New South Wales | 60 | 15:05 to 23:30 | 17 June 2022 | Forecast LOR2 |
| Endeavour Energy Network Operator Partnership | New South Wales | 30 | 15:45 to 20:00 | 17 June 2022 | Forecast LOR2 |
| Enel X Australia Pty Ltd | New South Wales | 32 | 13:00 to 22:00 | 17 June 2022 | Forecast LOR2 |
| Enel X Australia Pty Ltd | New South Wales | 3 | 13:00 to 22:00 | 17 June 2022 | Forecast LOR2 |
| EnergyAustralia Pty Ltd | New South Wales | 24 | 14:30 to 23:30 | 17 June 2022 | Forecast LOR2 |
| OneSteel NSW Pty Ltd | New South Wales | 38 | 13:58 to 23:30 | 17 June 2022 | Forecast LOR2 |
| Origin Energy Electricity Limited | New South Wales | 8 | 12:00 to 20:00 | 17 June 2022 | Forecast LOR2 |
| Paper Australia Pty Ltd | New South Wales | 19 | 14:48 to 23:30 | 17 June 2022 | Forecast LOR2 |
| Progressive Green Pty Ltd trading as Flow Power | New South Wales | 24 | 14:00 to 20:00 | 17 June 2022 | Forecast LOR2 |
| Reposit Power Pty Ltd | New South Wales | 8 | 12:45 to 18:00 | 17 June 2022 | Forecast LOR2 |
| Tomago Aluminium Company Pty Ltd | New South Wales | 300 | 14:53 to 18:00 | 17 June 2022 | Forecast LOR2 |
| Visy Industries Australia Pty Ltd | New South Wales | 13 | 15:00 to 23:00 | 17 June 2022 | Forecast LOR2 |
| Visy Industries Australia Pty Ltd | New South Wales | 12 | 15:00 to 23:00 | 17 June 2022 | Forecast LOR2 |
| Sub Total | | 622 | | | |
| Alcoa Portland Aluminium Pty Ltd | Victoria | 270 | 20:00 to 21:00 | 17 June 2022 | Forecast LOR2 |

| Provider | Location of reserve | Contracted reserve capacity | Time ⁴ | Date | Basis for contract |
|---------------------------------------------------|---------------------|-----------------------------|-------------------|--------------|--------------------|
| Alcoa Portland Aluminium Pty Ltd | Victoria | 170 | 20:00 to 21:00 | 17 June 2022 | Forecast LOR2 |
| The Australian Steel Company (Operations) Pty Ltd | Victoria | 40 | 17:58 to 23:00 | 17 June 2022 | Forecast LOR2 |
| The Australian Steel Company (Operations) Pty Ltd | Victoria | 11 | 17:58 to 22:00 | 17 June 2022 | Forecast LOR2 |
| BlueScope Steel Limited | Victoria | 8 | 18:45 to 23:00 | 17 June 2022 | Forecast LOR2 |
| EnergyAustralia Pty Ltd | Victoria | 14 | 18:30 to 23:30 | 17 June 2022 | Forecast LOR2 |
| Paper Australia Pty Ltd | Victoria | 35 | 18:58 to 23:30 | 17 June 2022 | Forecast LOR2 |
| Progressive Green Trading Pty Ltd T/A Flow Power | Victoria | 60 | 18:00 to 22:00 | 17 June 2022 | Forecast LOR2 |
| Shell Energy Retail Pty Ltd | Victoria | 18 | 18:00 to 21:00 | 17 June 2022 | Forecast LOR2 |
| Shell Energy Retail Pty Ltd | Victoria | 20 | 18:00 to 21:00 | 17 June 2022 | Forecast LOR2 |
| Visy Industries Australia Pty Ltd | Victoria | 20 | 19:00 to 23:00 | 17 June 2022 | Forecast LOR2 |
| Sub Total | | 666 | | | |

2.4 AEMO's methodology for contracting RERT

Where market mechanisms are not successful in alleviating a reserve shortfall and the latest time to intervene has been reached, AEMO may intervene in the market by issuing a direction or a clause 4.8.9 instruction or by exercising the RERT in accordance with NER clauses 3.8.14 and 3.20.

AEMO's approach to determining its choice of supply scarcity mechanism when the need for intervention arises (RERT, direction, or clause 4.8.9 instruction) is detailed in the Supply Scarcity Procedure⁵.

In making this decision, AEMO must use reasonable endeavours to choose the mechanism, or combination of mechanisms, that is effective in addressing the supply scarcity conditions while minimising the associated direct and indirect costs.

AEMO's procedure for the exercise of RERT sets out the methodology which it follows in determining the triggers for RERT, as well as the quantity and term of reserves contracted.

AEMO followed its procedures and the NER in contracting for short notice RERT, including:

- RERT Panel recruitment.
- Publication of notices.
- Requiring that reserves are not otherwise offered to the market or engaged.
- Determining the term and quantity of reserves to be contracted.
- The basis for determining the estimated Value of Customer Reliability (VCR).

⁵ The Supply Scarcity Procedure can be found in appendix A of the Short Term Reserve Management procedure numbered SO_OP_3703.

Under NER clause 3.20.2(b), AEMO must have regard to the RERT principles in exercising the RERT. These principles stipulate that AEMO is to take actions that have the least distortionary effect on the operation of the market, and actions taken should aim to maximise the effectiveness of reserve contracts at the least cost to end use consumers of electricity.

When entering into reserve contracts, AEMO factored these RERT principles into its decision-making:

- To minimise distortionary effects on the operation of the market, AEMO categorises RERT into the following three types based on their pre-activation and activation times:
 - Type 1 – capacity that can be pre-activated and activated in less than 30 minutes. These contracts are pre-activated and activated post-contingency (when an actual LOR3 occurs).
 - Type 2 – capacity where the sum of the pre-activation and activation lead times is greater than 30 minutes, but the activation lead time alone is less than 30 minutes. This means that for this capacity to be activated post-contingency (when an actual LOR3 occurs), it must be pre-activated in advance of the actual LOR3.
 - Type 3 – capacity whereby activation requires more than 30 minutes. This capacity needs to be pre-activated and activated in advance to ensure RERT is delivered on time.
- The use of these categories allows for minimal pre-activation and activation, since Type 1 and 2 categories can be activated post-contingent (during LOR3). This not only minimises impacts on the market, but also maximises the effectiveness of reserve contracts at the least cost to end use consumers of electricity.
- During the RERT procurement process, AEMO implemented the use of VCR as the maximum for assessing offers by potential RERT providers.

3 NEM market suspension – 10 June to 24 June

By Monday 13 June 2022, the cumulative price threshold had been exceeded for the Queensland, New South Wales, Victoria and South Australia regions.

The exceedance of the cumulative price threshold triggered the application of the administered price cap in those regions. At the same time, reductions in the amount of generation bid into the market, resulted in a requirement for AEMO to intervene by directing generation to bid into the market for system reliability, and to implement manual processes to manage capacity and energy limitations on generating facilities.

On Wednesday 15 June 2022, AEMO suspended the market and market suspension pricing schedule was applied to all regions. The suspension lasted until 24 June 2022.

For more information on events between 10 June and 24 June, see the associated NEM market suspension incident report and AEMO's website⁶.

⁶ Refer to the associated NEM market suspension incident report to be published mid-late August, and <https://www.aemo.com.au/newsroom/news-updates/june-2022-series-of-events-and-reports>.

4 RERT activation on Tuesday 14 June 2022

4.1 Pre-event conditions

On the morning of Tuesday 14 June 2022, light winds, clear conditions and cold temperatures prevailed over Sydney. Overnight temperatures were slightly cooler than day-ahead forecasts and reached lows of 1.4°C, 3.4°C and 6.2°C in Penrith, Bankstown Airport and Sydney Airport respectively. Mostly sunny conditions allowed daytime temperatures to peak at or slightly above day-ahead forecasts, reaching 17.7°C at 1500 hrs at Bankstown airport and 17.5°C and 16.3°C at 1600 hrs at Sydney Airport and Penrith respectively.

Following the peak day time temperature, the afternoon temperatures dropped below forecast and combined with lower than forecast distributed PV generation, this increased New South Wales operational demands above the day-ahead forecast during the evening peak.

At 1700 hrs, the New South Wales operational demand forecast was 12,020 MW for the evening peak at 1830 hrs. This had increased approximately 220 MW since the day-ahead forecast was produced at 1230 hrs the previous day.

As noted in Section 3, a reduced amount of generation was being bid into the market, resulting in a requirement for AEMO to intervene. AEMO's interventions included the use of RERT where appropriate.

4.2 Assessment of market response and latest time to intervene

On 14 June 2022, AEMO complied with NER clause 3.8.14 and followed its procedures in determining that RERT was the appropriate mechanism to address the conditions of supply scarcity since:

- Direction options had been exhausted as far as reasonably practical, and
- The cost of activating RERT was less than that of issuing a clause 4.8.9 instruction for load shedding, determined as the average aggregate VCR for New South Wales and Australian Capital Territory as published by the Australian Energy Regulator (AER).

At 1413 hrs, AEMO issued Market Notice (MN) 97295, forecasting a LOR3 in the New South Wales region from 1700 hrs on 14 June 2022 to 0000 hrs on 15 June 2022. The forecast capacity reserve required was 1,748 MW. At this point AEMO had already intervened in the market through directions (refer to the associated NEM market suspension incident report). The latest time to intervene for RERT was determined based on reserve provider pre-activation and activation lead time. The reserve provider was activated at the latest time based on its minimum activation lead time; see the section below.

4.3 Intervention event

RERT contracts vary in terms of pre-activation and activation lead times, as well as response times (for example, an industrial load responding to a request to reduce load under RERT may need several hours to prepare plant or undertake a safe shutdown) and minimum continuous run times.

On 14 June 2022, in response to forecast LOR3 conditions in New South Wales, based on the minimum lead times of the RERT provider, AEMO followed the procedure for the exercise of RERT⁷ to do the following:

- At 1700 hrs pre-activated a reserve contract.
- At 1800 hrs activated a reserve contract.

