

RULE

Australian Energy Market Commission

## **RULE DETERMINATION**

# NATIONAL ELECTRICITY AMENDMENT (ENHANCEMENT TO THE RELIABILITY AND EMERGENCY RESERVE TRADER) RULE 2019

## PROPONENT

AEMO

2 MAY 2019

## **INQUIRIES**

Australian Energy Market Commission PO Box A2449 Sydney South NSW 1235

E aemc@aemc.gov.au T (02) 8296 7800 F (02) 8296 7899

Reference: ERC0237

## CITATION

AEMC, Enhancement to the Reliability and Emergency Reserve Trader, Rule determination, 2 May 2019

## ABOUT THE AEMC

The AEMC reports to the Council of Australian Governments (COAG) through the COAG Energy Council. We have two functions. We make and amend the national electricity, gas and energy retail rules and conduct independent reviews for the COAG Energy Council.

This work is copyright. The Copyright Act 1968 permits fair dealing for study, research, news reporting, criticism and review. Selected passages, tables or diagrams may be reproduced for such purposes provided acknowledgement of the source is included.

5

6

**Rule determination** Enhancement to the Reliability and Emergency Reserve Trader

## SUMMARY

- 1 This final determination sets out a series of changes to the National Electricity Rules (NER) that will provide the Australian Energy Market Operator (AEMO) with the flexibility and appropriate discretion when using the Reliability and Emergency Reserve Trader (RERT or emergency reserves) to manage the transition in the power system, while minimising costs to consumers, and in a transparent manner.
- 2 The RERT is the National Electricity Market's (NEM) strategic reserve and has formed part of the reliability framework since the start of the NEM. The RERT allows AEMO to procure 'standby' emergency reserves when a supply shortfall is forecast; and to date, has typically been used when extreme heatwaves are predicted. The RERT is used as a last resort to help avoid larger and more widespread blackouts from occurring.
- 3 The final rule enhances the existing RERT framework, by enabling AEMO to use the RERT to meet the reliability standard. The final rule provides AEMO with the flexibility it needs to meet the operational challenges arising from the transition that is currently occurring in the NEM, which are making it harder to manage the power system, while containing the increased costs of doing so. These operational challenges are due to a number of factors including the changing nature of the power system, but also extreme weather events. These challenges mean that AEMO may need to do things differently to discharge its responsibilities for reliability.
- 4 The RERT has been used more frequently in recent years than in the past. There are concerns that this may continue for the next few years, as the NEM transitions. Some of these concerns will likely be mitigated by the Retailer Reliability Obligation (RRO) coming into effect on 1 July 2019, as well as other reforms that have either recently been put in place or that are currently underway.
  - The final rule enhances flexibility for AEMO in procuring and using emergency reserves by:
    - linking the RERT procurement trigger and volume to the reliability standard, which
      provides transparency to market participants of when and how RERT will be used
    - providing flexibility to AEMO as to how many emergency reserves it can procure since AEMO - as is appropriate for the system operator - has flexibility and discretion as to how the reliability standard is incorporated in its day-to-day operations, particularly through its modelling and forecasting of the risk to the power system
    - increasing the procurement lead time from 9 to 12 months, which will broaden the pool
      of RERT providers, allowing emergency reserves to be procured at lower cost for
      consumers. It also promotes consistency with the retailer reliability obligation.
    - Alongside these changes, there also needs to be recognition of the impacts of the RERT on the wholesale market, market participants and consumers. As a result, the final rule also:
    - clarifies the out of market provisions so that reliability is more likely to be delivered at minimal costs to consumers, including by reducing the risk of gaming by reserve providers

i

7

**Rule determination** Enhancement to the Reliability and Emergency Reserve Trader

- provides additional guidance to AEMO when entering into emergency reserve contracts around the appropriate cost of these
- aligns the cost of emergency reserves with, where possible, those customers who caused the need for the RERT
- increases transparency and reporting, to assist market participants and consumers in planning for RERT costs.

The RERT is one element of a broader framework for reliability in the NEM. Market participants operating in a competitive environment, as well as the system operator, all have a role in facilitating reliable outcomes in the NEM. Reliability outcomes in the NEM are largely driven by market participants making investment and operational decisions, taking into account expectations and information that is provided on future demand and supply. Generators and retailers have strong financial incentives to provide in-market reserves in order to support the operation of the power system in a reliable manner.

- 8 The final rule enhances and improves the RERT, by embedding it clearly within the reliability framework, which consists of the reliability standard and settings, the retailer reliability obligation and a suite of information processes that underpin investment and operational incentives that drive reliability.
- 9 The reliability framework is based around the reliability standard. Crucially, this is not set at zero per cent; the current reliability standard is 0.002 per cent expected unserved energy (USE). It is AEMO's responsibility to incorporate the reliability standard within its day-to-day operation of the market, by incorporating it into its modelling and forecasting of the risk to the power system and to inform the market of any projection that the reliability standard will not be met.
- 10 As part of the broader reliability standard, the RERT is a safety net, a last resort mechanism to use when the other elements have been exhausted. It is not a primary mechanism for meeting reliability. This is the role of the market. This is further reinforced by the introduction of the retailer reliability obligation, which builds on existing spot and financial market arrangements in the NEM to facilitate investment in dispatchable capacity and demand response in order to support the reliability of the power system.
- 11 Of course, as the power system changes, what AEMO does and how it discharges its responsibility for reliability will necessarily change over time. The NER give AEMO the flexibility to evolve and adapt its approach for how it operationalises the reliability standard in order to account for those changes.
- 12 There is no change to the reliability standard as part of this final rule. Questions about the reliability standard and what it should be are dealt with by the Reliability Panel as part of its regular review, which considers the reliability standard in the context of the broader reliability framework. That review is separate from the consideration of the tools that the system operator has to maintain reliability, such as the RERT.
- 13 A key determination of the Panel's thinking is estimates of the value of customer reliability (VCR). The AER is currently undertaking a survey of the VCR in the NEM, with numbers available at the end of the year. The Panel may consider turning its mind to the reliability

ii

L

standard and settings again, after the VCR review has been finalised. In addition, stakeholders could raise issues directly with the Panel if at any time if there is an informed position that consumers value reliability more than reflected in the reliability standard.

14 The final rule is made in response to a rule change request from AEMO. The Commission's final rule is a more preferable rule. The final rule includes a number of changes from the draft rule, all of which were made in response to stakeholder feedback.

# Why is there a need to change the current Reliability and Emergency Reserve Trader framework?

- 15 The RERT is an existing intervention mechanism that allows AEMO to contract for additional, emergency reserves such as generation or demand response that are not otherwise available in the market. They are additional reserves because they are in addition to the "buffer" that is made available by the market as part of the usual operation of the power system. The RERT is an important part of the regulatory framework, allowing AEMO to use a safety net at times when a shortfall in market reserves is forecast. These additional reserves are commonly referred to as "emergency reserves" or "strategic reserves" since they are used as a last resort when the market hasn't otherwise provided reserves to reduce the likelihood of blackouts, typically during periods when the demand-supply balance is tight, for example, summer.
- 16 There are different types of emergency reserves, based on how much time AEMO has to procure the RERT prior to the reserve shortfalls occurring: long-notice (between ten weeks and 12 months ahead of a projected shortfall under the final rule); medium-notice (between ten weeks' and seven days' notice of a projected shortfall); and short-notice RERT (between seven days' and three hours' notice of a projected shortfall).
- 17 Typically, AEMO sets up RERT panels of providers for both the medium-notice and shortnotice RERT. AEMO can form a RERT panel at any time, even if market reserves are sufficient and there is no projected shortfall. These RERT panels allow AEMO to have potential emergency reserves providers ready to go in case it needs to enter into an emergency reserve contract. It also allows AEMO to have pre-negotiated some of the more complicated aspects of the contracts, so that it is easier and quicker for it to enter into contracts when it needs to.
- 18 However, AEMO can only *enter* into an emergency reserve contract when it has identified a projected shortfall. It can then seek offers from RERT panel members.
- 19 Some form of a regulatory mechanism that allows the operator to contract for emergency reserves has existed since the start of the NEM. Prior to 2017, AEMO had only entered into RERT contracts three times and it had never been dispatched. This changed in 2017, when AEMO entered into a number of emergency reserve contracts. Since that time, AEMO has used the RERT a number of times, including November 2017, January 2018, and most recently in January 2019.
- 20 This increase in use of the RERT reflects the changing system needs, including a growing proportion of variable renewable generation, an aging fleet of thermal generation, a tightening supply-demand balance, peakier demand and higher temperature peaks. The work

L

that AEMO has done, as well as the Commission's analysis in the *Reliability Frameworks Review*, have highlighted a number of issues with the current Rules framework for emergency reserves. It is important that the emergency reserves framework is fit for purpose.

Further, a necessary consequence of using emergency reserves more frequently is that there are costs associated with the RERT that have made their way onto consumer bills. Consumers, in particular, have expressed concerns with the lack of transparency about the procurement and use of emergency reserves and its impact on electricity bills. Consumers have also expressed concerns about whether the current processes have resulted in consumers paying increased costs for the same amount of reserves (in-market or emergency) that would have been there anyway. In addition, there have been concerns about the high costs of emergency reserves and low predictability of these costs associated with the use of the RERT to date. The Commission considers that it is important to address these concerns in order to address affordability concerns as a key issue for all consumers.

22 Therefore, the Commission considers that there is a need to enhance the emergency reserve framework to provide AEMO with the flexibility it needs to meet the operational challenges arising from the transition, while containing the costs of doing so.

#### **RERT** is part of a broader context

- It is also important to recognise the broader context and consequences of the changes occurring in the energy market and power system. While the NEM has historically operated well within the reliability standard, providing sufficient supply to date, supply-demand conditions have tightened in recent years. Commercial investment in new or existing dispatchable generation is, however, being challenged by uncertainty over the mechanisms that will be used to implement government policies. Coupled with increasing temperatures that can drive demand to peak when power systems are already under strain, confidence in there being adequate future generation capacity that can meet changing system needs is being questioned. This results in increased focus and pressures on the industry, from the system operator through to market participants and consumers.
- 24 The Commission is cognisant of these changes and pressures, and has been working with AEMO as a priority to keep the rules current and responsive so that AEMO can manage the changing operational dynamics, particularly given changes to the way the system responds to feasible shocks such as extreme weather events. For example, AEMO have been making improvements to their forecasting processes, and the Commission made a number of recommendations to improve transparency of these processes in our *Reliability frameworks review.* In addition, the ESB, through the RRO, has also introduced new forecasting reporting requirements aimed at improving transparency of the system operator's forecasts.
- 25 However, not all of the changes in the market can be addressed by the RERT, which is only one part of the market and regulatory arrangement. For example, emergency reserves cannot address distribution network issues or outages. Nor can emergency reserves be used to manage changing outcomes (such as increased volatility) in the wholesale market or bring in more investment into the wholesale market. Technical system security challenges are also distinct from reliability concerns and are often very complex, and are better addressed

through targeted regulations. Similarly, investment uncertainty needs to be addressed through the development of stable regulatory mechanisms that can accommodate changing policy objectives. On the other hand, using emergency reserves that exist as a safety net for when the market runs out of reserves for the wrong purpose would carry high costs for electricity consumers.

- We are working with the Energy Security Board (ESB), the Reliability Panel, the Australian Energy Regulator (AER), AEMO and stakeholders to help identify issues and targeted, least cost solutions for these challenges, and then deliver the required tools – through a series of rule changes that provide the right incentives, obligations and safety nets.
- 27 Some of the work already underway to assist with reliability outcomes includes the RRO, which will require companies to hold contracts or invest directly in dispatchable energy to meet peak demand. The RRO is designed to incentivise retailers, on behalf of their customers, to support the reliability of the power system through their contracting and decisions. The RRO will incentivise more reserves into the market. If the RRO is triggered, retailers will be required to enter into contracts, which will have the aim of unlocking new investment, improving liquidity and increasing demand response. This will increase market reserves.
- 28 In addition, the Commission is also progressing three rule change requests that are aimed at facilitating wholesale demand response in the NEM. Such changes will promote investment in wholesale demand response capability and capacity, again increasing in-market reserves, further promoting reliability of the system.

#### How do emergency reserves fit into the overall reliability framework?

- 29 Reliability means that the power system has an adequate amount of capacity (generation, demand response and transmission capacity) to meet consumer needs. A reliable power system therefore requires adequate investment and disinvestment as well as appropriate operational decisions, so that supply and demand are in balance at any particular point in time.
- 30 The core objective of the existing reliability framework in the NEM is to deliver desired reliability outcomes through market mechanisms to the largest extent possible. In a reliable power system, the expected level of supply in the market will include a buffer, known as inmarket reserves. Expected supply will be greater than expected demand. In the event that the supply / demand balance tightens, spot and contract prices would rise, which will inform operational decisions and provide an incentive for entry and expansion, addressing any potential reliability problems as or before they arise. This allows the actual demand and supply to be kept in balance, even in the face of shocks to the system.
- 31 The NER contains the reliability standard for the NEM, currently at 0.002 per cent expected USE. The reliability standard is set every four years following a review by the Reliability Panel. The Panel is comprised of members who represent a range of participants in the NEM, including large and small energy users, generators, network businesses, retailers and AEMO.
- 32 Crucially, the reliability standard is not zero per cent since this would be too costly for consumers. The reliability standard represents a trade-off between the prices paid for

electricity and the cost of not having energy when it is needed: increasing levels of reliability involves increased costs.

As system operator, AEMO operates the system to meet the reliability standard. For example, it publishes a range of long-term forecasts in its Electricity Statement of Opportunities as to whether or not the reliability standard is projected to be met in the long-term. In the medium-term, AEMO models the power system through its medium-term projected assessment of system adequacy (PASA)<sup>1</sup> to probabilistically project whether the expected USE (i.e. a probability-weighted average across a number of scenarios) for a given year, in a given region, exceeds 0.002 per cent. The expected values of USE outcomes are proportional to their likelihood of occurring i.e. events with a high probability of occurring are given more weight than events with a low probability of occurring. An expected shortfall, relative to the reliability standard, is termed a low reserve condition. AEMO provides all this information to the market to allow the market to respond to what it projects could be a future shortfall in reserves.

Forecasting processes such as the medium-term PASA allow AEMO the flexibility to change its reliability assessments based on new information, including information about generation availability (e.g. whether a generator is out on maintenance or not) and changes in weather conditions. Participants are required to update the information they provide to AEMO every week and AEMO may change its inputs (e.g. its demand forecasts or its forced outage rates) if required as it learns new information – including updated weather conditions from the Bureau of Meteorology. AEMO updates the medium-term PASA weekly, using the latest available information. This makes sure that market participants, and AEMO, always make decisions based on the latest available and more accurate information.

- 35 In the short-term (pre-dispatch and short-term PASA), AEMO operationalises the reliability standard through lack of reserve (LOR) declarations, a deterministic approach. In this case, AEMO forecasts the level of reserves that are required to be in the market (i.e. MW required). This level is at least the size of the largest likely gap in available capacity, or larger to take into account forecasting uncertainty (e.g. that there will be a margin of error in any assumptions that feed into the modelling). If the forecast amount of reserves available falls below the LOR2 level, then AEMO considers this to be a breach of the reliability standard and informs the market of this, expecting a response. This approach allows AEMO even more flexibility to incorporate changes occurring in the power system, or external changes such as the weather forecasts. It gives AEMO the ability to target a higher level of reliability in the short term, in order to keep the power system reliable. The short-term demand and supply balance is updated every two hours, using the latest available information.
- 36 If market participants do not respond to an expectation from AEMO that the reliability standard will not be met, by making more reserves available, then AEMO may intervene in the market through using the RERT or clause 4.8.9 instructions or directions. Intervention by

<sup>1</sup> The Commission has received two rule change requests with respect to the medium-term PASA. See https://www.aemc.gov.au/rule-changes/improving-mt-pasa-transparency-and-accuracy and https://www.aemc.gov.au/rulechanges/extension-mt-pasa-duration

procuring emergency reserves under RERT can occur across a number of timeframes:<sup>2</sup>

- To the extent that low reserve conditions are being forecast, AEMO can procure emergency reserves up to one year out, under the final rule.
- As forecasts move closer to real time and the risks of reserve shortfalls become more accurate, AEMO can use medium-term (between ten weeks and 7 days ahead of a projected shortfall) and short-term (up to 7 days ahead of a projected shortfall) to procure RERT resources.





### **Overview of the final Rule**

The final rule enhances the RERT framework, by embedding it clearly within the reliability framework, providing AEMO with the necessary flexibility around how it determines the risk of reserve shortfalls; and how and when to purchase standby electricity supplies for events like extreme heatwaves, all while keeping costs to consumers as low as possible. The final rule makes a number of changes to the draft rule, in response to stakeholder feedback, most notably in relation to the out-of-market provisions. Specifically, the final rule:

Е

<sup>2</sup> The Commission is currently examining the intervention framework. See https://www.aemc.gov.au/market-reviewsadvice/investigation-intervention-mechanisms-and-system-strength-nem

- Clarifies how the RERT the NEM's safety net fits into the broader reliability framework by directly linking the RERT procurement trigger and volume to the reliability standard. Under the final rule, AEMO can procure emergency reserves when it forecasts a breach of the reliability standard and has made a declaration under the LOR or low reserve condition (LRC) framework. As system operator, AEMO incorporates the reliability standard within its day-to-day operation of the market, e.g. by providing information to the market as to whether or not the reliability standard is expected to be met. The final rule also sets the amount of emergency reserves the procurement volume to an amount that AEMO reasonably expects is required to meet the gap identified by an expected breach of the reliability standard, giving AEMO flexibility standard (through the LRC and LOR declarations) limits the misallocation of reliability risks, in terms of how they are managed in the NEM. At the same time, the final rule recognises the practical limitations and challenges of emergency reserves, and incorporates some flexibility for AEMO to make sure that it can procure enough to meet the gap.
- Extends the maximum procurement lead time for emergency reserves from nine to 12 months, allowing AEMO to procure emergency reserves through the RERT mechanism up to a maximum of 12 months ahead of an identified shortfall, which will:
  - broaden the pool of potential RERT providers and therefore potentially reduce costs associated with the RERT
  - create consistency with the lead time under the RRO that is currently under development.
- Clarifies the out-of-market provisions to make it clear that the wholesale market is the primary means by which reliability is delivered and that incentives to invest in market reserves need to be preserved, so that costs of reliability are minimised for consumers. The clarified provisions include:
  - that scheduled generation or scheduled load which has been in the market for 12 months prior to signing a RERT contract cannot provide emergency reserves through the RERT
  - that unscheduled generation or unscheduled load capacity cannot be in the wholesale market for the trading intervals to which their contract relate
  - that participants are required to comply with the above provisions. This provides increased flexibility for how these out of market provisions apply, increasing the amount of providers that can provide RERT compared to the draft rule.
- Introduces an additional RERT principle to provide additional guidance on RERT costs, namely that they should not exceed the average VCR. This is to recognise that the costs of emergency reserves should be less than the costs of involuntary load shedding.
- Improves the cost recovery process such that costs associated with emergency reserves are recovered, where possible, from those consumers who contributed to the need for the RERT, in the region in which the emergency reserves were used. The costs associated with the direct and immediate activation of RERT costs (e.g. usage or activation charges) will be recovered in proportion to market customers' consumption over the period in

38

**Rule determination** Enhancement to the Reliability and Emergency Reserve Trader

which the RERT resource is activated. This will provide an incentive for consumers to minimise their consumption of energy at times the RERT may be required, in order to minimise RERT costs. All other costs associated with the procurement of emergency reserves (e.g. availability costs) will be recovered in proportion to market customers' consumption during the billing periods in which payments were made, over the length of the contract. These costs are recovered as broadly as possible so as to be non-distortionary.

- Increases and enhances the transparency and reporting requirements that are associated with the RERT in order to better inform market participants, policy makers, consumers and other interested parties about the costs of the RERT, and what is driving the use of the RERT in order to guide these parties to make more informed operational and investment decisions, as well as to better budget and plan for RERT related charges. The increased transparency arrangements include:
  - AEMO publishing a quarterly RERT report, if necessary due to the addition of new information, covering both forward-looking (indicative costs of emergency reserves, and analysis of any procurement of emergency reserves); and backward-looking (updated emergency reserve costs and volumes, forecasts that indicated RERT intervention was required, impact on market reliability)
  - AEMO publishing a report within five business days of the dispatch / activation of the RERT, detailing preliminary estimated RERT costs and estimated volumes of emergency reserves dispatched/activated
  - AEMO to maintain a methodology report, explaining how it determined the amount of emergency reserves to procure, as part of its RERT procedures.
- Allowing AEMO to use any emergency reserves procured to be dispatched in order to manage power system security, where feasible.
- An overview of the changes, compared to the current arrangements, AEMO's proposal and the draft rule is provided at the end of this summary.

#### The reliability standard remains appropriate

- 39 The reliability standard is not set at zero per cent expected USE. In simple terms, the reliability standard requires there be sufficient generation and transmission interconnection in a region such that at least 99.998 per cent of forecast total energy demand in a financial year is expected to be supplied. In other words, the reliability standard implies that some load shedding (0.002 per cent and below) is acceptable when considering the costs that would be involved in trying to eliminate USE between 0.002 per cent and zero.
- 40 It is *expected* USE since the standard is measured as the weighted-average across a wide range of possible outcomes that could lead to USE, where the weights are the probabilities (or likelihood) that USE will occur. For example, extreme weather events tend to occur rarely, and are therefore weighted based on their likelihood of occurring. Conversely, average events are weighted more highly given, by definition, they are more likely to occur.
- 41 In operating the system to meet the reliability standard, AEMO has the flexibility in how it uses its forecasting processes to implement the reliability standard in its day-to-day activities.

ix

It does so through its Reliability Standard Implementation Guidelines, where AEMO explains exactly how it determines if the reliability standard is breached or not, through its different forecasting and information provision, and modelling processes. These are AEMO's responsibility to change, and amend, as it sees appropriate.

- 42 Some of AEMO's concerns raised in relation to the RERT in its rule change request related to the appropriateness of the reliability standard – in particular whether the reliability standard adequately captures community expectation of how risks now facing a changing power system are managed and how the reliability standard deals with an increasingly peaky system. Given these views, the Commission has considered the appropriateness of the reliability standard in this rule change request. It sought advice from the Reliability Panel and also engaged Brattle to review risk management approaches in reliability frameworks.
- 43 The Commission considers that the reliability standard is still appropriate; however, recognises that how it is operationalised may need to change. In considering the appropriateness of the reliability standard, as noted above, a non-zero reliability standard is crucial because of the trade off between affordable power and the cost of not having energy when it is needed. Not only could it be prohibitively expensive to try to maintain a 100 per cent level of reliability, practically, it is impossible as there will always be the possibility some unlikely combination of events could occur such that there is insufficient supply to meet demand.
- 44 This is why the reliability framework is based on a reliability standard that is not 100 per cent. Importantly, there is one reliability standard in the NEM - which provides signals to the market as to the level of investment required. The RRO is consistent with this, and is only triggered once a breach of the reliability standard is identified in order to further promote reliability through market incentives.
- 45 The Commission agrees with AEMO that the nature of the system is changing. The changing characteristics of the generation fleet and the increase in extreme weather events make the power system less stable, more volatile and difficult to operate. This in and of itself does not necessarily suggest that the reliability standard is no longer appropriate. However, it does suggest that the way the power system is operated to meet the standard may need to change.
- 46 Some stakeholders have also continued to support the concept of standing emergency reserves, whereby AEMO would procure emergency reserves on an ongoing basis or through multi-year contracting.
- 47 The Commission considers that, on balance, standing emergency reserves would not be appropriate. While allowing for standing reserves (where reserves could be procured for multiple years at a time) could potentially result in cheaper emergency reserves being provided, the Commission considers that the increased costs for consumers would outweigh these potential benefits since:
  - Consumers would pay for emergency reserves every year regardless of whether or not the emergency reserves are required – thereby increasing electricity costs.

L

48

**Rule determination** Enhancement to the Reliability and Emergency Reserve Trader

In addition, allowing standing reserves would likely disincentivise investment in all forms
of generation (and demand response) in the market which would lead to higher
wholesale market prices – further increasing costs to consumers.

The Commission recognises that some jurisdictions consider there needs to be interim measures in place in order for them to have higher levels of emergency reserves to assist in managing the system as the transition takes place. In particular, the Commission understands that some jurisdictions have concerns around the upcoming summers, due to the lack of investment in dispatchable capacity occurring in their regions. Some jurisdictions have suggested that it would be beneficial to have strategic reserves, in order to minimise the risk of any load shedding occurring during this transition period, over the next couple of summers.

- 49 The Commission is continuing to work with jurisdictions as well as the ESB, the Reliability Panel, consumers, AEMO and market participants to consider ways in which these concerns can be addressed. Some of this work is already under way as mentioned above, including the retailer reliability obligation which will be in place on 1 July 2019; as well as the rule change requests that the Commission is currently considering how to facilitate wholesale demand response. Both of these are focussed on increasing the level of in-market reserves, which should minimise the use of emergency reserves. In addition, stakeholders could raise issues directly with the Reliability Panel at any time if there is an informed position that consumers value reliability more than reflected in the reliability standard.
- 50 In addition to the above, there are a number of other options for jurisdictions to have more emergency reserves if they consider these are needed, particularly in the short-term. This includes jurisdictions providing funding to emergency reserve providers to sit on, and so be available through the RERT panel, or by participating in emergency reserves themselves, e.g. by purchasing capacity that is then offered into RERT, or by subsiding the costs of participating in the RERT for participants.

# AEMO has the flexibility to change the operationalisation of the reliability standard

- 51 The Commission considers that the current framework has built-in flexibility which gives AEMO the flexibility to accommodate changes that occur in the market, such as changing probabilities associated with tail risks and updating assumptions and inputs. AEMO - as is appropriate for the system operator - has flexibility and discretion as to how the reliability standard is incorporated in its day-to-day operations, particularly through its modelling and forecasting of the risk to the power system.
- 52 While the reliability standard is in the NER, the way that it is operationalised, i.e. how it is implemented day-to-day, is AEMO's responsibility. AEMO does so through its forecasting and modelling processes, using inputs and assumptions to project expected USE figures up to 10 years ahead. The inputs used in the process incorporate information provided by market participants, as well as AEMO's own forecasts and assumptions based on their expertise. Assumptions and inputs, and how these are incorporated, are typically developed by AEMO in consultation with industry.

L

58

**Rule determination** Enhancement to the Reliability and Emergency Reserve Trader

53 The rules do not prescribe how AEMO is to operationalise the reliability standard - it is up to AEMO, through consultation with industry, to create the methodology, and update its methodology, inputs and assumptions as the power system changes, including to take into account extreme weather events. Inputs such as demand and intermittent generation, and assumptions such as forced outage rates of generators are carried out by AEMO. AEMO has the flexibility to change those inputs and assumptions if the changes in the power system warrants it.

