June 2022 market events report

December 2022

AUSTRALIAN ENERGY REGULATOR

Inquiries about this publication should be addressed to:

Australian Energy Regulator
GPO Box 3131
Canberra ACT 2601
Tel: 1300 585 165

AER Reference: #14,743,468

Contents

Shortened forms

Shortened form	Extended form
AEMC	Australian Energy Market Commission
AEMO	Australian Energy Market Operator
AER	Australian Energy Regulator
AEST	Australian Eastern Standard Time
APC	Administered price cap
LOR	Lack of Reserve
LOR 1	Lack of Reserve Level 1 condition
LOR 2	Lack of Reserve Level 2 condition
LOR 3	Lack of Reserve Level 3 condition
MT PASA	Medium Term Projected Assessment of System Adequacy
MW	Megawatt
MWh	Megawatt hour
NEL	National Electricity Law
NEM	National Energy Market
NEMDE	National Energy Market Dispatch Engine
NSW	New South Wales
PASA	Projected Assessment of System Adequacy
QLD	Queensland
RERT	Reliability and Emergency Reserve Trader
Rules	National Electricity Rules
SA	South Australia
ST	Short Term
ST PASA	Short Term Projected Assessment of System Adequacy
VIC	Victoria

Executive summary

On 12 and 13 June 2022, administered price caps (APCs) were triggered in the Queensland, New South Wales, Victoria and South Australia regions of the National Electricity Market (NEM) due to wholesale electricity prices reaching the cumulative price threshold of $1.359 million.[1] When an APC is in place, generators can only bid in the spot market up to a price cap and cannot go higher. In June 2022 the limit was $300 per megawatt hour (MWh).

During this time, some electricity generators revised their market availability and/or withdrew capacity from the market by either offering zero capacity or by rebidding as unavailable. This contributed to forecast supply shortfalls and, along with various generation units being offline for planned maintenance and repairs, ultimately led to the Australian Energy Market Operator (AEMO) needing to intervene heavily in the market by issuing numerous directions to market participants to make capacity available for dispatch.[2] AEMO formed the view that this eventually became unworkable and suspended the NEM from 15 to 23 June 2022. At such times it is important that participants understand their obligations under the National Electricity Rules (Rules) and also that stakeholders, including consumers, have confidence that timely and independent investigation will take place should there be any question whether relevant rules or laws have been complied with. This report presents the AER's findings of its investigation into conduct by generators during the APC period.[3] The matters discussed here about the investigation concern questions of legal interpretation and the weight of evidence, which are ultimately matters for a court to determine. This report provides the AER's views of these matters.

The AER investigation was instigated in response to reports from a number of stakeholders, including AEMO, that generators were withdrawing capacity in order to be directed on by AEMO, which would then enable them to obtain compensation pursuant to the directions compensation regime established by the Rules. If generators had withdrawn their capacity without reasonable cause and had caused AEMO to issue a direction, this conduct would likely have amounted to a breach of clause 4.8.9(c2) of the Rules. Notably there is currently no civil penalty for a breach of this clause, but the AER can apply to the court to prevent the relevant generators from receiving compensation for being directed or to pay back any compensation they did receive.

The investigation was undertaken swiftly by the AER with the use of its compulsory information gathering powers, including new powers relating to oral examinations that came into force on 29 January 2021.[4] During the investigation the AER was assisted by external legal advisers, including Senior Counsel. The AER focused its investigation on several

---

1 The administered price cap, as it currently stands, is triggered if the rolling 7-day cumulative price of a megawatt per hour of electricity in a NEM region exceeds $1.359 million.

2 Under clause 4.8.9 of the Rules, AEMO may issue directions to registered participants where it is necessary to do so to maintain or return the power system to a secure or reliable operating state. AEMO's power to issue directions is also conferred by s 116 of the National Electricity Law.

3 The role of the AER is outlined in Appendix A of this report.

4 This power was introduced by amendments that came into force upon the proclamation of the *Statutes Amendment (National Energy Laws) (Penalties and Enforcement) Act 2020*.

generators that may have caused AEMO directions by withdrawing capacity while Lack of Reserve (LOR) notices were in operation.[5]

In order to establish a contravention of clause 4.8.9(c2) it is necessary to establish three main elements. These are (a) establishing that the generator's act or omission *caused or significantly contributed to* the circumstances causing a direction to be issued, (b) establishing either *intention or recklessness*, and (c) establishing the *absence of a reasonable cause* for the act or omission in question. The AER is of the view that there was evidence to support allegations of recklessness in causing or contributing to directions but that there were significant difficulties in proving the absence of reasonable cause. The reasons for this are explored further below.

The evidence gathered demonstrated behaviour that resulted in poor market outcomes. A number of generators engaged in conduct that significantly contributed to the circumstances causing AEMO to issue a direction – particularly in the context of withdrawing capacity when a forecast or actual LOR 2 notice or a forecast LOR 3 notice had been issued. The evidence we obtained appears to indicate that several generators had little to no regard about the effect of their actions on the broader system.

However, under the current Rules framework these generators are likely to be found to have had reasonable cause to withdraw capacity, given the circumstances. We consider this is most likely where these causes included limited fuel availability and the NEM Dispatch Engine (NEMDE)[6] not being able to dispatch effectively due to withdrawn capacity (a difficulty caused by the withdrawal of generation).

Another cause cited by generators – fearing that they would have had to supply electricity at a loss – is less clear under the Rules. While compensation was available, which was intended to incentivise generators to supply energy during the administered price period, they instead chose to rebid to withdraw capacity from the market. We consider, however, that there are a number of relevant countervailing factors:

- the low awareness and understanding of compensation schemes
- an APC of $300/MWh which was insufficient to cover the short-run marginal cost of most conventional gas or coal generation in these particular circumstances
- an underpinning principle of the Rules that generators have maximum commercial freedom to operate
- no positive obligation to supply in response to a LOR notice or express exclusion of economic considerations from 'reasonable cause'.

A key issue that flows from this conclusion is that while the Rules currently appear to allow for market participants to have maximum commercial freedom to decide how they will operate in the market, this can be detrimental to power system security, particularly under

---

5 Lack of Reserve notices (of which there are 3 levels) are issued by AEMO when there are forecast and actual insufficient levels of electricity supply reserves. A generator withdrawing capacity in these circumstances is more likely to have caused a direction because there is already a danger of there being insufficient capacity.

6 The NEM Dispatch Engine (NEMDE) is the software developed and used by AEMO to ensure the central dispatch process maximises value of trade subject to network and power system security requirements.

times of system stress. At the very least, certain generators limiting available capacity, even if unlikely to breach the Rules, did significantly complicate AEMO's task.

The existence of a compensation scheme designed to incentivise generators to supply and to avoid challenges to system security appears to be insufficient to overcome this challenge.

Our assessment of these unprecedented circumstances has identified areas where changes could be, and in some cases already have been, considered to improve the overall effectiveness of the regulatory framework.

Further, the AER's investigation revealed some poor compliance practices by some generators regarding Projected Assessment of System Adequacy (PASA) submissions,[7] late rebidding and contemporaneous record keeping. We were also concerned to find that traders were effectively ignoring forecast and actual LOR notices issued by AEMO during the June 2022 events. The AER is continuing to investigate one generator for possible breaches of the Rules concerning PASA submissions.

Despite the behaviour of generators being unhelpful in the first instance in withdrawing capacity, we otherwise found that AEMO and generators worked closely together in difficult circumstances and that there was good transparency and communication by both AEMO and generators. We were pleased with the response to the warning of the AER Chair in the early stages of the June 2022 market event to comply with the Rules, and with the cooperation by generators with the AER investigation.

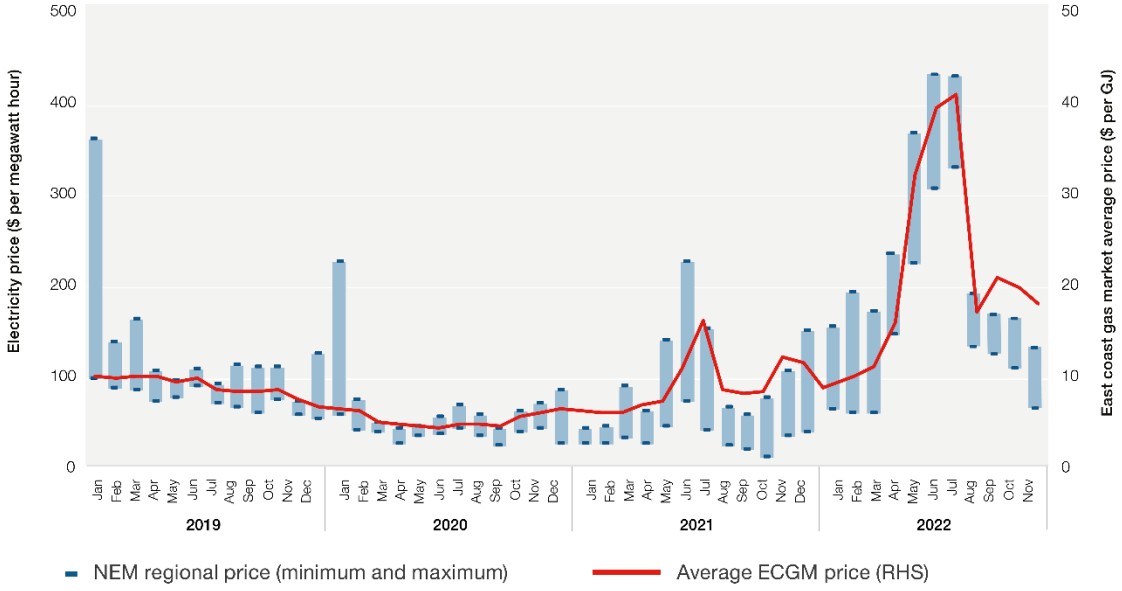
With expectations for continued volatility, generation closures, and tight gas and coal supply conditions, market conditions are likely to remain challenging for some time as we navigate this transitional period. Therefore, it is crucial that participants comply with the Rules and that the Rules are fit for purpose. Participants must provide high-quality and timely information to AEMO to ensure it can maintain a secure and reliable power system. This report will discuss the operation of the Rules in this context and identify areas for reform that may strengthen the operation of the Rules.