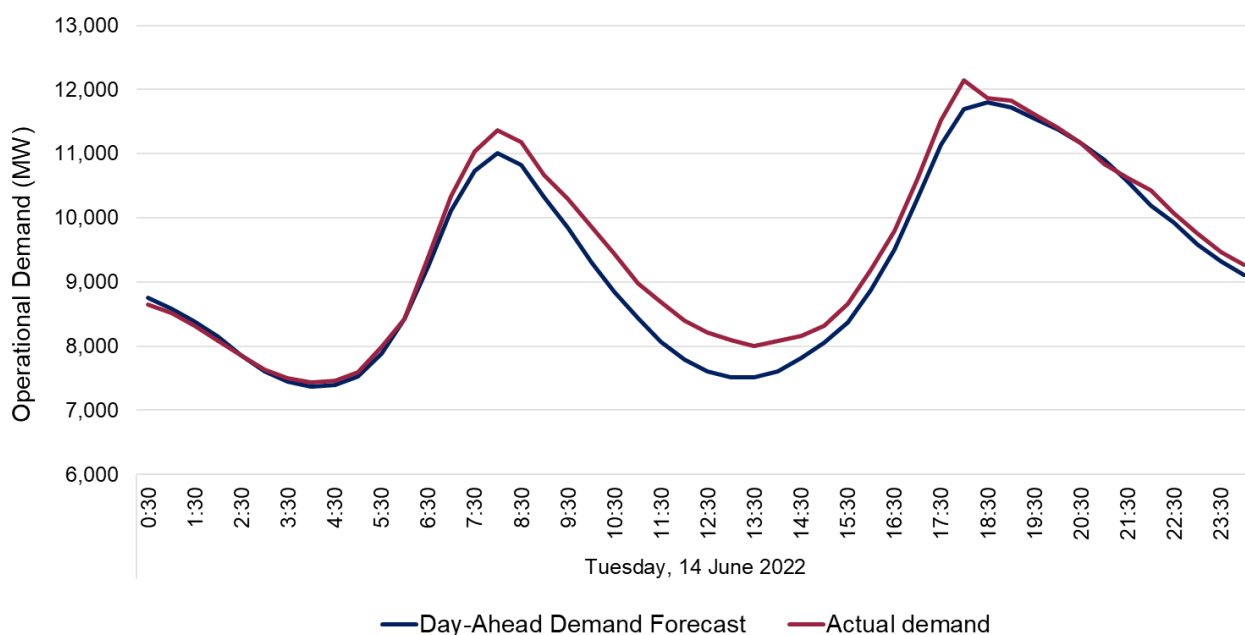
The 1700 hrs pre-dispatch PASA (PD PASA) run indicated a forecast LOR2 condition between 1730 hrs to 2000 hrs and 2100 hrs to 2300 hrs.

The 1730 hrs pre-dispatch PASA (PD PASA) run indicated a forecast LOR2 condition between 1700 hrs and 1900 hrs, 1930 hrs to 2000 hrs, and 2100 hrs to 2300 hrs.

The reserve contract was activated based on the forecast LOR periods and covered the actual LOR2 declared from 1800 hrs (MN 97407) to 0000 hrs (MN 97463). The reserves activated reduced the risks associated with the reduction in energy bid into the market by generator (see the NEM market suspension incident report).

The actual evening peak operational demand in New South Wales on 14 June 2022 reached 12,141 MW at 1800 hrs, approximately 450 MW above the day-ahead forecast. A driver of the higher demand was cooler than forecast temperatures coincident with this peak, with temperatures recorded 2°C and 1°C below forecast at Bankstown Airport and Penrith respectively. At 1830 hrs, actual demand reduced 300 MW following the activation of RERT and remained in line with the forecast during the activation period.

Figure 1 New South Wales Day-ahead forecast and actual operational demand, Tuesday 14 June 2022



The 1830 hrs PD PASA run indicated New South Wales was in an LOR2 condition from 2200 hrs to 2300 hrs, however PD PASA did not accurately reflect the reserve requirements because it was not designed for the level and extent of directions and the changing profile of the direction amounts. The unpredictable conditions caused

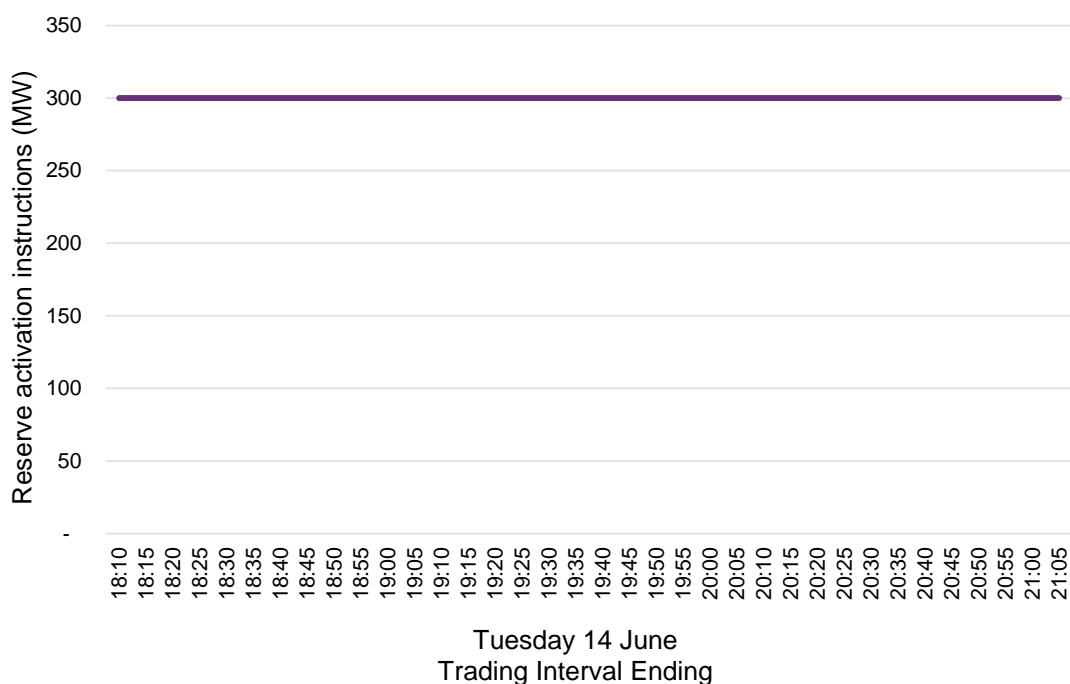
⁷ See the RERT procedure at https://aemo.com.au/-/media/files/electricity/nem/security_and_reliability/power_system_ops/procedures/so_op_3717-procedure-for-the-exercise-of-the-reliability-and-emergency-reserve-trader.pdf?la=en.

the requirement to direct 4.7 gigawatts (GW) of generation via more than 30 manual directions across the NEM. New South Wales remained in an actual LOR2 from 1800 hrs on 14 June to 0000 hrs on 15 June.

AEMO proceeded to deactivate all reserve contracts at the earliest possible times. All reserves were de-activated by 2105 hrs, reflecting both the minimum deactivation lead time required by the reserve provider, and the activation instruction end time. At 2114 hrs AEMO issued MN 97415 to declare the activation of RERT and that the AEMO intervention event had ended.

On 14 June 2022, AEMO instructed the activation of 900 MWhs of RERT⁸. Figure 2 shows a breakdown of RERT instructed per 30-minute period.

Figure 2 RERT actual activation instruction, New South Wales, 14 June 2022



4.4 Intervention pricing

Intervention pricing was applied for this event in accordance with NER 3.9.3(b) for the intervention periods from the trading intervals (TIs) ending 1810 hrs to 2105 hrs on 14 June 2022. Administered price periods (APPs) also applied in NEM mainland regions during 14 June 2022.

The intervention pricing methodology uses two runs of the NEM Dispatch Engine (NEMDE):

- The physical run is used to determine the actual dispatch of NEM units taking into account the dispatched RERT.
- The pricing or “what-if” run is used to determine the intervention pricing and to calculate a counter-factual dispatch had the RERT event not occurred.

⁸ Where the volume of RERT delivered by a RERT provider is greater than the amount set out in the activation instruction, the payment is only for the volume activated.

Intervention pricing is applied during interventions such as RERT. The amount of RERT reserves activated is populated into NEMDE. The RERT reserve value is calculated by AEMO's RERT scheduling tool based on the times the contracted reserves are scheduled. Intervention pricing on 14 June 2022 reflects 900 MWh of RERT load applied throughout the RERT intervention pricing period.

However, normal operation of the spot market was severely impacted by the circumstances arising under APP which led to market suspension on 15 June 2022. Please refer to NEM market suspension incident report for a more detailed explanation of these circumstances and the resulting issues for market systems, including the pricing runs.

4.5 Changes in dispatch outcomes

The activation of RERT is unlikely to have resulted in material changes in dispatch outcomes. However, AEMO was unable to determine the changes between the physical and pricing runs because of the very large number of intervention constraints.

Please refer to AEMO's Affected Participant Compensation Fact Sheet⁹ for more detailed explanation of the reasons why material changes in dispatch outcomes are unlikely to have resulted from RERT activation.

4.6 Impact on reliability

For the 14 June 2022 RERT event, there was no manual involuntary load shedding. AEMO activated RERT on the basis of forecast LOR3 conditions which developed into an actual LOR2 condition from 1800 hrs (MN 97407) until 0000 hrs.

The activation of 300 MW emergency reserves combined with 3.5 GW of manual directions in New South Wales assisted in removing the reserve shortfall. Manual involuntary load shedding was avoided because of these combined actions. Refer to the NEM market suspension incident report for detailed information on the situation that led to the extent amount of generation directions AEMO issued.

⁹ At <https://aemo.com.au/-/media/files/electricity/nem/data/mms/2022/affected-participant-compensation-fact-sheet.pdf?la=en>.

5 RERT activation on Wednesday 15 June 2022

5.1 Pre-event conditions

Wednesday 15 June 2022 had cool overnight and morning temperatures in Sydney. Minimum temperatures at Bankstown Airport bottomed at 1.5°C, approximately 2°C below the observed minimum the previous day. Clear conditions and light winds persisted, allowing daytime temperatures to warm to 19°C across Sydney's major weather stations and driving a slightly lower evening peak on Wednesday compared to Tuesday.

Actual operational demand tracked well against the day-ahead forecast in the ramp to the evening peak. At 1630 hrs, the evening peak forecast for New South Wales was 11,673 MW at 1830 hrs.

Across the Queensland east coast, weather conditions were average to slightly warmer than average, including in south-east Queensland and Brisbane. Clear skies resulted in cold mornings and warm winter days, with daytime temperature observations slightly above forecast at Archerfield, Amberley, and Coolangatta, peaking at 22.8°C, 22.6°C and 22.6°C respectively. At 1500 hrs the evening peak Queensland demand forecast was locked in at 7,511 MW at 1800 hrs, which was close to the day-ahead forecast.

As noted in Section 3, a reduced amount of generation was being bid into the market, resulting in a requirement for AEMO to intervene. AEMO's interventions included the use of RERT where appropriate.

5.2 Assessment of market response and latest time to intervene

On 15 June 2022, AEMO complied with NER clause 3.8.14 and followed its procedures in determining that RERT was the appropriate mechanism to address the conditions of supply scarcity, since:

- Direction options were exhausted as far as reasonably practicable, and
- The cost of activating RERT was less than that of issuing a clause 4.8.9 instruction for load shedding, determined as the average aggregate VCR for Queensland and New South Wales as published by the AER.

New South Wales

At 1401 hrs, AEMO issued MN 97701, forecasting a LOR3 in the New South Wales region from 1700 hrs on 15 June 2022 to 0230 hrs on 16 June 2022. The capacity reserve required to address the LOR3 was 2,795 MW.

AEMO had already intervened in the market through a market suspension and directions (refer to the associated NEM market suspension incident report¹⁰). Based on the forecast and the minimum activation lead times for RERT, AEMO determined the latest time to intervene for RERT in the New South Wales region was 1400 hrs the same day. Each reserve provider was activated at the latest time based on its minimum activation lead time (see Section 5.3).