- 54 For example, if AEMO considers that a more peaky system has changed the underlying distribution of USE outcomes, it could change the weighting of some of the extreme outcomes (e.g. a one-in-ten year outcome) accordingly, through consultation of the Reliability Standard Implementation Guidelines (RSIG) with industry. It could also adjust its forced outage rates, to reflect an increasing number of unplanned outages (if that is the case), or change the way it forecasts demand to better capture extreme weather events.
- 55 In addition, the lack of reserve (LOR) declaration framework which operates in the shortterm, is not directly linked to the expected USE metric. Moreover, this was recently changed to incorporate forecasting uncertainty, allowing errors with temperature or generation availability to be captured in AEMO's modelling. The final rule preserves this flexibility for AEMO, given that flexibility continues to be important to make sure that the reliability framework remains fit for purpose in the changing environment.
- 56 The reliability framework establishes that AEMO should target zero load shedding in realtime, and gives it a number of tools to manage this, including tools to manage extreme events. If AEMO forecasts that there are not enough reserves in the market in real-time, and there is an insufficient response from the market to provide additional reserves, and that there are no reserves procured or available through RERT, then these extreme events are managed through rotational load shedding.
- 57 Rotational load shedding occurs through AEMO directing networks to reduce load by turning power off to some areas to maintain balance in the system. It is called rotational load shedding because the outages for consumers are typically kept to about 30-60 minutes, with load shedding rotated between suburbs and regions, based on a priority list by each jurisdiction. Typically, lines supplying critical infrastructure (such as hospitals) and the CBD are exempt from rotational load shedding. While rotational load shedding is regrettable because of the impact on the customers affected, its objective is to avoid an even wider loss of supply, or even an extreme grid shut down. To avoid the rarity of rotational load shedding (the recent events being the third time rotational load shedding has been used in the NEM for reliability purposes) would incur significant costs that consumers have advised that they are unwilling to pay.

#### Benefits for the long-term interests of consumers

The final rule promotes reliability of the power system, while minimising costs for consumers. The final rule allows AEMO to procure emergency reserves from outside the market that can be used as a last resort in order to minimise the chances of load shedding for consumers. This promotes the likelihood that consumers will experience a reliable supply. However, the final rule also seeks to balance the trade-offs of a more reliable system, with the costs

associated with reliability. The final rule does this by clearly linking the procurement decision to the reliability standard. As noted above, the reliability standard is reviewed by the Reliability Panel at least every four years, and they seek to strike a balance between having enough generation capacity to cover almost all scenarios, and keeping costs as low as possible for consumers.

59 In addition, the final rule seeks to increase the number of reserve providers available to AEMO by increasing the procurement lead time from nine to 12 months. This will also give AEMO a longer period of time to enter into reserve contracts, which should reduce the costs associated with emergency reserves. This needs to be balanced against the potential the longer lead time has to increase market distortions, and so the final rule strengthens the outof-market provisions, as well as introducing an additional RERT principle aimed at minimising cost. These changes should also minimise costs for consumers associated with emergency reserves.

60 Finally, stakeholders have raised concerns around the transparency of RERT events, and the emergency reserve framework more broadly. For example, they have expressed concerns around the information provided to the market when AEMO uses RERT — particularly in 2017-18 as it was the first time emergency reserves were ever dispatched. The final rule addresses these concerns by building on existing reporting requirements to introduce new and enhanced requirements so that all interested parties have access to clear, timely and meaningful information to help them manage operational and investment decisions.

#### Interaction with the Retailer Reliability Obligation

- 61 The Commission has been working with the ESB on the development of the rules to give effect to the RRO. Under the RRO, if a gap that was identified three years out still persists one year out, then AEMO may commence procurement of emergency reserves at T-1 (i.e. 12 months ahead of the gap) through the RERT framework to address the remaining gap, with costs to be recovered through the Procurer of Last Resort cost recovery mechanism.
- 62 Where relevant in this determination, the Commission discusses the interactions between the RRO and this rule change.

#### Implementation

- 63 Prior to the final rule commencing, two key documents will need to be revised:
  - 1. The Reliability Panel will need to update its RERT guidelines.
  - Once the Panel has updated its guidelines, AEMO will need to update its RERT procedures.
- 64 Consistent with the relevant consultation processes stipulated by the NER, via transitional arrangements the Commission will require:
  - The Panel to publish its latest RERT guidelines, taking into account the amending rule, by 30 August 2019.
  - AEMO to publish its RERT procedures, taking into account the amending rule and the updated RERT guidelines, by 26 March 2020.

Based on feedback from AEMO, the Commission has determined to adopt a staggered, twostage approach to implementation of the enhanced RERT framework:

- Specific reporting requirements will commence by 31 October 2019.
- All the remaining elements of the final rule commence on 26 March 2020.

This staggered approach gives AEMO the time it needs to finalise its RERT procedures as well as internal processes, and aligns with the timetable proposed by AEMO in its submission to the draft determination. At the same time, in recognition of the pressing need for the transparency of the RERT framework to be improved, as noted by many stakeholders, the final rule requires AEMO to start reporting on some aspects of the RERT from October 2019, and so this increased transparency will be in place for the summer 2019-20. The enhanced RERT framework will commence in its entirety in March 2020, as per AEMO's request that it commence post summer 2019-20.

66

65

Rule determination Enhancement to the Reliability and Emergency Reserve Trader

### Table 1: Summary of final rule

RERT AND RELIABILITY FRAMEWORK	CURRENT ARRANGEMENTS	AEMO'S PROPOSAL	COMMISSION'S FINAL RULE	CHANGES BETWEEN DRAFT AND FINAL RULE	COMMISSION'S RATION- ALE
					Linking the procurement process explicitly to the reliability standard limits the misallocation of reliability risks.
Procurement trigger	NER trigger clause is ambiguous but implies it is the reliability standard	Broader risk assessment framework i.e. its economic cost minimisation (ECM) model and additional risk metrics.	Links trigger explicitly to reliability standard through the declaration of low reserve conditions (LRCs) and lack of reserves (LORs).	No changes.	This keeps the RERT framework and the reliability standard explicitly linked, promoting consistency and transparency of the reliability standard; thus minimising costs for consumers. Delinking RERT from the reliability standard could result in distortions from emergency reserves being procured to a different standard to what in-market reserves require.
Governance of the trigger	Governance shared by the NER, Reliability Panel and AEMO	• No proposal for a governance structure in relation to the ECM.	No changes - same as AEMO's proposal and current arrangements	No changes.	The reliability standard is reviewed by the Reliability Panel, which makes decisions about the level of

RERT AND RELIABILITY FRAMEWORK	CURRENT ARRANGEMENTS	AEMO'S PROPOSAL	COMMISSION'S FINAL RULE	CHANGES BETWEEN DRAFT AND FINAL RULE	COMMISSION'S RATION- ALE
		<ul> <li>No proposed changes other than proposing for some risk metrics to be set externally.</li> </ul>			reliability and costs on behalf of consumers. This is appropriate given that the Panel comprises experts from large energy users, consumer groups, generators, network businesses, retailers and AEMO. Similarly it is appropriate that AEMO operates the system to meet the reliability standard given that it is the system operator.
Reliability standard and reliability framework	Current reliability standard; one reliability standard for the market and for RERT.	Revised reliability standard incorporating risk aversion and loss aversion concepts. In the absence of this, delink RERT procurement from the reliability standard.	Reliability standard is appropriate; existing framework provides flexibility to AEMO as how it operationalises this in its day-to-day operations e.g. in its forecasting activities.	No changes.	There is no evidence to suggest that the metric is no longer appropriate. Stakeholders commented that it remained appropriate, and in fact, consumers were far more concerned about price than reliability. AEMO has the flexibility to change how it operates the system in respect of the reliability

RERT AND RELIABILITY FRAMEWORK	CURRENT ARRANGEMENTS	AEMO'S PROPOSAL	COMMISSION'S FINAL RULE	CHANGES BETWEEN DRAFT AND FINAL RULE	COMMISSION'S RATION- ALE
					standard. The Panel may consider turning its mind to the reliability standard and settings again, after the AER's VCR review has been finalised. In addition, stakeholders could raise issues directly with the Panel if at any time if there is an informed position that consumers value reliability more than reflected in the reliability standard.
Procurement volume	RERT procurement framework disconnected from rest of the reliability framework.	Broader risk assessment described above used to determine both whether to procure and how much.	Explicit link to reliability standard (through LORs and LRCs) with some flexibility provided to AEMO for practicality (e.g. to use the broader risk assessment).	No changes.	Linking the procurement process explicitly to the reliability standard limits the misallocation of reliability risks. This aims to minimise indirect costs and is likely to result in lower cost outcomes for consumers since it keeps the RERT

RERT AND RELIABILITY FRAMEWORK	CURRENT ARRANGEMENTS	AEMO'S PROPOSAL	COMMISSION'S FINAL RULE	CHANGES BETWEEN DRAFT AND FINAL RULE	COMMISSION'S RATION- ALE
					framework and the reliability standard explicitly linked. Provides flexibility to AEMO to procure emergency reserves, given the capacity procured under this mechanism is typically not firm.
Procurement lead time	A maximum of nine months.	A maximum of 12 months.	A maximum of 12 months, as per AEMO's proposal.	No changes.	Broadens the pool of potential RERT providers and so is likely to minimise the costs associated with the RERT. Creates consistency with the lead time under the RRO.
Contracting duration	Implied by the procurement lead time (nine months) but not prescribed explicitly in the NER.	Allowing multi-year (specifically, three years) contracting in some circumstances when it would be lower cost to do so.	Maximum term of the contract is implied by the procurement lead time (maximum of 12 months) with the term to be consistent with addressing the gap(s) identified through LORs and LRCs.	No changes.	Procurement lead time and contracting duration should be consistent in order to make sure outcomes for consumers are as low cost as possible, and to minimise the risk of gaming by reserve providers.

RERT AND RELIABILITY FRAMEWORK	CURRENT ARRANGEMENTS	AEMO'S PROPOSAL	COMMISSION'S FINAL RULE	CHANGES BETWEEN DRAFT AND FINAL RULE	COMMISSION'S RATION- ALE
					AEMO may add providers to the RERT panels for multiple years, however.
Out-of-market provisions	<ul> <li>Cannot participate in RERT if in the market for the trading intervals to which contract relates.</li> <li>Implementation of the provision is unclear.</li> </ul>	No proposed changes.	<ul> <li>Scheduled reserves cannot participate in RERT if in the wholesale market for the past 12 months, and for the duration of the contract.</li> <li>Unscheduled reserves cannot be both in the wholesale market and in RERT for the trading intervals to which the contract relate.</li> <li>Improves transparency by requiring AEMO to provide guidance on implementation.</li> </ul>	<ul> <li>Changes to improve flexibility and transparency including:</li> <li>The 12-month backward restriction only applies to scheduled reserves (also applied to unscheduled reserves in draft rule)</li> <li>Forward restriction proposed in the draft rule applies to scheduled reserves. For unscheduled reserves, it is limited to the trading intervals of the contract.</li> </ul>	Emphasises that the wholesale market is the primary means by which reliability is delivered, which has the effect of minimising cost outcomes for consumers. Provides flexibility and clarity to emergency reserve providers as to how they will be treated.

RERT AND RELIABILITY FRAMEWORK	CURRENT ARRANGEMENTS	AEMO'S PROPOSAL	COMMISSION'S FINAL RULE	COMMISSION'S FINAL RULE CHANGES BETWEEN DRAFT AND FINAL RULE	
				The requirement for AEMO to provide guidance is also new.	
Payment structure	Not prescribed in the NER.	High-level design discussed payment caps on each individual payment type (e.g. availability payments), specifically, a \$30,000/MWh cap on dispatch payments.	Introduces an additional RERT principle that the costs of RERT should not exceed average VCR.	Introduces a new RERT principle in lieu of a payment guide in order to be consistent with the RERT framework.	Provides guidance to AEMO when entering into emergency reserve contracts to consider whether or not the costs associated with these are reasonable, i.e. unlikely to exceed VCR.
Reporting requirements	There are a number of reporting requirements in the NER.	No proposed changes.	<ul> <li>Building on existing requirements, and current practice by AEMO, including:</li> <li>A quarterly report with forward-looking and backward-looking reporting on costs, forecasting and activities.</li> <li>A report to be published within five</li> </ul>	The final rule is largely the same, with some practical changes to address AEMO's and stakeholders' concerns.	Informs market participants, policy makers, consumers and other interested parties about the costs of the RERT, and what is driving the use of the RERT in order to guide these parties to make more informed operational and investment decisions, as well as to better budget and plan for RERT related charges.

RERT AND RELIABILITY FRAMEWORK	CURRENT ARRANGEMENTS	AEMO'S PROPOSAL	COMMISSION'S FINAL RULE	CHANGES BETWEEN DRAFT AND FINAL RULE	COMMISSION'S RATION- ALE
			<ul><li>business days of dispatch event.</li><li>Setting out a methodology for procurement volume.</li></ul>		
Cost recovery	Smeared across market customers as a share of consumption between 8am and 8pm on business days for the relevant billing week.	No proposed changes.	<ul> <li>Activation/dispatch costs to be recovered as a share of consumption over the dispatch intervals of the activation event.</li> <li>All other contractual costs as a share of consumption over the billing period in which payments were made, over the length of the contract.</li> <li>Recovered in the region where RERT was used.</li> </ul>	No changes.	Recover usage costs from those that were consuming at the time, i.e. those that contributed to the RERT event. All other costs are recovered as broadly as possible so as to be non- distortionary.
Dispatch trigger	NER trigger is the reliability standard and, where	No proposed changes.	No changes - same as proposed by AEMO and current arrangements.	No changes.	Allows AEMO to use whatever reserves available in real-time to manage the

RERT AND RELIABILITY FRAMEWORK	CURRENT ARRANGEMENTS	AEMO'S PROPOSAL	COMMISSION'S FINAL RULE	CHANGES BETWEEN DRAFT AND FINAL RULE	COMMISSION'S RATION- ALE
	practicable, power system security. AEMO operationalises through its processes.				system.
Standardised products	Not prescribed in NER.	Proposed to standardise products (through standard contractual terms and conditions), with some variations allowed.	<ul> <li>Agree with AEMO that standardised products would be helpful, but no changes to the NER proposed since standardisation should be left to AEMO to develop.</li> <li>If AEMO wishes to standardise products, the final rule requires it to publish standardised contract terms and conditions.</li> </ul>	No changes.	Can provide clarity and transparency to stakeholders.

## CONTENTS

1	AEMO's rule change request	1
1.1	The rule change request	1
1.2	Rationale for the rule change request	2
1.3	Solution proposed in the rule change request	3
1.4	Scope of the rule change request	5
1.5	Interaction with the Retailer Reliability Obligation	6
1.6	The rule making process	7
1.7	Structure of final rule determination	8
<mark>2</mark>	Background	9
2.1	Reliability in the NEM	9
2.2	NER framework for the RERT - current arrangements	20
2.3	The Reliability and Emergency Reserve Trader in practice	26
3.1 3.2 3.3 3.4	Final rule determination The Commission's final rule determination Rule making test Assessment framework Summary of reasons	28 28 30 31 32
4	Appropriateness of the reliability standard	35
4.1	Background and context	35
4.2	The reliability standard	36
4.3	Stakeholders' views	42
4.4	Reliability Panel advice	51
4.5	Commission's analysis and conclusions	52
<mark>5</mark>	Procurement trigger and volume	83
5.1	Current arrangements	83
5.2	Procurement trigger	86
5.3	Procurement volume	111
5.4	Power system security	120
<mark>6</mark>	Procurement lead time and contracting duration	<b>125</b>
6.1	Procurement lead time	125
6.2	Contracting duration	132
7	Minimising direct and indirect costs	140
7.1	Minimising indirect costs	140
7.2	Out-of-market provisions	148
7.3	Payment structure - additional RERT principle	171
8	Cost recovery	186
8.1	Current cost recovery arrangements	186
8.2	AEMO's views	188
8.3	Stakeholders' views	188
8.4	Commission's analysis and conclusions	190
8.5	Cost recovery by market customers from end consumers	200
<mark>9</mark> 9.1	Transparency and reporting requirements Current arrangements	<b>203</b> 203

9.2	AEM	O's views	207
9.3	Stak	eholders' views	209
9.4	COII		215
10	Dis	patch trigger and standardisation of products	233
10.1	Disp	atch trigger	233
10.2	Star	dardisation of products	240
11	Imp	blementation	250
11.1	Stag	gered implementation approach	250
11.2	Doc	uments requiring revision if the rule is made	255
11.3	Othe	er transitional rules	257
Abbre	eviatio	ons	259
ΔΡΡ		ICES	
A	Sur	nmary of other issues raised in submissions	261
	C al		
В	Leg	al requirements under the NEL	270
B.1	Fina	I rule determination	270
B.2	Pow	er to make the rule	270
в.з В.4	Civil	nenalties	270
B.5	Con	duct provisions	271
С	Rel	ability Panel advice on reliability standard	272
D	Pro	curement ontions assessment	276
D.1	Sum	mary of stakeholder submissions to the options paper	276
D.2	Asse	essment of options	278
D.3	Opti	on 2 - delinking the reliability standard	281
D.4	Opti	on 3 - enhanced role for Reliability Panel in operationalising the reliability standard	282
TAB	LES		
Table	1:	Summary of final rule	XV
Table -	4.1:	NEM-level VCR results (\$/MWh)	37
Table !	5.1:	Summary of options	90 177
Table	9.1:	Summary of reporting streams to enhance transparency	217
Table	11.1:	Reporting requirements AEMO will undertake by 31 October 2019	253
Table /	A.1:	Summary of other issues raised in submissions	261
Table	D.1:	Refined procurement options	279
FIG	JRE:	5	
Figure	1:	Current framework with escalating series of interventions	vii
Figure	1.1:	Scope of this rule change	6
Figure	2.1:	Sources of supply interruptions in the NEM (GWh): 2007-08 to 2017-18	10
Figure	2.2.	USE in the NEM (2007-08 to 2018-19)	12
Figure	2.4:	Setting the reliability standard	23
Figure	4.1:	How AEMO operationalises the reliability standard	39
Figure	4.2:	USE in the NEM (2007-08 to 2018-19)	73

Figure 4.2: USE in the NEM (2007-08 to 2018-19)

Figure 6.1:	RRO and RERT timeframe	132
Figure 7.1:	Delineation between what is in the market and what is not	157
Figure 7.2:	Payment structure and price cap	172
Figure 9.1:	Stanwell's proposed reporting obligations and timeframes	212
Figure 10.1:	Prices on 19 January 2018 - Victoria	238
Figure 10.2:	Prices on 25 January 2019 - Victoria	239
Figure D.1:	Stakeholders' views on each option	277

# 1

1.1

## The rule change request

On 9 March 2018, the Australian Energy Market Operator (AEMO) (proponent) submitted a rule change request to the Australian Energy Market Commission (AEMC or Commission) seeking broad changes to the Reliability and Emergency Reserve Trader (RERT or emergency reserves). These proposed changes included: increasing the amount of time AEMO has to enter into emergency reserve contracts prior to projected shortfalls from nine months to one year (and beyond in some circumstances); taking into account a broader risk assessment framework when procuring emergency reserves; and establishing standardised RERT products, with standardised elements including notification lead times and availability periods.

AEMO considered that these broader changes to the RERT framework will help manage the "risks of unanticipated shortfalls" of supply to meet demand in light of greater uncertainty and a tightening supply-demand balance, "driven by a growing proportion of variable renewable generation, an aging fleet of thermal generation and unexpected retirement of capacity increasing risk of forced outages."<sup>3</sup>

The rule change request and accompanying proposed rule are available on the AEMC website.<sup>4</sup> AEMO also submitted a high-level design document that set out its desired specification for an enhanced RERT.

### BOX 1: REINSTATEMENT OF THE LONG-NOTICE RERT

**AEMO'S RULE CHANGE REQUEST** 

At the same time as this rule change request was submitted, AEMO also submitted a rule change request on 9 March 2018 that sought to extend the period allowed for AEMO to contract for reserves ahead of a projected shortfall in supply to meet demand, in effect, reinstating the long-notice RERT. The AEMC considered this an urgent rule and so progressed it under an expedited process, making the final rule on 21 June 2018.

The final rule increased the lead time available for AEMO to procure out-of-market reserves through the RERT, to nine months ahead of a projected shortfall, effectively reinstating the long-notice RERT. This allowed AEMO to procure reserves under the long-notice RERT for the 2018-19 summer.

In the final determination for that rule change request, the Commission noted that the RERT has the potential to distort outcomes for market participants and in the wholesale market, and so is designed in such a way as to minimise these distortions.

The Commission noted that while the potential of the mechanism to distort outcomes remains unchanged since the Commission considered similar issues in 2016, several conditions in the

Е

<sup>3</sup> AEMO, rule change request, p. 2.

<sup>4</sup> For more information, see the project webpage: https://www.aemc.gov.au/rule-changes/enhancement-reliability-and-emergency-reserve-trader

market have changed since then, including the changing generation mix and the ARENA-AEMO RERT trial, which has demonstrated the existence of resources, primarily demand response, capable of participating in the RERT. The trial also found that a longer lead time is required for these types of reserves, e.g. to install relevant equipment. This was confirmed through stakeholder feedback to the reinstatement of the long-notice RERT rule change.

Further, the Commission considered that to the extent that emergency reserves are required, having more resources able to participate in the RERT through a longer procurement lead time may improve the efficiency of the procurement process. This may put downward pressure on the direct costs of emergency reserves, if it is needed.

Therefore, on balance, the Commission concluded that increasing the procurement lead time for the RERT from 10 weeks to nine months would contribute to the achievement of the National Electricity Objective and so promote the long-term interests of consumers.

Source: AEMC, Reinstatement of the Long Notice RERT, final determination, June 2018

## 1.2 Rationale for the rule change request

In the rule change request AEMO noted that in the context of greater uncertainty being experienced in the National Electricity Market (NEM) and a tightening supply-demand balance, it considered that there is a need for a reserve arrangement to mitigate against the risks associated with unanticipated shortfalls.<sup>5</sup> It stated that an enhanced RERT, as presented in its high-level design document attached to the rule change request, would be a stronger safety net.<sup>6</sup>

AEMO identified three main concerns with the current emergency reserve framework:

- The procurement lead time and contracting duration are too short AEMO stated that the current limit on signing contracts for reserves has the potential to limit the availability, or increase the cost, of reserves.<sup>7</sup>
- There is a lack of a comprehensive risk assessment framework AEMO is concerned that
  its market projections indicate a heightened risk of significant load shedding over
  upcoming summers, even when the projected unserved energy (USE) over a broad range
  of scenarios meets the reliability standard.<sup>8</sup> The current framework, with the RERT
  procurement trigger based on the reliability standard, is designed to balance the benefits
  to consumers of having reliable electricity supply against the costs associated with
  increasing levels of reliability in the NEM. The appropriateness of the reliability standard
  and these trade-offs has therefore been considered through this rule change.

<sup>5</sup> AEMO, Enhancement to the RERT, rule change request, p. 2

<sup>6</sup> AEMO, Enhancement to the RERT, rule change request, p. 2

For example, AEMO notes that the procurement of RERT, and the associated costs (e.g. assessing tenders) represents a significant time commitment and cost, meaning that the inability to enter into longer-term agreements leads to inefficient procurement processes. Also, AEMO considers that the inability to enter into longer-term agreements means potential resources, such as diesel gensets, may not be able to be procured in the most efficient way. AEMO, *Enhancement to the RERT, rule change request, p.6.* 

<sup>8</sup> AEMO, Enhancement to the RERT, rule change request, p. 6

**Rule determination** Enhancement to the Reliability and Emergency Reserve Trader

 RERT products are currently bespoke which is problematic for AEMO and potential providers — reserves are currently procured through highly bespoke, negotiated contracts. AEMO stated that this creates uncertainty for potential providers and makes it difficult for AEMO to compare offers, and is highly time-consuming.<sup>9</sup> AEMO would prefer to procure standardised products, e.g. common notification times and availability periods.<sup>10</sup>

## 1.3 Solution proposed in the rule change request

AEMO sought to resolve the issues discussed above by proposing a rule (proposed rule) that reflected elements of a new high-level design for the RERT that it attached to its rule change request.

AEMO's solution proposed: a longer lead time and contracting duration; a broader risk assessment framework; standardisation of products; and other modifications. These are discussed in turn below.

### 1.3.1 A longer lead time and contracting duration

AEMO proposed that emergency reserves be procured over a longer time horizon. In particular, AEMO considered that:  $^{11}$ 

- emergency reserves should be able to be procured up to one year ahead of an identified shortfall under an annual contract (i.e. increasing the procurement lead time from nine months to one year)
- if a longer-term requirement for emergency reserves (over multiple years) is projected with the forecasts taking into account committed or highly likely new projects emergency reserves may be able to be procured for up to three years, enabling multiyear contracts. AEMO proposed this could only occur if analysis indicated this would be a lower overall cost than procuring annually.

#### 1.3.2 A broader risk assessment framework

AEMO considered that the NER trigger for procuring emergency reserves (i.e. procurement trigger), and the determination of the volume to be procured (i.e. procurement volume), should be in the context of a broader risk assessment. It stated that this "should take into account the risk of USE, not just the "expected" value."<sup>12</sup> AEMO did not provide further information on this in its rule change request.

However, since submitting its rule change request, AEMO provided additional information in support of its proposal. This recommended that the procurement of RERT should be delinked from the reliability standard and that a standing reserve be created to provide the "insurance function" in the overall reliability framework.

<sup>9</sup> AEMO, Enhancement to the RERT, rule change request, p. 6

<sup>10</sup> In 2017, through a trial with ARENA, tenders were held for standardised products, leading to strong and competitive offers from potential providers that were directly put on the RERT panel.

<sup>11</sup> AEMO, Enhancement to the RERT, rule change request, p. 7

<sup>12</sup> AEMO, Enhancement to the RERT, rule change request, p. 7

AEMO also proposed that the reliability framework should set the level of the required standing reserve over a defined horizon (akin to determining the sum to be insured) by taking account of:<sup>13</sup>

- "the nature of the tail risk using a range of supplementary metrics
- the risk appetite for different levels of load shedding expressed both in cost and limits terms
- the cost structure and optimal mix of resources that can prevent or mitigate load shedding."

#### 1.3.3 Standardisation of products

Based on consultation with emergency reserve providers, the findings of the ARENA trial, and AEMO's operational requirements, AEMO noted it intends to move towards standardised RERT products. AEMO proposed to define distinct emergency reserve products to be procured from the market that would deliver AEMO's operational requirements but also reflect the supply constraints on the system.<sup>14</sup> For example, AEMO outlined a set of products that would be defined by season (summer or not summer), time blocks (12pm-4pm business days; 4pm-8pm business days and all other times) and with specific notification lead times (10 minute, 60 minute and 24 hour). These products were developed with industry consultation. AEMO considered that implementing these changes could be addressed through revising the Reliability Panel's RERT Guidelines and AEMO's RERT procedure — a rule change is therefore not necessarily required.<sup>15</sup>

#### 1.3.4 Other aspects of the high-level design

AEMO's high-level design proposal also includes a number of design choices, some of which are similar to existing arrangements, with others being more notably different from existing arrangements. AEMO's design provides details on:<sup>16</sup>

- Specifications for AEMO's standardised products, e.g. which technologies would be eligible and what additional requirements are appropriate (i.e. provisions that seek to minimise market distortions by making sure that emergency reserves provided under the RERT will be in addition to in-market reserves).
- The procurement process, including the tender process, how the scheme would be funded and the payment structure of offers.
- Dispatch procedures and implications of dispatching the RERT (e.g. consequences of nondelivery of emergency reserves).