[7] The PASA obligations in the Rules require certain generators to submit to AEMO details of physical plant capability available in a particular period, including any physical plant capability that can be made available on 24 hours' notice in that period. It is provided by generators to AEMO over medium-term and short-term time frames in accordance with rule 3.7. It is important that generators provide AEMO with timely and accurate information about their capability to ensure that AEMO can manage power system security.

Background to the June 2022 market events

Before considering the behaviour of generators and their obligations under the Rules it is useful to consider the context of the events as they unfolded. In June 2022, as international coal and gas prices climbed sharply (largely driven by the war in Ukraine), domestic fuel supply concerns and plant outages meant participants offered less energy into the market.[8] Wind and solar output was also lower than expected and a very early start to winter created higher than expected demand. This 'energy squeeze' combined to put pressure on hydroelectric and gas generation to offer more into the market at a time when hydro generators faced environmental constraints and gas spot market prices were at record highs.

Figure 1 Wholesale electricity prices and east coast gas market prices



Note: The range between the minimum and maximum NEM regional price shows the range of average monthly volume weighted wholesale electricity prices across the NEM regions. A large column illustrates a large variation between regions, while a short column highlights that prices are relatively similar across regions. NEM prices reflect the administered price caps on prices (limiting prices to $300 per megawatt hour) from 15 to 24 June. Average ECGM price is the average monthly east coast gas market price. The prices in May and June include periods of price setting and administered price caps.

Source: AER analysis using NEM data and gas data.

In the NEM, generators offered less capacity due to these fuel supply issues or outages. There were also higher priced offers (particularly coal and gas) where these generators were exposed to higher coal and gas prices.[9] This offer behaviour generally appeared to reflect these underlying market dynamics. This is consistent with the AER's findings in its Wholesale Electricity Market Performance Report (WEMPR), that most changes in offer behaviour appeared to be driven by supply conditions. However, WEMPR also identified

8 AER, Wholesale markets quarterly Q2 2022 report, p.1.

9 AER, Wholesale markets quarterly Q2 2022 report, p.1.

there may be evidence of sustained exercise of market power through economic withholding in some instances, though we note more analysis is needed.[10]

This generator behaviour resulted in extended high prices, and as a result, on 12 and 13 June 2022 APCs were triggered in the Queensland, New South Wales, Victoria and South Australia regions of the NEM. Currently, the APC is triggered if the rolling 7-day cumulative spot price of electricity in a NEM region exceeds $1.359 million and is a safety mechanism to avoid sustained periods of high electricity prices. During an APC period wholesale power prices were capped at $300/MWh. However, this has been lifted, and, from 1 December 2022 to 30 June 2025 will be $600/MWh. This is discussed further below in the section “Work already underway by market bodies”.

Further information on the APC and cumulative price threshold is in Box 1.

Box 1 Administered price cap and cumulative price threshold[11]

The administered price provisions of the Rules form an important component of the market safety net that operates to protect and maintain electricity trading in the NEM during periods of sustained high prices. If market prices in a region rise to levels that are likely to cause substantial financial stress, then those prices are capped until they return to lower levels.

Administered price conditions are independently assessed for each region and each market (energy and ancillary services) in the NEM. As outlined in clause 3.14.2(c), an administered price period is triggered for a given interval and market in a region when, over the 7 days leading up to that time:

- for the energy market, the regional reference prices (spot prices) add up to more than a set limit defined by the cumulative price threshold, or
- for an ancillary services market, the relevant ancillary service prices add up to more than a set limit defined by the cumulative price threshold.

The sum of prices over the previous 7 days is calculated as if any administered price period conditions did not apply.

The cumulative price threshold is determined and applied based on 5-minute trading intervals for all markets.

If an administered price period is triggered for energy, price capping and flooring is applied to the energy and all market ancillary service prices in the region.

The APC that applied in each region in June 2022 was $300/MWh. However, the AEMC has recently made a determination to raise it to $600/MWh. This is a transitional arrangement that applies from 1 December 2022 until the end of 30 June 2025.[12]

The cumulative price threshold is triggered if the cumulative spot price of electricity per megawatt in a state exceeds $1.359 million.

---

10 AER, Wholesale electricity market performance report 2022.

11 Source: AEMO, Operation of the administered price provisions in the NEM, July 2019.

12 AEMC, Amending the administered price cap, Rule determination, 17 November 2022.

Throughout the administered price and market suspension periods, continued withdrawal of capacity along with high demand driven by cold weather and offline generators resulted in AEMO issuing an increasing number of directions that capacity be made available. However, generators were withdrawing their capacity while advising via PASA submissions that their units were physically available. To maintain the security and reliability of the power system, AEMO had to direct certain generators under clause 4.8.9 of the Rules to make their capacity available. The generators complied by making available some or all of the capacity they had previously not offered as available.

As AEMO has reported, the large number of directions being issued became unsustainable and risked the stability of the market. At 14:00 (AEST) on 15 June 2022, AEMO suspended the wholesale spot market. Administered price caps remained in force for South Australia until 22 June 2022 and for New South Wales, Victoria and Queensland until 23 June 2022.

Following a staged process, normal dispatch pricing was resumed from 04:00 on 23 June 2022 and the suspension was formally lifted at 14:00 on 24 June 2022.[13]

During an administered price period, if generators continue to generate and suffer a loss as a result, they can seek compensation under clause 3.14.6 of the Rules. This is based on both direct and opportunity costs (clause 3.14.6(d)) and is determined in accordance with guidelines developed by the AEMC (clause 3.15.6(3)). Generators are also able to seek compensation when directed by AEMO based on direct costs (clause 3.15.7). The Rules stipulate that AEMO must pay and recover associated costs not covered by spot prices for participants that are affected by a market suspension (other than those that have been directed) (clause 3.14.5A). The Rules state that the objective of the compensation provisions is so an incentive remains for 'scheduled generators to supply energy' (clause 3.14.5A(a)(1)).

The suspension of the spot market by AEMO was a serious event that had significant impact on generators, retailers and consumers. It was the first time that AEMO had suspended all of the NEM for such a significant period of time.[14] The failure of the market and the need for this extreme action by AEMO was brought about by the withdrawal of capacity by generators as the administered price period unfolded.

Due to the seriousness of the situation and, in particular, due to reports by stakeholders, including AEMO, that generators were withdrawing capacity in order to be directed and to receive compensation, on 14 June 2022 the AER Chair, Ms Clare Savage, wrote to market participants reminding them of their obligations under the Rules. These included obligations under clause 4.8.9(c2) and the various clauses concerning bidding behaviour and PASA. A copy of the letter was subsequently published on the AER website.[15] Ms Savage also attended a joint industry-wide videoconference with AEMO and the AEMC on 16 June 2022, at which Ms Savage emphasised that the AER was investigating and would take action if any generators were found to have breached their obligations under the Rules.