¹⁰ At <https://www.aemo.com.au/energy-systems/electricity/national-electricity-market-nem/nem-events-and-reports/power-system-operating-incident-reports>

Queensland

At 1522 hrs, AEMO issued MN 97738, forecasting a LOR3 in the Queensland region from 1730 hrs to 2330 hrs on 15 June 2022. The capacity reserved required to address the LOR3 was 932 MW.

AEMO had already intervened in the market through a market suspension and directions (see the NEM market suspension incident report). Based on the forecast and the minimum activation lead times for RERT, AEMO determined the latest time to intervene for RERT in the Queensland region was 1530 hrs the same day. Each reserve provider was activated at the latest time based on its minimum activation lead time (see Section 5.3).

5.3 Intervention event

RERT contracts vary in terms of pre-activation and activation lead times, response times (for example, an industrial load responding to a request to reduce load under RERT may need several hours to prepare plant or undertake a safe shutdown), and minimum continuous run times.

New South Wales

On 15 June, in response to forecast LOR2 and LOR3 conditions in New South Wales, based on the minimum lead times of RERT providers, AEMO followed the procedure for the exercise of RERT¹¹ to do the following:

- 1330 hrs pre-activated a reserve contract.
- 1430 hrs pre-activated two reserve contracts.
- 1530 hrs pre-activated two reserve contracts.
- 1600 hrs pre-activated two reserve contracts.
- 1615 hrs pre-activated one reserve contract.
- 1630 hrs pre-activated three reserve contracts.
- 1635 hrs pre-activated one reserve contract.
- Between 1645 hrs and 1700 hrs activated eight reserve contracts.
- 1700 hrs activated three reserve contracts.
- 1810 hrs activated one reserve contract.

The 1400 hrs PD PASA run indicated a forecast LOR2 condition between 1630 hrs and 1700 hrs which escalated to a forecast LOR3 condition from 1730 hrs on 15 June to 0400 hrs on 16 June 2022.

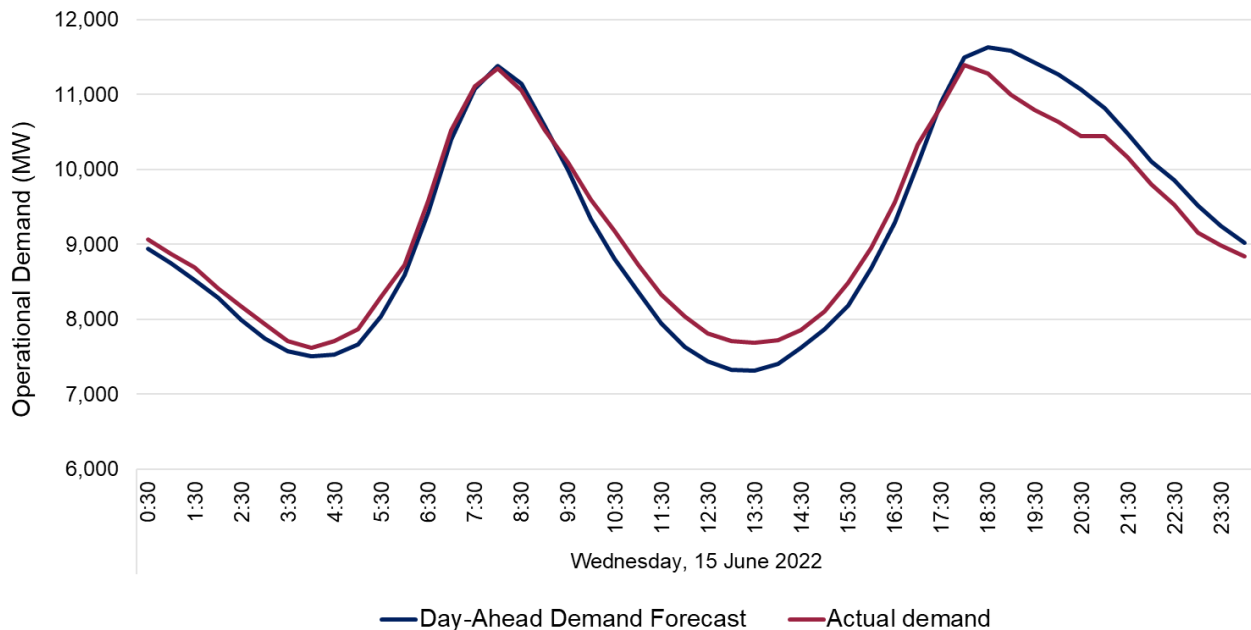
The 1600 hrs PD PASA run indicated a forecast LOR3 condition from 1730 hrs on 15 June to 0230 hrs on 16 June 2022.

The reserve contracts were activated based on the forecast LOR periods and covered the actual LOR2 declared from 1800 hrs (MN 97860) to 1830 hrs. The reserves activated reduced the risks associated with generator directions and physical fuel shortages at the time (see the NEM market suspension incident report).

¹¹ See the RERT procedure at https://aemo.com.au/-/media/files/electricity/nem/security_and_reliability/power_system_ops/procedures/so_op_3717-procedure-for-the-exercise-of-the-reliability-and-emergency-reserve-trader.pdf?la=en.

Actual evening peak operational demand in New South Wales on 15 June 2022 reached 11,390 MW at 1800 hrs and was within 100 MW of the day-ahead forecast for that interval. From 1830 hrs, following the activation of RERT, actual demand was lower than the day-ahead forecast and remained below the forecast for the rest of the day.

Figure 3 New South Wales Day-ahead forecast and actual operational demand, Wednesday 15 June 2022



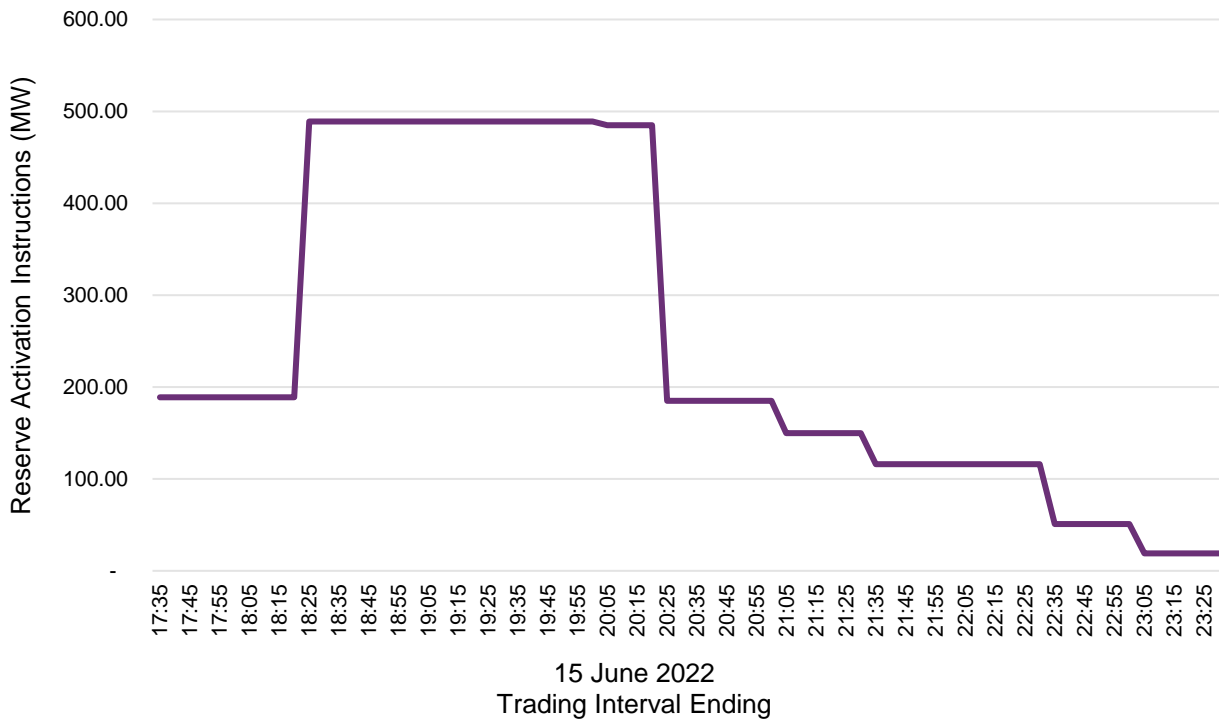
The 2130 hrs PD PASA run indicated that New South Wales remained in LOR2 condition until 2230 hrs. MN 97860 declared an actual LOR2 in New South Wales from 1800 hrs; the forecast requirement was 730 MW. At 0040 hrs on 16 June 2022, AEMO issued MN 97942 cancelling the actual LOR condition in New South Wales. AEMO deactivated all reserve contracts at the earliest possible times. All reserves were de-activated by 2330 hrs, reflecting either the deactivation lead times required by the reserve providers, or the activation instruction end times. At 2334 hrs AEMO issued MN 97941 to declare the activation of RERT and AEMO intervention event had ended.

On 15 June 2022, AEMO instructed the activation of 1,483.5 MWh of RERT.¹² Figure 4 shows the RERT reserves instructed to be activated per trading interval.

¹² Where the volume of RERT delivered by a RERT provider is greater than the amount set out in the activation instruction, the payment is only for the volume activated.



Figure 4 RERT actual activation instructions, New South Wales, 15 June 2022



Queensland

On 15 June, in response to forecast LOR2 and LOR3 conditions in Queensland, based on the minimum lead times of RERT providers, AEMO followed the procedure for the exercise of RERT to do the following:

- 1630 hrs pre-activated two reserve contracts.
- 1635 hrs pre-activated a reserve contract.
- 1645 hrs pre-activated a reserve contract.
- 1700 hrs pre-activated a reserve contract, activated three reserve contracts.
- 1730 hrs activated two reserve contracts.

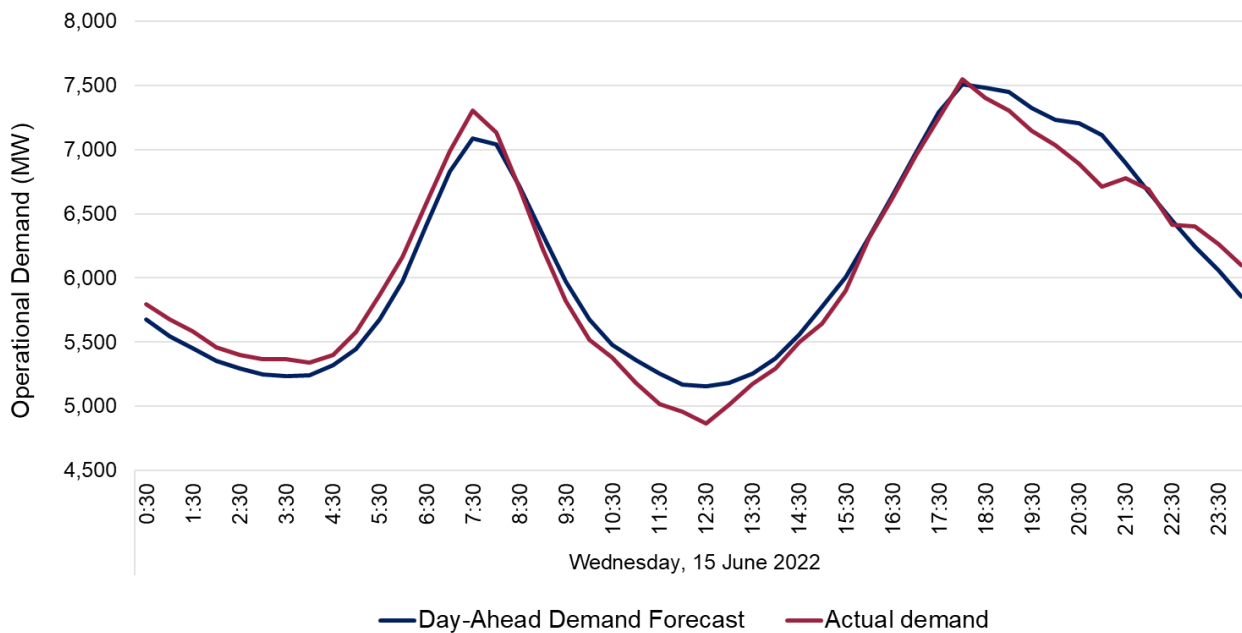
The 1600 hrs PD PASA run indicated a forecast LOR3 condition between 1730 hrs and 2330 hrs.