<sup>13</sup> AEMO, NEM Reliability Framework - Additional information from AEMO to support its Enhanced RERT rule change proposal, 2018, p. 3.

<sup>14</sup> AEMO, Enhancement to the RERT, rule change request, p. 8

<sup>15</sup> AEMO, Enhancement to the RERT, rule change request, p. 8

<sup>16</sup> AEMO, Enhancement to the RERT, rule change request

#### 1.3.5 Additional information to support its enhanced RERT rule change proposal

In November 2018, AEMO submitted additional information to support its enhanced RERT rule change proposal. The additional information considers the appropriateness of the existing NEM reliability framework in the context of the observed trends in the drivers of USE. AEMO's findings in the paper are that:

- the risk of load shedding in the NEM is increasing due to a tightening of the supplydemand balance, a trend of increasing maximum temperatures, and the variability of renewable resources and the observed recent increase of forced outages at thermal plant
- the NEM reliability framework is not suited to increasing risk and uncertainty, namely, increasing tail risk (i.e. the risk of rare events)
- the reliability framework should incentivise the optimal resource mix with the lowest cost
- this suggests that there should be various changes to the RERT framework.

This additional information is discussed further in Chapter 4.

## 1.4 Scope of the rule change request

The rule change considers the entire emergency reserve framework. The scope of the rule change is depicted in Figure 1.1 below.

н





## 1.5 Interaction with the Retailer Reliability Obligation

On 19 December 2018, the Council of Australian Governments (COAG) Energy Council agreed to the final draft bill of National Electricity Law (NEL) amendments which will give effect to the Retailer Reliability Obligation (RRO), as presented by the Energy Security Board (ESB). The ESB is progressing a final package of Rules to be brought to the COAG Energy Council for approval in May 2019 to facilitate commencement of the obligation by 1 July 2019.

The RRO builds on existing spot and financial market arrangements in the electricity market to facilitate investment in dispatchable capacity and demand response. It is designed to incentivise retailers, on behalf of their customers, to support the reliability of the power system through their contracting and investment decisions. In other words, the RRO will form part of the NEM's reliability framework, creating additional signals for investment by providing incentives to retailers to obtain contracts that will support reliability further.

The RRO does this by requiring electricity retailers (and other liable entities) to demonstrate they have entered into sufficient contracts for dispatchable capacity (including demand response) to cover their share of system peak demand at the time of the gap between

demand and supply. The obligation to secure sufficient qualifying contracts would be triggered if there is a material gap (i.e. a breach of the reliability standard) between forecast demand and supply three years out from the period in which the gap is forecast and the AER has subsequently made a 'T-3 reliability instrument'.<sup>17</sup>

If the gap persists one year out from the forecast gap, then AEMO is able to apply to the AER to make a 'T-1 reliability instrument'. If, one year out (T-1), a material reliability gap remains, the AER will require liable entities to report their net contract positions. AEMO may then commence procurement of emergency reserves at T-1 (i.e. 12 months ahead of the gap) through the RERT framework to address the remaining gap, with costs to be recovered through the Procurer of Last Resort cost recovery mechanism.

In other words, the cost recovery arrangements for emergency reserves procured due to a T-1 instrument will differ from all other RERT cost recovery.

The Commission has been working closely with the ESB on the development of the rules to give effect to the RRO. Where relevant in this determination, the Commission discusses the interactions between the RRO and this rule change.

## 1.6 The rule making process

On 21 June 2018, the Commission published a notice advising of its commencement of the rule making process and consultation in respect of the rule change request.<sup>18</sup> A consultation paper identifying specific issues for consultation was also published. Submissions closed on 26 July 2018. The Commission received 25 submissions as part of the first round of consultation.

On 4 October 2018, the Commission extended the period of time for making a draft determination, reflecting the complexity and cost implications of the issues being considered, and to allow time for advice from the Panel and AEMO's views on the appropriateness of the reliability standard to be considered.<sup>19</sup> AEMO supplied its additional views on the reliability standard to the Commission in November 2018.

On 18 October 2018, the Commission published an options paper for this rule change. The options paper details: how the RERT procurement trigger could be designed, how emergency reserve procurement volumes could be set, and how the Commission will consider the appropriateness of the reliability standard. Submissions to the options paper closed on 29 November 2018. The Commission received 20 submissions to the options paper.

On 31 January 2019, the Commission further extended the period of time for making a draft determination, by one week to 7 February 2019. The draft determination was published on 7 February 2019. The Commission received 23 submissions to the draft determination.

1

<sup>17</sup> When AEMO identifies a material gap three years out, it has to apply to the AER to make a "T-3 reliability instrument". This instrument is then the trigger for the RRO mechanism and obligations, such as requiring retailers to have enough contracts in place.

<sup>18</sup> This notice was published under s.95 of the National Electricity Law (NEL)

<sup>19</sup> The reliability standard is important because the RERT can be triggered and so procured if AEMO forecasts that the standard will be breached.

The Commission has also undertaken a large range of additional stakeholder consultation on this rule change request, including through:

- four technical working groups on 4 September, 20 November, 14 December 2018 and 5 April 2019, with the technical working group comprising a range of industry stakeholders<sup>20</sup>
- one public workshop for the rule change on 12 November 2018, which was also webcast<sup>21</sup>
- one-on-one meetings with a large number of stakeholders.

The Commission considered all issues raised by stakeholders in submissions. Issues raised in submissions are discussed and responded to throughout this final rule determination. Issues that are not addressed in the body of this document are set out and addressed in appendix A.

## 1.7 Structure of final rule determination

The structure of this final determination is as follows:

- Chapter 2 provides background information on the RERT
- Chapter 3 summarises the final rule determination
- Chapter 4 discusses the appropriateness of the reliability standard
- Chapter 5 outlines the procurement trigger and volume
- Chapter 6 discusses procurement lead time and contracting duration
- Chapter 7 discusses minimising direct and indirect costs
- Chapter 8 details cost recovery of the RERT
- Chapter 9 discusses transparency and reporting requirements
- Chapter 10 covers the dispatch trigger of the RERT and standardised products
- Chapter 11 discusses implementation
- Appendix A summarises other issues raised in submissions
- Appendix B sets out the legal requirements under the NEL
- Appendix C summarises the Reliability Panel's advice on the reliability standard
- Appendix D sets out the Commission's detailed assessment of procurement options.

<sup>20</sup> Discussion notes from each of these meetings are available on the project page.

<sup>21</sup> A recording of the webcast is available on the project page.

## 2 BACKGROUND

This chapter summarises:

- how the reliability framework operates in the National Electricity Market (NEM), which
  provides context to the operation of the Reliability and Emergency Reserve Trader (RERT
  or emergency reserves) given the RERT exists within this broader framework
- the current RERT framework and how it works in practice.

## 2.1 Reliability in the NEM

The RERT is a safety net which has formed part of the reliability framework since the start of the NEM. It is a tool that allows AEMO to intervene in the market in the event that demand exceeds supply and there is a shortfall of market reserves. While the focus of this rule change is on emergency reserves, it is worth understanding how the reliability framework operates more broadly in order to consider changes to the RERT framework in this context.

#### 2.1.1 Reliability versus security

A "reliable power system" has enough generation, demand response and network capacity to supply customers with the energy that they demand with a very high degree of confidence. A reliable power system therefore requires adequate investment and disinvestment as well as appropriate operational decisions, so that supply and demand are in balance at any particular point in time.

Reliability is distinct from system security. A secure system is one that is able to operate within defined technical limits, even if there is an incident such as the loss of a major transmission line or large generator. Security events are mostly caused by sudden equipment failure (often associated with extreme weather or bushfires) that results in the system operating outside of defined technical limits, such as voltage and frequency.

Reliability issues occur where the demand-supply balance in the system is tight, typically at times of peak demand for electricity, generally on very hot days. For example, when emergency reserves were exercised in both January 2018 and 2019, it was in the middle of the afternoon with the temperature exceeding 40 degrees Celsius in Victoria.<sup>22</sup> In contrast, security issues can arise at any time - and at present, more often than not tend to occur at off-peak times, when there are low demand conditions.<sup>23</sup> For example, the South Australian state-wide blackout that occurred in September 2016 was a security event, in relatively mild demand conditions.<sup>24</sup>

<sup>22</sup> AEMO activated reserve contracts to maintain the power system in a reliable operating state. The contracts were activated at 14:00 AEST on 19/01/2018. See: market notice 60843, 19 January 2018, 13:43, market intervention

<sup>23</sup> For example, on 2 December 2017, AEMO directed on a participant in South Australia to maintain the power system in a secure operating state, with the direction issued at 00:00. The direction was issued at 00:00 02/12/2017, with effect from 01:00 hrs 02/12/2017. See: market notice 60176, 2 December 2017, 0:02, market intervention.

<sup>24</sup> The Commission is currently reviewing this event, specifically focussing its assessment on the pre- and post-stages of the event. See https://www.aemc.gov.au/markets-reviews-advice/review-of-the-system-black-event-in-south-australi
### **BOX 2: SUPPLY INTERRUPTIONS**

Consistent with the various elements of a reliable power system described above, there are a number of causes of supply interruptions to customers: reliability (i.e. having insufficient generation to meet demand); security (e.g. load being shed to manage frequency across the system); or network (e.g. a particular line being out driving a network outage). The RERT only addresses reliability-related supply interruptions, which as shown in the brown area of the graph below only account for a small fraction of supply interruptions to consumers in the NEM.



### Figure 2.1: Sources of supply interruptions in the NEM (GWh): 2007-08 to 2017-18

Source: AEMC analysis and estimates based on publicly available information from: AEMO's extreme weather event and incident reports and the AER's RIN economic benchmarking spreadsheets.

The figure shows an indicative analysis of sources of supply interruptions in the NEM over the period 2007-08 to 2017-18.

This shows that supply interruptions that stem from reliability issues (not having enough supply to meet demand), are relatively limited in number. Over the period, only about 0.29 per cent of total supply interruptions (in terms of GWh) was the result of inadequacy of supply, noting that this is well below the reliability standard. This is much smaller than the amount of security interruptions that have occurred: over the past 10 years there have been 4.1 per cent supply interruptions for security. The vast majority of supply interruptions were network interruptions, specifically from the distribution network.

Note: The reliability standard is a maximum expected unserved energy of 0.002 per cent of demand in a financial year - NER clause 3.9.3C. The amount of unserved energy associated with the reliability interruptions in the chart is well below 0.002 per cent of demand. The only year when there was unserved energy in excess of the standard was in 2008-09. The Commission notes that the reliability standard was likely breached in 2018-19 as well (but this is not yet included in the chart). This chart only covers up to 30 June 2018 and will be updated next year when information about all types of interruptions are available. However, the Commission has reported information on the January 2019 load shedding event provided by AEMO in this determination.

### 2.1.2 The reliability framework

Consistent with the National Electricity Objective (NEO), the reliability framework has been designed to balance two costs:

- Costs of reliability Maintaining reliability involves costs. The higher the level of reliability, the more that investment in capacity (e.g. more generation, demand-side resources or network assets) and/or more stringent operating conditions is required, all of which impose costs on parties, and ultimately consumers. For example, having more generation being operated more stringently (i.e. having more generation being operated to meet a higher standard of reliability) creates higher per unit costs of electricity. These costs will be reflected in consumer prices.
- Costs of unserved energy (USE) The alternative to providing energy, no matter the cost, is not to supply the energy under certain conditions. That is to allow for an expected level of supply interruptions to consumers. This also has a cost reflecting the customer's willingness to pay for the reliable supply of electricity (this is known as the value of customer reliability). If a customer has their electricity supply interrupted, when they were willing to pay to consume electricity, they will face costs e.g. lost production if it is a business; or a colder / hotter home for residential customers with air conditioning.

Figure 2.2 provides a summary of the existing reliability framework, including the reliability standard, the reliability settings and AEMO's intervention mechanisms. Reliability in the NEM is largely driven through market participants responding to financial incentives and information provided about the need for resources.



### Figure 2.2: Current framework with escalating series of interventions

### **Market incentives**

The core objective of the existing reliability framework in the NEM is to deliver efficient reliability outcomes through market mechanisms to the largest extent possible. In a reliable power system, the expected level of supply in the market will include a "buffer", known as inmarket reserves. Expected supply will be greater than expected demand.

As the expected supply/demand balance tightens, spot and contract prices will rise which will inform operational decisions and provide an incentive for entry and increased production, addressing any potential reliability problems as or before they arise. This allows the actual demand and supply to be kept in balance, even in the face of shocks to the system. This framework also provides incentives for an efficient mix of technologies to be deployed.

Put simply, market participants respond to financial, operational and other incentives (such as information provided by AEMO, including on the reliability standard) to provide the level of reliability that is expected by the reliability standard. Generators and retailers have strong incentives to provide in-market reserves in order to support the operation of the power system in a reliable manner.

In addition, the RRO builds on existing spot and financial market arrangements in the electricity market to facilitate investment in dispatchable capacity and demand response. It is designed to incentivise retailers, on behalf of their customers, to support the reliability of the power system through their contracting and investment decisions. The RRO will incentivise more reserves into the market. If the RRO is triggered, retailers will be required to enter into contracts, which will have the aim of unlocking new investment, improving liquidity and increasing demand response, that will increase in-market reserves and support reliability further.

### Reliability standard and reliability settings

The reliability standard (for generation and inter-regional transmission elements) is the maximum expected USE in a region of 0.002 per cent for a given financial year as a share of total energy demanded in that region. In general terms, 'unserved energy' means the amount of customer demand that cannot be supplied within a region of the NEM due to a shortage of generation or interconnector capacity.<sup>25</sup>

The NER contains the reliability standard for the NEM, currently at 0.002 per cent expected USE. The reliability standard is set every four years following a review by the Reliability Panel, which comprises members who represent a range of participants in the NEM, including large and small consumer representatives, generators, network businesses, retailers and AEMO.<sup>26</sup> Reliability Panel members are selected on the basis of their direct interests in the reliability of electricity supply. Consideration is also given to balancing the Reliability Panel membership representation according to geographical location and participating jurisdictions.

Crucially, the reliability standard is not zero per cent since this would be too costly. Instead, the reliability standard represents a trade-off between the prices paid for electricity and the cost of not having energy when it is needed: increasing levels of reliability involves increased costs. The reliability standard is set at a level that provides a balance between delivering reliable electricity supplies and maintaining reasonable costs for customers (i.e. an economic trade off between affordability and reliability, based on what consumers value).

As system operator, AEMO operates the system to meet the reliability standard. It incorporates the reliability standard within its day-to-day operation of the market, including informing the market that the reliability standard is not being met. It does this through its forecasting and information provision processes, which determine whether or not there is a breach in the reliability standard. These are discussed in more detail below.

Chapter 4 discusses the reliability standard in more detail, including how AEMO implements the reliability standard in its operations, such as the processes it uses to determine a breach of the reliability standard.

<sup>25</sup> See also the definition of unserved energy in Chapter 10 of the NER.

<sup>26</sup> The Commission notes that the Reliability Panel may review the reliability standard and settings earlier than 2021 if warranted following any updated values of VCR from the AER in December 2019 and the introduction of the Retailer Reliability Obligation. In addition, stakeholders can raise issues directly with the Panel at any time if there is an informed position that consumers value reliability more than reflected in the reliability standard.

In addition to the reliability standard, there are also the reliability market settings that are closely linked to, and derived directly from, the 'reliability standard'. These form a price envelope for spot prices and are: the market price cap,<sup>27</sup> the market floor price,<sup>28</sup> the cumulative price threshold<sup>29</sup> and the administered price cap.<sup>30</sup>

### Information to the market

AEMO is required by the NER to publish various materials which provide information to market participants – and any other interested parties – on matters pertaining to the reliability standard; that is, over and above the information contained in contract and spot market prices.

For example, it publishes a range of long-term forecasts in its Electricity Statement of Opportunities (ESOO) as to whether or not the reliability standard is projected to be met in the long-term. In the medium-term (two years ahead of real time), AEMO models the power system through its medium-term projected assessment of system adequacy (PASA) to project whether the expected USE (i.e. a probability weighted average across a number of scenarios) for a given year, in a given region, exceeds 0.002 per cent. The expected values of USE outcomes are proportional to their likelihood of occurring i.e. events with a high probability of occurring are given more weight than events with a low probability of occurring. An expected shortfall, relative to the reliability standard is termed a low reserve condition.

In the case of the ESOO, if the expected USE value is higher than the reliability standard, three years out from the period in which the gap is forecast, then the RRO is triggered. AEMO would apply to the AER to make a 'T-3' instrument, which would start the RRO process, including requiring retailers to enter into contracts to fill the gap. The RRO introduces additional information provision to the market.

AEMO provides all of this information to the market to allow the market to respond to what it projects could be a shortfall in reserves.

While the ESOO is only updated on an annual basis, the medium-term PASA is updated more regularly, with AEMO updating its reliability assessment on a weekly basis. Participants are required to submit information weekly to the PASA process and AEMO may also update its inputs and assumptions as required. This is discussed in more detail in Chapter 4.

In the short-term (pre-dispatch and short-term PASA - seven days ahead of real time), AEMO operationalises the reliability standard through lack of reserve (LOR) declarations. In this case, AEMO forecasts the level of reserves that are required to be in the market (i.e. MW required), using a deterministic approach, as opposed to the probabilistic approach taken in the medium-term PASA and ESOO. This level is at least the size of the largest credible contingency, or larger to take into account forecasting uncertainty (e.g. that there will be a margin of error in any assumptions that feed into the modelling). If the forecast amount of

<sup>27</sup> Currently \$14,500/MWh, indexed annually.

<sup>28</sup> Currently -\$1,000/MWh.

<sup>29</sup> Currently \$216,900, indexed annually.

<sup>30</sup> The administered price cap of \$300/MWh applies when an administered pricing period is declared by AEMO whenever the sum of the spot price in the previous 336 consecutive trading intervals (that is, seven days) exceeds the cumulative price threshold.

reserves available falls below the LOR2 level, then AEMO considers this to be a breach of the reliability standard and informs the market of this, expecting a response.

The purpose of these forms of supplementary information is to inform the market of prevailing and forecast conditions, and when reserves may be running low, in order to elicit a market response. In particular, if AEMO identifies a breach of the reliability standard through its forecasting and information processes, it is required to inform the market of this, and typically first seeks a market response. These types of information help market participants make operational and investment decisions with respect to reliability and also help AEMO manage the power system.

### Intervention mechanisms

As effective as information processes can be in delivering the desired reliability outcomes through market incentives, they do not always elicit the outcomes needed. If the market fails to respond to the information AEMO publishes (for example, by shifting outages in order to increase production), AEMO may use the tools available to it to intervene in the market, namely:

- AEMO has RERT obligations. These allow AEMO to contract for reserves ahead of a period where in-market reserves are insufficient to meet the reliability standard - the RERT is the subject of this rule change and is discussed in more detail in section 2.2, including how AEMO identifies that there is a gap in in-market reserves, and so how many emergency reserves it decides to procure.
- In addition, if there is a risk to the secure or reliable operation of the power system, AEMO can use directions or instructions under NER clause 4.8.9 to:
  - Direct a generator to increase its output, cancel or shift an outage or not to go offline, if this is possible and can be done safely. To be effective, the generator must have enough time to 'ramp up'. If the generating unit is not already generating, it can take time for it to start up and to connect to the network and begin to ramp up. Even generators which are currently generating cannot typically change their output instantly.
  - Direct a large energy user, such as an industrial plant, to temporarily disconnect its load or reduce demand. If there continues to be a shortfall in supply, even after these measures have been implemented, AEMO may instruct a network service provider to commence involuntary load shedding as a last resort to avoid the risk of a wider system blackout, or damage to generation or network assets.

However, although AEMO is expected to do all in its power to avoid load shedding using the above intervention mechanisms, there will be times when involuntary load shedding will be regrettable, but, unavoidable because the level of investment and operational decisions are being driven by a reliability standard that is non-zero.

The Commission, in 2018, completed its *Reliability Frameworks Review*, where it made a number of recommendations with respect to the broader intervention framework. The

Commission has initiated a project to progress this recommendation, titled *Investigation into intervention mechanisms and system strength in the NEM*.<sup>31</sup>

### 2.1.3 Reliability in practice

On any given day, market participants use information provided by AEMO, as well as their own information and forecasting processes to make operational (e.g. how much generation to offer into the market and at what time) or investment (e.g. whether or not to invest in more generation or demand response) decisions. AEMO also updates its information processes and forecasts on a regular basis, in order to inform itself of the state of the power system.

Box 3 illustrates scenarios of how market participants and AEMO apply the reliability framework in practice.

### BOX 3: RELIABILITY IN THE NEM

Consider a hot summer day when there is high demand forecast. AEMO's processes forecast that there are not enough reserves in the market and AEMO publishes an LOR2 (which is a declaration that indicates to the market that there are not enough reserves) seeking a market response.

### Scenario 1

Generator A has three units: two are baseload coal, and the last is a gas unit. Generator A sees the forecast LOR2 and associated forecast high prices. Its own information and forecasts also suggests that these are likely to occur. Generator A starts its third unit and offers it into the market, which has a high marginal cost, knowing that there is a high likelihood of high prices, which would enable it to recover its costs. As a result, supply availability increases and AEMO cancels the LOR2 - a market response was sufficient and there are once again enough reserves in the market. Reliability is maintained.

### Scenario 2

In this scenario, no market response occurs (for example, either due to participants having different views to AEMO as to what the forecast entails; or there is insufficient available capacity in the market; or no planned outages could be cancelled) and the forecast LOR2 persists. AEMO determines that it will intervene through emergency reserves. It dispatches unscheduled emergency reserve contracts (say, demand response) at a time that it has determined is the latest by which it needs to intervene. This has the effect of reducing demand and there are once again enough reserves in the market for the duration of the RERT event. Reliability is maintained.

### Scenario 3

<sup>31</sup> See https://www.aemc.gov.au/market-reviews-advice/investigation-intervention-mechanisms-and-system-strength-nem

Assume in this scenario that emergency reserves (and directions) are not available to AEMO in sufficient quantities or in sufficient time and the market does not respond as there is no spare generation or demand response. The forecast LOR2 persists into an actual LOR2. At that point, one unit unexpectedly trips, leading to a drop in reserves and an actual LOR3 occurring - this means that load shedding is imminent due to the market having run out of reserves.

AEMO then instructs networks to shed load in the affected region. This is typically done is a controlled manner, through what is known as rotational load shedding. With this type of load shedding, consumers are "rotated", i.e. groups of consumers are interrupted for a limited amount of time (such as 30 minutes), then their supply is restored while another group is interrupted and so on.

Note: LOR2 stands for lack of reserve level 2. An LOR2 means that there are insufficient reserves in the market, which then allows AEMO to seek a market response. The LOR framework is described in more detail in Chapter 4.

Involuntary load shedding is the last resort, after all other avenues have been exhausted, and is typically done so as to avoid potentially larger issues occurring, such as interconnector flows exceeding secure limits (i.e. the system being in an insecure state), with the risk of more widespread blackouts should a further contingency occur. Rotational load shedding is initiated by AEMO through instructions to network service providers to shed blocks of load. It is manually initiated, with the load shedding manually rotated across load blocks to deliver an equitable outcome.

To be clear, involuntary load shedding arising from reliability issues is typically instructed by AEMO to return the system to a secure state or maintain power system security. If AEMO does not do so at that point in time, it would be possible for larger blackouts to occur e.g. due to the interconnectors reaching their limit. In that sense, involuntary load shedding is an appropriate last resort to guard against the potential for larger blackouts, and return the system to a secure operating state. In this example, the root cause of the power system security issue is a reliability issue that was not addressed by the market, the RERT or directions, leaving AEMO with its last resort power, involuntary load shedding. This is distinct from events where power system security is the root cause, such as the larger blackouts that occur due power system security issues, e.g. state-wide blackouts.

The order and location of the interruptions, under involuntary load shedding, are based on a schedule set by each jurisdiction, based on priorities. Essential services such as hospitals and other sensitive consumers (such as businesses in the CBD or critical industries) are typically not high on the load shedding list. Furthermore, businesses or energy users that require very high levels of reliability (e.g. data centres and emergency services) typically have back-up plans such as back-up generators or uninterruptible power supply units to manage their own reliability, in the event of load shedding. As AEMO notes, "load shedding arrangements vary from state to state, but the objective of rotational load shedding is to minimise the impact on any one group of customers."<sup>32</sup>

<sup>32</sup> See https://www.aemo.com.au/Media-Centre/Media-Statement---NSW-Electricity-supply-demand-update

Load shedding schedules are confidential, except in South Australia.<sup>33</sup> In South Australia, according to South Australia Power Networks (SAPN - the local distributor), rotational load shedding typically only lasts for about 30-40 minutes for a group of customers before it is "rotated" to a different group, and the CBD and areas with critical infrastructure are excluded.<sup>34</sup>

In its report into the January 2019 load shedding event, AEMO also stated that when a smelter is interrupted (on 24 January 2019, AusNet Services interrupted the Portland smelter following an instruction from AEMO to load shed, in accordance with the priority load shedding schedules),<sup>35</sup> to prevent damage to potlines, each potline can only be taken out of service for a maximum of one hour.<sup>36</sup> This is consistent with the rotational nature of load shedding.

### **Reliability performance**

Load shedding for the purpose of reliability has been rare, occurring on average about once every ten years, as shown in the figure below.



### Figure 2.3: USE in the NEM (2007-08 to 2018-19)

Queensland — New South Wales — Victoria — South Australia — Tasmania ----- Reliability Standard Source: AEMO. The 2018-19 USE estimate is based on preliminary information about the January 2019 load shedding events from AEMO in its submission to this rule change request and is subject to revision. It does not include any projections of USE for the remaining of the financial year (noting that there is currently none projected, in any event).

### January 2009 events

On 29 January 2009:

 280 MW was shed for about three hours in Victoria, or approximately 3 per cent of consumers, repeated every half an hour, over three hours, i.e. a different group of

<sup>33</sup> SA's list is available here: https://www.sa.gov.au/\_\_data/assets/pdf\_file/0008/34982/Manual-load-shedding-list-June-2018.pdf

<sup>34</sup> See https://www.sapowernetworks.com.au/outages/load-shedding/

<sup>35</sup>  $\,$  AEMO, Load Shedding in Victoria on 24 and 25 January 2019, p. 30.  $\,$ 

<sup>36</sup> Ibid. p. 30.

consumers (3 per cent) would have been shed every half an hour, for the total event duration of three hours. <sup>37</sup> Put another way, a total of 18 per cent of consumers experienced blackouts for half an hour.

• 140 MW was shed for 1.5 hours in SA, or approximately 4 per cent of consumers, every half an hour, for 1.5 hours (or 12 per cent of consumers for half an hour).

On 30 January 2009:

- 340 MW was shed for about three hours in Victoria, or approximately 3 per cent of consumers, every half an hour, for three hours. (or 18 per cent for half an hour)
- 90 MW was shed for 1.5 hours in SA, or approximately 3 per cent of consumers, every half an hour, for 1.5 hours (or 9 per cent for half an hour).