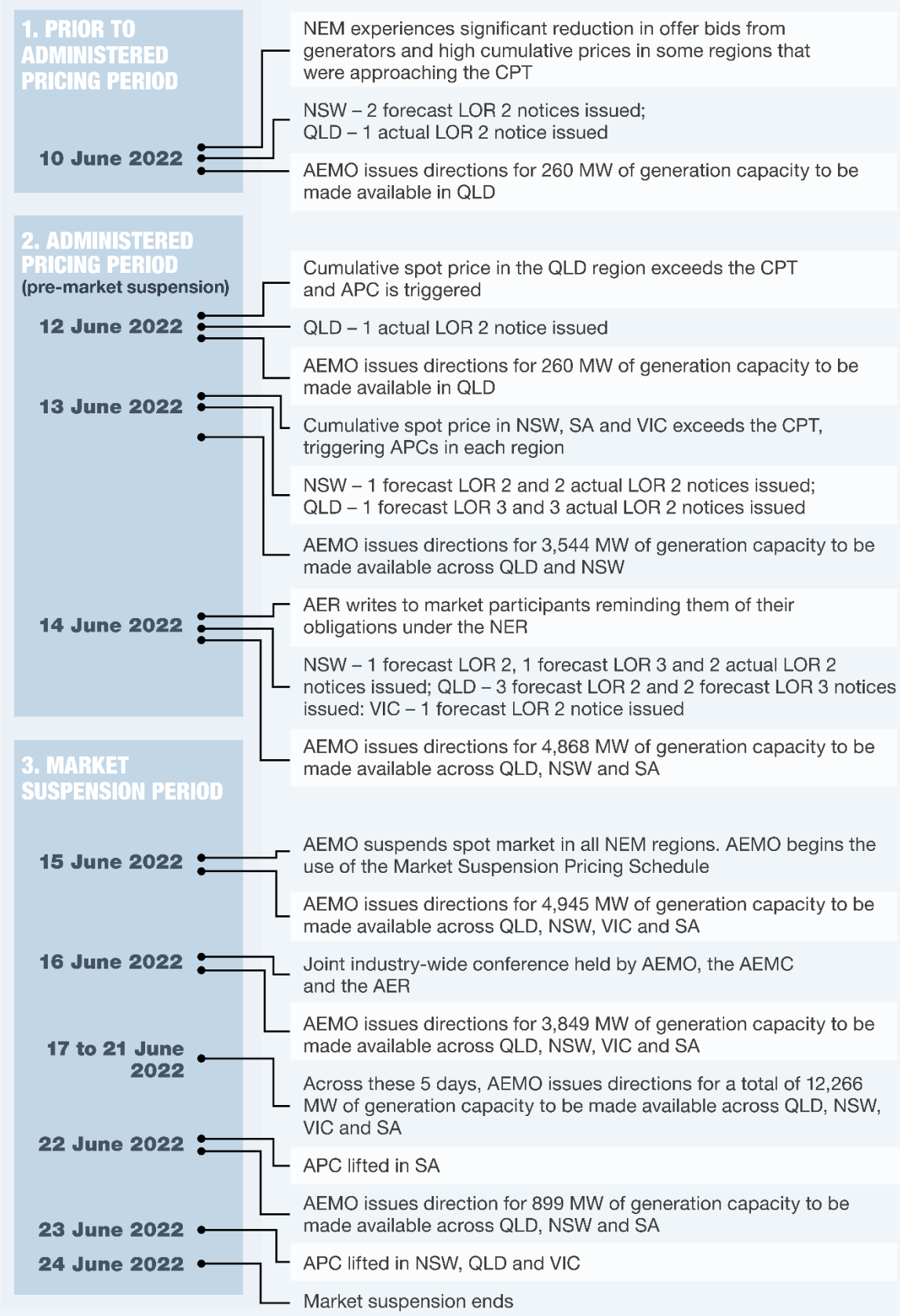
---

13 AEMO, NEM market suspension and operational challenges in June 2022, August 2022, (AEMO June 2022 Report) p. 5.

14 The first market suspension occurred on 8 April 2001 for a period of 2 hours, affecting all regions of the NEM following a market systems (IT system) failure.

15 Clare Savage, Chair, AER letter to market participants, 14 June 2022.

Timeline of the main events in June 2022



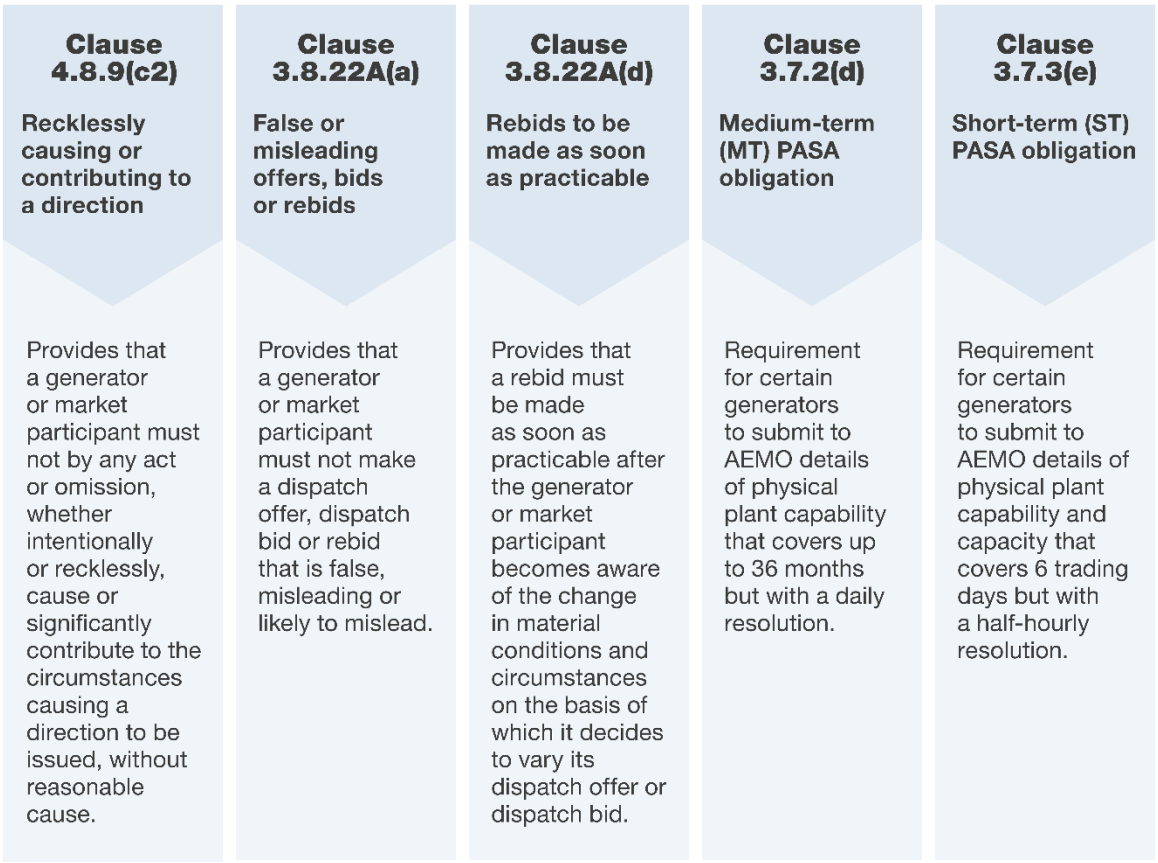
AER investigation

On 16 June 2022 the AER commenced an investigation into the conduct of generators during the period of the APC to determine whether there was any evidence that generators had not behaved in accordance with their obligations under the Rules. Given the seriousness of the situation, it was crucial to identify whether generators had breached their obligations. At the time, there were reports from a number of stakeholders, including AEMO, that generators were deliberately withdrawing capacity in order to be directed so that they could obtain compensation pursuant to the direction compensation regime under the Rules (clause 3.15.7). It was reported that generators had a preference for this form of compensation. As such, the AER investigation commenced with a particular focus on whether generators had intentionally or recklessly caused, or significantly contributed to, the circumstances causing AEMO to issue a direction in breach of clause 4.8.9(c2) of the Rules.

The investigation also considered whether there were potential breaches of other provisions of the Rules by generators during this period including:

- clause 3.8.22A(a): making false or misleading offers, bids or rebids
- clause 3.8.22A(d): which requires rebids to be made as soon as practicable after the generators become aware of a change in material conditions and circumstances
- clauses 3.7.2(d) and 3.7.3(e): generators' obligations to comply with their medium-term (MT) and short-term (ST) PASA obligations.

Figure 3 Rules considered by the AER



We closely considered evidence from several participants with gas and coal fuelled generation, concerning 18 generating units, obtained via section 28 National Electricity Law (NEL) compulsory notices for information and documents.[16] The generators selected for investigation were chosen on the following basis:

- they withdrew capacity and were subsequently directed or may have significantly contributed to a direction issued to another generator
- their rebid reasons referred to 'available for direction' and/or 'uneconomic'.

Other generators were excluded because the direction occurred well after they withdrew capacity, so the required causal nexus was not apparent. Some generators were also excluded because they withdrew capacity in accordance with their usual bidding pattern (before the administered price period).

16 If the AER has reason to believe that a person is capable of providing information, producing a document or giving evidence that the AER requires for the performance or exercise of a function or power conferred on it under the National Energy Laws and Rules, the AER may serve a compulsory notice on that person.

Fifteen individual section 28 compulsory examinations were also conducted of the generators' traders, compliance officers and other key staff as part of this investigation.[17] This was the first time the AER used its compulsory examination powers, which came into force on 29 January 2021. The examinations were a useful tool to obtain information and evidence in an expedited manner. Information and evidence was also gathered from AEMO, including transcripts of telephone conversations between AEMO operators and generators, information about NEMDE and AEMO forecasting, and market notices.

The AER undertook an in-depth investigation into generator behaviour for the period leading up to and including 12 to 15 June 2022, which was the pre-market suspension period. Although the administered price period before the suspension of the market was the focus of the investigation, we did take into account the market suspension period by considering the AEMO June 2022 Report,[18] market notices and generator offers, bids and rebids, and PASA submissions.

---

17 This requires the recipient to appear before a member of the AER or a specified AER Senior Executive Service employee at a time and place specified in the compulsory notice to give evidence, orally or in writing, and produce documents. This power was introduced by amendments that came into force upon the proclamation of the *Statutes Amendment (National Energy Laws) (Penalties and Enforcement) Act 2020* on 29 January 2021.

18 AEMO June 2022 Report.

We also considered key concepts about the market design principles under the Rules, as well as AEMO's statutory functions as set out in the NEL, as outlined in Box 2.

Box 2 Market design principles and AEMO statutory functions

NEM market design principles

Clause 3.1.4 provides that Chapter 3 of the Rules ('Market Rules') is intended to give effect to the market design principles, which include:

- minimisation of AEMO decision-making to allow market participants the greatest amount of commercial freedom to decide how they will operate in the market (principle 1)
- maximum level of market transparency in the interests of achieving a very high degree of market efficiency, including by providing accurate, reliable and timely forecast information to market participants, in order to allow for responses that reflect underlying conditions of supply and demand (principle 2)
- consistency between central dispatch and pricing (principle 4).

AEMO statutory functions

AEMO's statutory functions, in relation to the NEL, are set out in s 49(1). They include:

- to operate and administer the wholesale exchange: s 49(1)(a)
- to promote the development and improve the effectiveness of the operation and administration of the wholesale exchange: s 49(1)(b)
- to maintain and improve power system security: s 49(1)(e)
- any other functions conferred under the NEL or the Rules: s 49(1)(i).