The reserve contracts were activated based on the forecast LOR periods. The reserves activated reduced the risks associated with generator directions and physical fuel shortages at the time (refer to the NEM market suspension incident report).

Actual evening peak operation demand in Queensland on 15 June 2022 reached 7,551 MW at 1800 hrs and was within 50 MW of the day-ahead forecast for that interval. At 1830 hrs, actual demands were lower than the day-ahead forecast, with the divergence larger than the 51 MW of RERT activated at the time, and the remaining reductions due to controlled demand side management from distribution network service providers (DNSPs) in Queensland until 2130 hrs.



Figure 5 Queensland Day-ahead forecast and actual operational demand, Wednesday 15 June 2022



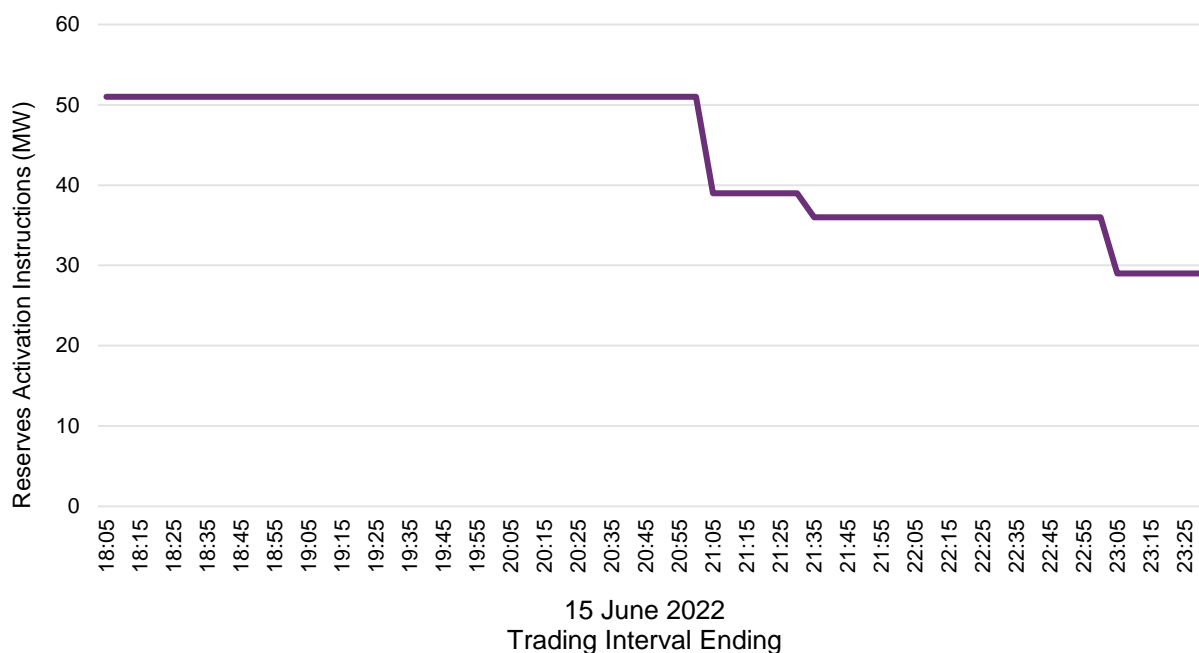
The 1800 hrs PD PASA run indicated that Queensland was in LOR2 or LOR3 from 1730 hrs on 15 June 2022 until 0400 hrs on 16 June 2022, with the LOR2 being cleared briefly for the periods ending 2000 hrs and 2300 hrs.

AEMO proceeded to deactivate all reserve contracts at the earliest possible times. All reserves were de-activated by 2330 hrs, reflecting either the deactivation lead time required by the reserve providers, or the activation instruction end time. At 2333 hrs, AEMO issued MN 97940 to declare the activation of RERT and advise that the AEMO intervention event had ended.

On 15 June 2022, AEMO instructed the activation of 241 MWh of RERT¹³. Figure 6 below shows a breakdown of RERT reserves instructed to be activated per 5-minute trading interval.

¹³ Where the volume of RERT delivered by a RERT provider is greater than the amount set out in the activation instruction, the payment is only for the volume activated.

Figure 6 RERT actual activation instructions, Queensland, 15 June 2022



5.4 Intervention pricing

During the RERT event on 15 June 2022, market suspension was applied with the market suspension pricing schedule used to set the price in accordance with NER clause 3.14.5 between TIs ending 1405 hrs on 15 June and 0400 hrs on 23 June 2022. Normal operation of the spot market and intervention pricing was severely impacted during APP which led to market suspension. Refer to Section 4.4 for further detail.

RERT constraints were applied into NEMDE although the market suspension pricing schedule was used to set the price. The RERT constraint reflects 1471.5 MWh of RERT load applied in New South Wales between TIs ending 1735 hrs and 2330 hrs, and 241 MWh of RERT load applied in Queensland between TIs ending 1805 hrs and 2330 hrs in NEMDE. These constraints are automatically created by AEMO’s RERT scheduling tool based on the times the contracted reserves are scheduled. The amount created by AEMO’s RERT scheduling tool approximately reflected what was actually activated (the amount may not fully reflect a changing load profile or manual adjustments at all times).

5.5 Changes in dispatch outcomes

The activation of RERT is unlikely to have resulted in material changes in dispatch outcomes. However, AEMO was unable to determine the changes between the physical and pricing runs because of the very large number of intervention constraints.

Please refer to AEMO’s Affected Participant Compensation Fact Sheet ¹⁴ for more detailed explanation of the reasons why material changes in dispatch outcomes are unlikely to have resulted from RERT activation.

¹⁴ At <https://aemo.com.au/-/media/files/electricity/nem/data/mms/2022/affected-participant-compensation-fact-sheet.pdf?la=en>.



5.6 Impact on reliability

On 15 June 2022, there was no manual involuntary load shedding. AEMO activated RERT on the basis of forecast LOR2 and LOR3 conditions in both New South Wales and Queensland, which developed into an actual LOR2 condition in New South Wales.

The activation of 489 MW and 51 MW of emergency reserves in New South Wales and Queensland respectively, combined with 2,507 MW of directions in New South Wales and 550 MW of directions in Queensland, assisted in removing the reserve shortfall. Manual involuntary load shedding was avoided because of these combined actions.

See the NEM market suspension incident report for more information about events on 15 June 2022.

6 RERT activation on Friday 17 June 2022 and Saturday 18 June 2022

6.1 Decision to intervene

6.1.1 Pre-event conditions

Overnight and morning temperatures were approximately 4°C below the day-ahead forecast at Bankstown Airport and slightly below forecast at Penrith. This caused morning peak operational demand to be approximately 250 MW higher than the day-ahead forecast. Following the morning peak, temperatures converged with forecast, and distributed PV generation tracked closely to forecast, which resulted in demand tracking near the day-ahead expectations. Daytime temperatures reached 19°C in Penrith and Bankstown Airport, and 17°C at Sydney Airport, which were close to forecast, and saw evening peak operational demand come in within 50 MW of its day-ahead forecast at 1800 hrs. As RERT was activated after the evening peak, no adjustments were made to the forecast during the evening peak intervals.

As noted in Section 3, a reduced amount of generation was being bid into the market, resulting in a requirement for AEMO to intervene. AEMO's interventions included the use of RERT where appropriate.

6.2 Assessment of market response and latest time to intervene

On 17 June 2022, AEMO complied with NER clause 3.8.14 and followed its procedures in determining that RERT was the appropriate mechanism to address the conditions of supply scarcity, since:

- Direction options were exhausted as far as reasonably practicable, and
- The cost of activating RERT was less than that of issuing a clause 4.8.9 instruction for load shedding, determined as the average aggregate VCR for Queensland as published by the AER.

At 1125 hrs, AEMO issued MN 98272, forecasting a LOR2 in the New South Wales region on 17 June 2022 from 1430 hrs to 1630 hrs and again from 2000 hrs to 0230 hrs. The forecast capacity reserve required from 2000 hrs was 765 MW, and the minimum capacity reserve forecast was 144 MW. Based on the forecast and the minimum activation lead times, AEMO determined the latest time to intervene for RERT was approximately 1900 hrs the same day. Each reserve provider was activated at the latest time based on their minimum activation lead time (see Section 6.3).

6.3 Intervention event

RERT contracts vary in terms of pre-activation and activation lead times, response times (for example, an industrial load responding to a request to reduce load under RERT may need several hours to prepare plant or undertake a safe shutdown), and minimum continuous run times.