### February 2017 event

On 8 February 2017, 300MW was shed (although AEMO only instructed 100MW to be shed, with 300MW shed instead due to a software error). This affected about 10 per cent of SA's customers for about 30 minutes.<sup>38</sup> If 100MW had been shed as expected, then only about 3 per cent of SA consumers would have been affected.

By means of comparison, the actual unplanned system average interruption duration index (SAIDI),<sup>39</sup> for Ausgrid for 2016/17 averaged across all customer types was 79 minutes.<sup>40</sup> This is 79 minutes for all consumers on average for every year from distribution issues and is typically double what a small percentage of consumers would experience in rare circumstances from wholesale reliability situations, i.e. distribution outages tend to be twice as long in length, and tend to affect a wider group of customers, than rotational load shedding.

### January 2019 events

On 16 April 2019, AEMO published its report into the January 2019 load shedding and RERT event.  $^{\rm 41}$ 

In the report, AEMO stated that temperatures in SA broke new records on 24 January 2019 and Victoria experienced extreme heat close to record levels, resulting in high electricity demand across both regions.

On 24 and 25 January 2019, the following contributed to the reliability issue:

reductions in availability of electricity supply due to thermal inefficiencies

<sup>37</sup> The Commission notes that these are estimates based on the amount of load shed as a share of demand at the time. It also assumes that groups of consumers (3 per cent of load) being load shed are "rotated" every half an hour - or thereabouts - to minimise the impact of load shedding on individual consumers, as is the practice.

<sup>38</sup> It is unlikely that load would have been rotated in this event as it only lasted for about half an hour.

<sup>39</sup> SAIDI is a common measure of distribution network reliability, and is defined as the sum of the duration of each sustained customer interruption (in minutes), divided by the total number of distribution customers. SAIDI excludes momentary interruptions (one minute or less duration).

<sup>40</sup> Data provided by IPART for 2017 Annual market performance review, see p. 143.

<sup>41</sup> See https://www.aemo.com.au/-

<sup>/</sup>media/Files/Electricity/NEM/Market\_Notices\_and\_Events/Power\_System\_Incident\_Reports/2019/Load-Shedding-in-VIC-on-24-an d-25-January-2019.pdf

- unexpected equipment failures
- urgent maintenance activity
- reduced generation capacity.

AEMO activated RERT contracts to reduce demand in Victoria and SA (SA contracts were on 24 January only) and directed on a synchronous condenser in NSW to maximise flows into the Victorian region across the interconnector from NSW. While the RERT and the direction reduced the amount of load shedding required, they were not enough to avoid the need to shed some load in Victoria to balance demand and supply.

The report stated that:

- 1621 MWh of emergency reserves were dispatched on 24 January (Victoria and SA combined)
- 1472 MWh of emergency reserves were dispatched on 25 January (Victoria only).

The average cost of RERT payments for 24 and 25 January was approximately \$10,000/MWh, with a total contractual cost of \$30.6 million (usage-type payments only) for a total cost, including compensation, of \$34.2 million.

The report stated that 266 MW of load was shed on 24 January and 272 MW on 25 January, both in Victoria. AEMO's initial view is that the reliability standard was breached in Victoria, as a result, i.e. USE amounted to more than 0.002 per cent. AEMO noted that without RERT, it estimates that a further 1252 MWh of load shedding would have been required.

In its submission to the draft determination, AEMO also provided information on the January 2019 event.<sup>42</sup> This information pre-dates the report above; however, it does provide some additional insights into the event.

AEMO noted that its preliminary numbers indicate that the total amount of involuntary load shedding on both days was 1015 MWh, approximately 15 per cent above the reliability standard for Victoria (i.e. USE was just over 0.002 per cent - a breach of the reliability standard in Victoria, as shown in the figure above). AEMO also notes that the activation of RERT is estimated to have avoided an additional 1252 MWh of involuntary load shedding, bringing the total estimate to 2267 MWh, approximately 2.5 times the reliability standard for Victoria (i.e. if RERT that avoided load shedding is included in USE,<sup>43</sup> then USE would be about 0.005 per cent).<sup>44</sup>

### 2.2 NER framework for the RERT - current arrangements

The following sections set out how the emergency reserve framework currently operates under the NER. It does not include any changes proposed under the final rule. Further detail on how the RERT currently operates is contained in each individual chapter in the determination.

<sup>42</sup> AEMO, submission to draft determination, p. 6.

<sup>43</sup> The Commission notes that the Reliability Panel is currently examining whether this should be the case in its review of the definition of USE. See https://www.aemc.gov.au/market-reviews-advice/definition-unserved-energy

<sup>44</sup> AEMO, submission to draft determination, p. 6.

### What is the RERT?

The RERT is one of three existing intervention mechanisms in the NEM as discussed above.<sup>45</sup> The RERT allows AEMO to contract for emergency reserves (generation or demand-side capacity that is not otherwise available to the market through any other arrangement). AEMO can use these emergency reserves in the event that it determines that market participants are not meeting the reliability standard (i.e. when AEMO projects that unserved energy in a region is expected to be greater than 0.002 per cent of total energy demanded in that region for a financial year) and, where practicable, to maintain power system security.

The RERT guidelines, which are reviewed and prepared by the Reliability Panel, specify three types of emergency reserves based on how much time AEMO has to procure emergency reserves prior to the projected reserve shortfalls occurring:

- long-notice RERT between nine months' and ten weeks' notice of a projected reserve shortfall
- medium-notice RERT between ten weeks' and one week's notice of a projected reserve shortfall
- short-notice RERT between seven days' and three hours' notice of a projected reserve shortfall.

Typically, AEMO sets up a RERT panel of providers for both the medium-notice and shortnotice RERT and only triggers the procurement contract when it has identified a potential shortfall and after seeking offers from RERT panel members.<sup>46</sup> There is no panel for the longnotice RERT; rather, contracts are signed following the close of a public tender process.

The NER provide the high-level framework within which AEMO may procure and dispatch emergency reserves,<sup>47</sup> including requiring AEMO to:

- have regard to the RERT principles in the NER<sup>48</sup>
- have regard to the RERT guidelines which are made and published by the Reliability Panel<sup>49</sup>
- comply with the procedures for the exercise of emergency reserves, which are made and published by AEMO.<sup>50</sup>

The RERT principles provide that:<sup>51</sup>

 actions taken should be those which AEMO reasonably expects, acting reasonably, to have the least distortionary effect on the operation of the market

<sup>45</sup> In addition to the RERT, if there is a risk to the secure or reliable operation of the power system, AEMO can use directions or instructions under NER clause 4.8.9 to: direct a generator to increase its output, if this is possible and can be done safely; or direct a large energy users, such as a large industrial user, to temporarily disconnect its load or reduce demand.

<sup>46</sup> AEMO has the discretion to use a tender process in addition to using panel members in the case of the medium-notice RERT.

<sup>47</sup> Rule 3.20 of the NER.

<sup>48</sup> Clause 3.20.2(b) of the NER.

<sup>49</sup> Clause 3.20.8 of the NER.

<sup>50</sup> Clause 3.20.7(e) of the NER.

<sup>51</sup> Clause 3.20.2(a)(3) and clause 3.20.2(b) of the NER.

 actions taken should aim to maximise the effectiveness of reserve contracts at the least cost to end use consumers of electricity.

The RERT guidelines, prepared by the Reliability Panel, provide additional guidance to AEMO on the RERT principles and on the cost-effectiveness of emergency reserves. AEMO is required to take into account the RERT guidelines when exercising emergency reserves. The RERT guidelines specify what AEMO may take into account when it is determining whether to enter into contracts for emergency reserves (that is, in procuring the RERT) and in dispatching/activating emergency reserves.

AEMO also publishes a procedure for the exercise of emergency reserves under clause 3.20.7(e) of the NER in accordance with the rules consultation procedures. This procedure takes into account the RERT principles and RERT guidelines. AEMO also makes and publishes an operating procedure for the dispatch and activation of reserve contracts. AEMO's procedure for the exercise of the RERT document provides information on AEMO's procedures in relation to the RERT panel, the evaluation of tenders, procurement of the RERT, the publication of information and the activation/dispatch of emergency reserves.

### **Purpose of the RERT**

The current purpose of the RERT is for it to be used as a safety net only in the event that the market fails to achieve the desired level of reliability i.e. the reliability standard. This is clear when examining previous reviews and rule changes relating to the RERT.

For example, in reviewing the RERT in 2011, the Panel noted that the reserve trading provisions which were replaced by the RERT essentially enabled the market operator to procure additional reserves if a shortfall of reserves was forecast. It acted as a "safety net" in the event that the market did not deliver sufficient reserves to ensure that the reliability standard of 0.002 per cent USE was met.<sup>52</sup>

The reliability standard captures the trade-offs between the cost of load shedding and the cost of providing higher reliability which is meant to reflect the economically-efficient level of reliability as shown in Figure 2.4. The reliability standard is discussed in more detail in Chapter 4.

<sup>52</sup> See https://www.aemc.gov.au/sites/default/files/content/3b955d3e-93bf-4666-a27f-25662f407d74/Final-Report.pdf





This purpose is given effect through the existence of the procurement trigger, which relates to making sure that there is reliability of supply, as discussed next. In practice, this trigger is given effect through the operationalisation of the reliability standard (how this occurs is discussed in Chapter 4), with AEMO procuring emergency reserves after the identification of an expected breach of the reliability standard.

Based on the existing NER framework, the RERT is therefore a "safety net" in the sense that it is available to be used in the exceptional event that the market fails to deliver against the reliability standard – it is not designed to be used on an enduring basis.

### **Procurement trigger**

Under the NER, AEMO may determine to enter into emergency reserve contracts to ensure that the reliability of supply in a region or regions meets the reliability standard for the region, and where practicable, to maintain power system security.<sup>53</sup> In practice, this is typically achieved through the operationalisation of the reliability standard where AEMO incorporates the reliability standard within its day-to-day operation of the market, and the declaration of low reserve conditions (LRC) or lack of reserve (LOR) conditions. These are discussed in more detail in Chapter 4.

In procuring emergency reserves, AEMO must consult with persons nominated by relevant jurisdictions with respect to any determination to enter into reserve contracts.<sup>54</sup>

### Procurement lead time and contracting period

<sup>53</sup> Clause 3.20.3(b) of the NER.

<sup>54</sup> Clause 3.20.3(c) of the NER.

Under the current NER, AEMO must not enter into an emergency reserve contract, or renegotiate, more than nine months prior to when AEMO reasonably expects the reserves to be needed, i.e. when AEMO identifies a shortfall.<sup>55</sup> The procurement lead time refers to the amount of time AEMO has to enter into emergency reserve contracts (prior to the date that AEMO expects the emergency reserves under the contract may be required to ensure reliability of supply, and where practicable, to maintain power system security).

The contracting period refers to the duration of the emergency reserve contract. The NER do not prescribe a specific contract duration for emergency reserve contracts; however, the procurement lead time specified in the NER acts as a maximum limit on the duration of an emergency reserve contract because AEMO is not permitted to enter into contracts in respect of in-market reserve shortfalls that are expected to occur outside that lead time.

### **Procurement volume**

The NER do not prescribe the amount of emergency reserves that AEMO should procure once it has identified a potential shortfall.

### **Types of reserves**

The NER specify that AEMO may enter into one or more contracts with any person in relation to the capacity of:<sup>56</sup>

- scheduled generating units, scheduled network services or scheduled loads (being scheduled emergency reserve contracts)
- unscheduled reserves (being unscheduled emergency reserve contracts).

As such, the NER do not have restrictions on the types of technologies<sup>57</sup> that can participate in the RERT.

### **Out-of-market provisions**

Under the NER, AEMO must not contract for scheduled emergency reserves if such reserves have been submitted, or are likely to be submitted or otherwise available for dispatch, in the trading interval(s) to which the contract would relate.<sup>58</sup> The NER also specify that any emergency reserve contracts entered into must contain a provision that the other party to the contract has not and will not otherwise offer the reserve which is the subject of the contract in the market for the trading intervals to which the contract relates (except in accordance with that contract).<sup>59</sup>

### Direct costs and payment structure

The NER do not prescribe any types of costs or payment structure with respect to the RERT.

### **Cost recovery**

<sup>55</sup> Clause 3.20.3(d) of the NER.

<sup>56</sup> Clause 3.20.3(a) of the NER.

<sup>57</sup> The NER do not have any restrictions but some technologies may not be technically capable of participating in the RERT.

<sup>58</sup> Clause 3.20.3(h) of the NER.

<sup>59</sup> Clause 3.20.3(j) of the NER.

The NER require that RERT costs incurred by AEMO be met by fees imposed on market customers in the region where emergency reserves have been procured and/or dispatched.<sup>60</sup> Cost per market customer is proportional to the energy consumption of that customer in the relevant region during certain time periods.<sup>61</sup> If emergency reserves are required in multiple regions, cost sharing arrangements must be agreed between the regions and AEMO when entering the contracts.<sup>62</sup> Costs are recovered through the usual weekly settlement processes.

The NER do not prescribe how market customers (e.g. retailers) then recover these costs from end consumers. Market customers typically do so based on the conditions of the contracts with their consumers. For example, tariffs in residential contracts (while not a NER restriction), tend to only change once per year. Other contracts may have different conditions, including the ability for retailers to pass through RERT costs, should they choose to, in a more timely manner.

### Information provided to the market

As soon as practicable after emergency reserves are dispatched, the NER requires that AEMO publish a report detailing a number of things, including the circumstances giving rise to the need to dispatch emergency reserves and the processes associated with such dispatch.<sup>63</sup> The remainder of NER clause 3.20.6 requires AEMO to provide more information to the market, including reporting on the cost and recovery of the cost of the emergency reserves. AEMO may also inform the market every time it enters into a new RERT contract<sup>64</sup> and there are a series of market notices that it must publish in the lead up and during the activation/dispatch of emergency reserves.<sup>65</sup>

### **Dispatch of the RERT**

In the first instance, AEMO must determine the latest time for exercising emergency reserves and publish a notice of any foreseeable circumstances that may require implementation of the RERT.<sup>66</sup> Once such time has arrived, the NER state that AEMO may dispatch emergency reserves to ensure that the reliability of supply meets the reliability standard, and where practicable, to maintain power system security.<sup>67</sup> AEMO must also take into account the RERT guidelines before dispatching emergency reserves.<sup>68</sup>

Further, during periods of supply scarcity, AEMO must use its reasonable endeavours to act in accordance with the following sequence: dispatch all valid dispatch bids and offers, then exercise the RERT and then implement directions and clause 4.8.9 instructions.<sup>69</sup>

<sup>60</sup> Clause 3.15.9(a) of the NER.

<sup>61</sup> Clause 3.15.9(e) of the NER.

<sup>62</sup> Clause 3.20.3(f) of the NER.

<sup>63</sup> Clause 3.20.6(a) of the NER.

<sup>64</sup> In accordance with the RERT guidelines.

<sup>65</sup> See Clauses 4.8.5, 4.8.5A, 4.8.5B of the NER.

<sup>66</sup> Clause 4.8.5A and clause 4.8.5B of the NER.

<sup>67</sup> Clause 3.20.7(a) of the NER.

<sup>68</sup> Clause 3.20.7(f) of the NER.

<sup>69</sup> Clause 3.8.14 of the NER.

If emergency reserves are dispatched, AEMO applies intervention pricing (also known as "what-if" pricing or "but-for" pricing) in all circumstances.

### 2.3 The Reliability and Emergency Reserve Trader in practice

Prior to 2017, the RERT had been procured but had never been activated (i.e. dispatched).<sup>70</sup>

In 2017, AEMO procured emergency reserves through the long-notice RERT and added providers to its RERT panels. As a result, for the 2017-18 summer, AEMO stated that it expected a total of 1,150 MW of RERT (884 MW of demand response resources and 266 MW of generation) capacity to be available. Some of this capacity was then dispatched, as summarised in the consultation paper.<sup>71</sup> Based on these two events, the Commission has set out how it understands that the RERT works in practice under the current framework in Box 4. The Commission also notes that AEMO has entered into reserve contracts for 2018-19 and that the RERT was used in January 2019 as described above.

# BOX 4: THE RELIABILITY AND EMERGENCY RESERVE TRADER IN PRACTICE UNDER THE CURRENT FRAMEWORK

The following shows a hypothetical, simplified example of how the RERT works in practice.

For simplicity, in this example, all emergency reserve contracts are assumed to be unscheduled demand response contracts with an activation lead time of more than 30 minutes.

In August Year 1, AEMO identifies a breach of the reliability standard in the medium-term PASA for January and February of Year 2. AEMO informs the market of this through an LRC declaration and seeks a market response. If one is not forthcoming, AEMO tenders for long-notice RERT. Assuming a successful tender process, AEMO enters into long-notice RERT contracts to procure out-of-market reserves to meet the reliability standard.

In January Year 2, AEMO's short-term PASA forecasts LOR2s for the following week. AEMO seeks a market response. The market responds by offering more generation into the market through short-term PASA, leading to a higher forecast reserve margin in the market, cancelling the LOR2.

In February Year 2, AEMO's short-term PASA once again forecast LOR2s for the following week. AEMO seeks a market response. The day before the forecast gap, the LOR2 persists - there has been insufficient market response. AEMO decides to intervene, and informs the market of its intention.

It then seeks additional emergency reserves from the RERT panel, as the forecast gap in short-term PASA is more than it had contracted for through the long-notice RERT.

<sup>70</sup> Unscheduled reserves are said to be activated while scheduled reserves are said to be dispatched. In this determination, both terms are used to mean the act of AEMO dispatching reserves.

<sup>71</sup> See https://www.aemc.gov.au/sites/default/files/2018-06/Consultation%20paper\_0.pdf

On the day of the gap, as the gap persists in pre-dispatch and the market has not sufficiently responded, AEMO then decides to dispatch emergency reserves. It assesses all its emergency reserve contracts and dispatches RERT based on the lead times associated with the relevant contracts and based on least cost combinations. For example, the least cost contract has an activation lead time of two hours, so AEMO makes its decision to intervene two hours ahead of the gap.

Before dispatching emergency reserves, AEMO dispatches all valid dispatch bids and offers first to meet demand, then activates (dispatches) emergency reserves. As the emergency reserve contracts are demand response contracts, they have the effect of reducing demand in the market. This restores the level of reserves in the market to an LOR2 level.

Consider a simple case where:

- demand is 8,000MW
- generator availability is 8,500MW (including spare generation capacity from other regions via interconnectors)
- reserves are 500MW
- the LOR2 level (i.e. the level of reserves needed in the market) is 1,000MW.

Reserve levels are about 500MW short, triggering an LOR2. AEMO contracts 500MW of emergency reserves and dispatches 8,000MW of generation to meet demand. It then dispatches 500MW of emergency reserves and the balance changes to:

- demand is 7,500MW
- generator availability is unchanged at 8,500MW (including spare generation capacity from other regions via interconnectors)
- reserves are 1000MW
- the LOR2 level (i.e. the level of reserves needed in the market) is 1,000MW.

There would once again be enough reserves in the market.

The temperature then drops suddenly, leading to a further fall in demand. This leads to even higher reserve level, which cancels the LOR2. AEMO, however, cannot yet de-activate the emergency reserves as the contracts have a minimum run time that is yet to elapse. Once the minimum run time has elapsed, AEMO then cancels the RERT activation.

Source: AEMO, RERT event reports and AEMC analysis.

3

3.1

**Rule determination** Enhancement to the Reliability and Emergency Reserve Trader

# FINAL RULE DETERMINATION

### The Commission's final rule determination

The Commission's final rule determination is to make a final more preferable rule. The final more preferable rule enhances the Reliability and Emergency Reserve Trader (RERT or emergency reserves) framework, by:

- clarifying how the RERT the NEM's safety net fits into the broader reliability framework by directly linking the procurement trigger to the reliability standard through the low reserve condition (LRC) and lack of reserve (LOR) declarations.
- setting the amount of emergency reserves the procurement volume to an amount that AEMO reasonably expects is required to meet the gap identified by a breach of the reliability standard, giving AEMO flexibility as to exactly how much to procure.
- extending the procurement lead time to 12 months in order to: broaden the pool of
  potential emergency reserve providers and therefore potentially reducing costs associated
  with the RERT; and create consistency with the lead time under the Retailer Reliability
  Obligation (RRO) that is currently under development.
- clarifying the out-of-market provisions to make it clear that the wholesale market is the primary means by which reliability is delivered and that incentives to invest in market reserves need to be preserved, so that costs of reliability are minimised for consumers The clarified provisions include:
  - placing a restriction on scheduled RERT providers who have offered scheduled reserves in the energy market in the 12 months prior to signing an emergency reserve contract from participating in the RERT
  - making sure that AEMO ensures scheduled emergency reserve providers are not participating in the market for the term of the reserve contract
  - putting in place a restriction on unscheduled emergency reserve providers from participating in the energy market for the trading intervals to which the contract relate
  - the introduction of an obligation on participants to comply with the out-of-market provisions
  - requiring AEMO to explain how it will implement the out-of-market provisions with respect to unscheduled reserve providers, to improve transparency.
- further limiting distortions and minimising costs by introducing a new RERT principle to complement the existing RERT principles:
  - the new RERT principle requires AEMO to consider the principle that the average amount payable by AEMO under reserve contracts for each MWh of reserves should not exceed the estimated average VCR for the relevant region.
- improving the cost recovery process such that costs associated with emergency reserves are recovered, where possible, from those that were consuming at the time that emergency reserves were needed:

- The costs associated with the direct and immediate activation of emergency reserves (e.g. usage or activation charges) will be recovered in proportion to market customers' consumption over the period in which the emergency reserve was activated.
- All other costs associated with the procurement of reserves (e.g. availability costs) will be recovered in proportion to market customers' consumption during the billing period in which those costs were incurred.
- increasing and enhancing the reporting requirements that are associated with the RERT particularly in relation to costs of emergency reserves and when emergency reserves will be used - in order to improve transparency. The increased transparency arrangements include:
  - AEMO publishing a quarterly RERT report, if necessary due to the addition of new information, covering information such as indicative costs and updated costs.
  - AEMO publishing a report within five business days of the dispatch / activation of emergency reserves, detailing preliminary estimated emergency reserve costs and estimated volumes of RERT dispatched/activated.
  - AEMO to maintain a methodology report, explaining how it determined the term of each emergency reserve contract and amount of emergency reserves to procure, as part of its RERT procedures.

The final more preferable rule also includes some transitional rules:

- The Panel is to publish its latest RERT guidelines, taking into account the amending rule, by 30 August 2019.
- AEMO is to publish its RERT procedures, taking into account the amending rule and the updated RERT guidelines, by 26 March 2020.
- A staggered, two-stage approach to implementation:
  - Specific reporting requirements will commence by 31 October 2019.
  - All the remaining elements of the final rule commence on 26 March 2020.
  - This approach gives AEMO the time it needs to finalise its RERT procedures as well as internal processes. At the same time, in recognition of the pressing need for the transparency of the RERT framework to be improved, as noted by many stakeholders, the final rule requires AEMO to start reporting on some aspects of the RERT from October 2019, and so this increased transparency will be in place for the summer 2019-20. The enhanced RERT framework will commence in its entirety in March 2020, as per AEMO's request that it commence post summer 2019-20.

The Commission's reasons for making this final determination are set out in section 3.4 and in more detail in the relevant chapters and appendices.

This chapter outlines:

- the rule making test for changes to the NER
- the more preferable rule test
- the assessment framework for considering the rule change request

• the Commission's consideration of the more preferable final rule against the NEO.

Further information on the legal requirements for making this final rule determination is set out in Appendix B.

### 3.2 Rule making test

### 3.2.1 Achieving the NEO

Under the NEL the Commission may only make a rule if it is satisfied that the rule will, or is likely to, contribute to the achievement of the NEO.<sup>72</sup> This is the decision making framework that the Commission must apply.

The NEO is:73

to promote efficient investment in, and efficient operation and use of, electricity services for the long term interests of consumers of electricity with respect to:

- (a) price, quality, safety, reliability and security of supply of electricity; and
- (b) the reliability, safety and security of the national electricity system.

The Commission has identified that the relevant aspects of the NEO are the efficient investment in, and efficient operation and use of, electricity services with respect to the price and reliability of supply of electricity, and reliability of the national electricity system because:

- The RERT is one of the intervention mechanisms available to AEMO to manage reliability
  of the power system in the event that the power system is not expected to meet the
  reliability standard.
- The direct costs of the RERT are passed on to market customers (e.g. retailers) in the region where the RERT was used, and ultimately recovered from consumers. This means that the use of emergency reserves has an impact on prices, while the indirect costs such as market distortions also have implications for reliability and prices.

The framework used for assessing whether the proposed rule will, or is likely to, contribute to the achievement of the NEO is set out below.

### 3.2.2 Making a more preferable rule

Under s. 91A of the NEL, the Commission may make a rule that is different (including materially different) to a proposed rule (a more preferable rule) if it is satisfied that, having regard to the issue or issues raised in the rule change request, the more preferable rule will or is likely to better contribute to the achievement of the NEO.

In this instance, the Commission has made a final more preferable rule. A summary of reasons is provided below. More detailed reasons for making this final more preferable rule, including detailed analysis of the issues raised and appropriate response to them, are set out in Chapters 4 to 10, as well as the accompanying appendices.

<sup>72</sup> Section 88 of the NEL.

<sup>73</sup> Section 7 of the NEL.

The final more preferable rule is referred to throughout this final determination as the "final rule".

### 3.2.3 Making a differential rule

Under the Northern Territory legislation adopting the NEL, the Commission may make a differential rule if, having regard to any relevant MCE statement of policy principles, a different rule will, or is likely to, better contribute to the achievement of the NEO than a uniform rule. A differential rule is a rule that:

- varies in its term as between:
  - the national electricity system, and
  - one or more, or all, of the local electricity systems, or
- does not have effect with respect to one or more of those systems

but is not a jurisdictional derogation, participant derogation or rule that has effect with respect to an adoptive jurisdiction for the purpose of s. 91(8) of the NEL.

As the rule relates to parts of the NER that currently do not apply in the Northern Territory, the Commission has not assessed the rule against the additional elements required by the Northern Territory legislation.<sup>74</sup>

### 3.3 Assessment framework

In assessing whether the proposed rule will, or is likely to, contribute to the achievement of the NEO the Commission has considered the following principles:

- **Promoting reliability of the power system**: A reliable power system is a crucial part of the energy market and the long-term interest of consumers. The Commission had regard to the potential benefits to reliability brought about by the proposed rule change; in particular, that the RERT is a safety net mechanism available to AEMO to use at times when a supply shortfall is forecast (i.e. there is a lack of in-market reserves), or, where practicable, for power system security.
- Minimising direct costs: Emergency reserves carry direct costs to consumers in terms
  of availability and activation payments, administrative costs, as well as compensation
  costs. The Commission had regard to the effect that the proposed solution will have on
  the potential for direct costs associated with the RERT to be paid for by consumers.
- Minimising market distortions: Minimising distortions on market participants (i.e. market distortions) is important in order to minimise indirect costs, which could be substantial. For example, it would not be desirable for a generator to withdraw from the spot market, in anticipation that it would receive higher revenue through emergency reserve payments. Such an outcome would increase the wholesale costs of electricity, and so would be passed on to consumers, while providing no reliability benefit. The

<sup>74</sup> From 1 July 2016, the NER, as amended from time to time, apply in the NT, subject to derogations set out in regulations made under the NT legislation adopting the NEL. Under those regulations, only certain parts of the NER have been adopted in the NT. (See the AEMC website for the NER that applies in the NT.) National Electricity (Northern Territory) (National Uniform Legislation) Act 2015.