The following section sets out the potential contraventions of the Rules considered by the AER in its investigation and the AER's findings. We also explain our concerns about the operation of the Rules and whether they are fit for purpose given the volatility of the energy market and its evolution. This is followed by a discussion on policy reform options that may address issues with the Rules and help avoid market events of this nature in the future by ensuring generators keep offering capacity and keep generating, particularly during times of market stress.

AER findings

Clause 4.8.9(c2) – intentionally or recklessly causing or significantly contributing to a direction without reasonable cause

As discussed above, in response to reports that generators were withdrawing capacity in order to be directed on so that they could obtain compensation, the AER investigation commenced with a focus on whether generators had intentionally or recklessly caused, or significantly contributed to, the circumstances causing AEMO to issue a direction (clause 4.8.9(c2) of the Rules).[19]

In order to establish a contravention of clause 4.8.9(c2) it is necessary to establish three main elements. These are (a) establishing that the generator's act or omission *caused or significantly contributed to* the circumstances causing a direction to be issued, (b) establishing either *intention or recklessness*, and (c) establishing the *absence of a reasonable cause* for the act or omission in question. The evidence collected demonstrated that several generators may have been reckless as to whether a rebid would significantly contribute to the circumstances causing AEMO to issue a direction – particularly in the context of withdrawing capacity when a forecast or actual LOR 2 notice or a forecast LOR3 notice had been issued. While compensation was available, which was intended to incentivise generators to supply energy during the administered price period, they instead chose to rebid to withdraw capacity from the market. Further, generators did not have regard to LOR notices issued by AEMO.

Clause 4.8.9(c2) requires that a market participant not contribute to the circumstances causing a direction to be issued, without reasonable cause. While the provision has not been judicially considered, the AER takes the view a generator could 'cause or significantly contribute' to a direction, in circumstances where AEMO had to issue a direction because a generator that had already offered available capacity then withdrew it via a rebid, particularly if this was at short notice or would have made matters worse than if it had never bid in the first place. Unless a generator had reasonable cause to make this rebid, it will have breached clause 4.8.9(c2).

However, there were difficulties establishing that generators did not have 'reasonable cause', in particular in circumstances where they were facing limited fuel availability and the NEM dispatch engine NEMDE was not able to dispatch effectively. A number of generators reported that in withdrawing capacity they were motivated to preserve limited fuel for peak periods and to conserve current fuel reserves. Several generators also raised difficulties with the functioning of NEMDE given that while the APC was in place, it was unable to manage the efficient order and duration of dispatch. Some generators said that the only way to manage this was to withdraw capacity (which in turn contributed to the problem).

While concerns over fuel availability and dispatch by NEMDE may be 'reasonable cause', another cause cited by generators – fearing that they would have had to supply electricity at a loss – is less clear under the Rules. As they currently stand, the Rules do not positively

---

19 For completeness, clause 4.8.9(c2) provides that 'A market participant must not by any act or omission, whether intentionally or recklessly, cause or significantly contribute to the circumstances causing a direction to be issued, without reasonable cause.'

oblige generators to offer available capacity and, as outlined above, market design principle 1 allows market participants to have the greatest amount of commercial freedom to decide how they will operate in the market.

As such, under the current Rules framework, generators may rationally decide that they would prefer not to generate, while still leaving themselves available to be directed by AEMO.

Similar to our findings during the market suspension period of the 2016 Black System Event in South Australia,[20] under the Rules, AEMO is able to manually dispatch generators by telephone instead of its usual electronic system, NEMDE. This was necessary during the June 2022 market event because generators were bidding in with zero availability. It then became impossible for NEMDE to automatically schedule generators because it was unknown which generators with a zero availability bid were in fact able to generate at greater than zero.

A further issue was that NEMDE was not able to discriminate between generators that had actual fuel scarcity and those with high fuel costs. Therefore, NEMDE was unable to co-optimise demand for individual trading intervals. As noted in the AEMO Report: 'NEMDE could not find a feasible dispatch solution in some intervals without breaching one or more constraints – known as "over-constrained dispatch".'[21] During our investigation, in managing this situation, generators highlighted there was cooperation and a lack of push back by AEMO telephone operators regarding the bids and rebids made. This suggested to generators that what they were doing was appropriate in the circumstances.[22]

Another factor to this commercial decision of generators withdrawing capacity was the APC of $300/MWh. Generators were unwilling to bid their capacity due to the APC, which they considered was insufficient to cover their short-run marginal cost to generate. While we appreciate this was a consideration for generators, there are 10 price bands available between the market price cap at the time of $15,100/MWh and the price floor of -$1,000/MWh. NEMDE uses these price bands to determine which generators should be dispatched. This is the case even though the market was settled at the capped price of $300. When there is an APC, the bulk of the market including most generators will bid at the cap to avoid being dispatched in conditions of fuel scarcity or where their short run marginal costs will not be met. However, had generators continued to bid their capacity into the market at different levels using the price bands, NEMDE would have functioned optimally. The difficulties that occurred with NEMDE not dispatching effectively would not have developed to the extent they did and generators' commercial interests would still have been protected via the compensation regime. Despite this, we note that generators have the freedom to make their own decisions how to bid and are not obliged to bid in a way that reflects their costs.

The practical effect was that supply could not be met because there were insufficient generators offering capacity into the market within the affected NEM regions (or sub regions). This meant more generation was dispatched in a neighbouring region (or sub region) to meet

---

20 AER, The Black System Event Compliance Report, December 2018, p. 167.

21 AEMO June 2022 Report, p. 43.

22 The AER considers AEMO acted entirely appropriately in this situation.

demand, which means that network constraints were violated. Issues regarding NEMDE are discussed in further detail below.

Regarding our findings for clause 4.8.9(c2), a key issue is that although the current Rules prioritise commercial freedom, this can be detrimental to power system security, particularly under times of system stress. The existence of a compensation scheme designed to incentivise generators to supply and to avoid challenges to system security appears to be insufficient to overcome this challenge.

We note that the Rules and the NEL provide AEMO with the power to direct market participants as a safeguard for when the market design is imperfect (or unique circumstances prevail). Directions for these rare situations should not be a source of concern. There will always be unforeseen events that necessitate powers of intervention in an efficient market design (noting that changing market designs are costly). It is only if AEMO directions become a common occurrence that amending the market design should be considered.

The importance of commercial freedom under the market design principles lends weight to the view that economic reasons could be a 'reasonable cause'. However, as was seen during the June 2022 events, this behaviour caused the suspension of the market and could risk cascading failures in the NEM with flow-on financial costs to consumers. Therefore, clause 4.8.9(c2) could be seen to be deficient in an emergency situation of this nature. During the 2016 Black System Event in South Australia, most market participants prioritised social responsibility above commercial considerations during the market suspension period. This extended to generators agreeing to operate without being formally directed, although this meant operating at a loss. Some gas line operators also waived gas transportation charges to generators.[23] As such, as can been seen from the Black System Event, such responses are not impossible for generators in these sorts of situations.

The AER considers that there needs to be policy consideration as to whether the Rules could be clarified to expressly exclude economic considerations from being a 'reasonable cause' during actual LOR 2 and LOR 3 conditions given the presence of the compensation regime.

In the section 'Reform options for consideration" we discuss further whether the current market design is fit for purpose at this juncture of the energy transition.

MT and ST PASA submissions – clauses 3.7.2(d) and 3.7.3(e)

PASA is the principal method of indicating to AEMO and market participants a forecast of the overall balance of supply and demand for electricity in the NEM. Before we discuss our findings on these obligations, details around these provisions can be found in Box 3.

[23] AER, The Black System Event Compliance Report, December 2018, p. 157.

Box 3 PASA

AEMO prepares PASA over 2 time frames:

- medium-term PASA (MT PASA) covers up to 36 months from the Sunday after the day of publication with a daily resolution (clause 3.7.2)
- short-term PASA (ST PASA) covers 6 trading days from the end of the trading day covered by the most recent pre-dispatch schedule with a half-hourly resolution (clause 3.7.3).

AEMO uses ST PASA results to identify Lack of Reserve (LOR) conditions to inform its decisions about whether market intervention is required to maintain a reliable and secure electricity system.

The Rules set out, among other things, that MT and ST PASA inputs must be submitted to AEMO in accordance with the timetable, and that they must be the market participant's current intentions and best estimates.

We have previously outlined our expectations regarding compliance with PASA obligations in the AER's NEM Readiness Guide.[24]

In particular, because participants submit their PASA inputs in advance, the AER considers the Rules require participants to update their submissions to AEMO taking account of any changes to plant capabilities or other relevant information, to ensure that submitted values remain consistent with their current intentions and best estimates.

The ongoing, overarching obligation to ensure all information is up to date is at clause 3.13.2(h) of the Rules, which requires generators and market participants to notify AEMO of any changes to submitted information within the times prescribed in the timetable published by AEMO.

A key concern that has emerged from our ongoing investigation is that some generators may have been taking a 'set and forget' approach to their PASA submissions without fully considering changes in conditions such as fuel availability.

In practice, AEMO is monitoring the entire power system and may not be able to review the information that participants submit immediately. In particular, where conditions in the market are tight, and PASA and pre-dispatch projections are impacted, or where the issue about which a participant is informing AEMO of is time sensitive, it would be sensible to verbally inform AEMO's control room operators.

In that regard, we have found that AEMO and generators communicated closely during the June 2022 market event, which was evident in the telephone transcripts and the compulsory examinations we conducted as well as in the AEMO June 2022 report.[25] While generators generally provide information on their physical availability and capacity in their MT and ST

24 AER NEM Readiness Guide, November 2022.

25 AEMO June 2022 Report, p. 29.

PASA submissions, at times they also do so during telephone conversations with AEMO.[26] Our investigation revealed good transparency and communication between AEMO and generators which showed that lessons from the 2016 Black System market suspension had been learned and implemented.