On 17 June 2022, in response to forecast LOR2 conditions in New South Wales, based on the minimum lead times of RERT providers, AEMO followed the procedure for the exercise of RERT¹⁵ to do the following:

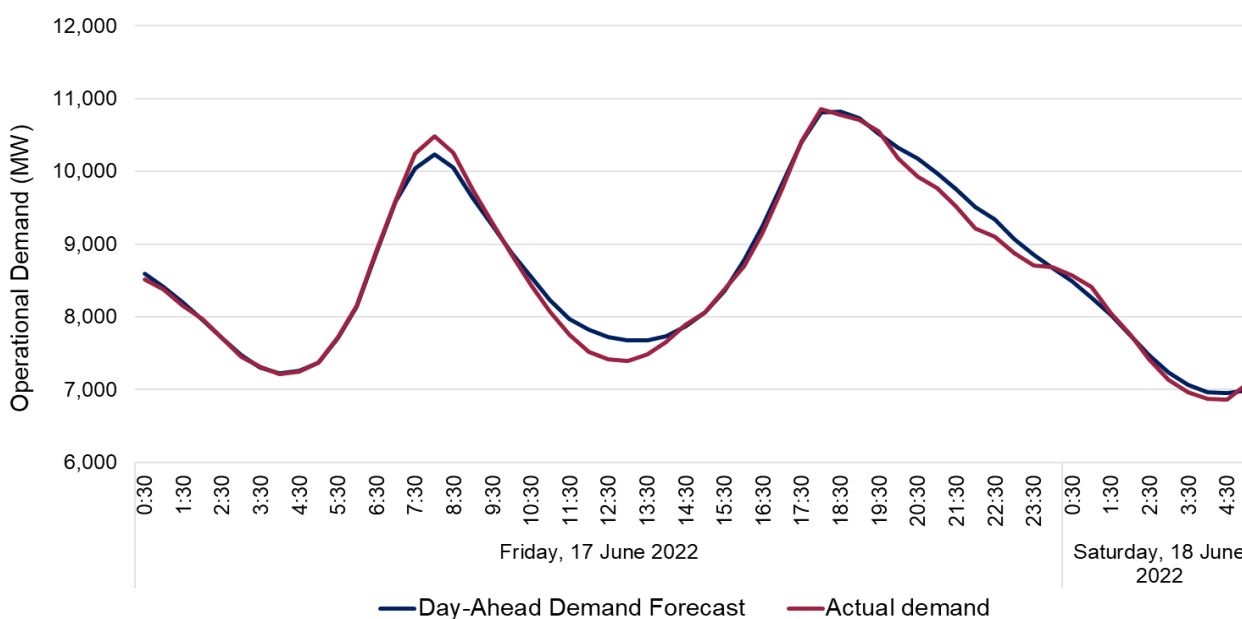
- 1730 hrs to 1800 hrs pre-activated eight reserve contracts.
- 1805 hrs pre-activated three reserve contracts.
- 1910 hrs activated five reserve contracts.
- 1915 hrs to 1930 hrs activated four reserve contracts.
- 2115 hrs activated two reserve contracts.
- 0042 hrs activated one reserve contracts.

The 1730 hrs PD PASA run indicated a forecast LOR3 condition from 2000 hrs until midnight on 17 June 2022, followed by a forecast LOR2 condition from 0000 hrs to 0330 hrs on 18 June 2022.

The reserve contract was activated based on the forecast LOR periods and covered the actual LOR2 declared from 1500 hrs (MN 98402) to 0600 hrs (MN 98455) on 18 June 2022. The reserves activated reduced the risks associated with generator directions and physical fuel shortages at the time (refer to the NEM market suspension incident report¹⁶).

The actual evening peak operational demand in New South Wales on 17 June 2022 reached 10,856 MW at 1800 hrs, which was within 50 MW of the day-ahead forecast. No RERT was activated during the evening peak and no known demand side response was in operation. From 2000 hrs and during the period of RERT activation, the actual operational demand was below the day-ahead forecast before returning near forecast near midnight, when smaller volumes of RERT were activated. Actual operational demand again dropped below forecast between 0130 hrs and 0430 hrs on 18 June 2022, during a period of post contingent RERT activation.

Figure 7 New South Wales Day-ahead forecast and actual operational demand, 17 June to 18 June 2022



¹⁵ See the RERT procedure at https://aemo.com.au/-/media/files/electricity/nem/security_and_reliability/power_system_ops/procedures/so_op_3717-procedure-for-the-exercise-of-the-reliability-and-emergency-reserve-trader.pdf?la=en.

¹⁶ At <https://www.aemo.com.au/energy-systems/electricity/national-electricity-market-nem/nem-events-and-reports/power-system-operating-incident-reports>.

New South Wales was in an actual LOR2 from 1500 hrs on 17 June to 0600 hrs 18 June 2022 (MN 98402 and MN 98451). AEMO issued MN 98455 cancelling the actual LOR2 in New South Wales at 0600 hrs on 18 June 2022.

AEMO deactivated all reserve contracts at the earliest possible times. All reserves were de-activated by 0410 hrs, reflecting either the deactivation lead times required by the reserve providers, or the activation instruction end times. At 0216 hrs on 18 June 2022, AEMO issued MN 98426 to declare the activation of RERT was forecast to apply until 0410 hrs on 18 June 2022.

Over the event on 17 June and 18 June, AEMO instructed the activation of 1,416.83 MWh of RERT¹⁷. Figure 8 shows the RERT reserves instructed to activate.

Figure 8 RERT actual activation instruction, New South Wales 17 June to 18 June 2022



6.4 Intervention pricing

During the RERT event between 17 and 18 June 2022, market suspension was applied with the market suspension pricing schedule used to set the price in accordance with NER clause 3.14.5 between TIs ending 1405 hrs on 15 June and 0400 hrs on 23 June 2022. Normal operation of the spot market and intervention pricing was severely impacted during APP which led to market suspension. Refer to Section 4.4 for further detail.

RERT constraints were applied into NEMDE although the market suspension pricing schedule was used to set the price. The volume of RERT reserves in NEMDE reflects 1140.42 MWh of RERT load applied in NSW between TIs ending 2005 hrs on 17 June 2022 and 0410 hrs on 18 June 2022.

¹⁷ Where the volume of RERT delivered by a RERT provider is greater than the amount set out in the activation instruction, the payment is only for the volume activated.

The amount of RERT reserves represented into NEMDE is automatically created by AEMO's RERT scheduling tool based on the times the contracted reserves are activated and is used in the NEMDE pricing run to calculate the counter-factual dispatch (that is, had the RERT event not occurred). The amount created by AEMO's RERT scheduling tool approximately reflected what was actually activated (the amount may not fully reflect a changing load profile or manual adjustments at all times).

6.5 Changes in dispatch outcomes

The activation of RERT is unlikely to have resulted in material changes in dispatch outcomes. However, AEMO was unable to determine the changes between the physical and pricing runs because of the very large number of intervention constraints.

Please refer to AEMO's Affected Participant Compensation Fact Sheet¹⁸ for more detailed explanation of the reasons why material changes in dispatch outcomes are unlikely to have resulted from RERT activation.

6.6 Impact on reliability

For the 17 June 2022 and 18 June 2022 RERT event, there was no manual involuntary load shedding. AEMO activated RERT on the basis of forecast LOR2 and LOR3 conditions, which developed into an actual LOR2 condition.

The activation of 463 MW emergency reserves, combined with manual directions of 1,224 MW in New South Wales on 17 June 2022, assisted in removing the reserve shortfall. Manual involuntary load shedding was avoided because of these combined actions.

¹⁸ At <https://aemo.com.au/-/media/files/electricity/nem/data/mms/2022/affected-participant-compensation-fact-sheet.pdf?la=en>.

7 Cost of exercising RERT

NER clause 3.20.2(b)(2) requires that when AEMO activates RERT it should have regard to the RERT principles, including the principle that actions taken should aim to maximise the effectiveness of the reserve contracts at the least cost to end-use consumers of electricity. Accordingly, AEMO activated reserve contracts based on location, cost, capacity, time to activate, minimum activation time, and the profile of the forecast lack of reserve.

Table 3 shows a breakdown of the costs associated with exercising RERT during Q2 2022, which were included in the 13 July final statements, as per NER clause 3.20.6(f)(1).

The total cost of exercising RERT in Q2 2022 was \$79.97 million, which includes pre-activation, activation, and intervention costs. The cost per MWh has been calculated based on the total cost divided by the MWh delivered for each activation event. The average cost per MWh associated with exercising RERT in Q2 2022 is \$19,280/MWh.

As noted in Section 1.2, AEMO has estimated that additional costs payable in November 2022 could total \$1.4 million in additional activation costs. This could increase the total costs from \$79.97 million to \$81.37 million, however this total RERT cost is subject to change based on reserve provider performance and review of amounts paid.

Table 3 Costs associated with activating RERT in Q2 2022

| | State | Pre-activation costs (\$) | Activation costs (\$) | Intervention costs (\$)* | Total cost (\$) | Cost per megawatt hour (\$/MWh) |
|-------------------|-------|---------------------------|-----------------------|--------------------------|-----------------|---------------------------------|
| 14 June 2022 | NSW | \$8,100,000 | \$13,500,000 | - | \$21,600,000 | \$24,000 |
| 15 June 2022 | NSW | \$10,809,003 | \$18,761,315 | - | \$29,570,318 | \$19,933 |
| 15 June 2022 | QLD | \$696,634 | \$3,038,776 | - | \$3,735,410 | \$15,500 |
| 17 & 18 June 2022 | NSW | \$8,231,477 | \$16,828,485 | - | \$25,059,962 | \$17,687 |

*Intervention costs represent the compensation paid to Market Participants due to the intervention event (for example, to compensate for energy generation which is displaced by RERT capacity), and to Eligible Persons (Settlement Residue Auction [SRA] holders) due to changes in interconnector flows, and therefore changes in the value of Settlement Residues. AEMO has determined no affected participant compensation as the counter-factual to AEMO's interventions, including activating RERT, on all occasions covered by this report was possible involuntary load shedding, and RERT was unlikely to materially impact on dispatch outcomes. Note that these costs are subject to change under clause NER 3.12.1(a).

Table 4 below presents the cost recovery for the activation event, including a breakdown of the cost recovery from Market Customers using electricity during the RERT event (Usage) and cost recovery from Market Customers using electricity in the billing week¹⁹ (Other), as per NEM clause 3.20.6(f)(2). All RERT costs were recovered from Market Customers.

¹⁹ The billing period is the period ending 18 June 2022.

Table 4 Breakdown of how costs were allocated to the Market Customers, RERT Q2 2022

| Region | Participant Category | Payment type | Recovery period start | Recovery period end | Amount Recovered | Period Total Energy(MWh) | Recovery rate (\$/MWh) | |
|--------|----------------------|------------------|-----------------------|---------------------|------------------|--------------------------|------------------------|---------|
| NSW | Market Customers | Usage | 14/06/2022 18:10 | 14/06/2022 21:05 | \$13,500,000.00 | 31,165.43 | \$433.17 | |
| NSW | | | 15/06/2022 17:35 | 15/06/2022 20:00 | \$149,865.12 | 25,205.02 | \$5.95 | |
| NSW | | | 15/06/2022 17:35 | 15/06/2022 21:00 | \$1,950,338.28 | 34,739.57 | \$56.14 | |
| NSW | | | 15/06/2022 17:35 | 15/06/2022 21:30 | \$1,649,428.18 | 39,375.83 | \$41.89 | |
| NSW | | | 15/06/2022 17:35 | 15/06/2022 22:30 | \$2,591,847.72 | 48,208.10 | \$53.76 | |
| NSW | | | 15/06/2022 17:35 | 15/06/2022 23:00 | \$1,282,336.00 | 52,405.04 | \$24.47 | |
| NSW | | | 15/06/2022 17:35 | 15/06/2022 23:30 | \$2,137,500.00 | 56,525.03 | \$37.82 | |
| NSW | | | 15/06/2022 18:25 | 15/06/2022 20:20 | \$9,000,000.00 | 19,748.02 | \$455.74 | |
| NSW | | | 15/06/2022 20:05 | 16/06/2022 2:00 | \$2,137,500.00 | 50,643.88 | \$42.21 | |
| NSW | | | 17/06/2022 20:05 | 17/06/2022 21:00 | \$589,000.00 | 8,958.11 | \$65.75 | |
| NSW | | | 17/06/2022 20:05 | 17/06/2022 22:00 | \$465,652.47 | 17,500.45 | \$26.61 | |
| NSW | | | 17/06/2022 20:05 | 17/06/2022 23:00 | \$500,045.40 | 25,739.40 | \$19.43 | |
| NSW | | | 17/06/2022 20:05 | 17/06/2022 23:20 | \$2,648,246.43 | 28,413.31 | \$93.20 | |
| NSW | | | 17/06/2022 20:05 | 17/06/2022 23:30 | \$635,348.96 | 29,745.36 | \$21.36 | |
| NSW | | | 17/06/2022 21:45 | 17/06/2022 23:05 | \$953,049.70 | 11,703.84 | \$81.43 | |
| NSW | | | 18/06/2022 1:15 | 18/06/2022 4:10 | \$8,899,642.36 | 19,869.73 | \$447.90 | |
| NSW | | | Other | 12/06/2022 0:05 | 19/06/2022 0:00 | \$27,140,479.50 | 1,337,254.12 | \$20.30 |
| QLD | | | Usage | 15/06/2022 18:05 | 15/06/2022 21:00 | \$543,600.00 | 19,727.90 | \$27.55 |
| QLD | | | | 15/06/2022 18:05 | 15/06/2022 21:30 | \$146,414.58 | 22,868.75 | \$6.40 |
| QLD | | 15/06/2022 18:05 | | 15/06/2022 23:00 | \$279,541.85 | 31,896.32 | \$8.76 | |
| QLD | 15/06/2022 18:05 | 15/06/2022 23:30 | | \$2,069,219.60 | 34,794.64 | \$59.47 | | |
| QLD | Other | 12/06/2022 0:05 | | 19/06/2022 0:00 | \$696,633.93 | 947,717.79 | \$0.74 | |