Commission has therefore had regard to the distortionary impact of the proposed solution.

- **Improving transparency**: Transparency of the RERT framework, procurement and activation decisions, as well as costs is crucial to underpin market participants' understanding of how emergency reserves are used and to inform the decisions that they make. Transparency can also assist in guiding consumers of electricity in their decisions about when and how much to consume. The Commission had regard to how the proposed solution improves transparency for both market participants and consumers.
- Efficient risk allocation: It is important that the risks associated with managing reliability and the cost of load shedding are being allocated appropriately to those who are best placed to manage those risks. This will serve to reduce overall costs by allowing risks to be better managed. The Commission had regard to how efficiently reliability risks would be managed under the proposed solution.

This assessment framework is consistent with that set out in the consultation paper for this rule change request.

### 3.4 Summary of reasons

The final rule made by the Commission is attached to and published with this final rule determination. It is described in section 3.1.

Having regard to the issues raised in the rule change request and during consultation, the Commission is satisfied that the more preferable final rule will, or is likely to, better contribute to the achievement of the NEO than the rule proposed by AEMO for the following reasons:

### Promoting reliability of the power system:

- By providing more certainty to the market that AEMO will only intervene after the market has had a chance to respond (within the known limitations of the RERT framework), the final rule maximises the ability of the market to maintain system reliability, rather than AEMO through an intervention.
- By reinforcing the link between the reliability standard and the RERT procurement trigger and reserve volumes, the final rule delivers the level of reliability that reflects consumer preferences, and therefore, consumers' willingness to pay. It remains appropriate for the Reliability Panel - representing a range of parties including large and small users, retailers, generators, networks and AEMO - to continue to make decisions and recommendations about consumers' willingness to pay, through the reliability standard.
- By increasing the procurement lead time and clarifying the procurement process, the final rule potentially broadens the pool of RERT providers, which could increase the emergency reserves available to support system reliability, in the event that emergency reserves are needed. In addition, increasing the procurement lead time to 12 months creates consistency with the lead time under the RRO.
- Minimising direct costs:

- By contributing to an efficient emergency reserve procurement process through a longer procurement lead time and a more transparent dispatch process, the final rule reduces barriers to participation and therefore enables a greater number of providers to offer RERT services.
- By introducing a provision that the costs of the emergency reserves should reflect the value of customer reliability, the final rule limits the exposure of consumers to emergency reserve costs.
- Minimising market distortions (i.e. indirect costs):
  - A longer procurement lead time drives lower direct costs; but has the potential to increase indirect costs. Therefore, by strengthening the out-of-market provisions for RERT providers, for example, scheduled reserve providers that have offered emergency reserves in the market or under a demand response arrangement in the last 12 months cannot participate in RERT, the final rule minimises the potential for distortions such as reducing incentives for market participants to invest in market generation.<sup>75</sup>
  - Similarly, by introducing a more cost-reflective approach to who pays for emergency reserves, the final rule reduces the costs associated with consumers inefficiently consuming.
  - By explicitly linking the procurement trigger and volumes to the reliability standard, the final rule avoids the distortions that would occur if the RERT was delinked from the reliability standard, as proposed by AEMO in their rule change request. This is explained further in Chapter 7.
- Improving transparency:
  - By clarifying the procurement trigger, the final rule makes it unambiguous as to when AEMO may procure emergency reserves, and this would be clear to all market participants, as well as consumers (where relevant).
  - By linking the level of emergency reserves AEMO should procure to the reliability standard, the final rule enables market participants and consumers to manage operational and investment decisions better and improves transparency.
  - By introducing new reporting requirements that clearly explain the reasons for RERT procurement the final rule improves the ability of retailers, consumer groups, governments and policy makers to explain costs and benefits of emergency reserves to consumers and the industry more broadly. It also allows lessons to be learned.
  - By requiring indicative emergency reserve costs to be provided the final rule could enable retailers and end customers to better budget and plan for RERT related charges (e.g. potentially hedging these risks and costs). Similarly, the timely provision of cost information would help with budgetary reporting.
- Efficient risk allocation:
  - By strengthening the link between the reliability standard (with its associated governance structure) and the RERT, the final rule allows reliability risks to continue

<sup>75</sup> These distortions are further minimised by not allowing multi-year reserve contracting as proposed by AEMO.

> to be managed primarily by the market, with the Reliability Panel continuing to manage reliability risks on behalf of consumers, when reviewing the reliability standard and settings.

• By introducing a more cost reflective approach to the RERT, the final rule facilitates incentives for consumers to make efficient consumption decisions.

4

# APPROPRIATENESS OF THE RELIABILITY STANDARD

This chapter discusses the appropriateness of the reliability standard, which is relevant to this rule change given that the existing procurement trigger for the Reliability and Emergency Reserve Trader (RERT or emergency reserves) is the reliability standard. AEMO, in its rule change request, considered that the existing procurement trigger is no longer appropriate - given this, the Commission examined whether or not the reliability standard, as the procurement trigger, is appropriate.

This chapter first sets out AEMO's views and stakeholder feedback with respect to the reliability standard. It also discusses the Commission's analysis and conclusions on whether or not the reliability standard is appropriate.

### 4.1 Background and context

In its rule change request, AEMO noted that the reliability standard may no longer be appropriate given changing system conditions, in particular, a more peaky system and one with more common extreme weather events.<sup>76</sup> It also stated that community expectations have shifted so that jurisdictional governments are unwilling to tolerate load shedding and are intervening themselves directly in the market as a result.<sup>77</sup>

In its rule change request, AEMO did not propose a specific solution to the issue that it raised with the procurement trigger. Instead, it stated that it wished to have a trigger that takes into account a broader risk assessment, which would include the risk of unserved energy (USE), not just the expected value of USE.<sup>78</sup>

AEMO subsequently, in its submission to the consultation paper, clarified its position that the procurement trigger should be removed and be substituted with a broad risk assessment.<sup>79</sup>

In the options paper, the Commission set out its approach to considering the appropriateness of the reliability standard. In particular, it noted that there would be two key inputs that will be important in assisting the Commission consider the appropriateness of the reliability standard and reach conclusions:<sup>80</sup>

 Advice from the Reliability Panel - Given the role of the Reliability Panel in reviewing and providing advice on the reliability standard and settings to the AEMC every four years,<sup>81</sup> the Commission wrote to the Panel to seek its views on the appropriateness of the reliability standard as a procurement trigger for the RERT.<sup>82</sup> This advice was received on

<sup>76</sup> AEMO, rule change request, p. 6.

<sup>77</sup> Ibid. p. 3.

<sup>78</sup> Ibid., p. 7.

<sup>79</sup> AEMO, submission to consultation paper, p. 7.

<sup>80</sup> AEMC, Enhancement to the RERT, options paper.

<sup>81</sup> Clause 3.9.3A(d) of the NER.

<sup>82</sup> If requested to do so by the AEMC, the Reliability Panel must provide advice to the AEMC in relation to the safety, security and reliability of the national electricity system: s 38(4) of the NEL.

4.2.1

**Rule determination** Enhancement to the Reliability and Emergency Reserve Trader

28 September 2018 and is included in Appendix C. The letter requesting the advice as well as the advice itself can be found on the AEMC website.

 AEMO views on the current reliability standard - In November 2018, AEMO provided additional information to the Commission to support this rule change request. This additional information was specifically focussed on its views on the appropriateness of the reliability standard, including its views on what it thinks the issues are with the existing reliability standard. AEMO's paper may be found on the AEMC website and a brief summary is available in section 4.3.1.

In addition to the advice from the Panel and additional information provided by AEMO, the Commission also held a public workshop in November to discuss the appropriateness of the reliability standard. The technical working group also discussed this topic. The Commission also engaged The Brattle Group to assess the reliability framework, particularly in relation to risk aversion.

The next sections briefly describe the reliability standard and then set out the views of all stakeholders and the Commission's conclusions, having had regard to the evidence presented to it.

### 4.2 The reliability standard

### The reliability standard

The reliability standard (for generation and inter-regional transmission elements) is the maximum expected USE in a region of 0.002 per cent for a given financial year as a share of total energy demanded in that region. In general terms, 'unserved energy' means the amount of customer demand that cannot be supplied within a region of the NEM due to a shortage of generation or interconnector capacity.<sup>83</sup>

The standard has three main aspects: form, level and scope:

- The *form* of the standard is the method by which reliability is measured. The NEM standard is an output-based measure expressed in terms of 'expected unserved energy per region per year'. This is also an expression of risk i.e. the expected level of electricity at risk of not being supplied to consumers in a region.
- The *level* of the standard specifies how much USE is acceptable as a percentage of annual demand per region. The level is currently set at 0.002 per cent USE.
- The *scope* of the standard defines what does and does not count towards the NEM's reliability performance. In terms of the electricity supply chain, the standard currently includes generation and bulk transmission capacity and excludes distribution networks. In terms of events, the standard currently excludes power system security incidents, with certain limited exceptions.

The reliability standard is not set at zero per cent expected USE. The current reliability standard is 0.002 per cent expected USE and is defined in the NER.<sup>84</sup> In simple terms, the

<sup>83</sup> See also the definition of unserved energy in Chapter 10 of the NER.

<sup>84</sup> See clause 3.9.3C(a) of the NER.

reliability standard requires there be sufficient generation and transmission interconnection in a region such that at least 99.998 per cent of forecast total energy demand in a financial year is expected to be supplied. In other words, the reliability standard implies that some load shedding (0.002 per cent and below) is acceptable when considering the costs of eliminating USE between 0.002 per cent and zero.

A non-zero standard is crucial because setting the level of the reliability standard involves a trade-off between the prices paid for electricity and the cost of not having energy when it is needed. Increasing the levels of reliability means increased costs as explained in Chapter 2. Assessing this trade-off is important, and is frequently informed by the value of customer reliability - how much are customers willing to pay for a reliable supply. Consumers would not be willing to pay for a 100 per cent reliable system, since such a system would also be very costly. Indeed, guaranteeing a reliability standard of zero per cent expected USE is impossible, because it is always conceivable that some very unlikely combination of events could occur such that there is insufficient supply to meet demand.

Box 5 discusses the value of customer reliability in more detail.

### BOX 5: VALUE OF CUSTOMER RELIABILITY

The value of customer reliability (VCR) plays an important role in deciding and delivering a range of standards, settings and other policy parameters in the NEM, including the reliability standard and settings. Until recently, VCRs have only been estimated a limited number of times, with no single body responsible for determining VCRs. This has led to variations in both the methodology and the resulting VCRs in previous estimations.

### Latest estimates

The latest estimates of VCR are from AEMO's study undertaken in 2014. AEMO's study reported NEM-wide results by customer class, as well region-wide results. The table below summarises the NEM-wide results, nothing that the \$33,460/MWh figure often quoted refers to the aggregate NEM-wide average.

CUSTOMER CLASS	VCR (\$/MWH)
Residential	25,950
Agriculture	47,670
Commercial	44,720
Industrial	44,060
Direct connect customers (customers directly connected to the transmission network)	6,050

### Table 4.1: NEM-level VCR results (\$/MWh)

CUSTOMER CLASS	VCR (\$/MWH)
Aggregate NEM wide value	33,460

Source: AEMO http://www.aemo.com.au/-/media/Files/PDF/VCR-final-report—PDF-update-27-Nov-14.pdf

#### **AER's work**

On 5 July 2018, the Commission made a final rule to make the AER responsible for calculating VCR estimates. This rule requires the AER to develop a VCR methodology, and calculate the first VCR estimates under that methodology by 31 December 2019.

The AER published a consultation paper in October 2018, noting its proposed approach to borrow from AEMO's approach, build upon it and adapt it to meet the current challenges and transformation of the energy sector recognising, for example, the greater deployment of distributed energy resources.

In April 2019, the AER published a consultation update paper, which sets out the AER's initial positions on existing approaches to measuring VCRs, its proposed methodology, and survey design for estimation of standard outages. The AER intends to conduct its pilot survey of customers in May 2019, with a draft decision on its methodology due in August 2019 and a final methodology report by October 2019. The AER is expected to publish final VCR values by the end of 2019.

Source: AER, https://www.aer.gov.au/networks-pipelines/guidelines-schemes-models-reviews/values-of-customer-reliability-vcr; AEMO http://www.aemo.com.au/-/media/Files/PDF/VCR-final-report—PDF-update-27-Nov-14.pdf

It is AEMO's responsibility to incorporate the reliability standard within its day-to-day operation of the market, and to inform the market of any projection that the reliability standard is expected to not be met. This is discussed next.

### 4.2.2 Operationalisation of the reliability standard

While AEMO provides information to the market based on, and operates the system with reference to the reliability standard, in its day-to day-operation of the power system AEMO seeks to 'clear the market' such that no demand goes unserved, i.e. no load is shed.

In practice, further clarity with regard to how AEMO interprets the reliability standard is provided in AEMO's Reliability Standard Implementation Guidelines (RSIG). The RSIG also specify how AEMO triggers the RERT in practice and in accordance with the NER.

Specifically, the RSIG specifies the following:85

<sup>85</sup> The Commission notes that AEMO is currently revising the RSIG as part of its proposed changes to the ESOO process as a result of the Retailer Reliability Obligation. See http://aemo.com.au/Stakeholder-Consultation/Consultations/Reliability-Forecasting-Methodology-Issues-Paper?Convenor=AEMO%20NEM

Process	Study Time Frame/Publication Frequency <sup>1</sup>	Assessment Method	Primary Action	Second Action	Assumption for Potential Breach of Reliability Standard
ESOO	10 year/Annually	USE	Inform		Forecast USE>0.002% in any forecast year
EAAP	2 year/Annually	USE	Inform	4.8.9 instruction, RERT or direction	Forecast USE>0.002% in any forecast year
MT PASA	2 year/Weekly	USE	Inform	4.8.9 instruction, RERT or direction	Forecast USE>0.002% in any forecast year
ST PASA	6 day/2 hours	Capacity	Inform	4.8.9 instruction, RERT or direction	LOR2 or LOR3

### Figure 4.1: How AEMO operationalises the reliability standard

Source: AEMO, Reliability Standard Implementation Guidelines, June 2018, p. 8.

According to the RSIG, the Electricity Statement of Opportunities (ESOO), which provides information to existing and potential new market participants to assess opportunities in the NEM over a 10-year period, is typically used for information only. In its report into the January 2019 RERT event, AEMO noted that following its publication of the 2018 ESOO which identified increasing reliability risks (but did not forecast a breach of the reliability standard, at the time), it set up a RERT panel of providers of the upcoming summer.<sup>86</sup> AEMO may set up RERT panels at any time - a breach of the reliability standard is not required.

The RSIG states that AEMO typically does not take further action based on the ESOO, but does so based on the Energy Adequacy Assessment Projection (EAAP), which provides analysis of the impact of energy constraints (e.g. water shortages, fuel supply constraints) on energy availability, and the medium- and short-term Projected Assessment of System Adequacy (PASAs).

EAAP is also only published on an annual basis. The next sections therefore focus on the PASA processes, which are updated more regularly, and provide opportunities to AEMO and market participants to further refine their expectations, forecasts and availability, closer (and up to) to real time.

### Medium-term and long-term

Over the medium- and long-term (i.e. from seven days ahead to two years ahead in the medium-term PASA)<sup>87</sup>, the RSIG states that AEMO identifies a breach of the reliability standard when it declares a low reserve condition (LRC).<sup>88</sup> This is determined when AEMO's medium-term PASA probabilistically projects that expected USE for a given year in a given

AEMO, Load shedding in Victoria on 24 and 25 January 2019, p. 5.

<sup>87</sup> AEMO is prohibited from purchasing reserves greater than nine months ahead of real time under clause 3.20.3(d) of the NER, increasing to 12 months under the final rule.

<sup>88</sup> In accordance with clause 4.8.4(a) of the NER.

region exceeds 0.002 per cent. Medium-term PASA projects expected USE for the next two years.<sup>89</sup>

Forecasting processes such as the medium-term PASA allow AEMO the flexibility to change its reliability assessments based on new information, including information about generation availability (e.g. whether a generator is out on maintenance or not) and changes in weather conditions. Participants are required to update the information they provide to AEMO every week and AEMO may change its inputs (e.g. its demand forecasts, its forced outage rates etc) if required. AEMO updates the medium-term PASA weekly, using the latest available information.

AEMO projects the expected value of USE in medium-term PASA by:90

- carrying out a number of iterations of power system simulation runs for 10 per cent probability of exceedance (POE)<sup>91</sup> demand and 50POE demand<sup>92</sup>
- averaging (i.e. taking the mean) all USE outcomes in 10POE runs and repeating this for 50POE runs
- weighting the average (i.e. the mean) 10POE outcomes and average 50POE outcomes 30 per cent and 70 per cent respectively to obtain an expected value, i.e. what AEMO defines as expected USE.<sup>93</sup>

This expected USE value is an annual value. AEMO repeats this analysis for the two-year horizon - but reports annual USE separately. If the annual expected USE value as determined through the process above is more than 0.002 per cent in a given region then AEMO declares a low reserve condition (LRC) to inform the market that it has projected USE in excess of the reliability standard.<sup>94</sup>

In other words, the reliability standard is operationalised by AEMO as an annual expected USE – so if the current forecast of annual expected USE is less than 0.002 per cent for a given region, then the reliability standard is said to be met.

This annual analysis is done on a regional basis - i.e. AEMO assesses each region separately, taking into account interconnector capability (spare capacity from any interconnected regions). AEMO may identify a breach of the reliability standard in one region, but not in an adjacent region.

<sup>89</sup> AEMO also operationalises the reliability standard up to 10 years into the future through the Electricity Statement of Opportunities.

<sup>90</sup> In accordance with clause 3.7.2 of the NER and the RSIG.

<sup>91</sup> A POE shows the probability that a value will be exceeded It is usually abbreviated to POE. For example, 10 per cent probability of exceedance is referred to simply as 10POE. For example, if 10POE demand is, say, 9,000 MW, this implies that there is a 10% probability that demand is higher than 9,000 MW. Another way of putting this is that demand may be higher than 9,000 MW once every 10 years.

<sup>92</sup> Similarly, if 50POE demand is 7,000 MW, this means that there is a 50% probability that demand is higher than 7,000 MW - or a one-in-two year occurrence.

<sup>93 90</sup>POE outcomes are not separately weighted but are implicitly included in the 50POE outcomes.

<sup>94</sup> This is relevant as monitoring LRCs is one of the actions that AEMO may take in relation to the RERT according to the RERT guidelines and RERT procedures. The RSIG also state that AEMO will use an LRC to decide whether to intervene under clause 4.8.9 (directions) or rule 3.20 (RERT) of the NER.

Using this approach there is a clear, mathematical link between the reliability standard as defined in the NER and the process for determining whether the reliability standard is being met.

### Short-term

In the pre-dispatch (a day ahead) and short-term PASA (seven days ahead) timeframes, AEMO operationalises the reliability standard through lack of reserve (LOR) declarations in accordance with AEMO's *Reserve Level Declaration Guidelines* which AEMO is required to update in accordance with the NER.<sup>95</sup> This is a different framework than what is used in the medium-term, and which was discussed above.

AEMO identifies that in-market reserves are running low if reserves available in the market fall below the required reserve level as determined by the LOR methodology.<sup>96</sup> The reserve threshold at which emergency reserves can be activated is called LOR2. LOR2 is the relevant level as monitoring LOR2s is one of the actions that AEMO may take in relation to the RERT according to the RERT guidelines and RERT procedures. The RSIG also state that AEMO will use an LOR2 to decide whether to intervene under rule 3.20 of the NER (i.e. the RERT).

LOR2 is calculated as follows:97

- As a minimum, the LOR2 reserve level is the largest identified credible contingency event, typically the loss of the largest generating unit in a region
- However, AEMO then applies a forecasting uncertainty measure (FUM) to this minimum level in order to account for forecasting uncertainty such as wind or demand forecast deviations as well as generator outages. If the FUM is larger than the largest credible contingency event, then the FUM sets the LOR2 reserve level.

In simple terms, AEMO procures emergency reserves when the amount of reserves in the market fall below the LOR2 level, and only after a market response has not been forthcoming. This calculation is also made on a regional basis (accounting for interconnection), although South Australia and Victoria generally share reserves.

To be clear, there is no mathematical link between the LOR framework and the reliability standard. However, AEMO operationalises the reliability standard through the LOR framework. Specifically, LOR2s (i.e. when the probability of load shedding is more than remote) and LOR3s (i.e. when the market has run out of reserves and involuntary load shedding is imminent) is an assumption of a breach of the annual reliability standard under the RSIG.

In practice, the LOR framework is a more conservative standard than implied by the reliability standard of 0.002 per cent USE, i.e. it tolerates even less load shedding than implied by the reliability standard. The LOR framework allows AEMO to require that there are sufficient market reserves to withstand a large credible contingency or a sudden increase in demand.

<sup>95</sup> Clause 4.8.4A of the NER.

<sup>96</sup> In accordance with Clause 4.8.4(b) of the NER. For more information, see AEMO's reserve level declaration guidelines.

<sup>97</sup> See AEMO's reserve level declaration guidelines, which are available at https://www.aemo.com.au/Stakeholder-Consultation/Consultations/Consultation-on-initial-version-of-Reserve-Level-Declaration-Guidelines

While planning to avoid any load shedding would be impossible, the LOR framework does allow AEMO to manage the system to a far more conservative standard operationally.

### 4.3 Stakeholders' views

### 4.3.1 AEMO's views

AEMO's views as outlined in the rule change request, submission to the consultation paper, additional information paper and the options paper are set out below.

### **Rule change request**

In its rule change request AEMO considered that there is inconsistency between the operational objectives of the current RERT (meeting the reliability standard, which allows some load shedding in a financial year) and directions (maintaining a reliable operating state which implies no load shedding).<sup>98</sup>

It noted that it considered the trigger for procuring emergency reserves, and the determination of the volume to be procured, should be in the context of a broader risk assessment. This should take into account the *risk* of USE, not just the "expected" value.<sup>99</sup> It did not provide more detail as to how this would work.

With respect to the reliability standard, it made the following comments:100

- AEMO's modelling highlighted a heightened risk of load shedding in 2018-19 and 2019-20 in Victoria and, potentially, South Australia, even when the projected USE over a broad range of scenarios meets the reliability standard
- AEMO noted that (at the time this was written) in Victoria in 2018-19, under AEMO's "neutral" demand growth scenario, the risk of not meeting the reliability standard is projected to be nine per cent (approximately one-in-ten year event), and the risk of some USE is approximately 25 per cent (i.e. every four years)
- AEMO stated that it is likely that the reliability standard may not be met during extreme ("peaky") demand scenarios, even if AEMO projects that the reliability standard (i.e. expected USE) will be met across the average of all scenarios.
- AEMO noted that this meant that significant load shedding could occur during severe demand and supply conditions, which does not meet the expectations of most stakeholders.

### Submission to the consultation paper

In its submission to the consultation paper, AEMO stated that:<sup>101</sup>

 The current reliability standard based on average annual USE does not consider the uncertainty dimension of a more volatile market, and has an inherent disconnect with AEMO's operational reliability decision-making.

<sup>98</sup> AEMO, rule change request, p. 6.

<sup>99</sup> Ibid. pp. 7,8.

<sup>100</sup> Ibid. p. 6.

<sup>101</sup>  $\,$  AEMO, submission to the consultation paper, pp. 2, 6.

- Operational reliability refers to the management of supply and demand over operational timeframes (minutes, hours and days). Extreme events with the potential for high impact occur relatively frequently in the power system.
- At the planning stage, the average USE can be within the reliability standard, even if a number of individual scenarios might contain high levels of USE. In real-time during periods of supply scarcity, however, AEMO is required to use its reasonable endeavours to dispatch bids and offers, then activate reserves, before utilising its powers of direction or instruction (such as to initiate load shedding).

AEMO also stated the RERT can be considered as an "insurance product" for the NEM and its end consumers and noted that the main value of an insurance product arises from the amount of protection it offers in plausible extreme conditions.<sup>102</sup> Continuing with the insurance analogy, AEMO explained that when a typical household decides whether to buy car insurance, it does not make the purchase conditional on the annual expected loss in accidents exceeding some percentage of household income, noting that instead, it will likely assess the cost of insurance, potential losses in accidents, especially those arising from extreme events and the likelihood of those events happening.<sup>103</sup>

AEMO noted that similar insurance consideration should be given to the reliability of energy supply, particularly given reliability related USE is likely to be correlated with high demand periods during extreme weather conditions, where a sudden loss of power could lead to significant community costs, for example, due to health-related issues.<sup>104</sup>

### Additional information paper

AEMO further developed its thinking and in its additional information paper, made the following points:<sup>105</sup>

- Increasing tail end risks raises a question about the appropriateness of the current reliability standard which compares an average USE measure to a single 0.002 per cent threshold.
- The current reliability standard does not adequately address the following two issues:
  - It assumes a single cost of VCR if VCR varies by customer segment, timing and magnitude of load shedding then the average USE metric will not be proportional to the cost of load shedding.
  - It ignores the value of insurance and risk mitigation the current reliability standard approach does not recognise the value of reducing the risk of USE (i.e. reducing the range, or extremity of potential USE outcomes), hence the insurance value and benefit of a safety net that limits costs in extreme USE events is not considered in the trade-off.
- Failure to incorporate these two aspects means the current reliability standard will not incentivise the optimal resource mix.

<sup>102</sup> Ibid. p. 6.

<sup>103</sup> Ibid.

<sup>104</sup> Ibid.

<sup>105</sup> AEMO, additional information paper, p. 31.

• Linking RERT procurement in a binary form to the current reliability standard can lead to an on-again, off-again procurement trigger which could increase overall RERT costs.

AEMO added that the current reliability standard does not signal the value of risk management in mitigating against extreme USE outcomes. Using such a metric to balance the reliability trade-off assumes that society is risk neutral (i.e. it weighs upside and downside outcomes equally and places no explicit value in avoiding extreme USE outcomes).<sup>106</sup> It also stated that the average USE metric ignores risk aversion which is counter to most evidence of human behaviour. To the extent that society is risk averse then it will prefer to pay a premium to avoid downside outcomes.<sup>107</sup>

It added that it has become more important to ensure that the RERT, as a supplementary procurement mechanism, is able to act as an effective safety net and provide insurance to society when the energy market alone does not deliver the efficient resource mix.<sup>108</sup> It also stated that the most usual way of managing tail-risk, (i.e. where there is a low probability of a high consequence event) is to take out insurance and RERT should be considered as a form of insurance.<sup>109</sup>

### Submission to the options paper

In its submission to the options paper AEMO reiterated some of its earlier points and stated that the current standard does not set an efficient reliability level and as such RERT procurement should be delinked from it.<sup>110</sup> It also stated that the average VCR used in the current reliability standard underestimates the true cost of load shedding and its risk neutral approach fails to signal the value of risk mitigation and insurance.<sup>111</sup>

AEMO added that the current standard based on an average USE has the following issues:<sup>112</sup>

- It does not adequately take into account the severity of tail-end risks other metrics such as conditional tail risk and "USE at risk" can provide better insights.
- It equally weights all USE events. If there is a higher cost, for example, of more severe USE events then this metric underestimates the cost of load shedding.
- It ignores risk aversion which is a common human behaviour, as evidenced by the prevalence of insurance products in daily life.