It is essential for participants to provide high-quality and timely information to AEMO to ensure that AEMO can maintain a secure and reliable power system. Market bodies, including AEMO, continue to consider how the rules relating to PASA can be improved. There are recent rule changes underway to this effect.

The AER is currently considering potential breaches of PASA provisions that were identified during our investigation. These include alleged failure to submit MT PASA and ST PASA inputs which represented the generator's current intentions and best estimates. We are yet to complete this aspect of the investigation.

False or misleading bids, late rebids and contemporaneous record keeping – clauses 3.8.22A(a), 3.8.22A(d), 3.8.22(ca)

The efficient and secure operation of the NEM depends on its ability to instantaneously match supply and demand of electricity. At the same time, the NEM is a dynamic market, where relevant participants are able to adjust their offers to reflect changing events or in response to changing market conditions. These mechanisms are designed to ensure system security and reliability can be maintained, while still permitting adjustments to offers subject to certain requirements prescribed under the Rules.

The Rules require that if a bid or offer is amended through a rebid, a brief, verifiable and specific reason must be provided to AEMO. The reason provided will be reviewed by the AER and assists us to assess compliance with specific clauses of the Rules. Relevant participants can also amend or rebid their offers based on the physical or technical capabilities of their plant (technical parameters). The ability to make offers in this way is necessary to ensure the plant is operated safely.

Clause 3.8.22A(a) prescribes that offers, bids and rebids must not be false or misleading, and clause 3.8.22A(d) requires that rebids are to be made as soon as practicable after generators become aware of a change in material conditions and circumstances.

Clause 3.8.22(ca) states that relevant participants that make a rebid during the late rebidding period must make a contemporaneous record in relation to the rebid, which must include information such as the material conditions and circumstances giving rise to the rebid and reasons for making the rebid, among other things.

We considered whether there was evidence of any offers, bids and rebids that were false or misleading in contravention of clause 3.8.22A(a), but we did not uncover any evidence to show a contravention of this provision.

---

[26] We observe that the Rules, as well as AEMO's procedures, allow for instructions to be issued other than electronically (i.e. manual dispatch instructions via telephone) if normal processes are not available. See clause 3.8.21(e) and AEMO System Operating Procedure: 'Market Suspension and Systems Failure', paragraph 9.2.

In relation to clause 3.8.22A(d), our investigation found that at times some generators were bidding as being 'available' at specified price bands. However, when they were scheduled for future dispatch, they were then rebidding as 'unavailable' in the late rebidding period but immediately prior to being dispatched.

We did not identify any evidence that indicated a breach of clause 3.8.22A(d), but we consider it useful to remind participants of their obligations, particularly because when a number of generators engage in this behaviour at the same time it can be difficult for AEMO to manage the power system. Generators should be encouraged to communicate with AEMO about these bidding decisions, particularly with respect to the withdrawal of capacity.

In relation to contemporaneous record keeping (clause 3.8.22(ca)), we identified one instance of a generator that had amended relevant entries in the bid log (which was intended to contain a contemporaneous record of late rebids) several days or even weeks after the bids had been made.

While it appears that the relevant trader's intent in making these amendments was to ensure accuracy and completeness of entries, this behaviour is inconsistent with the expectations set out in the AER's Rebidding and Technical Parameters Guideline regarding rebidding practices and contemporaneous record keeping.[27] We encourage generators to familiarise themselves with these guidelines and to communicate the importance of these records to their staff. It is not acceptable to make subsequent amendments to records that are meant to be contemporaneous and an accurate representation of what was happening in real time.

Lack of Reserve (LOR) notices

One of our findings was that, in formulating their rebids, traders did not necessarily have regard to forecast and actual LOR notices issued by AEMO during the June 2022 events. When there is a forecast tightening of supply and demand, AEMO takes proactive steps to manage reserve shortfalls identified through the PASA process by issuing LOR notices to participants to seek a market response. AEMO is required to issue LOR notices pursuant to clause 4.8.5A and they fall into one of 3 categories, with an LOR 3 the most serious indicating no reserve supplies are available and that load shedding may be necessary. The levels of LOR conditions and the situations in which they are issued are explained in Box 4.

[27] AER, Rebidding and Technical Parameters Guideline, dated February 2019.

Box 4 LOR conditions

An LOR 1 condition exists when reserve levels are lower than the 2 largest supply resources in a state. At this stage, there is no impact to power system security or reliability and AEMO continues to monitor reserve levels to maintain adequate supply.

An LOR 2 condition signals a tightening of electricity supply reserves. This condition exists when reserve levels are lower than the single largest supply resource in a state.[28] At this level, there is no impact to the power system, but supply could be disrupted if a large incident occurs. Once a forecast LOR 2 is declared, AEMO has the power to direct generators or activate the Reliability and Emergency Reserve Trader (RERT)[29] to improve the supply–demand balance.

LOR 3 signals a deficit in the supply–demand balance. This condition exists when the available electricity supply is equal to or less than the operational demand. This means there are no reserve supplies available. Controlled load shedding may be required as a last resort to protect system security and prevent long-term damage to system infrastructure.

A forecast LOR occurs when AEMO's forecasts show a reduced amount of electricity reserves. An actual LOR occurs when the market response to the forecast LOR has not been adequate to clear the LOR thresholds and the LOR becomes an operational reality.[30]

During the APC there was an increased frequency of LOR notices issued due to generators withdrawing capacity, with LOR conditions resolved once the generators were directed on. From 12 to 15 June, a total of 20 forecast LOR 2 and LOR 3 conditions and 7 actual LOR 2 conditions were declared in New South Wales, 16 forecast LOR 2 and LOR 3 conditions and 9 actual LOR 2 conditions were declared in Queensland, and 13 forecast LOR 2 and LOR 3 conditions and 2 actual LOR 2 conditions were declared in Victoria. The total number of market notices relating to LORs issued in this period was 129 for New South Wales, 115 for Queensland and 60 for Victoria.[31] The number and frequency of these notices within a short period heightened public scrutiny with numerous and ongoing media reports of potential blackouts. This in turn generated reports of under consumption by consumers and a loss of confidence in the power system.

In its report AEMO stated that there were an unprecedented number of LOR conditions during this period. To manage this situation, it developed a set of criteria for issuing market notices that prioritised forecast and actual LOR 2 and LOR 3 conditions for which AEMO anticipated a need to intervene in the market. On this basis, AEMO did not declare all identified LOR conditions during the period.[32]

---

28 AEMO LOR factsheet.

29 RERT is a function conferred on AEMO to maintain power system reliability and system security using reserve contracts. See the AEMO RERT factsheet for further information.

30 More information on LOR notices can be found in the AEMO LOR factsheet. Please also see the AEMO publication Reserve Level Declaration Guidelines (December 2018), which discusses related concepts, such as the Forecast Uncertainty Measure.

31 The LOR notice numbers in this paragraph are based on information from AEMO at https://aemo.com.au/en/market-notices, 13 July 2022.

32 AEMO June 2022 Report, Report, p. 5.

Our investigation revealed that, in practice, market participants (traders in particular) tended to not pay attention to these notices and were unaware of them as they were issued. In some cases, the traders preferred to rely on other forms of information, such as pre-dispatch data, or their own analysis. More generally, the traders did not consider that they necessarily had to have regard to those notices – rather, their main obligation was to respond to directions from AEMO. In some cases, the traders proactively communicated to AEMO their intentions and their readiness to be directed if necessary, as discussed above, in the AER findings section.

Some generators reported that the number and frequency of forecast LOR notices, particularly those that were not realised, made it difficult to respond and to know how to respond. We acknowledge the challenge generators were facing at the time, although point out that the forecast and actual LOR conditions during this period were caused by the generators withdrawing capacity from the market in the first instance.

In the context of what was happening in the market at the time, we consider the lack of regard given to these notices by generators to be concerning. These notices are used by AEMO to inform participants about what is happening in the market and are designed to produce a response. Under the Rules, while generators are not obliged to respond to LOR notices, they are a crucial method for generators to keep themselves informed about market conditions.

We consider that the current policy proposal of a new capacity or firming mechanism (discussed further below), which would likely obligate participating generators to bid during periods of stress including during LOR conditions, may significantly reduce the necessity for the market to be placed into administered pricing and to be suspended.

In the meantime, there is an expectation that generators will monitor market notices, including LOR and abnormal conditions notices, and respond, if appropriate. Reviewing and responding to these notices if appropriate is an essential part of monitoring market developments. In a practical sense, this could be by assessing whether the LOR notice changes the generator's commercial incentives such that they may wish to rebid to offer further capacity. While we appreciate a large number of notices can be issued over short periods of time, it is still important for generators to monitor and respond if appropriate.

Training

The AER's investigation also found that there was a general lack of detailed, regular training and that a number of traders were unaware of the specific provisions of the Rules. We consider there is a need for generators to institute regular compliance programs and training and communicate compliance messaging. Training for operators and traders should be flexible enough that it allows them to adapt to new and emerging risks within the power system and be able to communicate effectively any information in relation to these risks and threats to AEMO.

The AER expects participants to have robust systems and processes in place to ensure appropriate training is provided for staff and to regularly review their training programs to identify potential gaps or improvements. This training should be designed to foster a culture of compliance and ensure that staff are aware of, and understand, relevant Rules obligations and guidance from the AER and AEMO. It is essential that new staff are adequately trained before assuming responsibility for operations and that current staff are provided with regular refresher training, including where new obligations are introduced or new AER/AEMO guidance is released. We advise generators to carefully consider the AER NEM Readiness Guide and accompanying checklist to assist with compliance.[33]

We note that AEMO in its report has also recommended participants ensure that operator training continues to cover bidding, operational and communication requirements during rare modes of market operation, such as during administered price periods and market suspension.[34] We support this recommendation.