AEMO activated RERT on the basis of forecast LOR2 and LOR3 conditions in Q2 2022; these activations were in combination with manual directions. AEMO's intervention avoided manual involuntary load shedding in Q2 2022, however the inaccuracies of PD PASA and the intervention pricing run make impractical to estimate and isolate the number of MWh of manual load shedding avoided using RERT.

Had the largest credible contingency occurred for each event, then the total cost of avoided manual load shedding based on the RERT reserves activated would have been \$176 million, or \$43,690 per MWh for New South Wales and \$41,520 per MWh for Queensland. This has been calculated using the latest VCR published by the AER²⁰.

Table 5 Largest credible contingency risk avoided, represented as a cost, Q2 2022

| Event | Contingency risk avoided through RERT, as a cost |
|-------------------------|--------------------------------------------------|
| 14 June New South Wales | \$39.3 million |
| 15 June New South Wales | \$64.8 million |
| 15 June Queensland | \$10 million |
| 17 June New South Wales | \$61.9 million |
| Total | \$176 million |

²⁰ At <https://www.aer.gov.au/networks-pipelines/guidelines-schemes-models-reviews/values-of-customer-reliability>.



8 AEMO's intervention process

AEMO's general process for deploying RERT is documented in SO_OP_3717 – Procedure for the Exercise of the Reliability and Emergency Reserve Trader.

AEMO considers that it followed all relevant provisions under NER clause 4.8 and procedures in SO_OP_3717 in the exercising of RERT in Q2 2022, to the extent it was able to do so.

A1. Timelines for RERT events in Q2 2022

The tables below provide a summary timeline for RERT events in Q2 2022.

Table 6 Timeline of key events on 14 June 2022, New South Wales

| Date | Event/comment |
|---------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 14/06/2022 14:13 hrs | <p>MN97295 - PDPASA - Update of the Forecast Lack Of Reserve Level 3 (LOR3) in the NSW Region beginning on 14/06/2022</p> <p>The Forecast LOR3 condition in the NSW region advised in AEMO Electricity Market Notice No. 97280 has been updated at 1330 hrs to the following:</p> <p>[1.] From 1700 hrs 14/06/2022 to 0000 hrs 15/06/2022. The maximum load (other than interruptible loads) forecast to be interrupted is 1748 MW at 2100 hrs.</p> <p>[2.] From 0700 hrs 15/06/2022 to 0830 hrs 15/06/2022. The maximum load (other than interruptible loads) forecast to be interrupted is 402 MW at 0700 hrs.</p> <p>[3.] From 0930 hrs 15/06/2022 to 1130 hrs 15/06/2022. The maximum load (other than interruptible loads) forecast to be interrupted is 768 MW at 1000 hrs.</p> <p>[4.] From 1430 hrs 15/06/2022 to 1630 hrs 15/06/2022. The maximum load (other than interruptible loads) forecast to be interrupted is 577 MW at 1530 hrs.</p> <p>[5.] From 1700 hrs 15/06/2022 to 0400 hrs 16/06/2022. The maximum load (other than interruptible loads) forecast to be interrupted is 3166 MW at 2000 hrs.</p> <p>AEMO is seeking a market response.</p> <p>AEMO has not yet estimated the latest time it would need to intervene through an AEMO intervention event.</p> <p>AEMO Operations</p> |
| 14/06/2022 15:31 hrs | <p>MN97303 - INTENTION TO COMMENCE RERT CONTRACT NEGOTIATIONS</p> <p>Reliability and Emergency Reserve Trader (RERT) Intention to negotiate for additional reserve - NSW1 Region- 14/06/2022</p> <p>Refer to AEMO Electricity Market Notice no. 97295.</p> <p>AEMO intends to commence negotiations with RERT Panel members for the provision of additional reserve by issuing requests for tender for the following period of time; 17:00 to 00:00 hrs 15/06/2022</p> <p>If reserve is required, the period of activation or dispatch will be within this period but may not be for the entire period.</p> <p>AEMO will issue a further advice if reserve is contracted.</p> <p>Manager NEM Real Time Operations</p> |
| 14/06/2022 16:10 hrs | <p>MN97323 - INTENTION TO IMPLEMENT an AEMO INTERVENTION EVENT WITH RERT</p> <p>AEMO Intervention Event, Reliability and Emergency Reserve Trader (RERT) - NSW1 Region - 14/06/2022</p> <p>Refer to AEMO Electricity Market Notice no. 97303.</p> |

| Date | Event/comment |
|-----------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | <p>AEMO has entered into a reserve contract and may implement a AEMO Intervention Event by dispatching that reserve contract to maintain the power system in a Secure and Reliable operating state during the following period of time; 17:00 to 00:00 hrs 15/06/2022 If reserve is required, the period of activation or dispatch will be within this period, but may not be for all the entire period. AEMO will issue a further advice if the reserve contract is dispatched/activated.</p> <p>Manager NEM Real Time Operations</p> |
| <p>14/06/2022 17:12 hrs</p> | <p>MN97365 - PDPASA - Update of the Forecast Lack Of Reserve Level 2 (LOR2) in the NSW Region beginning on 14/06/2022</p> <p>The Forecast LOR2 condition in the NSW region advised in AEMO Electricity Market Notice No. 97317 has been updated at 1700 hrs to the following:</p> <p>[1.] From 1730 hrs 14/06/2022 to 2000 hrs 14/06/2022. The forecast capacity reserve requirement is 730 MW. The minimum capacity reserve available is 178 MW.</p> <p>[2.] From 2100 hrs 14/06/2022 to 2300 hrs 14/06/2022. The forecast capacity reserve requirement is 700 MW. The minimum capacity reserve available is 266 MW.</p> <p>[3.] From 0000 hrs 15/06/2022 to 0030 hrs 15/06/2022. The forecast capacity reserve requirement is 700 MW. The minimum capacity reserve available is 430 MW.</p> <p>[4.] From 0400 hrs 15/06/2022 to 0500 hrs 15/06/2022. The forecast capacity reserve requirement is 681 MW. The minimum capacity reserve available is 271 MW.</p> <p>[5.] From 0830 hrs 15/06/2022 to 1000 hrs 15/06/2022. The forecast capacity reserve requirement is 753 MW. The minimum capacity reserve available is 72 MW.</p> <p>[6.] From 1030 hrs 15/06/2022 to 1230 hrs 15/06/2022. The forecast capacity reserve requirement is 743 MW. The minimum capacity reserve available is 338 MW.</p> <p>[7.] From 1300 hrs 15/06/2022 to 1400 hrs 15/06/2022. The forecast capacity reserve requirement is 794 MW. The minimum capacity reserve available is 735 MW.</p> <p>[8.] From 1430 hrs 15/06/2022 to 1700 hrs 15/06/2022. The forecast capacity reserve requirement is 805 MW. The minimum capacity reserve available is 78 MW.</p> <p>AEMO is seeking a market response.</p> <p>AEMO has not yet estimated the latest time it would need to intervene through an AEMO intervention event.</p> <p>AEMO Operations</p> |
| <p>14/06/2022 17:57 hrs</p> | <p>MN97376 - RERT DISPATCHED</p> |

| Date | Event/comment |
|-----------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | <p>AEMO Intervention Event, Reliability and Emergency Reserve Trader (RERT) - NSW1 Region- 14/06/2022</p> <p>Refer AEMO Electricity Market Notice no. 97323</p> <p>AEMO has dispatched/activated reserve contract(s) to maintain the power system in a Secure and Reliable operating state.</p> <p>The reserve contract(s) was dispatched/activated at 18:05 hrs 14/06/2022 and is forecast to apply until 21:05 hrs 14/06/2022</p> <p>AEMO has implemented an AEMO intervention event for the duration the reserve contract(s) is dispatched/activated/</p> <p>To facilitate the RERT process, constraints commencing with the following identifiers may be evident at various times in dispatch,</p> <p>#RT_NSW1</p> <p>Manager NEM Real Time Operations</p> |
| <p>14/06/2022 18:01 hrs</p> | <p>MN97379 - AEMO Intervention Event - Intervention price dispatch intervals - 14/06/2022</p> <p>AEMO Intervention Event - Intervention price dispatch intervals - 14/06/2022</p> <p>Refer AEMO Electricity Market Notice no. 97376</p> <p>An AEMO Intervention Event, the dispatch of Reliability and Emergency Reserve Trader (RERT) has been implemented.</p> <p>The AEMO Intervention Event commenced at 18:00 hrs 14/06/2022 and is forecast to apply until 21:00 hrs 14/06/2022</p> <p>AEMO declares all dispatch intervals during the AEMO Intervention Event to be intervention price dispatch intervals.</p> <p>The AEMO Intervention Event is expected to affect dispatch quantities for intervention pricing purposes from the 18:05 hrs dispatch interval on 14/06/2022</p> <p>Manager NEM Real Time Operations</p> |
| <p>14/06/2022 21:14 hrs</p> | <p>MN97415 - End of RERT Dispatch - 14/06/2022 and End of intervention event</p> <p>End of Reliability and Emergency Reserve Trader (RERT) dispatch for - NSW1 Region - 14/06/2022 and end of AEMO Intervention Event.</p> <p>Refer AEMO Electricity Market Notices 97376</p> <p>Activation of reserve contract(s) has ended.</p> <p>The reserve contract(s) were activated from 18:05 hrs 14/06/2022 to 21:05 hrs 14/06/2022</p> <p>The AEMO Intervention Event ended from 21:05 hrs 14/06/2022</p> <p>Manager NEM Real Time Operations</p> |