In the same submission, AEMO also proposed that the AEMC should modify the reliability standard and framework so that it reflects the true cost and risk trade-offs and is fit-forpurpose in the current NEM, noting that an efficient reliability framework would then subsume the proposed assessment framework for RERT, which will automatically link RERT procurement back to the framework.<sup>113</sup>

111 Ibid.

<sup>106</sup> Ibid. p. 32.

<sup>107</sup> Ibid. p. 34.

<sup>108</sup> Ibid. 109 Ibid.

<sup>110</sup> AEMO, submission to the options paper, p. 5

<sup>112</sup> Ibid.

<sup>113</sup> Ibid. p. 12.

AEMO also noted that a key concern about the current reliability standard is the lack of explicit metrics on USE risk limitation.<sup>114</sup> It therefore proposed that the AEMC could seek advice from experts from other markets that specialise in risk management to determine whether some explicit risk management standard should be incorporated in the reliability framework.<sup>115</sup>

### Submissions to draft determination

In the draft determination, the Commission concluded that the reliability standard was appropriate, adequately captures risk management and balances the trade-offs between higher reliability and the costs of providing more reliability, on behalf of consumers.

However, the Commission recognised that how the reliability standard is operationalised may need to change to capture the changes occurring in the system and noted that the framework was flexible enough to enable this, through AEMO's operationalisation of the reliability standard.

AEMO did not share the Commission's view on the appropriateness of the reliability standard and made the following comments:  $^{\rm 116}$ 

- "There is ample evidence in AEMO's forecasts as well as real market events to highlight that tail-end risk is a real concern in the NEM and the risk has increased in recent years.
- The current reliability standard, with its average USE metric, is inadequate in protecting consumers from tail-end reliability risks, which would leave them worse-off. An explicit risk metric is needed to protect consumers if they are risk averse against reliability load shedding.
- The AEMC should undertake an empirical study to investigate the existence and extent of
  risk aversion towards reliability risks and should consider the abundant international
  examples showing system operators procuring more resources than their reliability
  standards to account for these risks.
- The current NEM reliability standard is based on an average 0.002% USE metrics where equal weights are given to scenarios with no load shedding and those with large amount of USE.
- There is ample international evidence suggesting that: (1) reliability standards are typically set at much tighter levels in other international jurisdictions; (2) System operators often procure to a higher reliability level than implied by their reliability standards."

### 4.3.2 Stakeholders' views

Stakeholders' views on the appropriateness of the reliability standard, as expressed in submissions to the consultation paper and options paper are summarised below.

### Submissions to the consultation paper

<sup>114</sup> Ibid. p. 5.

<sup>115</sup> Ibid. p. 6.

<sup>116</sup> AEMO, submission to draft determination.
The overwhelming majority of stakeholders explicitly stated that the reliability standard remains appropriate.<sup>117</sup> AEMO and the SA Government were the only explicit proponents of moving away from the reliability standard for the purpose of the RERT procurement trigger.

The SA Government specifically suggested that a standing reserve reduces the need for market interventions as they can allow economically-efficient resources to be targeted to provide responses at times of uncertainty.<sup>118</sup> This would also address the inconsistency between the objective of the current RERT framework (which implies some load shedding) and directions (which can be used to meet a reliable operating state, which means no load shedding).<sup>119</sup>

A number of stakeholders, including consumers and their representative organisations:

- considered there was not sufficient evidence provided to suggest community and government sentiment has changed (as asserted by AEMO).<sup>120</sup>
- noted the VCR review to be completed by the AER in 2019 would form an important input in any reconsideration of the standard - with some stakeholders warning that this rule change should not pre-empt the AER's VCR review.<sup>121</sup>
- did not support the use of other metrics to the current reliability standard.<sup>122</sup>

The Energy Users Association of Australia (EUAA) considered that the best current indicator of consumers' attitudes is the feedback given in consumer consultations on network revenue resets.<sup>123</sup>

- The EUAA's participation in these consultations concluded that the overwhelmingly important issue for all customers is affordability. This was definitely the view of its members.
- The EUAA states that consumers are satisfied with the current level of reliability and want to see this delivered at a lower cost.

Some stakeholders also commented specifically on the operationalisation of the reliability standard. In particular:

- The Australian Energy Council and Snowy Hydro believe the Reliability Panel could assist AEMO by providing interpretations of the reliability standard that can be used in forecasts with shorter horizons that one year.<sup>124</sup>
- ERM Power considered that AEMO's forecasts tend to overestimate demand, noting that AEMO's forecast uncertainty measure (FUM) has potential to result in increased activation

<sup>117</sup> Stakeholders that considered that the reliability standard remains appropriate include: Major Energy Users, Energy Networks Australia, EUAA, Flow Power, TransGrid, Clean Energy Council, Snowy Hydro, Brickworks, ERM Power, SACOSS and St Vincent de Paul, BlueScope, Australian Energy Council, Meridian, Energy Australia, Origin.

<sup>118</sup> SA Government, submission to consultation paper, pp. 2-3.

<sup>119</sup> Ibid.

<sup>120</sup> Stakeholders that made this point include: Clean Energy Council, BlueScope, Australian Energy Council, Brickworks, SACOSS/StVdP, Meridian, Snowy Hydro, Energy Australia

<sup>121</sup> Stakeholders that made this point include: SACOSS/StVdP, Australian Energy Council, Energy Australia, Energy Users Association of Australia, Meridian, TransGrid

<sup>122</sup> EUAA, BlueScope, Snowy Hydro, Meridian, Flow Power, MEU, AEC

<sup>123</sup> EUAA, submission to the consultation paper, p. 5.

<sup>124</sup> AEC and Snowy Hydro: submissions to consultation paper.

of RERT. For example, it stated that Victoria in the summer period has never achieved the AEMO's 1-in-10 year maximum demand. ERM Power also believes AEMO's methodology in weighting USE outcomes is highly conservative as it ignores POE outcomes below 50POE forecasts.<sup>125</sup>

- Origin also noted that AEMO's USE forecasts may be conservative, for example, due to its
  processes not considering 90 POE demand scenarios to balance out 10 POE scenarios.<sup>126</sup>
- Meridian had concerns around the operationalisation of the standard, particularly in light of the addition of the FUM through the LOR2 process. Meridian believes the NER or RERT guidelines should provide AEMO with clearer guidance on balancing the costs and risks of any early intervention against any potential cost savings.<sup>127</sup>
- By contrast, TransGrid stated the value that customers place on avoiding high-impact low-probability (HILP) events has not been adequately taken into account by the regulatory framework.<sup>128</sup>

In terms of the insurance analogy used by AEMO:

- Specifically, the Energy Efficiency Council (EEC) noted that RERT provides a form of insurance for the electricity system and that the NEM already relies on a number of mechanisms, including involuntary load-shedding and System Restart Ancillary Services to minimise the impact of unplanned supply outages.<sup>129</sup>
- The SA Government noted that reserves should be considered as an insurance product to manage market risk on a routine and ongoing basis over a long-term period.<sup>130</sup>

## Submissions to the options paper

With the exception of AEMO, all stakeholders<sup>131</sup> that commented on the reliability standard in their submissions to the options paper, stated that it is appropriate.

Stakeholders, including customer representatives, set ouf a number of reasons for supporting the existing reliability standard (metric and level) including that:

- The market is working to provide reliability as implied by the reliability standard and it
  has been doing so successfully market participants through the existing governance
  structure of the reliability standard are best placed to manage the risks associated with
  reliability.<sup>132</sup>
- The existing reliability standard does factor in peakiness of demand and the USE forecasts will change as peakiness changes, in contrast with AEMO's views on the subject.<sup>133</sup>

<sup>125</sup> ERM Power, submission to consultation paper, p. 2.

<sup>126</sup> Origin, submission to consultation paper, p. 1.

<sup>127</sup> Meridian, submission to consultation paper, p. 2.

<sup>128</sup> TransGrid, submission to consultation paper, p. 3.

<sup>129</sup> EEC, submission to consultation paper, p. 1.

<sup>130</sup> SA Government, submission to consultation paper, p. 3.

<sup>131</sup> AEC, Stanwell, Flow Power, Snowy Hydro, MEU, EUAA, EA, Alinta, ECA: submissions to options paper.

<sup>132</sup> Snowy Hydro, submission to options paper, p. 4, Stanwell, submission to options paper, p. 4

<sup>133</sup> MEU, submission to the options paper, p. 4, EnergyAustralia, submission to the options paper, p. 2, Origin, submission to the options paper, p. 1..

- There is no evidence that consumers want a higher level of reliability or no USE in fact, consumers are primarily concerned about reducing electricity prices.<sup>134</sup>
- There no evidence that "political VCR" is reflected in consumers' VCR.<sup>135</sup>
- Alternative metrics to USE are less appropriate as they overstate the risk to the system and/or do not take into account size and duration of interruptions.<sup>136</sup>
- HILP events best describe security-type issues, not reliability issues reliability events are managed in a controlled manner through rotational load shedding, thereby minimising the impact on consumers.<sup>137</sup>

In terms of affordability, Energy Consumers Australia (ECA) noted that affordability continues to be the number one priority for consumers. The latest results of its Energy Consumer Sentiment Survey (which is carried out every six months), show that consumers are overall far more satisfied with the reliability of their service than they are with the value for money.<sup>138</sup>

Stakeholders made the following additional points:

- Snowy Hydro noted that it would be premature for AEMO to be proposing to make significant changes to arrangements and structures when they have not settled issues regarding the VCR and forecasting.<sup>139</sup>
- Major Energy Users (MEU) stated that there is a stronger argument for increasing the level of USE than for reducing it as this might result in lower costs for consumers without resulting in a discernible reduction in reliability.<sup>140</sup>
- EUAA said the approach taken by AEMO seems to overestimate the achievable accuracy in modelling rare events and the ability to deploy this model to efficiently allocate resources given how statistically rare these events are.<sup>141</sup>
- Stanwell noted that if the current reliability standard does not accurately reflect customers' expectations of reliability, proper consideration of the reliability standard through the Reliability Panel is the appropriate approach.<sup>142</sup>
- Meridian noted that a more appropriate outcome may be to request the Reliability Panel to conduct a review of how to implement a change to deal with the issues of 'tail risk' (if the AEMC considers that the need for this is made out) and enable all participants to actively participate in this.<sup>143</sup>

On the insurance analogy and risk aversion theory used by AEMO:

<sup>134</sup> MEU, submission to options paper p. 2, EUAA, submission to the options paper, p. 3, ECA, submission to the options paper, p. 3., Flow Power, submission to options paper, p. 5.

<sup>135</sup> EUAA, submission to the options paper, p. 7, AEC, submission to the options paper, p. 2.

<sup>136</sup> Snowy Hydro, submission to options paper, p. 7, AEC, submission to the options paper p. 2., ECA, submission to the options paper, p. 6.

<sup>137</sup> Flow power, submission to options paper, p. 5, AEC, submission to the options paper, p. 2.

<sup>138</sup> ECA, submission to options paper, p. 3.

<sup>139</sup> Snowy Hydro, submission to options paper, p. 6.

<sup>140</sup> MEU, submission to the options paper, p. 2.

<sup>141</sup> EUAA, submission to the options paper, p. 2.

<sup>142</sup> Stanwell, submission to options paper, p. 4.

<sup>143</sup> Meridian, submission to options paper, p. 3.

- Energy Users Association of Australia (EUAA) noted that in the private market where attempts are made to "over insure" a risk, a very swift and hard push back is brought from industry when they see inefficient capital allocation.<sup>144</sup>
- It further noted that if the RERT is meant to be a "last resort" insurance policy under AEMO's proposed changes, it risked becoming a second or third last resort, leading to higher costs to consumers from higher procured volume.<sup>145</sup>
- The AEC stated that risk-aversion bias is relevant to a risk of catastrophic failure, such as might happen in a property fire. However, a controlled rotational load shedding event (i.e. what occurs with a reliability-related event) is not of this nature.<sup>146</sup>

On VCR and how reliability is managed in the NEM:

- Meridian noted that an assessment of VCR for reliability purposes requires an assessment of the likely costs to be incurred by customers who are actually affected at the time of shedding and not some theoretical whole of year and whole of market average.<sup>147</sup>
- This was echoed by the EUAA, which noted that a more appropriate approach to estimating VCR (for the purposes of reliability) might be to get information on the most likely outcome for a NEM reliability event e.g. a short duration (30 to 60 minutes) rolling outages impacting a small subsection of consumer demand at any given time.<sup>148</sup>

## Submissions to draft determination

Most stakeholders, including all consumers and their representatives, that commented on this aspect explicitly stated their support of the draft determination because:<sup>149</sup>

- The Panel is best placed to make reliability trade-offs.
- There was no clear evidence that the reliability standard is no longer appropriate.
- AEMO already has flexibility to better capture extreme events/tail risk through the operationalisation of the reliability standard.
- There is no evidence that consumers want to pay for a more conservative reliability standard.

Indeed, the EUAA continued to raise concerns around RERT costs for its members, noting that increased energy costs are either absorbed by the large consumers (typically, businesses), making it more difficult to maintain existing levels of employment and reasonable returns to shareholders or passed through to their own consumers in the form of increases in the prices paid for many everyday items further adding to the cost of living pressure for the average consumer.<sup>150</sup>

Meridian stated that RERT is the ambulance at the bottom of the cliff and investing excessively on ambulances runs the real risk that investment on the fence at the top (the

<sup>144</sup> EUAA, submission to options paper, p. 5.

<sup>145</sup> Ibid. p.9

<sup>146</sup> AEC, submission to options paper, p. 2.

<sup>147</sup> Meridian, submission to options paper, p. 4.

<sup>148</sup> EUAA, submission to options paper, p. 6.

<sup>149</sup> CEC, EUAA, AEC, Origin, MEU, EA, Stanwell, Snowy Hydro, Meridian: submissions to draft determination.

<sup>150</sup> EUAA, submission to draft determination, p. 1.

market) will reduce such that no number of ambulances will be able to deal with the emergency.<sup>151</sup>

ENGIE noted that while it had material concerns around the Panel's decision on the reliability standard, these concerns would not be mitigated by having AEMO unilaterally apply its own reliability criteria.<sup>152</sup>

ENGIE and AEC suggested that we should continue to explore the possibility of the Reliability Panel having an enhanced role in providing AEMO with guidance on how to operationalise the reliability standard in the short term.<sup>153</sup>

The Victorian Government made the following overaching comments about reliability:154

- The likelihood of ageing thermal generation forced outages is increasing, but the rate of increase (and whether the outages are likely to be correlated) is not well understood.
- While it agrees in principle that the market itself should provide reserves, in practice, there may be a problem in the current market transition period.

#### 4.3.3 Technical working group

The technical working group discussed this issue on 14 December 2018 and noted that all the stakeholders that commented on the reliability standard in submissions stated that it was appropriate and that changing the reliability standard itself was not necessary.

It was broadly considered that high-impact, low-probability events (e.g. a system black) were security events and not reliability events. It was acknowledged that emergency reserves are not procured to mitigate such catastrophic events (and would be largely ineffective in these situations in any event).

There was discussion that reliability-related events involved controlled, precise, rotational load shedding that did not interrupt an individual customer's supply for more than an hour, as explained in Chapter 2. If an event involved load shedding across the system for greater than 24 hours (which is unlikely to be a reliability event in the first place, as reliability events tend to be shorter in duration), mandatory restrictions would be imposed.

Mandatory restrictions<sup>155</sup> on the use of electricity may be imposed by a jurisdiction as a means of controlling demand and averting a situation where there is insufficient generation capacity to meet demand, particularly in situations where mandatory load shedding is or would otherwise be necessary. These restrictions may come into effect during periods of extreme demand or instances where a sudden decrease in available capacity occurs, for example due to industrial action.<sup>156</sup>

<sup>151</sup> Meridian, submission to draft determination, p. 2.

<sup>152</sup> ENGIE, submission to draft determination, p. 2.

<sup>153</sup> AEC and ENGIE: submissions to draft determination.

<sup>154</sup> Victorian Government, submission to draft determination, p. 2.

<sup>155</sup> Rule 3.12A of the NER.

<sup>156</sup> The Commission will examine mandatory restrictions through its Investigation into Intervention Mechanisms and System Strength in the NEM.

It was also noted consumers reliant on continuous supply were likely to have plans in place such as back-up generators or uninterruptible power supplies (UPSs) installed.<sup>157</sup>

# 4.4 Reliability Panel advice

The Reliability Panel has a number of responsibilities that are related to this rule change request, specifically:

- under the NER the Panel has an ongoing and periodic obligation to review and provide advice on the reliability standard and settings to the AEMC every four years, with its most recent review of the reliability standards and settings published in April 2018<sup>158</sup>
- in reviewing the standard and settings, the Panel must comply with a Reliability Standard and Settings Guideline, which it prepares, the most recent of which was published in December 2016 with this version guiding the most recent review of the standards and settings<sup>159</sup>
- the Panel is also required under the NER to develop and publish guidelines that provide guidance for AEMO in its operation of the RERT.<sup>160</sup>

Given the role of the Panel, the Commission wrote to seek the Panel's views on the appropriateness of the reliability standard as a procurement trigger for the RERT.<sup>161</sup> In particular, the Commission requested that the Panel draw on previous work that relates to this rule change request as identified above, informed by its expert views, and present views back to the Commission on:

- whether the reliability standard i.e. 0.002 per cent expected USE remains appropriate for the NEM
- whether there was any evidence in the recent review of the reliability standard and settings that the standard may need to be tightened, in some or all conditions, to meet community expectations, including any stakeholder submissions on this point
- the potential costs and benefits arising from any tightening of the reliability standard
- whether the Panel considered a different metric to the reliability standard (i.e. a metric that is different from expected USE per region per year) as part of its analysis and any views on its appropriateness
- the implications that might arise if the RERT's procurement trigger was delinked from the reliability standard and what implications this may have for the reliability settings.

The advice was provided to the Commission on 28 September 2018. Both the request for advice and the advice itself can be found on the Commission's website.

The Panel's key points may be summarised as follows:

<sup>157</sup> A UPS is a machine that provides near-instantaneous emergency power to a load when there is a power cut, meaning that power as felt by the user is "uninterruptible".

<sup>158</sup> Clause 3.9.3A(d) of the NER.

<sup>159</sup> Clause 3.9.3A(e) of the NER.

<sup>160</sup> Clause 3.20.8 of the NER.

<sup>161</sup> In accordance with section 38(4) of the NEL.

- The form of the reliability standard should be retained as USE.
- The Panel did not review the 0.002 per cent USE level of the reliability standard in its most recent review because the threshold requirements for its reassessment were not met. The threshold requirements are set out in the guidelines for the review and include: (i) any changes in AEMO's value of customer reliability measure (ii) any changes in the way consumers use electricity that suggest many consumers are markedly less reliant on grid-supplied electricity.<sup>162</sup>
- Submissions received to the Panel's 2018 review considered the current level of the standard was appropriate.
- Modelling conducted for the Panel's 2018 review forecasts the system will provide a level of reliability significantly better than then 0.002 per cent reliability standard in all national electricity market regions, for the review period.
- Modelling indicates the additional cost of moving to zero expected USE under the Victorian base scenario would increase wholesale energy costs by nearly 7 per cent (\$200 million per annum) in that region, as measured against current market outcomes.<sup>163</sup>
- The RERT's procurement trigger should be linked to the reliability standard at least for medium- and long-notice RERT.
- In relation to the short-notice RERT (reserves procured up to seven days in advance), the Panel considers it less clear whether or not the procurement of the reserves should be linked to the reliability standard.

For further information, see Appendix C.

# 4.5 Commission's analysis and conclusions

## BOX 6: SUMMARY OF COMMISSION'S CONCLUSIONS

The reliability standard is not set at zero per cent expected USE. In simple terms, the reliability standard requires there be sufficient generation and transmission interconnection in a region such that at least 99.998 per cent of forecast total energy demand in a financial year is expected to be supplied. In other words, the reliability standard implies that some load shedding (0.002 per cent and below) is acceptable <u>when</u> considering the costs that would be involved in trying to eliminate USE between 0.002 per cent and zero.

It is *expected* USE since the standard is measured as a weighted-average across a wide range of possible outcomes that could lead to USE, where the weights are the probabilities (or likelihood) that USE will occur. For example, extreme weather events tend to occur rarely, and

<sup>162</sup> The Panel also considered other factors such as changes in the costs of new entrant generation since 2014 and the benefits of predictability and stability.

<sup>163</sup> To be clear, the 7 per cent increase in wholesale energy costs was specifically for the Victorian base modelling scenario. Under alternative scenarios the cost of moving to zero expected USE could be far higher. An alternative scenario where USEexceeds the reliability standard (0.002 per cent expected USE) in Victoria through early coal-fired generation retirement was also modelled. Achieving an expected outcome of zero USE under this scenario would involve a 20 per cent increase in wholesale energy costs (an additional \$600 million per annum), compared to current Victorian wholesale energy costs.

are therefore weighted based on their likelihood of occurring. Conversely, common events are weighted more highly given, by definition, they are more likely to occur.

The reliability standard is generally set every four years following a review by the Reliability Panel, which comprises members who represent a range of participants in the NEM. In reviewing the reliability standard, the Panel comprehensively assesses the trade-off inherent in higher levels of reliability.

In considering the appropriateness of the reliability standard, as noted above, a non-zero reliability standard is crucial because of the trade off between affordable power and the cost of not having energy when it is needed. This was reinforced by consumer feedback on this rule change, where consumers were more concerned about price than reliability - in fact, no consumer group or large energy user suggested that the reliability standard was not fit for purpose or that it needed to be more conservative.

Not only could it be prohibitively expensive to try to maintain a 100 per cent level of reliability, practically, it is impossible because there is always the possibility that some unlikely combination of events could occur such that there is insufficient supply to meet demand.

This is why the reliability framework is based on a reliability standard that is not 100 per cent. Importantly, there is one reliability standard in the NEM - which provides signals to the market as to the level of investment required. The Retailer Reliability Obligation is consistent with this, and is only triggered once a breach of the reliability standard is identified (known as a material gap) in order to further promote reliability through market incentives.

The Commission agrees with AEMO that the nature of the system is changing. The changing characteristics of the generation fleet and the increase in extreme weather events make the power system less stable, more volatile and difficult to operate. This in and of itself does not suggest that the reliability standard is no longer appropriate (indeed, stakeholders commented that it remains appropriate), but does mean that the way the power system is operated to meet the reliability standard may need to change.

As the power system changes, what AEMO does and how it discharges its responsibility for reliability will necessarily change over time. The NER are flexible enough in order to adapt to accommodate the changes occurring, and any "tail risk" that may emerge. AEMO - as is appropriate for the system operator - has flexibility and discretion as to how the reliability standard is operationalised, and therefore, incorporated in its day-to-day operations, particularly through its modelling and forecasting of the risk to the power system.

For example, if AEMO considers that a more peaky system has changed the underlying distribution of USE outcomes, it could change the weighting of some of the extreme outcomes (e.g. a one-in-ten year outcome) accordingly, through consultation of the RSIG with industry. In addition, the LOR declaration framework which operates in the short-term, is not directly linked to the expected USE metric. Moreover, this was recently changed to incorporate forecasting uncertainty, allowing errors with temperature or generation availability to be captured in AEMO's modelling. The final rule preserves this flexibility for AEMO, given that

flexibility continues to be important to make sure that the reliability framework remains fit for purpose in the changing environment.

The Commission also assessed the appropriateness of the reliability standard specifically with respect to high-impact, low-probability (HILP) events, due to concerns from AEMO that the reliability standard did not appropriately capture these types of events, based on theories such as risk aversion, which suggest that consumers tend to be risk averse when it comes to HILP events.

The reliability framework establishes that AEMO should target zero load shedding in real-time, and gives it a number of tools to manage this, including tools to manage extreme events. If AEMO forecasts that there are not enough reserves in the market, <u>and</u> there is an insufficient response from the market to provide additional reserves, <u>and</u> that there are no reserves procured or available through RERT or directions, then these extreme events are managed through rotational load shedding, typically to maintain power system security.

Rotational load shedding occurs through AEMO directing networks to reduce load by turning power off to some areas to maintain balance in the system. It is called rotational load shedding because the outages for consumers are typically kept to about 30-60 minutes, with load shedding rotated between suburbs and regions. Typically, lines supplying critical infrastructure (such as hospitals) and the CBD are exempt from rotational load shedding. While rotational load shedding is regrettable because of the impact on the customers affected, its objective is to avoid an even wider loss of supply, or even an extreme grid shutdown. To avoid the rarity of rotational load shedding (the recent events of January 2019 being the third time rotational load shedding has been used in the NEM for reliability) would incur significant costs that consumers may be unwilling to pay.

Therefore, the Commission concludes that the reliability standard remains appropriate with respect to these types of events because reliability events are managed through rotational load shedding and typically lasts for a short amount of time, compared to events such as a system-wide blackouts.

Power system security HILP events can, however, have a significant impact on consumers. However, these types of events are best managed through the existing power system security framework, e.g. security directions and frequency control. The RERT is not the most appropriate mechanism to address these types of events.

The Commission also acknowledges Brattle's finding that it would be appropriate to explicitly account for risk aversion towards small losses or incremental reliability risks (known as loss aversion, which is discussed in more detail below), if there is evidence that consumers in the NEM are loss averse. Additional information on consumer preferences would indeed be beneficial. However, in light of the significant feedback that consumers do not wish to pay more for electricity, it does not appear to the Commission that there is much evidence of this in the NEM.

In conclusion, there is no change to the reliability standard as part of this final rule.

Questions about the reliability standard and what it should be are dealt with by the Reliability Panel as part of its regular review, which considers the reliability standard in the context of the broader reliability framework. That review is separate from the consideration of the tools that the system operator has to maintain reliability, such as the RERT.

A key determination of the Panel's thinking is estimates of the value of customer reliability. The AER is currently undertaking a survey of the value of customer reliability in the NEM, with numbers available at the end of the year. The Panel may consider turning its mind to the reliability standard and settings again, after that review has been finalised. In addition, stakeholders could raise issues directly with the Panel at any time if there is an informed position that consumers value reliability more than reflected in the reliability standard.

### 4.5.1 Rationale for a centrally-determined reliability standard

In most markets the price for a particular good is decided at any moment in time through the buyers (the demand-side) and the sellers (the supply-side) agreeing on a price at which to transact. In effect, customers signal the value they place on the supply of a particular good and when a shortfall in supply is forecast, a price signal is provided to the market to drive investment in new supply. In such markets, there is no need for a minimum level of supply to be determined by a central body.