NEMDE

As set out above, during our investigation generators made a number of comments about the poor functionality of NEMDE. The AER has considered this issue and has sought further insight from AEMO on the working of NEMDE during this period. This has clarified that, with the dispatch price no longer set by a market mechanism, NEMDE was unable to manage the efficient order and duration of dispatch in some trading intervals due to insufficient supply being offered into the NEM.

In particular, as a result of generator behaviour in either reducing capacity or bidding at the market price cap following implementation of the APC, a number of issues arose. These included generators being unable to manage the limited fuel at their disposal as they typically would by bidding at higher price bands. However, as outlined earlier in this report, we consider that although most generators will bid at the price cap when there is an APC in place (to avoid being dispatched in conditions of fuel scarcity or where their short run marginal costs will not be met), they are nonetheless still able to use price bands to bid their capacity into the market. Because generators were bidding in with zero availability, it then became impossible for NEMDE to automatically schedule generators since it was unknown which generators with a zero availability bid were in fact able to generate at greater than zero. A further issue was that NEMDE was not able to discriminate between generators that had actual fuel scarcity compared with those with high fuel costs. Therefore, overall, NEMDE was unable to co-optimise demand for individual trading intervals. Again, we consider this

---

33 AER NEM Readiness Guide, November 2022 and AER NEM Readiness Checklist.

34 AEMO June 2022 Report, p. 49.

was caused by generators withdrawing capacity in the first instance and not using the available price bands. In response to these issues, to ensure generators were dispatched in the correct trading intervals, AEMO directed generators to be available but then applied constraints so they would not be dispatched until they were needed. When the generators were needed, AEMO removed the constraint and they were dispatched.

AEMO has stated in its report that, to implement this management strategy, AEMO had daily communications with energy constrained scheduled generators to understand physical fuel constraints and associated unit energy limits that could impact future capacity availability. AEMO had a day ahead scheduling team, which endeavoured to indicate to generators the likelihood of directions for the next day by early afternoon the previous day for fuel management and procurement purposes.[35]

Initially the directions issued were primarily to generators in the Queensland region, then moved to New South Wales, South Australia and Victoria respectively on 14, 15 and 16 June 2022, with a peak of almost 5,000 MW of directed capacity across the NEM on 15 June 2022. The daily maximum number of direction-related participant notices issued (110) occurred on 17 June 2022.[36]

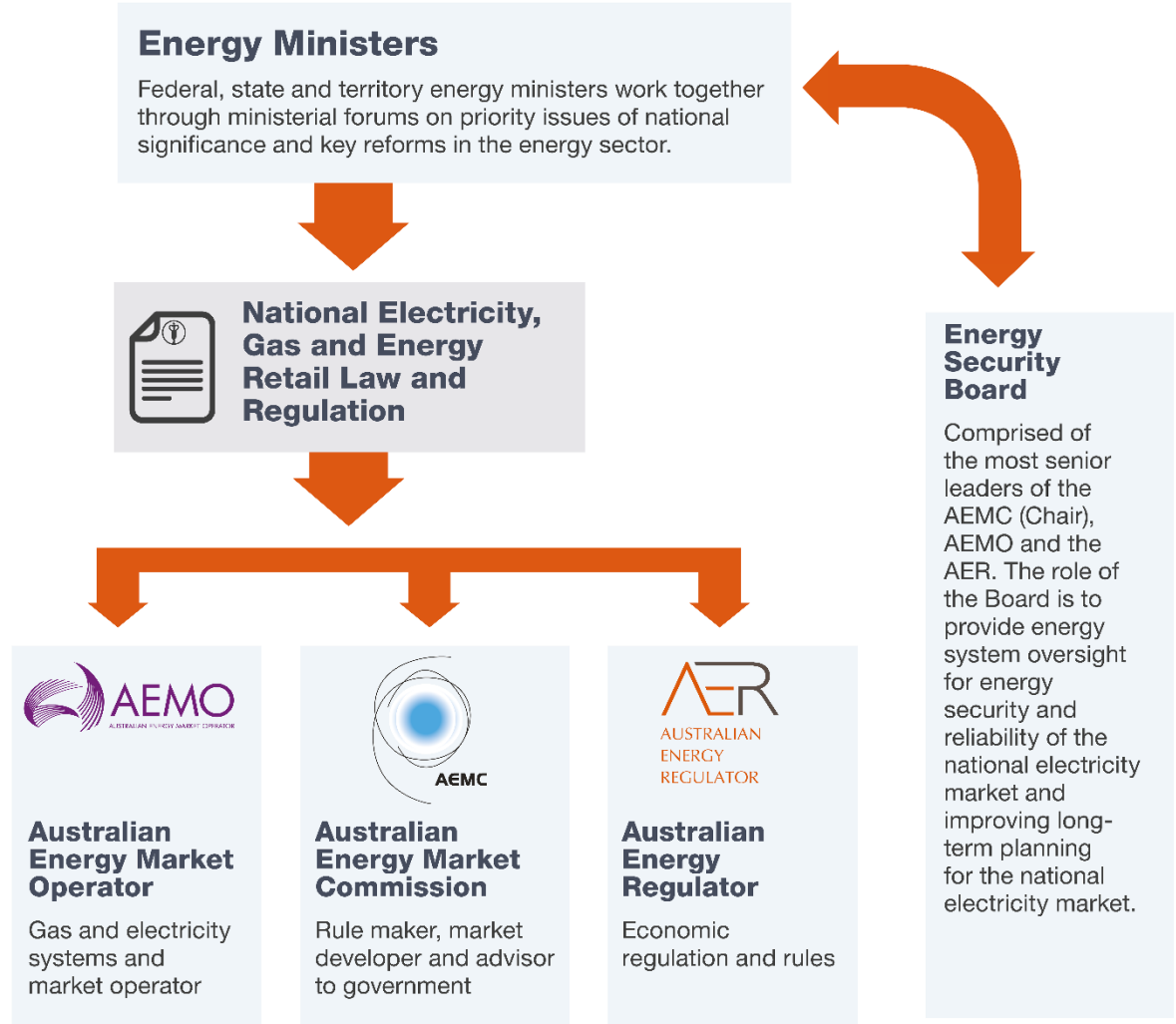
AEMO has further reported that, following the resumption of dispatch pricing on 23 June 2022, all outstanding directions were cancelled and no further directions were issued for the remainder of the suspension period ending at 14:00 on 24 June 2022.[37]

35 AEMO June 2022 Report, p. 29.

36 AEMO June 2022 Report, p. 29.

37 AEMO June 2022 Report, p. 29.

National energy markets and market bodies



Market participants

Reform options for consideration

This final section of our report addresses reform options for consideration.

Our findings and subsequent compliance assessment of the unprecedented circumstances surrounding the June 2022 market event has identified areas where changes could and have been considered to improve the overall effectiveness of the regulatory framework.

Obligations on generators under conditions of market stress

Given our findings regarding clause 4.8.9(c2) that, under the current Rules framework, commercial considerations could arguably be a 'reasonable cause' for generators to cause or contribute to AEMO directions, market bodies, policy makers and Energy ministers may wish to consider, given the availability of compensation, whether power system security should be the priority during times of system stress. This is because the objective of the compensation provisions, which is meant to incentivise 'scheduled generators to supply energy',[38] appears to be insufficient in these circumstances.

There are several ways this could be addressed. One way may be to stipulate that commercial considerations cannot form 'reasonable cause' for the purposes of clause 4.8.9(c2) under conditions of market stress, such as during an administered price period. Another option could be to introduce a positive obligation on generators to continue to offer capacity into the market during actual LOR 2 and LOR 3 conditions during an administered price period. Alternatively, an obligation could be imposed to oblige generators to use available price bands during administered price periods.

The specific advantages and disadvantages of imposing such positive obligations would depend on the nature of the obligation. The benefits might include clarifying or enhancing the significance and effect of LOR notices, spreading the burden of responding more equitably, less intervention required by AEMO and reduction of the chance of market suspension.

By contrast, the disadvantages of imposing a positive obligation might include an increase to regulatory burden and a disincentive to investment, uncertainty (if the obligation is not sufficiently clear), greater need for enforcement and monitoring, and a reduction in flexibility and discretion for AEMO. It would also dilute the statutory market design principles, in particular the commercial freedom for generators to decide how they will operate in the market, because it would be another type of intervention.

We also note that clause 4.8.9(c2), as it currently stands, is not a civil penalty provision. However, under clause 3.12.2(r) of the Rules, in the case of a breach, the AER may apply to the court for a disgorgement order. Such a court order would effectively force the contravener to repay any compensation that had been paid arising from the offending conduct.

While our investigation revealed that there are significant hurdles in establishing contraventions of clause 4.8.9(c2) in these particular circumstances, we will liaise with the

[38] Clause 3.14.5A(a)(1).

AEMC to consider whether clause 4.8.9(c2) should be made a civil penalty provision by way of a Rule change.