Table 7 Timeline of key events on 14 June 2022, Queensland

| Date | Event/comment |
|-----------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>14/06/2022 13:18 hrs</p> | <p>MN97277 - PDPASA - Update of the Forecast Lack Of Reserve Level 3 (LOR3) in the QLD Region on 14/06/2022</p> <p>The Forecast LOR3 condition in the QLD region advised in AEMO Electricity Market Notice No. 97269 has been updated at 1230 hrs to the following:</p> <p>[1.] From 1630 hrs 14/06/2022 to 0000 hrs 15/06/2022. The maximum load (other than interruptible loads) forecast to be interrupted is 1537 MW at 2000 hrs.</p> <p>[2.] From 0700 hrs 15/06/2022 to 0800 hrs 15/06/2022. The maximum load (other than interruptible loads) forecast to be interrupted is 327 MW at 0700 hrs.</p> <p>[3.] From 1700 hrs 15/06/2022 to 2230 hrs 15/06/2022. The maximum load (other than interruptible loads) forecast to be interrupted is 1017 MW at 1730 hrs.</p> <p>AEMO is seeking a market response.</p> <p>AEMO has not yet estimated the latest time it would need to intervene through an AEMO intervention event.</p> |
| <p>14/06/2022 15:36 hrs</p> | <p>MN97306 - INTENTION TO COMMENCE RERT CONTRACT NEGOTIATIONS</p> <p>Reliability and Emergency Reserve Trader (RERT) Intention to negotiate for additional reserve - QLD1 Region- 14/06/2022</p> <p>Refer to AEMO Electricity Market Notice no. 97277. AEMO intends to commence negotiations with RERT Panel members for the provision of additional reserve by issuing requests for tender for the following period of time; 16:30 to 00:00 hrs 15/06/2022 If reserve is required, the period of activation or dispatch will be within this period but may not be for the entire period. AEMO will issue a further advice if reserve is contracted.</p> <p>Manager NEM Real Time Operations</p> |
| <p>14/06/2022 16:09 hrs</p> | <p>MN97321 - INTENTION TO IMPLEMENT an AEMO INTERVENTION EVENT WITH RERT</p> <p>AEMO Intervention Event, Reliability and Emergency Reserve Trader (RERT) - QLD1 Region - 14/06/2022</p> <p>Refer to AEMO Electricity Market Notice no. 97306. AEMO has entered into a reserve contract and may implement a AEMO Intervention Event by dispatching that reserve contract to maintain the power system in a Secure and Reliable operating state during the following period of time; 16:30 to 00:00 hrs 15/06/2022 If reserve is required, the period of activation or dispatch will be within this period, but may not be for all the entire period. AEMO will issue a further advice if the reserve contract is dispatched/activated.</p> <p>Manager NEM Real Time Operations</p> |

Table 8 Timeline of key events on 15 June 2022, New South Wales

| Date | Event/comment |
|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 15/06/2022 11:01 hrs | <p>MN97640 - PDPASA - Update of the Forecast Lack Of Reserve Level 2 (LOR2) in the NSW Region beginning on 15/06/2022</p> <p>The Forecast LOR2 condition in the NSW region advised in AEMO Electricity Market Notice No. 97610 has been updated at 1030 hrs to the following:</p> <p>[1.] From 1100 hrs 15/06/2022 to 1630 hrs 15/06/2022. The forecast capacity reserve requirement is 741 MW. The minimum capacity reserve available is 28 MW.</p> <p>[2.] From 1700 hrs 15/06/2022 to 1830 hrs 15/06/2022. The forecast capacity reserve requirement is 730 MW. The minimum capacity reserve available is 96 MW.</p> <p>[3.] From 0030 hrs 16/06/2022 to 0400 hrs 16/06/2022. The forecast capacity reserve requirement is 755 MW. The minimum capacity reserve available is 101 MW.</p> <p>AEMO is seeking a market response.</p> <p>AEMO has not yet estimated the latest time it would need to intervene through an AEMO intervention event.</p> <p>AEMO Operations</p> |
| 15/06/2022 11:23 hrs | <p>MN97645 - INTENTION TO COMMENCE RERT CONTRACT NEGOTIATIONS</p> <p>Reliability and Emergency Reserve Trader (RERT) Intention to negotiate for additional reserve - NSW1 Region- 15/06/2022</p> <p>Refer to AEMO Electricity Market Notice no. 97640. AEMO intends to commence negotiations with RERT Panel members for the provision of additional reserve by issuing requests for tender for the following period of time; 17:30 to 23:30 hrs 15/06/2022 If reserve is required, the period of activation or dispatch will be within this period but may not be for the entire period. AEMO will issue a further advice if reserve is contracted.</p> <p>Manager NEM Real Time Operations</p> |
| 15/06/2022 14:21 hrs | <p>MN97712 - INTENTION TO IMPLEMENT an AEMO INTERVENTION EVENT WITH RERT</p> <p>AEMO Intervention Event, Reliability and Emergency Reserve Trader (RERT) - NSW1 Region - 15/06/2022</p> <p>Refer to AEMO Electricity Market Notice no. 97645. AEMO has entered into a reserve contract and may implement a AEMO Intervention Event by dispatching that reserve contract to maintain the power system in a Secure and Reliable operating state during the following period of time; 17:30 to 23:30 hrs 15/06/2022 If reserve is required, the period of activation or dispatch will be within this period, but may not be for all the entire period. AEMO will issue a further advice if the reserve contract is dispatched/activated.</p> <p>Manager NEM Real Time Operations</p> |
| 15/06/2022 16:30 hrs | <p>MN97776 - PDPASA - Update of the Forecast Lack Of Reserve Level 3 (LOR3) in the NSW Region beginning on 15/06/2022</p> |

| Date | Event/comment |
|-----------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | <p>The Forecast LOR3 condition in the NSW region advised in AEMO Electricity Market Notice No. 97742 has been updated at 1600 hrs to the following:</p> <p>[1.] From 1730 hrs 15/06/2022 to 0200 hrs 16/06/2022. The maximum load (other than interruptible loads) forecast to be interrupted is 1886 MW at 2000 hrs.</p> <p>[2.] From 0330 hrs 16/06/2022 to 0400 hrs 16/06/2022. The maximum load (other than interruptible loads) forecast to be interrupted is 0 MW at 0330 hrs.</p> <p>[3.] From 0700 hrs 16/06/2022 to 0830 hrs 16/06/2022. The maximum load (other than interruptible loads) forecast to be interrupted is 375 MW at 0700 hrs.</p> <p>[4.] From 0900 hrs 16/06/2022 to 1100 hrs 16/06/2022. The maximum load (other than interruptible loads) forecast to be interrupted is 1173 MW at 0900 hrs.</p> <p>[5.] From 1400 hrs 16/06/2022 to 0400 hrs 17/06/2022. The maximum load (other than interruptible loads) forecast to be interrupted is 4254 MW at 2000 hrs.</p> <p>AEMO is seeking a market response.</p> <p>AEMO estimates the latest time it would need to intervene through an AEMO intervention event is 1700 hrs on 15/06/2022.</p> <p>AEMO Operations</p> |
| <p>15/06/2022 16:53 hrs</p> | <p>MN97793 - RERT DISPATCHED</p> <p>AEMO Intervention Event, Reliability and Emergency Reserve Trader (RERT) - NSW1 Region- 15/06/2022</p> <p>Refer AEMO Electricity Market Notice no. 97712</p> <p>AEMO has dispatched/activated reserve contract(s) to maintain the power system in a Secure and Reliable operating state.</p> <p>The reserve contract(s) was dispatched/activated at 17:30 hrs 15/06/2022 and is forecast to apply until 23:30 hrs 15/06/2022</p> <p>AEMO has implemented an AEMO intervention event for the duration the reserve contract(s) is dispatched/activated/</p> <p>To facilitate the RERT process, constraints commencing with the following identifiers may be evident at various times in dispatch,</p> <p>#RT_NSW1</p> <p>Manager NEM Real Time Operations</p> |
| <p>15/06/2022 23:34 hrs</p> | <p>MN97941 - End of RERT Dispatch - 15/06/2022 and End of intervention event</p> <p>End of Reliability and Emergency Reserve Trader (RERT) dispatch for - NSW1 Region - 15/06/2022 and end of AEMO Intervention Event.</p> <p>Refer AEMO Electricity Market Notices 97793</p> <p>Activation of reserve contract(s) has ended.</p> <p>The reserve contract(s) were activated from 17:30 hrs 15/06/2022 to 23:30 hrs 15/06/2022</p> <p>The AEMO Intervention Event ended from 23:30 hrs 15/06/2022</p> <p>Manager NEM Real Time Operations</p> |

Table 9 Timeline of key events on 15 June 2022, Queensland

| Date | Event/comment |
|---------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 15/06/2022 15:22 hrs | <p>MN97738 - PDPASA - Update of the Forecast Lack Of Reserve Level 3 (LOR3) in the QLD Region beginning on 15/06/2022</p> <p>The Forecast LOR3 condition in the QLD region advised in AEMO Electricity Market Notice No. 97697 has been updated at 1500 hrs to the following:</p> <p>[1.] From 1530 hrs 15/06/2022 to 1600 hrs 15/06/2022. The maximum load (other than interruptible loads) forecast to be interrupted is 2 MW at 1530 hrs.</p> <p>[2.] From 1730 hrs 15/06/2022 to 2330 hrs 15/06/2022. The maximum load (other than interruptible loads) forecast to be interrupted is 932 MW at 2000 hrs.</p> <p>[3.] From 0700 hrs 16/06/2022 to 0730 hrs 16/06/2022. The maximum load (other than interruptible loads) forecast to be interrupted is 247 MW at 0700 hrs.</p> <p>[4.] From 1730 hrs 16/06/2022 to 2130 hrs 16/06/2022. The maximum load (other than interruptible loads) forecast to be interrupted is 340 MW at 2000 hrs.</p> <p>AEMO is seeking a market response.</p> <p>AEMO estimates the latest time it would need to intervene through an AEMO intervention event is 1530 hrs on 15/06/2022.</p> <p>AEMO Operations</p> |
| 15/06/2022 15:25 hrs | <p>MN97740 - INTENTION TO COMMENCE RERT CONTRACT NEGOTIATIONS</p> <p>Reliability and Emergency Reserve Trader (RERT) Intention to negotiate for additional reserve - QLD1 Region- 15/06/2022</p> <p>Refer to AEMO Electricity Market Notice no. 97738. AEMO intends to commence negotiations with RERT Panel members for the provision of additional reserve by issuing requests for tender for the following period of time; 18:00 to 23:30 hrs 15/06/2022 If reserve is required, the period of activation or dispatch will be within this period but may not be for the entire period. AEMO will issue a further advice if reserve is contracted.</p> <p>Manager NEM Real Time Operations</p> |
| 15/06/2022 15:59 hrs | <p>MN97756 - INTENTION TO IMPLEMENT an AEMO INTERVENTION EVENT WITH RERT</p> <p>AEMO Intervention Event, Reliability and Emergency Reserve Trader (RERT) - QLD1 Region - 15/06/2022</p> <p>Refer to AEMO Electricity Market Notice no. 97740. AEMO has entered into a reserve contract and may implement a AEMO Intervention Event by dispatching that reserve contract to maintain the power system in a Secure and Reliable operating state during the following period of time; 18:00 to 23:30 hrs 15/06/2022 If reserve is required, the period of activation or dispatch will be within this period, but may not be for all the entire period. AEMO will issue a further advice if the reserve contract is dispatched/activated.</p> <p>Manager NEM Real Time Operations</p> |