For a number of reasons, electricity differs from other commodities in this respect. First, it is not cost effective to store electricity in bulk - although the economics of this are rapidly changing. This means that (generally) electricity must be produced by generators and delivered to customers in real time. In addition, electricity customers generally have little direct involvement in the market and instead are represented by their retailer. In the absence of a wide-spread adoption of smart meters and time-of-use tariffs, most electricity customers currently have neither the means nor the ability to express their preferences quickly. However, the Commission is considering ways to increase the ability for consumers to participate in demand response through its consideration of three rule change requests on wholesale demand response.<sup>164</sup>

While these factors may in time be less significant as a result of technological developments (for example in batteries and adoption of smart meters) they are still material today. Together, these factors limit the ability of the demand-side to send accurate and effective price signals regarding the 'optimal' level of electricity supply. Further, if customers cannot reveal their willingness to avoid very high prices through their consumption decisions, the price of electricity would predominately be set by the supply-side.<sup>165</sup>

<sup>164</sup> See https://www.aemc.gov.au/rule-changes/wholesale-demand-response-mechanism

<sup>165</sup> Albeit, with some limited demand-side participation who have the ability to signal their price sensitivity and curtail load without impacting other customers.

It is for these reasons that energy markets tend to rely on regulatory solutions for ensuring reliability. Such solutions have been a feature of the NEM since it commenced.<sup>166</sup>

The reliability standard is one such regulatory solution. As noted by the Reliability Panel, the reliability standard embodies a trade off, *made on behalf of consumers*, between the prices paid for electricity and the cost of not having energy when we need it.<sup>167</sup> As noted above, in other commodity markets, this trade off is made directly by the consumer.

#### Is the reliability standard fit for purpose?

As a regulatory solution, the reliability standard is inevitably imperfect. Any standard determined by one body (in this case, the Reliability Panel which reviews the standard to provide advice to the AEMC, which ultimately determines the standard within the NER) has insufficient information to make the trade off that would perfectly reflect consumers' preferences. Even if all individual consumer preferences were known to the body, the reliability standard needs to be relatively simply articulated in order to be operationalised in real-time, which means that it cannot represent the myriad of complexities relating to the trade off. For example different consumers valuing reliability at different levels to one another and at different times.

The pertinent question is therefore whether the reliability standard, both in terms of the metric (maximum expected USE per region per financial year) and level (0.002 per cent), is appropriate and meets the needs of consumers, knowing that the reliability standard itself cannot be perfect.

The Commission sets out its analysis of whether or not the existing reliability standard is appropriate next.

#### 4.5.2 Is the USE metric appropriate?

Much historic consideration has been given to whether the metric is appropriate, and the underlying rationale as to why it was adopted remains unchanged. For example, the Panel considered this matter in 1998, 2007, and 2016 and concluded that the metric is fit for purpose.<sup>168</sup> The Panel reiterated this review in advice requested for this rule change.<sup>169</sup> The Commission's views are consistent with those that have been expressed by the Panel since 1998, and are laid out below.

## Alternative metrics

The current metric reflects the amount of energy that is not supplied. Alternatives metrics, such as those relating to the frequency of supply interruptions, or their cumulative duration, could be used instead of, or as well as, the current USE measure.

168 Reliability Panel, Determination on reserve trader and direction guidelines, NECA website(www.neca.com.au), June 1998; Reliability Panel, Comprehensive Reliability Review, 2007; Reliability Panel, RSSR Guidelines 2006.

<sup>166</sup> For a more detailed discussion, please see: https://www.aemc.gov.au/sites/default/files/content/ef134ef7-90b2-4d05-abfc-3ab9370bf3fd/Final-report.PDF, pp. 11-12.

<sup>167</sup> Reliability standards and settings review, final report, 2018, p. 9.

<sup>169</sup> See Appendix C.

There are a range of different metrics that could be used to express and assess the reliability of the NEM. Some of these are detailed below:

- Loss of load probability (LOLP), which is the proportion (or probability) of the days per year, half-hours per year, or events per season, in which available generating capacity is insufficient to serve demand.
- Loss of load expectation (LOLE), which is the expected number of days per year in which available generating capacity is insufficient to serve demand, or the half-hours per year in which capacity is insufficient to serve half-hourly load.
- Deterministic standards, which define a minimum amount of reserve generation capacity.
- The conditional tail expectation, is the average MW of USE providing that USE occurs.<sup>170</sup>

Alternative metrics of reliability have significant limitations. While time based measures such as LOLP and LOLE provide information about the frequency of interruptions, as AEMO acknowledges, they provide no information on the actual volumes of energy not supplied.<sup>171</sup>

LOLP expresses the likelihood of load being lost but not the severity; for the same value of LOLP, a supply interruption may be less than 1 MWh (very minor) or greater than 1000 MWh (very serious). Therefore, LOLP has less physical significance and is difficult to interpret. As the AEC notes LOLP easily exaggerates risks for typical stakeholders.<sup>172</sup> This is because LOLP shows the risk of any USE occurring. So for example, 50 per cent LOLP metric could mean a 50 per cent probability of a trivial amount of USE. In terms of conveying risk, with peakier system conditions,<sup>173</sup> the Commission might expect that LOLP metric is less conservative as interruption events might be deeper but rarer and less frequent.

In contrast to LOLP, LOLE is expressed in terms of hours or days (rather than a percentage) and as such there is a physical significance associated with the metric that makes it easier to interpret. However, like LOLP, LOLE does not recognise the degree of capacity or energy shortage. The Commission appreciates the international summary of metrics provided by AEMO<sup>174</sup> and notes that LOLE is used in a number of jurisdictions.<sup>175</sup> However, for the reasons discussed below the Commission considers that the USE is more appropriate for the NEM. The Commission also acknowledges that comparisons across different jurisdictions are difficult due to differing factors such as market design, competitive structure, level of interconnection, and the VCR.

The Commission notes a deterministic standard may be relatively simple to implement, but the actual level of reliability it provides is a function of the number of generators actually in

<sup>170</sup> AEMO, additional information to support the enhanced RERT rule change, p.15.

<sup>171</sup> AEMO, additional information to support enhanced RERT rule change proposal, p. 12.

<sup>172</sup> AEC submission to the options paper, p. 2

<sup>173</sup> As identified by AEMO.

<sup>174</sup> AEMO, additional information to support enhanced RERT rule change, p. 11.

<sup>175</sup> The Commission considers AEMO's conclusion "that the NEM standard is generally not as restrictive as standards in other countries" is not well-founded. The Commission notes Snowy Hydro's assessment of AEMO's comparison of metrics as "alarmist" and "meaningless". Snowy Hydro submission to options paper, p. 7.

service at any given time and in some cases may just be more an expression of redundancy rather than energy not delivered to consumers, which is more relevant to consider in relation to reliability.

The Commission agrees with AEMO that tail-risks or tail-end events and risk aversion are difficult to capture in any metric. This is because these types of events are rarely observed and are projected to occur in extremely rare circumstances.

In its rule change proposal and subsequent documents and submissions, AEMO raised the concepts of "risk aversion" and "loss aversion", which it says are reasons why the reliability standard is no longer appropriate since the reliability standard does not explicitly take those concepts into account.

Specifically, in its submission to the options paper for this rule change request, AEMO proposed that the AEMC "could seek advice from experts from other markets that specialise in risk management to determine whether some explicit risk management standard should be incorporated in the reliability framework and if so, the appropriate form and level of the metrics."<sup>176</sup>

Therefore, the Commission engaged Brattle to examine reliability frameworks in other jurisdictions, and how they implement reliability in practice. Brattle's report may be found on the Commission's website.<sup>177</sup>

Brattle, in reviewing how other jurisdictions incorporate risk aversion into policy decisions, did not find clear examples of policy decisions where an option was chosen explicitly taking risk aversion (or loss aversion) into account.<sup>178</sup> However, over time, new methods or ways of better capturing tail risks may be developed.

Brattle's other findings with regard to other jurisdictions are summarised next.

## Lessons from other jurisdictions

Brattle examined four jurisdictions, namely, PJM, ISO-NE, Great Britain and ERCOT. It found that two of the four jurisdictions have reliability standards which are more stringent than an efficient standard, i.e. one that equates the cost of increasing wholesale-level reliability with the value to consumers of making that increase.

Some key insights include the following:

PJM and ISO-NE both have a standard of "1 in 10" loss of load expectation, which they
operationalise as one wholesale-level reliability outage per ten years, or an expected
probability of having an outage of 0.1 per year (0.1 LOLE). Brattle found that it has been
estimated that this 0.1 LOLE standard implies a VCR of about US \$200,000/MWh.<sup>179</sup>

<sup>176</sup> AEMO, submission to options paper, p. 6.

<sup>177</sup> Brattle, High-Impact, Low-Probability Events and the Framework for Reliability in the National Electricity Market, February 2019, available on the project page.

<sup>178</sup> Ibid.

<sup>179</sup> By contrast, the latest estimates of VCR in the NEM - average NEM-wide - is \$33,460. See AEMO http://www.aemo.com.au/-/media/Files/PDF/VCR-final-report—PDF-update-27-Nov-14.pdf.

• The modelling in Great Britain uses a "least worst regret" approach (and explicitly rejects probability-weighted approaches), which allows a range of possible future scenarios to be incorporated without assigning probabilities to each one.

Least worst regret approaches typically minimise the worst-case regret (or loss), whereby regret cost is typically expressed as total cost minus minimum cost. Risk aversion is accounted for as the outputs of this methodology are affected by extreme scenarios.

In its submission to the draft determination, AEMO noted that Brattle's statement that "none of [the jurisdictions] explicitly discuss risk aversion" appeared contradictory since the Great Britain approach uses a "least worst regret" approach, which accounts for risk aversion.<sup>180</sup> The Commission understands Brattle's conclusion to mean that the policy rationale for choosing the least worst regret approach was not necessarily or explicitly to address concerns around risk aversion, but rather broader concerns around reliability, as discussed next.

Brattle found that regardless of the approach chosen, in all four jurisdictions, the reliability frameworks ultimately result in procuring more resources than system modelling shows is needed to meet the reliability standard. Brattle concluded that, to a certain extent, this over-procurement may be the result of concerns that reliability modelling does not adequately capture all of the risks facing the system, or that some of the risks associated with HILP events cannot be reliably estimated. It also concluded that it could be because system operators are concerned about power system security risks, and as a result, procure more resources in order to manage both reliability and security events. Another possible reason could be because system operators may have an incentive to over-procure, since over-procurement is costly for consumers but not for system operators (whereas under-procurement would be costly for system operators and consumers).

In particular, it also concluded that PJM and ISO-NE in particular carry higher reserve margins than a "risk neutral" energy-only market design whose prices reflect VCR, due to conservatisms built into the 1-in-10 LOLE standard, the design of the capacity auction, and reliability modelling techniques.

AEMO, in its submission to the draft determination, considered that its proposal (an explicit risk metric) was more preferable than what overseas jurisdictions do as it would make procurement more transparent.<sup>181</sup>

However, the Commission considers that the NEM is not dissimilar to other jurisdictions in that regard - there is conservatism built into the NEM's reliability framework through, e.g. AEMO's modelling techniques and assumptions. This view was also shared by some stakeholders in this process. This is appropriate for a system operator. A better approach would be to improve transparency of how the reliability standard is operationalised - indeed, the Commission's Reliability Frameworks Review made a number of recommendations with respect to reliability forecasts aimed at improving transparency. The Commission expects rule

<sup>180</sup> Brattle, High-Impact, Low-Probability Events and the Framework for Reliability in the National Electricity Market, February 2019, available on the project page

<sup>181</sup> AEMO, submission to draft determination, p. 10

change requests on these issues shortly. In addition, the Retailer Reliability Obligation introduces new reporting obligations on AEMO with respect to the Electricity Statement of Opportunities (ESOO). This includes a Reliability Forecast Guidelines which AEMO will need to publish, in accordance with the AER's forecasting best practice guidelines. These should further promote transparency around forecasting how the reliability standard is operationalised.

## Hybrid standards

The Panel has previously assessed the possibility of a hybrid standard. The Panel found that hybrid standards, in effect, are as restrictive as their most restrictive element and that introducing an additional parameter, therefore, may cause the reliability standard to be tightened, with associated cost to consumers.<sup>182</sup> In other words, if there are two individual metrics that form one hybrid metric, the outcomes would be driven by the more conservative of the two metrics. Meridian agree and believe that the addition of a new metric to the current standard would result in the more conservative metric being applied.<sup>183</sup>

The Commission agrees that introducing an additional parameter, therefore, may cause the USE standard to be inadvertently tightened. If tightening the standard was deemed to be appropriate, then a more efficient and clearer way to do this would be to tighten the USE metric itself, rather than introducing a second metric.

## Conclusions

Noting the significant limitation of alternative metrics, the Commission considers that the existing reliability standard is still fit for purpose at this time. This is consistent with stakeholder feedback (summarised in section 4.3), with the majority of stakeholders opposing the use of other metrics to the current reliability standard.

The current USE standard is an energy standard consistent with a market whereby energy and capacity are traded together via integration of the spot and contract market. This design is well suited to placing value on cumulative, long-term energy shortfall and thus rewarding additional energy generation or consumer responses to reduce that shortfall. Introducing an alternative individual or hybrid standard is likely to create conflicting objectives that cannot readily be incorporated into the market design. For instance, introducing parameters to limit the frequency or depth of individual events may unavoidably affect the cumulative, long-term energy shortfall.

These views are consistent with that provided by the Reliability Panel in its advice for this rule change process:<sup>184</sup>

"At the start of the market, the standard was established as maximum expectation of unserved energy of 0.002 per cent. Part of the reason for establishing the standard on unserved energy was that it clearly fits within the market based environment of the

<sup>182</sup> AEMC Reliability Panel 2007, Comprehensive Reliability Review, Final Report, December 2007, Sydney

<sup>183</sup> Meridian, submission to the consultation paper, p. 3.

<sup>184</sup> See https://www.aemc.gov.au/sites/default/files/2018-10/Letter%20of%20Advice%20from%20the%20Reliability%20Panel.pdf

NEM. The potential for interruption of individual consumers is then a function of the regional reliability, which in turn is assessed by the system operator on the basis of market data. This is consistent with the underlying principles of the NEM, rather than looking at occurrences of interruptions which would be more consistent with capacity based arrangements."

The Commission therefore concludes that the USE metric remains appropriate.

The Commission recognises that any reliability standard needs to adapt and evolve over time as the energy system transforms - particularly in a world of large transformation that is occurring in the power system at present. Indeed, there is an amount of discretion available to AEMO as to how to operationalise the reliability standard - the inputs and assumptions that underpin the projections may change as the power system changes, which means that the current framework provides flexibility to AEMO to adapt how it operationalises the reliability standard to changes to the system.

The Commission also acknowledges that any standard has inevitable drawbacks. For example, a USE standard fails to reflect the value of load shedding associated with the frequency or length of interruptions (to the extent these are not implicitly captured in a total USE metric). However, having analysed other metrics, the Commission considers that the current metric best reflects the economic cost of not having electricity when needed.

The Commission further notes that, in general, energy shortfalls to individual consumers would be managed by rotating the shortfalls. This further indicates that a total USE metric, which is based on an expected value, is appropriate.

#### 4.5.3 Is the level (0.002 per cent) appropriate?

The level of the reliability standard is a trade off between the cost of load shedding and the cost of providing reliable electricity. A non-zero reliability standard is crucial because of the trade off between affordable power and the cost of not having energy when it is needed. Not only could it be prohibitively expensive to try to maintain a 100% level of reliability, practically it is impossible because it is always possible that some unlikely combination of events could occur such that there is insufficient supply to meet demand.

The Commission has not undertaken a quantitative assessment of whether the level of the standard is appropriate. However, the Commission has taken into account quantitative evidence available (such as ECA's energy consumer sentiment survey), as well as submissions to this process that include consumer representatives or consumers themselves, to conclude that there is not a sufficiently strong case to change the level of the reliability standard.

The reliability standard is a key determinant of the reliability settings (including the market price cap). Changes to the reliability standard would therefore involve reconsidering all the associated reliability settings. Substantial changes to the reliability standard, market price cap and the other reliability settings can provide instability to the investment environment, increasing investment risk and potentially increasing costs to consumers.

As a result, any changes to the reliability standard requires careful review of the evidence.

The Commission considers that the following shows that there is not enough evidence to change the level of the reliability standard:

- The Panel considered this matter in 2018 and determined that a materiality threshold had not been met for a review of the level of the reliability standard.<sup>185</sup> In making this decision, and consistent with the factors identified in its guidelines<sup>186</sup> the Reliability Panel noted:
  - the absence of any change in AEMO's value of customer reliability measure since the previous RSSR review.
  - changes in the way consumers use electricity do not suggest they are markedly less reliant on grid-supplied electricity.
  - other factors such as changes in the costs of new entrant generation since 2014 and the benefits of predictability and stability.
- As noted in section 4.3.2, the vast majority of stakeholders, including all consumer representative bodies and consumers which commented on this matter, have stated that the level of reliability they receive is appropriate, or if anything too high (i.e. delivering too high a level of reliability) given the resultant higher prices, including:
  - The ECA's Energy Consumer Sentiment Survey, with results consistently showing that consumers are overall far more satisfied with the reliability of their service than they are with the value for money of electricity products.<sup>187</sup>
  - The EUAA stated that its participation in consumer consultations concluded that the overwhelmingly important issue for all customers is affordability and that this was definitely the view of its members.<sup>188</sup>
  - The MEU stated that it is clear that the large majority of consumers do not wish to see higher prices, even if accompanied by increased reliability of supply.<sup>189</sup>
  - Flow Power stated that there is no evidence consumers are demanding a reliability level of zero load shedding and that this appears to have become confused with the SA situation, i.e. the power system security event that resulting in a state-wide blackout in 2016.<sup>190</sup>
- This was reflected in the Panel's advice provided to the Commission as well.

The Commission also notes that in 2010, the definition of the reliability standard was changed from being expected USE exceeding 0.002 per cent over 10 years to being the expected USE exceeding 0.002 per cent in a given financial year. Under the old definition, the ex-post assessment reported by AEMO would have shown that the reliability standard was met over the past 10 years. However, under the existing definition, the reliability standard was breached in 2008-09 and is likely to be breached in 2018-19 based on preliminary data

<sup>185</sup> Reliability Panel, Reliability standard and settings review 2018, final report, 30 April 2018, Sydney

<sup>186</sup> See https://www.aemc.gov.au/sites/default/files/content/4d5fb7a2-5143-4976-a745-217618b49e73/REL0059-Final-

guidelines.PDF 187 ECA, submission to options paper, p. 4

<sup>188</sup> EUAA, submission to options paper, p. 1.

<sup>189</sup> MEU, submission to options paper, p. 2.

<sup>190</sup> Flow Power, submission to options paper, p. 5.

from AEMO. In that sense, when the change was made, while the level did not explicitly change, the reliability standard was implicitly tightened i.e. tolerates less load shedding.

## The role of VCR in setting the level of the reliability standard

AEMO has stated that one of the drawbacks of the reliability standard is that it assumes a single VCR number. The Commission notes that VCR is only one of the criteria that the Panel uses in order to assess the level of the reliability standard or assess changes to the reliability settings, as noted above. However, the Panel has noted that it may reassess the standard once the VCR has been determined by the AER if the change was material.

The Commission acknowledges that determining VCR is complex - it is not one value but many values, which vary by customer segment and indeed, from consumer to consumer, at any point in time. As each consumer's VCR is not known at each point in time, for practical reasons, the best available option is used (historically, AEMO's estimates of VCR; soon to be the AER's estimates of VCR).

The Commission also notes that, with respect to the reliability standard, the relevant VCR is the average VCR of the customers that are load shed in the event of a reliability event. In the NEM, this is likely to be based on the load shedding list. Given that the load shedding list is different in each jurisdiction, set by the relevant jurisdictional government taking into account a variety of factors, the VCR for the purposes of reliability would vary from region to region. If for example, in a region, residential consumers are the first to be load shed, then the average VCR of residential consumers would be the relevant VCR for that region.<sup>191</sup> If in another region, the first customer to be shed is a large industrial load, then the VCR of that industrial load would be the relevant VCR.

The AER is now in the process of updating the VCR as discussed in Box 5. If, as an example, the AER publishes different types of VCR for the purpose of reliability, then it would be open for the Panel to take more than one VCR into account when reviewing the reliability standard.

The Commission notes that the AER will update the VCR by the end of 2019.<sup>192</sup> A material change to the VCR may warrant a change to the reliability standard at that time, noting that any such change should take into account the benefits of predictability and stability in the investment environment.

The Commission also acknowledges that the market price cap (MPC) and VCR are different - this is because their purpose is different, which has been recognised by the Reliability Panel. The MPC caps exposure and risk for all market participants, considering the trade-offs between higher prices and higher reliability. The VCR, on the other hand, reflects the value of lost load - a value that is dynamic and subjective. As a result, the two numbers tend to diverge. The Commission considers that this is appropriate, given the significant cost involved in providing for additional reliability, and in the absence of a transparent mechanism which would allow each consumer to reveal their VCR. The Reliability Panel has noted that once the

<sup>191</sup> More granular estimates of the exact group of consumers whose turn it is to be load shed would be preferable but are unlikely to be practical to estimate.

<sup>192</sup> AEMC, Establishing VCRs, Rule determination, 5 July 2018.

AER has finalised its VCR work, it could consider a study into the level of the reliability standard.

#### 4.5.4 Operationalisation of the reliability standard

The Commission notes that AEMO is responsible for operationalising the reliability standard in the RSIG and may update its process through the rules consultation procedures, i.e. by consulting with participants and other interested persons before making changes. Therefore, AEMO has significant discretion and flexibility as to how it operationalises the reliability standard. The Commission considers that this continues to be appropriate given the complexities involved in operationalising the reliability standard - AEMO, as power system operator, remains the most appropriate body to do so as it has all the information that it needs and understanding of the power system required to undertake such projections. The Commission has not proposed any changes to this.

AEMO states that the "average USE" metric equally weights all USE events and that if there is a higher cost of more severe USE events, then this metric underestimates the cost of load shedding. This was reiterated in AEMO's submission to the draft determination, which stated that "the current NEM reliability standard is based on an average 0.002 per cent USE metrics where equal weights are given to scenarios with no load shedding and those with large amount of USE."<sup>193</sup>

However, as noted in the background section, AEMO projects *expected* USE, not average USE - expected USE is a probability-weighted average of all modelled USE outcomes. Scenarios with no load shedding are weighted with a high probability, as they are the most common scenarios. On the other hand, scenarios with large amounts of USE are relatively rare as they would require a number of events going wrong for these outcomes to occur. As a result, they are weighted with a lower probability.

In other words, probability-weighted means that low-probability events are given a proportionally small weight, with high-probability events are given a proportionally high weight. For example, 10POE (i.e. a one-in-ten year event) is likely to be a rare event, and would be weighted as such, i.e. with a low weight. As a result, tail-risks are accounted for in the framework through the 10POE outcomes. How changes to tail risks could be accommodated is discussed further in the implications section below.

As a result, the Commission considers that it is more appropriate to use the term "expected USE" (in accordance with the NER) rather than average USE, as average may be misconstrued to mean that probability is not taken into account.

#### Medium-term estimates

Existing weightings have been in place since around 2002 and are based on a mathematical approach to approximate a normal distribution of USE outcomes, using three points (10POE, 50POE and 90POE).<sup>194</sup>

<sup>193</sup> AEMO, submission to draft determination, p. 8.

<sup>194</sup> See https://www.aemo.com.au/-/media/Files/Electricity/NEM/Planning\_and\_Forecasting/NEM\_ESOO/2018/2018-Electricity-Statement-of-Opportunities.pdf for more information, p.90

Using this mathematical approach, the three weightings are:

- 30.44 per cent for the 90POE
- 39.12 per cent for the 50POE
- 30.44 per cent for the 10POE.

In medium-term PASA (from eight days to two years ahead), AEMO projects expected USE by weighting the average (i.e. the mean) 10POE outcomes and average 50POE outcomes 30 per cent and 70 per cent respectively to obtain an expected value. It does not model 90POE outcomes separately but instead assumes that it is zero. The 70 per cent figure is derived from combining the 50POE and 90POE weighting. This is because AEMO makes the simplified assumption that 90POE outcomes and 50POE outcomes are the same, which justifies combining the weights. However, this is a conservative assumption since 50POE outcomes tend to be positive outcomes, while 90POE outcomes are assumed to be zero. As a result of assigning a 70 per cent probability to 50POE outcomes, 50POE outcomes are being assigned a higher probability than would be implied by their likelihood of occurring and the implied 90POE outcomes is not zero.

This does not occur in ESOO and EAAP expected USE modelling whereby AEMO uses all three weights. This means that, all else being equal (assumptions and inputs), expected USE results from medium-term PASA would be more conservative than those from ESOO and EAAP. Put another way, medium-term PASA is likely to show higher expected USE outcomes, and more likely to show a breach of the reliability standard than the ESOO and EAAP. In practice, the inputs and assumptions used in ESOO and EAAP differ from those of the medium-term PASA such that the expected USE outcomes are not directly comparable.

## Short-term estimates

In the short-term (within eight days), AEMO uses the LOR framework, as noted above. The LOR2 trigger was recently changed to include the FUM, or forecasting uncertainty measure, allowing errors with temperature or changes in generation availability to be captured in AEMO's modelling.<sup>195</sup> The minimum size of the LOR2 trigger is the size of the largest credible contingency, i.e. the largest unit in the region. The FUM increases this number if the likelihood of forecast uncertainty is high enough, and if the size of this uncertainty is larger than the size of a single credible contingency event. In those instances, the LOR2 level is set at the value of the FUM. AEMO intervenes if the amount of reserves in the market is lower than the level implied by the LOR2 calculation.

The Commission notes that, in the short-term, AEMO does not project expected USE and instead manages the system to a tighter reliability standard for operational purposes. Consider a scenario where a rare event occurs or is expected to occur due to extremely high temperatures. Presumably, this would be reflected in AEMO's short-term forecasts, including in pre-dispatch. Forecast demand would be higher, generators would be expected to revise their availability - both upwards (due to expectations of higher prices) and downwards (due to expected lower performance of units during heat events). The FUM, which is aimed at

<sup>195</sup> AEMC 2017, Declaration of Lack of Reserve Conditions, Rule Determination, 19 December 2017, Sydney

capturing forecasting uncertainty, would also likely rise. The forecast LOR2, and the gap implied by it (i.e. the gap between reserves available in the market and reserves that needs to be in the market) would also reflect this rare event. AEMO updates its operational demand forecasts every 30 minutes in the short term, which provides it with the flexibility to use the latest available information.<sup>196</sup>

AEMO would then be able to use the short-notice RERT, and seek tenders from RERT panel providers and enter into enough reserve contracts to withstand the rare event. If this rare event, in hindsight, turns out to be an extreme weather event, such as one-in-10 year event, then short-notice RERT trigger and the way that reliability is managed in the short-term, would have allowed AEMO to procure reserves to meet this event, assuming there were enough offers from RERT panel members.