Work already underway by market bodies and Energy Ministers

More broadly, we observe that there is much work already underway through the instigation of various rule changes and policy reform proposals, as well as through rule changes already determined since the June 2022 event.[39] For example, we are aware that Energy Ministers have confirmed the development of a Capacity Investment Scheme, designed to drive new renewable dispatchable capacity and ensure reliability.[40] In addition, an orderly exit management arrangement framework is currently being considered which is designed to provide the framework for a NEM-wide approach to the orderly exit of thermal generators.[41]

We also note AEMO has a number of actions completed, underway or planned that include identifying tools and processes needed to cater for energy limitations, and to review processes used for PASA over the medium term, among other things.[42] AEMO has also indicated it will consider the findings and recommendations from this series of events when completing the 2023 General Power System Risk Review.[43]

Temporarily increasing the administered price cap

On 17 November 2022 the AEMC made a determination amending the Rules to temporarily increase the APC.[44]

The 2 key elements are:

- a temporary increase in the APC from $300/MWh to $600/MWh, to be implemented from 1 December 2022 and to be in place until 30 June 2025, when any change to the longer-term setting of the APC will be made following the AEMC's consideration of the Reliability Panel's rule change request
- no temporary change to the cumulative price threshold.

The amendment to the APC seeks to ensure that prices during an administered price period are sufficient to cover the costs of most generators operating under today's market conditions to support normal market operation and settlement.[45]

We note that, in the Reliability Panel's 2022 Reliability standard and settings review final report, the Panel considers that 'there is a material benefit to increasing the APC to minimise

---

39 Such as the AEMC, Enhancing information on generator availability in MT PASA, Rule determination, 18 August 2022. We also note the AEMC, Updating Short Term PASA, Rule determination, 5 May 2022.

40 Media Release, The Hon Chris Bowen MP, Capacity Investment Scheme to power Australian energy market transformation, 8 December 2022.

41 Energy Ministers Communique, 8 December 2022.

42 AEMO June 2022 Report, p. 49.

43 In September 2022, AEMO published its 2023 General Power System Risk Review approach paper. Submissions closed in October. The final report is due by 31 July 2023. AEMO, General Power System Risk Review.

44 AEMC, Amending the administered price cap.

45 AEMC Information Sheet, Amending the administered price cap.

reliance on the compensation regime and reduce additional pass-through costs to consumers'.[46] The APC had not been updated in 14 years.[47]

As indicated above, the rule change to increase the cap is on a temporary basis only, pending the instigation of a rule change by the Reliability Panel.

While temporarily increasing the market cap will not address the issue of generators withdrawing capacity in order to manage their fuel, we consider that it may assist in encouraging generators to continue to operate through normal market dispatch during administered price periods (as it is more likely to cover their costs to run) which in turn will assist AEMO to operate the market and manage security and reliability.

---

46 Reliability Panel, Final report for 2022 Reliability Standard and Settings Review information sheet, p. 3.

47 AEMC media releases Electricity consumers to be further protected under proposed rule change, dated 29 September 2022, and Rule change to help protect consumers against costly blackouts, dated 17 November 2022.

Summary and conclusion

The NEM is currently facing rapid technological transition and a challenging economic environment, which have been highlighted by the June 2022 event. Fuel availability has also evidently become a particular challenge. Addressing these risks requires not only wide-ranging policy reforms, but also massive physical investment.[48]

In the June 2022 event, we found that despite our finding that generators may have had 'reasonable cause' in respect of withdrawing capacity, we consider that their behaviour could be described as reckless as to whether a rebid would significantly contribute to the circumstances causing AEMO to issue a direction. We also found that traders, in formulating their rebids, did not necessarily have regard to forecast LOR notices issued by AEMO and that generators had a 'set and forget' approach to their PASA submissions.

Despite the behaviour of generators being unhelpful in the first instance in withdrawing capacity, we otherwise found that AEMO and generators worked closely together in difficult circumstances to avoid load shedding and to maintain power system security and reliability. More broadly, our investigation revealed good transparency and communication by both AEMO and generators. Lessons from the Black System Event market suspension have been learned and implemented.

We are otherwise pleased with the generators' response to the warning of the AER Chair in the early stages of the June 2022 market event to comply with the Rules, and that they fully cooperated with the AER investigation. However, the AER's investigation did reveal the need for some generators to improve their compliance practices.

With expectations for continued volatility, generation closures, and tight gas and coal supply conditions, market conditions are likely to remain challenging for some time as we navigate this transitional period. Therefore, it is crucial that participants comply with the Rules and provide high-quality and timely information to AEMO to ensure it can maintain a secure and reliable power system.

The AER is continuing to monitor the conduct of market participants and shall consider all potential compliance and enforcement remedies available in relation to any concerning conduct. We will work closely with the relevant market participants around these compliance issues.

---

48 Energy Security Board, Health of the National Electricity Market 2022, p. 5.

Appendix A – Our role

The AER is Australia's national energy market regulator. Among other functions, the AER is responsible for monitoring, investigating and enforcing compliance with obligations under the NEL, National Gas Law, National Energy Retail Law and the respective Rules and Regulations (national energy laws). The enforcement functions and powers of the AER are set out in section 15 of the NEL and are designed to ensure confidence in the market.

In particular, the Rules set out a framework for how the power system should operate, including at times of system stress. This framework is intended to ensure that the roles of relevant participants and the system operator are clear, and the operation of the system is transparent to market participants and stakeholders.

As well as monitoring compliance, the AER has powers to investigate breaches or possible breaches of the national energy laws and to take appropriate enforcement action, such as:

- issuing warning letters
- accepting voluntary undertakings to remedy breaches
- accepting Court enforceable undertakings to remedy breaches
- issuing infringement notices for civil penalty provisions
- instituting Court proceedings seeking declarations, injunctions, penalties and other orders as appropriate.

In determining its enforcement response, the AER assesses the impact of breaches against the objectives of the national energy laws, that is: to promote efficient investment in and efficient operation and use of energy services for the long-term interests of consumers with respect to price, quality, safety, reliability and security of supply of energy.[49]

All obligations in the national energy laws are subject to compliance requirements, but greater weight is given to breaches that have the potential to significantly impact the achievement of the relevant national energy laws objective. The factors the AER takes into consideration when determining what, if any, enforcement response is required are set out in the AER's Compliance and Enforcement Policy.[50]

The AER undertakes its compliance and enforcement roles not only for the National Electricity Objective, but also to ensure confidence in the market and so that participants have clarity about their roles and responsibilities.

---

49 Section 7 NEL, section 23 National Gas Law and section 13 National Energy Retail Law.

50 See AER Compliance and Enforcement Policy, July 2021.

Glossary

Term	Definition
Actual LOR	When the market response to the forecast LOR condition has not been adequate to clear the LOR thresholds and the LOR condition becomes operational reality.
Administered price cap	A price cap specified in clause 3.14.1 of the Rules, which is applied by AEMO to a regional reference price or ancillary service price in times of sustained periods of high prices that exceed the cumulative price threshold.
Administered price period	A period declared by AEMO, in accordance with clause 3.14.2 of the Rules, in which an administered price cap may be invoked.
Administered pricing	The invocation of an administered price cap by AEMO.
AEMC	The Australian Energy Market Commission, which is established by section 5 of the *Australian Energy Market Commission Establishment Act 2004* (SA).
AEMO	The Australian Energy Market Operator Limited (ACN 072 010 327).
AER	The Australian Energy Regulator, which is established by section 44AE of the *Competition and Consumer Act 2010* (Cth).
Available capacity	The total MW capacity available for dispatch by a scheduled generating unit, semi-scheduled generating unit or scheduled load (i.e. maximum plant availability) or, in relation to a specified price band, the MW capacity within that price band available for dispatch (i.e. availability at each price band). For a wholesale demand response unit, subject to clauses 3.8.2A(b), (c), (d) and (e) of the Rules: • the total MW capacity available for dispatch by the wholesale demand response unit (i.e. maximum plant availability) • in relation to a specified price band, the MW capacity within that price band available for dispatch (i.e. availability at each price band).
Black System Event	The period surrounding the state-wide blackout that occurred on the afternoon of 28 September 2016, specifically from 17:16 on 27 September 2016 until resumption of the spot market in South Australia at 22:30 on 11 October 2016.
Capacity	In relation to a generator, the maximum amount of MW electricity available for production.
Central dispatch process	A dispatch process centrally coordinated by AEMO that operates in cycles of 5 minutes to efficiently match the supply and demand of electricity while ensuring system security.
Civil penalty provision	A provision of the National Electricity Law (other than an offence provision) or the Rules that is prescribed by the Regulations to be a civil penalty provision, by which a monetary penalty can be imposed by either a court judgment or by the AER where it has reason to believe a person or body corporate has breached a civil penalty provision and issues an infringement notice.
Compensation	A claim by eligible market participants under clause 3.14.6 of the Rules, for monetary losses incurred during an administered pricing period. Generators are also able to seek compensation when directed by AEMO based on direct costs (clause 3.15.7). The Rules also stipulate that AEMO must pay and recover associated costs not covered by spot prices for participants that are affected by a market suspension (other than those who have been directed) (clause 3.14.5A).
Compulsory examination(s)	When the AER, through a compulsory notice, compels a person to appear before a member of the AER or a specified AER Senior Executive Service employee at a time and place specified in the compulsory notice to give evidence, orally or in writing, and produce documents.
Compulsory notice	A notice issued by the AER in accordance with section 28 of the NEL, section 206 of the National Energy Retail Law, or section 42 of the National Gas Law to a person it believes is capable of providing information, producing a document or giving evidence that the AER requires for the performance or exercise of a function or power conferred on it under the National Energy Retail Rules, National Gas Law, the Rules or NEL.