| Date | Event/comment |
|-----------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>15/06/2022 16:24 hrs</p> | <p>MN97772 - PDPASA - Update of the Forecast Lack Of Reserve Level 3 (LOR3) in the QLD Region beginning on 15/06/2022</p> <p>The Forecast LOR3 condition in the QLD region advised in AEMO Electricity Market Notice No. 97738 has been updated at 1600 hrs to the following:</p> <p>[1.] From 1730 hrs 15/06/2022 to 2230 hrs 15/06/2022. The maximum load (other than interruptible loads) forecast to be interrupted is 780 MW at 2000 hrs.</p> <p>[2.] From 0700 hrs 16/06/2022 to 0730 hrs 16/06/2022. The maximum load (other than interruptible loads) forecast to be interrupted is 292 MW at 0700 hrs.</p> <p>[3.] From 1730 hrs 16/06/2022 to 2130 hrs 16/06/2022. The maximum load (other than interruptible loads) forecast to be interrupted is 349 MW at 2000 hrs.</p> <p>AEMO is seeking a market response.</p> <p>AEMO estimates the latest time it would need to intervene through an AEMO intervention event is 1700 hrs on 15/06/2022.</p> <p>AEMO Operations</p> |
| <p>15/06/2022 16:58 hrs</p> | <p>MN97801 - RERT DISPATCHED</p> <p>AEMO Intervention Event, Reliability and Emergency Reserve Trader (RERT) - QLD1 Region- 15/06/2022</p> <p>Refer AEMO Electricity Market Notice no. 97756</p> <p>AEMO has dispatched/activated reserve contract(s) to maintain the power system in a Secure and Reliable operating state.</p> <p>The reserve contract(s) was dispatched/activated at 18:00 hrs 15/06/2022 and is forecast to apply until 23:30 hrs 15/06/2022</p> <p>AEMO has implemented an AEMO intervention event for the duration the reserve contract(s) is dispatched/activated/</p> <p>To facilitate the RERT process, constraints commencing with the following identifiers may be evident at various times in dispatch,</p> <p>#RT_QLD1</p> <p>Manager NEM Real Time Operations</p> |
| <p>15/06/2022 23:33 hrs</p> | <p>MN97940 - End of RERT Dispatch - 15/06/2022 and End of intervention event</p> <p>End of Reliability and Emergency Reserve Trader (RERT) dispatch for - QLD1 Region - 15/06/2022 and end of AEMO Intervention Event.</p> <p>Refer AEMO Electricity Market Notices 97801</p> <p>Activation of reserve contract(s) has ended.</p> <p>The reserve contract(s) were activated from 18:00 hrs 15/06/2022 to 23:30 hrs 15/06/2022</p> <p>The AEMO Intervention Event ended from 23:30 hrs 15/06/2022</p> <p>Manager NEM Real Time Operations</p> |

Table 10 Timeline of key events on 17 June 2022, New South Wales

| Date | Event/comment |
|-----------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>17/06/2022 11:25 hrs</p> | <p>MN98272 - PDPASA - Update of the Forecast Lack Of Reserve Level 2 (LOR2) in the NSW region beginning on 17/06/2022</p> <p>The Forecast LOR2 Condition in the NSW Region advised in AEMO Electricity Market Notice No. 98032 updated at 1100 hrs 17/06/2022.</p> <p>[1.] From 1430 hrs 17/06/2022 to 1630 hrs 17/06/2022. The forecast capacity reserve requirement is 792 MW. The minimum capacity reserve available is 278 MW.</p> <p>[2.] From 2000 hrs 17/06/2022 to 0230 hrs 18/06/2022. The forecast capacity reserve requirement is 765 MW. The minimum capacity reserve available is 144 MW.</p> <p>[3.] From 0300 hrs 18/06/2022 to 0400 hrs 18/06/2022. The forecast capacity reserve requirement is 885 MW. The minimum capacity reserve available is 138 MW.</p> <p>AEMO is seeking a market response.</p> <p>AEMO has not yet estimated the latest time it would need to intervene through an AEMO intervention event.</p> <p>AEMO Operations</p> |
| <p>17/06/2022 11:26 hrs</p> | <p>MN98273 - INTENTION TO COMMENCE RERT CONTRACT NEGOTIATIONS</p> <p>Reliability and Emergency Reserve Trader (RERT) Intention to negotiate for additional reserve - NSW1 Region- 17/06/2022</p> <p>Refer to AEMO Electricity Market Notice no. 98272. AEMO intends to commence negotiations with RERT Panel members for the provision of additional reserve by issuing requests for tender for the following period of time; 16:00 to 23:30 hrs 17/06/2022 If reserve is required, the period of activation or dispatch will be within this period but may not be for the entire period. AEMO will issue a further advice if reserve is contracted.</p> <p>Manager NEM Real Time Operations</p> |
| <p>17/06/2022 12:02 hrs</p> | <p>MN98275 - INTENTION TO IMPLEMENT an AEMO INTERVENTION EVENT WITH RERT</p> <p>AEMO Intervention Event, Reliability and Emergency Reserve Trader (RERT) - NSW1 Region - 17/06/2022</p> <p>Refer to AEMO Electricity Market Notice no. 98273. AEMO has entered into a reserve contract and may implement a AEMO Intervention Event by dispatching that reserve contract to maintain the power system in a Reliable operating state during the following period of time; 16:00 to 23:30 hrs 17/06/2022 If reserve is required, the period of activation or dispatch will be within this period, but may not be for all the entire period. AEMO will issue a further advice if the reserve contract is dispatched/activated.</p> <p>Manager NEM Real Time Operations</p> |
| <p>17/06/2022 19:01 hrs</p> | <p>MN98386 - RERT DISPATCHED</p> |

| Date | Event/comment |
|-----------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | <p>AEMO Intervention Event, Reliability and Emergency Reserve Trader (RERT) - NSW1 Region- 17/06/2022</p> <p>Refer AEMO Electricity Market Notice no. 98275</p> <p>AEMO has dispatched/activated reserve contract(s) to maintain the power system in a Reliable operating state. The reserve contract(s) was dispatched/activated at 20:00 hrs 17/06/2022 and is forecast to apply until 23:30 hrs 17/06/2022</p> <p>AEMO has implemented an AEMO intervention event for the duration the reserve contract(s) is dispatched/activated/</p> <p>To facilitate the RERT process, constraints commencing with the following identifiers may be evident at various times in dispatch,</p> <p>#RT_NSW1</p> <p>Manager NEM Real Time Operations</p> |
| <p>18/06/2022 02:16 hrs</p> | <p>MN98426 - Update - RERT DISPATCHED</p> <p>Update - AEMO Intervention Event, Reliability and Emergency Reserve Trader (RERT) - NSW1 Region- 17/06/2022 - 18/06/2022</p> <p>Refer AEMO Electricity Market Notice no. 98275 and 98386</p> <p>The reserve contract(s) was dispatched/activated at 20:00 hrs 17/06/2022 and is now forecast to apply until 04:10 hrs 18/06/2022</p> <p>#RT_NSW1</p> <p>Manager NEM Real Time Operations</p> |

Table 11 Timeline of key events on 17 June 2022, Victoria

| Date | Event/comment |
|-----------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>17/06/2022 11:40 hrs</p> | <p>MN98274 - PDPASA - Correction of the Forecast Lack Of Reserve Level 3 (LOR3) in the VIC Region on 18/06/2022</p> <p>Correction to MN 98264.</p> <p>The Forecast LOR2 condition the VIC region advised in AEMO Electricity Market Notice No. 98236 has been updated at 1100 hrs to the following:</p> <p>[1.] From 2000 hrs 17/06/2022 to 2100 hrs 17/06/2022. The forecast capacity reserve requirement is 586 MW. The minimum capacity reserve available is 455 MW.</p> <p>[2.] From 0300 hrs 18/06/2022 to 0400 hrs 18/06/2022. The forecast capacity reserve requirement is 666 MW. The minimum capacity reserve available is 169 MW.</p> <p>AEMO is seeking a market response.</p> <p>AEMO has not yet estimated the latest time it would need to intervene through an AEMO intervention event.</p> <p>AEMO Operations</p> |
| <p>17/06/2022 14:53 hrs</p> | <p>MN98289 - INTENTION TO COMMENCE RERT CONTRACT NEGOTIATIONS</p> <p>Reliability and Emergency Reserve Trader (RERT) Intention to negotiate for additional reserve - VIC1 Region- 17/06/2022</p> <p>Refer to AEMO Electricity Market Notice no. 98274. AEMO intends to commence negotiations with RERT Panel members for the provision of additional reserve by issuing requests for tender for the following period of time; 20:00 to 23:25 hrs 17/06/2022 If reserve is required, the period of activation or dispatch will be within this period but may not be for the entire period. AEMO will issue a further advice if reserve is contracted.</p> <p>Manager NEM Real Time Operations</p> |
| <p>17/06/2022 15:34 hrs</p> | <p>MN98296 - INTENTION TO IMPLEMENT an AEMO INTERVENTION EVENT WITH RERT</p> <p>AEMO Intervention Event, Reliability and Emergency Reserve Trader (RERT) - VIC1 Region - 17/06/2022</p> <p>Refer to AEMO Electricity Market Notice no. 98289 . AEMO has entered into a reserve contract and may implement a AEMO Intervention Event by dispatching that reserve contract to maintain the power system in a Reliable operating state during the following period of time; 20:00 to 23:25 hrs 17/06/2022 If reserve is required, the period of activation or dispatch will be within this period, but may not be for all the entire period. AEMO will issue a further advice if the reserve contract is dispatched/activated.</p> <p>Manager NEM Real Time Operations</p> |

Glossary

This document uses many terms that have meanings defined in the National Electricity Rules (NER). The NER meanings are adopted unless otherwise specified.

| Term | Definition |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| AER | Australian Energy Regulator |
| APP | Administered price period |
| ESOO | Electricity Statement of Opportunities |
| IRM | Interim reliability measure |
| LOR1 | Lack of Reserve level 1. The threshold for an LOR1 is determined by the larger value of either the FUM or the sum of the two largest credible risks in the region (LCR2). |
| LOR2 | Lack of Reserve level 2. The threshold for an LOR2 is determined by the larger value of either the FUM or the largest credible risk in the region (LCR). |
| LOR3 | Lack of Reserve level 3. The threshold for an LOR3 condition is when the forecast reserve for a region is at or below zero. |
| MN | Market notice |
| MW | Mega Watt |
| MWh | Mega Watt hours |
| NER | National Electricity Rules |
| RERT | Reliability and Emergency Reserve Trader |
| SRA | Settlement Residue Auction |
| USE | Unserved Energy |
| VCR | Value of Customer Reliability |