Term	Definition
	A compulsory notice may be issued by the AER to require the recipient to: • provide information in writing signed by the recipient or competent officer of the recipient within the time and in the manner specified • produce documents to the AER or to a person specified in the compulsory notice • appear before a member of the AER or a specified AER Senior Executive Service employee at a time and place specified in the compulsory notice to give evidence, orally or in writing, and produce documents.
Constraints	A limitation on the capability of a network, load or a generating unit such that it is unacceptable to either transfer, consume or generate the level of electrical power that would occur if the limitation was removed.
Consumers	A person who: 1) engages in the activity of purchasing electricity supplied through a transmission or distribution system to a connection point 2) is registered by AEMO as a Customer under Chapter 2 of the Rules.
Contemporaneous record	A record made in real time in accordance with clause 3.8.22(ca) of the Rules.
Cumulative price	The sum of trading prices across 2,016 consecutive trading intervals (7 days).
Cumulative price threshold	The threshold calculated by the AEMC under clause 3.14.1 of the Rules for the imposition of an administered price cap.
Deficit	The shortfall of electricity supply when compared with the operational demand.
Direct costs	Costs directly incurred by the claimant due to a price limit event.
Direction(s)	If AEMO, or a person authorised by AEMO, requires a Registered Participant to take action as contemplated by clause 4.8.9(a) of the Rules or section 116 of the NEL in relation to scheduled plant or a market generating unit.
Dispatch	The act of initiating or enabling all or part of the response specified in a dispatch bid, dispatch offer or market ancillary service offer in accordance with rule 3.8, or a direction or operation of capacity the subject of a reserve contract or an instruction under an ancillary services agreement or to enable an inertia network service or system strength service as appropriate.
Forecast LOR	LOR condition by which AEMO issues a market notice forecasting a reduced amount of electricity reserves.
Generating unit(s)	The plant used in the production of electricity and all related equipment essential to its functioning as a single entity.
Generation	The production of electrical power by converting another form of energy in a generating unit.
Generator(s)	A person who engages in the activity of owning, controlling or operating a generating system that is connected to, or who otherwise supplies electricity to, a transmission or distribution system and who is registered by AEMO as a Generator under Chapter 2 of the Rules. For the purposes of Chapter 5 of the Rules, the term includes a person who is required or intends to register in that capacity or is a non-registered embedded generator (as defined in clause 5A.A.1) who has made an election under clause 5A.A.2(c) of the Rules.
Hydro generator(s)	A generating unit that uses flowing water to spin a turbine in order to convert kinetic energy to electric energy.
Instruction(s)	If AEMO, or a person authorised by AEMO, requires a Registered Participant to take some other action contemplated by clause 4.8.9(a) of the Rules or section 116 of the NEL.
Late rebidding period	In respect of a trading interval, the period beginning 30 minutes before the commencement of the trading interval.
Load shedding	The deliberate shutdown of power supply to parts of the electricity network to reduce a predetermined volume of electricity usage to protect critical infrastructure, maintain system stability and the supply-demand balance.

Term	Definition
LOR condition	When AEMO determines, in accordance with the reserve level declaration guidelines, that the probability of load shedding (other than the reduction or disconnection of interruptible load) is, or is forecast to be, more than remote.
Market	Any market or exchange conducted by AEMO, notwithstanding a period of market suspension.
Market bodies	Each of AEMO, the AER and the Reliability Panel.
Market cap	The administered price cap specified in clause 3.14.1(a) of the Rules.
Market design principles	The principles set out in clause 3.1.4 of the Rules.
Market participant(s)	A person who is registered by AEMO as a Market Generator, Market Customer, Market Small Generation Aggregator, Demand Response Service Provider, Market Standalone Power Systems Resource Provider or Market Network Service Provider under Chapter 2 of the Rules.
MT PASA submission	The inputs to be prepared in accordance with clauses 3.7.2(c) and (d) of the Rules.
National Electricity Law (NEL)	The National Electricity Law set out in the schedule to the *National Electricity (South Australia) Act 1996* (SA) and applied in each of the participating jurisdictions.
National Electricity Market (NEM)	The wholesale exchange operated and administered by AEMO and the national electricity system.
National Electricity Market Dispatch Engine/NEM dispatch engine (NEMDE)	The software that calculates the optimum economic dispatch of the NEM every 5 minutes, subject to a number of constraint equations that reflect additional physical power system requirements. The software co-optimises the outcome of the energy spot market and the frequency control ancillary services market.
National Electricity Rules (Rules)	The National Electricity Rules made under Part 7 of the National Electricity Law as amended from time to time in accordance with that Part.
Normal dispatch pricing	The determination of spot prices in accordance with clause 3.9.2 of the Rules.
Offer(s)	In relation to generation dispatch, is a notice submitted by a Scheduled Generator or Semi-Scheduled Generator to AEMO relating to the dispatch of a scheduled generating unit or a semi-scheduled generating unit in accordance with clause 3.8.6 of the Rules.
Operational demand	Demand supplied from the national power system (or grid).
Opportunity costs	The value of opportunities foregone by the claimant due to the price limit event as defined in the compensation guidelines.
Over-constrained dispatch	When the marginal price of one or more regions is over the market price cap or below the market floor price due to the added cost of violated constraints.
PASA availability	The physical plant capability (taking ambient weather conditions into account in the manner described in the procedure prepared under clause 3.7.2(g) of the Rules) of a scheduled generating unit, scheduled load or scheduled network service available in a particular period, including any physical plant capability that can be made available during that period, on 24 hours' notice. For a wholesale demand response unit, the maximum MW wholesale demand response available in a particular period, including any wholesale demand response that can be made available during that period, on 24 hours' notice.
Plant	Controllable generating equipment, controllable loads and wholesale demand response units.
Power system	The electricity power system of the national grid including associated generation and transmission and distribution networks for the supply of electricity but excluding regulated Standalone Power Systems, operated as an integrated arrangement.
Power system security	The safe scheduling, operation and control of the power system on a continuous basis in accordance with the principles set out in clause 4.2.6 of the Rules.

Term	Definition
Pre-dispatch	Forecast of dispatch performed one day before the trading day on which dispatch is scheduled to occur.
Pre-dispatch schedule	A schedule prepared in accordance with clause 3.8.20(a) of the Rules.
Price bands	A MW quantity specified in a dispatch bid, dispatch offer or market ancillary service offer as being available for dispatch at a specified price.
Projected Assessment of System Adequacy process (PASA)	The medium-term and short-term processes described in rule 3.7 to be administered by AEMO.
Publish/publication	A document is published by the AER if it is: • published on the AER's website • made available for public inspection at the AER's public offices • in the case of a document inviting submissions from members of the public – published in a newspaper circulating generally throughout Australia. In Part B of Chapter 5 of the Rules, a document is published by the Distribution Network Service Provider if it is published on the Distribution Network Service Provider's website. Otherwise, a document is published by someone else if it is made available to Registered Participants electronically.
Rebidding and Technical Parameters Guideline	The guideline published by the AER in accordance with clause 3.8.22(f) of the Rules as in force from time to time and includes amendments made in accordance with the aforementioned rule.
Rebids	A variation to a bid or offer made in accordance with clause 3.8.22(b) of the Rules.
Region	An area determined by the AEMC in accordance with Chapter 2A of the Rules, being an area served by a particular part of the transmission network containing one or more major load centres or generation centres or both.
Reliability	The probability of a system, device, plant or equipment performing its function adequately for the period of time intended, under the operating conditions encountered.
Reliability and Emergency Reserve Trader (RERT)	A function conferred on AEMO to maintain power system reliability and system security using reserve contracts.
Reliability Panel	The panel of persons established by the AEMC under section 38 of the NEL.
Reserves	In relation to the NEM this is spare capacity, over and above the level of electricity demand that is forecast at any given time, which assists with maintaining power system reliability.
Rule change request	A request made to the AEMC under section 91 of the National Electricity Law requesting changes to the Rules.
Rule change(s)	In relation to the Rules, is an amendment made to the rules in accordance with Part 7 of the National Electricity Law.
Rules	The rules called the National Electricity Rules made under Part 7 of the National Electricity Law as amended from time to time in accordance with that Part.
Scheduled generating unit(s)	A generating unit so classified in accordance with Chapter 2 of the Rules. For the purposes of Chapter 3 of the Rules (except clause 3.8.3A(b)(1)(iv)) and rule 4.9, two or more generating units referred to in paragraph (a) that have been aggregated in accordance with clause 3.8.3.
Scheduled generator(s)	A generating system comprising scheduled generating units.
Short-run marginal cost	The additional cost of producing one more unit of output from an existing generation plant.
Spot market	The spot market established and operated by AEMO in accordance with clause 3.4.1 of the Rules.
ST PASA submission	The inputs to be prepared in accordance with clauses 3.7.3(d) and (e) of the Rules.

Term	Definition
Statutory functions	In relation to AEMO, the functions or powers conferred under: • the NEL or the Rules • the National Gas Law, the National Gas Rules, or related subordinate legislation.
Supply	The delivery of electricity, fuel or other resources.
Suspended	In relation to regions, a region in which the spot market is suspended in accordance with clause 3.14.4 of the Rules.
Timetable	The timetable published by AEMO under clause 3.4.3 of the Rules for the operation of the spot market and the provision of market information.
Trader(s)	A person who is registered by AEMO as a Trader under Chapter 2 of the Rules.
Trading day(s)	The 24-hour period commencing at 4:00 am (AEST) and finishing at 4:00 am on the following day.
Trading interval(s)	Refers to the 5-minute trading cycles in which NEMDE co-optimises dispatch bid, dispatch offer or market ancillary service offers.
Unit	Refer to entry for ‘generating unit(s)’.
Value of trade	The price per unit, multiplied by the quantity of electricity traded
Wholesale exchange	The wholesale exchange for electricity operated and administered by AEMO under the NEL and the Rules.
Wholesale prices	The trading prices of the NEM.
Wholesale spot market	Refer to entry for ‘spot market’.