#### Implications

The Commission is therefore of the view that there is already an element of conservatism built into AEMO's modelling processes for the purposes of implementing reliability, even though the reliability standard itself is set by the Commission and reviewed by the Reliability Panel. This is consistent with other jurisdictions - as discussed above, Brattle found that all four jurisdictions<sup>197</sup> that it examined target a reliability standard that is much higher than justified on the basis of the expected benefits of avoided outages (i.e. similar to what would occur in the NEM when using the expected USE metric), or procure more resources than required to meet their reliability standard, or both.<sup>198</sup>

The Commission notes that this is expected of a system operator, given the role that it plays in managing the system and the incentives that it faces. The risks associated with not having enough reliability are borne by both consumers and the system operator. However, the costs of procuring more reserves than needed are borne by consumers alone - the system operator does not bear any risks in procuring more. The Commission notes that this is why the governance framework for reliability involves independent organisations setting and reviewing the reliability standard, and doing so on behalf of consumers while weighing the costs and benefits of reliability.

The Commission considers that it is appropriate for the system operator to have discretion in how to operationalise the reliability standard, including using all the powers available to it to operate the power system, with a view to avoid any load shedding on the day. The Commission is of the view that there is already an element of conservatism built into AEMO's forecasting processes and the reliability framework as well that provides more certainty to AEMO and consumers that the reliability standard will be met.

The Commission agrees with AEMO that the nature of the system is changing. The changing characteristics of the generation fleet and the increase in extreme weather events make the power system less stable, more volatile and difficult to operate. This in and of itself does not suggest that the reliability standard itself is no longer appropriate but does mean that the

<sup>196</sup> AEMO, Load shedding in Victoria on 24 and 25 January 2019, p. 15.

<sup>197</sup> PJM, ISO-NE, Great Britain and ERCOT.

<sup>198</sup> Brattle's report is available on the project page.

way the power system is operated to meet the standard likely needs to change. The current framework is flexible enough in order to adapt to accommodate this. AEMO - as is appropriate for the system operator - has flexibility and discretion as to how the reliability standard is incorporated in its day to day operations, particularly through its modelling and forecasting of the risk to the power system.

AEMO has the flexibility to change the inputs and assumptions behind USE and LOR projections, through consultation on the RSIG with industry. While the Commission considers that the current framework is appropriate and that it can be considered that there is already conservatism built into the system (which is appropriate given the consequences), the Commission acknowledges that flexibility continues to be important to make sure that the reliability framework remains fit for purpose in an environment where the power system is rapidly changing.

Through the RSIG, AEMO has a number of tools at its disposal to manage extreme events. For example, if AEMO considers that a more peaky system has changed the underlying distribution of USE outcomes, it could change the weighting of some of the extreme outcomes (e.g. a one-in-ten year outcome) accordingly, through consultation of the RSIG with industry. The final rule preserves this flexibility for AEMO, given that flexibility continues to be important to make sure that the reliability framework remains fit for purpose in the changing environment.

Indeed, in its report into the January 2019 RERT event, AEMO noted that it continues to work with weather forecasts to develop extreme weather forecasting tools as extreme weather events increase.<sup>199</sup>

Box 7 provides a simplified example of how the framework provides flexibility with respect to reliability assessments, as the conditions in the market change over an 18-month period. In particular, the example focusses on changes in weather forecasts which affect demand.

## BOX 7: OPERATIONALISATION OF RELIABILITY FRAMEWORK IN PRACTICE

## 18-months ahead of the gap

- Through the medium-term PASA, AEMO carries out a weekly assessment of expected USE for two years ahead. In this particular week, based on its assumptions about demand and supply, assume that it does not project any expected USE for the period in 18 months' time.
- These assumptions are based on weighting different probabilities of demand. Mediumterm PASA weights a 10 per cent POE (meaning that only 10 per cent of demand outcomes will be higher than this amount) by 30 per cent; and a 50 per cent POE (meaning that in any range of measurement, this value is the most likely to occur) is weighted 70 per cent.

<sup>199</sup> AEMO, Load shedding in Victoria on 24 and 25 January 2019, p. 15.

• Given AEMO does not project any expected USE, it therefore informs the market that there are enough in-market reserves: there is no need for the market to provide more reserves.

## Six-months ahead of the gap

- AEMO has been updating its reliability assessment weekly.
- At six months ahead of the gap, it updates its demand forecasts. The Bureau of Meteorology is now forecasting a hotter summer. Say that this is reflected in its demand forecasts, i.e. forecast demand is being *higher*.
- Therefore, when estimating its scenarios through the medium-term PASA, the quantities
  of demand that feed into USE calculations are higher. Consequently, the projections of inmarket reserves are lower and so AEMO forecasts a breach of the reliability standard i.e.
  expected USE in excess of 0.002 per cent.
- AEMO still uses the same weightings that were discussed above. While the weightings have not changed, AEMO, in this scenario, is using higher demand inputs, which is driving the changes in the projections in the reliability standard.
- Given that a breach is forecast, AEMO then publishes an LRC to inform the market that AEMO is projected that there are not enough market reserves meet the reliability standard, and so seeks a market response.
- If a market response is insufficient or not forthcoming, then AEMO can intervene by purchasing emergency reserves through long-notice RERT.
- Assume that the market doesn't respond, and so AEMO procures 100 MW of emergency reserves.

## Seven-days ahead of the gap

- Seven days ahead of the gap, AEMO's reliability assessment switches to a more operational-type assessment whereby AEMO targets zero USE.
- It no longer uses probabilities of USE, but rather, assesses how many reserves are needed to avoid any load shedding.
- The Bureau of Meteorology has further updated its demand forecasts, and it is expected to be even hotter, with little wind.
- Assume these updated conditions are reflected in AEMO's short-term forecasts.
- Forecast demand is higher than what was expected six months ago. Generators would be
  expected to revise their availability both upwards (due to expectations of higher prices
  associated with the increased demand) and downwards (due to expected lower
  performance of units during heat events).
- Given the extreme conditions, the forecasting uncertainty measure (FUM) that AEMO factors into its calculation of short-term reserves, would also likely rise.
- AEMO's short-term forecasting processes now show that there are not enough reserves in the market to avoid load shedding.

- AEMO publishes a forecast LOR2 notice to the market, seeking a market response. Assume the response required is 200 MW. If a market response is not sufficient or forthcoming, AEMO would then:
  - Be able to dispatch the 100MW of RERT it had already procured.
  - Be able to use the short-notice RERT and seek tenders from RERT panel providers and enter into 100MW of additional emergency reserve contracts, and dispatch those.
  - It could also issue directions in order to manage the system e.g. tell generators to move outages.

The box above only shows how flexibility is built into the framework through changes in the demand side. The above shows that AEMO has the flexibility to adjust its demand forecasts over time, which has the effect of updating reserve requirements, and so changing the volume of emergency reserves that it requires to manage reliability. In addition, AEMO could update its demand forecasting methodology to update these more often to further enhance its flexibility.

There are also examples of flexibility on the supply side as well. For example, if a generator knows that three of its units will be unavailable for maintenance for a lengthy period of time, it is required to change its availability in medium-term and short-term PASA (which are civil penalty obligations). AEMO's weekly update would then reflect higher expected USE outcomes associated with lower generation (even with the weights unchanged). The rule recently made b the Commission to require generators to provide three years' notice of their closure will also provide further information on the supply side for AEMO to incorporate into its forecasts.

In addition, AEMO also factors in forced outages in its reliability assessment in the mediumterm PASA. It does so through its simulations, with each run of the simulation using a random pattern of forced outage rates (i.e. one simulation may assume no forced outages, another may assume four generators being unavailable at the same time and so on). To the extent that this methodology is no longer appropriate, AEMO could also consult on changes to this through its RSIG and medium-term PASA processes.

In fact, following a review into extreme weather events, in 2015, the Commission made a final rule which required AMEO to consider extreme weather events both in terms of lessons learned from previous extreme weather events and the potential impact on reliability that may be caused by future extreme weather events, when operationalising the reliability standard.<sup>200</sup>

The Commission further notes that AEMO's report into the January 2019 RERT event stated that it did, in its ESOO modelling, factor in the impact of a reduction in thermal generation reliability (i.e. forced outage rates) based on recent trends as well as factoring in reduced

<sup>200</sup> See https://www.aemc.gov.au/rule-changes/governance-of-the-reliability-standard-and-setting

wind and solar generation during extreme weather events, consistent with the existing flexibility in the framework.<sup>201</sup>

In the short-term PASA and pre-dispatch, as noted in the box, the FUM would capture uncertainty, including in relation to generator availability, including intermittent generation. This typically has the effect of increasing the market reserve requirement, to account for the potential for multiple generators experiencing forced outages, for example.

The Commission also notes that it examined forecasting and information provision, including the forecasts that underpin reliability assessment in the NEM through its Reliability Frameworks Review. In the review, it made a number of recommendations with respect to forecasting, including for the AER to submit rule change requests in relation to reporting of forecasting deviations. As noted above, the AER is expected to submit these shortly, and the introduction of additional transparency of forecasting through the RRO should also help. Under the RRO, generators will also be required to provide additional information to AEMO, which will feed into AEMO's forecasting processes. These forecasting transparency improvements should help to address stakeholder concerns, including those of the Victorian Government, around reliability inputs, assumptions and outputs.

## 4.5.5 HILP, reliability and security events

#### HILP events and reliability events

Throughout this rule change request, AEMO has raised concerns around the appropriateness of the reliability standard in the context of HILP events.

**A HILP event** is the term use for high-impact events that have a low-probability of occurring. They can be seen as rare events, but catastrophic-type events. Outside of the NEM, this could include events such as a house fire where the entire house is lost, unexpected death or severe floods. In the NEM, this would typically be associated with system black events, whereby an entire region loses power supply, or an event whereby a larger proportion of consumers lose power. These events, in the NEM, would typically last longer than an hour.

Importantly, these events affect everyone. For example, consider a system black event such as the one that occurred in South Australia in September 2016. Electricity consumers, the system operator and indeed everyone in South Australia was affected by this significant event, including for almost four hours until power was initially restored to the first consumers.

**Reliability events**, on the other hand, only occur due to supply inadequacy, i.e. when the market has run out of reserves. These events, even when large, are managed through involuntary load shedding, which, as explained in Box 8 below, is done in a controlled, rotational manner. Importantly, AEMO, at that point in time, instructs load shedding so as to avoid larger blackouts, including potentially system-wide blackouts occurring, which would have a far larger impact on consumers.

<sup>201</sup> AEMO, Load shedding in Victoria on 24 and 25 January 2019, p. 24.

## BOX 8: ROTATIONAL LOAD SHEDDING IN THE NEM

Load shedding is initiated by AEMO through instructions to network service providers to shed blocks of load. It is manually initiated, the load shed is manually rotated across load blocks to deliver an equitable outcome. While load shedding is regrettable because of its impact on the customers affected, its objective is to avoid an even wider loss of supply, or even an extreme grid shutdown.

The order and location of the interruptions are based on a list set by each jurisdiction, based on priorities. Essential services such as hospitals and other sensitive consumers (such as large shopping centres and critical industries) are typically not on top of the load shedding list.

Furthermore, businesses or energy users that require very high levels of reliability (e.g. data centres and emergency services) typically have back-up plans such as back-up generators or uninterrupted power supply units to manage their own reliability, in the event of load shedding.

According to AEMO, load shedding arrangements vary from state to state, but the objective of rotational load shedding is to minimise the impact on any one group of consumers.

Load shedding lists are confidential, except in SA. In SA, according to SAPN, rotational load shedding typically only lasts for about 30-40 minutes for a group of customers before it is "rotated" to a different group, and the CBD and areas with critical infrastructure are excluded.

Source: AEMO, SA Government https://www.sa.gov.au/\_\_data/assets/pdf\_file/0008/34982/Manual-load-shedding-list-June-2018.pdf, SAPN https://www.sapowernetworks.com.au/outages/load-shedding/

Given that load is shed on a rotational basis, the impact felt by each customer, while regrettable, is only felt for a short amount of time. While some customers may be affected to a greater extent, for example if a businesses' operations are interrupted at a critical time, and they do not have back-up generators or UPS units, given loads are rotated consumers are unlikely to be affected for longer than one hour. However, if the reliability event is particularly large, the system operator would be affected to a greater extent than each consumer would. The system operator, in managing the entire system, would "feel" the entire event and experience the event through the total amount that needed to be shed, rather than through a rotational basis. In addition, such an event would likely put the system under stress - and impact on other security related variables (all of which are the responsibility of the system operator to manage) - further increasing the impacts to the system operator.

As a result, individual consumers would only be affected by a large reliability event for a short amount of time. This should not have a significant impact on the community due to health-related costs, or costs associated with large impact events such as region-wide blackouts, although some customers may be more affected than others, if for example, even a short interruption is inconvenient, such as for a restaurant or small businesses. Not all of those businesses may have back-up generators, for example, or UPS units. But on the other hand, a large reliability event would have a much higher impact on the system operator.

In its submission to the draft determination, AEMO stated that in practice, rotational load shedding is managed manually, the process can be risky and prone to error.<sup>202</sup> Alcoa disagreed with the Commission that involuntary load shedding is not a significant issue for smelters as smelters cannot put in place back up generation of sufficient size to prevent the catastrophic loss of plant arising from extended outages.<sup>203</sup>

The Commission recognises that involuntary load shedding is a serious matter that tends to occur when the system is under stress, meaning that errors are more likely to occur. However, the Commission understands that the example provided by AEMO of the error that occurred in February 2017 when 300MW of load was shed instead of 100MW by mistake, this was the result of a software error that has since been fixed.

Based on information in AEMO's report into the January 2019 event, the actual load shed was only slightly different from what was requested by AEMO.<sup>204</sup>

With regards to Alcoa's concerns, the Commission notes that load shedding lists are a jurisdictional matter. As a result, the Commission considers that Alcoa's concerns would be best addressed through discussion with the Victorian Government. The load shedding list can exclude sensitive loads which may include large loads or important areas such as the CBD.

The Commission also understands that when a smelter is interrupted, the interruption is rotated across potlines, with any one potline being interrupted for a maximum of one hour to prevent damage.<sup>205</sup> The Commission also encourages Alcoa to discuss any concerns around this with AEMO and the Victorian Government, as the intent of rotational load shedding is to minimise the impact on consumers.

## Can reliability events be HILP events?

There have only been a few reliability events in the past decade that the Commission can draw from in order to provide practical experience as to how consumers experience reliability outages, as shown in the figure below. The Commission notes that the 2018-19 figure is based on preliminary information provided by AEMO and is subject to revision.

<sup>202</sup> AEMO, submission to draft determination, p.9.

<sup>203</sup> Alcoa, submission to draft determination, p. 2.

<sup>204</sup> AEMO, Load shedding in Victoria on 24 and 25 January 2019, pp. 33-34

<sup>205</sup> Ibid, p. 30.



Figure 4.2: USE in the NEM (2007-08 to 2018-19)

January 2009 events

The 2008-09 event was classified as an extreme weather event. Temperatures in excess of 43 °C drove the 30-minute Victorian and South Australian market demand to reach record maximums of 10,494MW and 3,383MW respectively on 29 January 2009.<sup>206</sup> An LOR3 was declared on 29 January and again on 30 January 2009, with load shedding occurring in both regions on both days. This was in breach of the reliability standard, and the only time that the reliability standard has ever been breached.

remaining of the financial year (noting that there is currently none projected, in any event).

On 29 January 2009:

- 280 MW was shed for about three hours in Victoria, or approximately 3 per cent of consumers, repeated every half an hour, over three hours, i.e. a different group of consumers (3 per cent) would have been shed every half an hour, for the total event duration of three hours.<sup>207</sup> Put another way, a total of 18 per cent of consumers experienced blackouts for half an hour.
- 140 MW was shed for 1.5 hours in SA, or approximately 4 per cent of consumers, every half an hour, for 1.5 hours (or 12 per cent of consumers for half an hour).

On 30 January 2009:

• 340 MW was shed for about three hours in Victoria, or approximately 3 per cent of consumers, every half an hour, for three hours (or 18 per cent for half an hour).

<sup>206</sup> See https://www.aemo.com.au/-/media/Files/PDF/180-0091-pdf.pdf

<sup>207</sup> The Commission notes that these are estimates based on the amount of load shed as a share of demand at the time. It also assumes that groups of consumers (3 per cent of load) being load shed are "rotated" every half an hour - or thereabouts - to minimise the impact of load shedding on individual consumers, as is the practice.

• 90 MW was shed for 1.5 hours in SA, or approximately 3 per cent of consumers, every half an hour, for 1.5 hours (or 9 per cent for half an hour).

## February 2017 event

On 8 February 2017, 300MW was shed (although AEMO only instructed 100MW to be shed, with 300MW shed instead due to a software error). This affected about 10 per cent of SA's customers for about 30 minutes.<sup>208</sup> If 100MW had been shed as expected, then only about 3 per cent of SA consumers would have been affected.

By means of comparison, the actual unplanned system average interruption duration index (SAIDI)<sup>209</sup>, for Ausgrid for 2016/17 averaged across all customer types was 79 minutes.<sup>210</sup>

This is double what a small percentage of customers would experience under rotational load shedding - i.e. distribution outages tend to be twice as long in length, and tend to affect a wider group of customers, than rotational load shedding.

## January 2019 events

On 16 April 2019, AEMO published its report into the January 2019 load shedding and RERT event.  $^{\rm 211}$ 

In the report, AEMO stated that temperatures in SA broke new records on 24 January 2019 and Victoria experienced extreme heat close to record levels, resulting in high electricity demand across both regions.

On 24 and 25 January 2019, the following contributed to the reliability issue:

- · reductions in availability of electricity supply due to thermal inefficiencies
- unexpected equipment failures
- urgent maintenance activity
- reduced generation capacity.

AEMO activated RERT contracts to reduce demand in Victoria and SA (SA contracts were on 24 January only) and directed on a synchronous condenser in NSW to maximise flows into the Victorian region across the interconnector from NSW. While the RERT and the direction reduced the amount of load shedding required, they were not enough to avoid the need to shed some load in Victoria to balance demand and supply.

The report stated that:

1621 MWh of emergency reserves were dispatched on 24 January (Victoria and SA combined)

<sup>208</sup> It is unlikely that load would have been rotated in this event as it only lasted for about half an hour.

<sup>209</sup> SAIDI is a common measure of distribution network reliability, and is defined as the sum of the duration of each sustained customer interruption (in minutes), divided by the total number of distribution customers. SAIDI excludes momentary interruptions (one minute or less duration).

<sup>210</sup> Data provided by IPART for 2017 Annual market performance review, see p. 143.

<sup>211</sup> See https://www.aemo.com.au/-

<sup>/</sup>media/Files/Electricity/NEM/Market\_Notices\_and\_Events/Power\_System\_Incident\_Reports/2019/Load-Shedding-in-VIC-on-24-an d-25-January-2019.pdf

• 1472 MWh of emergency reserves were dispatched on 25 January (Victoria only).

The average cost of RERT payments for 24 and 25 January was approximately \$10,000/MWh, with a total contractual cost of \$30.6 million (usage-type payments only) for a total cost, including compensation, of \$34.2 million.

The report stated that 266 MW of load was shed on 24 January and 272 MW on 25 January, both in Victoria. The reliability standard was breached in Victoria, as a result, i.e. USE amounted to more than 0.002 per cent. AEMO noted that without RERT, it estimates that a further 1252 MWh of load shedding would have been required.

In its submission to the draft determination, AEMO also provided information on the January 2019 event.<sup>212</sup> This information pre-dates the report above; however, it does provide some additional insights into the event.

AEMO noted that its preliminary numbers indicate that the total amount of involuntary load shedding on both days was 1015 MWh, approximately 15 per cent above the reliability standard for Victoria (i.e. USE was just over 0.002 per cent - a breach of the reliability standard in Victoria, as shown in the figure above). AEMO also notes that the activation of RERT is estimated to have avoided an additional 1252 MWh of involuntary load shedding, bringing the total estimate to 2267 MWh, approximately 2.5 times the reliability standard for Victoria (i.e. if RERT that avoided load shedding is included in USE,<sup>213</sup> then USE would be about 0.005 per cent).<sup>214</sup>

## **Conclusions**

It can be said that the impact on individual consumers is limited through rotational load shedding due to the fact that outages typically only last 30-60 minutes. The Commission considers that generally speaking, reliability events, due to their nature of being managed through rotational load shedding, are unlikely to be "high impact" events, unlike system-wide blackouts or more widespread blackouts.

The Commission acknowledges that when modelling USE outcomes, at least one iteration of the simulation may show a HILP outcome (for example, a large number of generators withdrawing their availability for the same time period due to unrelated issues, leading to severe supply shortfalls).<sup>215</sup> The more simulations a model carries out, the more there may be a chance of such an event being an outcome in the modelling. These outcomes are not completely ignored from the calculation but are instead weighted as part of the 10POE outcomes, and indeed it is appropriate that they are given a weighting in proportion to their probability, rather than a higher weighting, due to rotational load shedding. That is, the cost of USE is (by and large) proportional to the size of the USE event.

<sup>212</sup> AEMO, submission to draft determination, p. 6.

<sup>213</sup> The Commission notes that the Reliability Panel is currently examining whether this should be the case in its review of the definition if USE. See https://www.aemc.gov.au/market-reviews-advice/definition-unserved-energy

<sup>214</sup> AEMO, submission to draft determination, p. 6

<sup>215</sup> The Commission notes that if a large number of units "trip" in close succession of each other, for example, then the event would typically be a power system security event and not a reliability event.

#### Reliability versus security events

The Commission cautions against confusing reliability and power system security events: these have different causes and are treated differently in the framework; therefore, the solutions or risk mitigation measures are very different. For example, an event whereby large parts of a region or CBDs have lost supply are unlikely to be reliability events. They are more likely to be the result of technical failures in the power system and classified as power system security events. For example, the South Australian system black that occurred on 28 September 2016 was a HILP event and also a power system security event. These events are managed through the power system security framework. The RERT is not meant to address - nor is it likely that it could actually address - such events.

Power system security events and reliability events are distinct. Security events can occur at any time, while reliability events only occur when reserves are low. Severe reliability events, if not addressed, can lead to the power system being in an insecure state. This typically occurs because when the demand and supply balance becomes really tight, and reserves are running out, the interconnector may overload, sending the power system into an insecure state.

In the draft determination, the Commission stated that AEMO would then be required to initiate load shedding to return power system security. These events are reliability events managed by the market and distinct from power system security events that may also lead to the power system being insecure. AEMO could also have used the RERT to address the low reserve balance in the market, prior to the interconnector overloading. However, it would not be expected to use the RERT to avoid widespread blackouts but rather to prevent them from happening, by restoring reserves - this is because the root cause of the problem, in the example above, would be the low reserve (i.e. the root cause is not having enough generation or demand response in the market), which may be addressed through either using the RERT, a direction, or involuntary load shedding. In fact, the RERT would not be able to address a large-scale blackout, nor is the mechanism meant to.

In its submission to the draft determination, AEMO stated that the distinction between reliability and security is often blurred during load shedding, as AEMO may instigate load shedding to maintain power system security.<sup>216</sup>

In this final determination, the Commission has further clarified the distinction between the two.

As noted above, involuntary load shedding is typically instructed by AEMO to return the system to a secure state or maintain power system security. If AEMO does not initiate load shedding at that point in time, it would be possible for larger blackouts to occur e.g. due to the interconnectors reaching their limit. In that sense, involuntary load shedding is an appropriate last resort to guard against the potential for larger blackouts, and return the system to a secure operating state.

<sup>216</sup> AEMO, submission to draft determination, p. 9.

However, the root cause of this power system security issue in the example above would be a reliability issue that was not addressed by the market, the RERT or directions, leaving AEMO with its last resort power, involuntary load shedding. This is distinct from events where power system security is the root cause, such as state-wide blackouts caused by major technical issues.

The Commission acknowledges that during an actual event, in real time, it may be inconvenient or difficult to differentiate between a reliability and security event. This is why the reliability and security frameworks are designed to give AEMO the tools that it needs to manage the system *in real time*, without necessarily needing to differentiate between the two events. AEMO may issue directions or dispatch RERT for both power system security and reliability. Indeed, the way the reliability standard is operationalised over the short-term is aimed at addressing the potential for the lines to be blurred in real time.

However, the NER also provides a framework, after the occurrence of the event, by which AEMO then categories which events were reliability events, and which events were power system security events. As a result, only events which typically fall into the category of "supply inadequacy" tend to count towards reliability events, and therefore, towards the reliability standard.<sup>217</sup>

#### 4.5.6 Risk and loss aversion, and implications for the NEM

As noted above, the Commission engaged Brattle to examine the reliability framework following feedback from AEMO in its submission that the reliability standard is no longer appropriate and that the AEMC should, as result, seek expert advice on risk management in particular.

As part of this work, Brattle examined concepts of risk aversion and loss aversion to determine whether they might suggest an approach for reliability different from comparing expected USE to the reliability standard, and specifically whether a different approach might be needed for managing risks associated with HILP events. Box 9 summarises the findings in relation to risk and loss aversion, while section 4.5.2 above details their findings in relation to international comparisons.

# BOX 9: RISK AND LOSS AVERSION AND IMPLICATIONS FOR THE NEM

## **Risk and loss aversion**

In many circumstances, individuals make decisions which are not consistent with maximising expected financial gains (or minimising expected financial costs). Rather, individuals seem to prefer certainty to uncertain/risky outcomes. For example, people often prefer to purchase insurance against risks such as accidental damage to their possessions, and electricity consumers often prefer a fixed-price retail contract to one that passes through volatile spot

<sup>217</sup> The Reliability Panel is currently examining this in its review of the definition of unserved energy. See https://www.aemc.gov.au/market-reviews-advice/definition-unserved-energy

prices in the wholesale market. The expected value of an insurance policy (a possible future claim to offset an insured risk eventuating, multiplied by the probability of needing to claim, less the certain up front premium payment) is negative, since the insurance provider will want to recover the expected claims, plus a margin, when it sets the premium. In the second example, electricity consumers do not mind paying a premium above expected volatile spot power prices for a steady price over an extended period. People purchase insurance because they prefer the certainty of being insured, even though it costs money. This type of behaviour is termed "**risk aversion**".

Economic theory provides two different explanations for why individuals are risk averse. In relation to large risks, which could give rise to significant changes in the individual's total wealth, risk aversion is explained by the idea that individuals try to maximise expected utility (the satisfaction they get from money and the goods and services that money buys) rather than expected wealth. The utility of additional wealth declines as wealth gets larger. Expected utility theory is the traditional explanation for risk averse behaviour, so much so that many economists use the terms interchangeably.

When individuals choose to avoid smaller risks, this behaviour is better explained by the concept of "**loss aversion**", one of the tenets of behavioural economics. Loss aversion states that relative to their expectation for the future, individuals dislike the chance of a small loss more than they like the chance of an equally likely gain of the same magnitude. For example, individuals often prefer to buy insurance in circumstances where expected utility theory would predict that the risk is too small to be worth insuring, such as warranties on white goods.

#### Lessons from overseas jurisdictions

Brattle reviewed the reliability frameworks in several US jurisdictions (PJM, ISO-NE, ERCOT) and Great Britain. None of them explicitly discuss risk aversion. As noted above, in practice, in all four of the overseas jurisdictions that we reviewed, the reliability frameworks ultimately resulted in the system operator procuring more resources than system modelling shows is needed to meet the reliability standard.

#### **Implications for the NEM**

If rotating outages operate as planned and there is no additional security risk, it seems unlikely that high-impact low-probability (HILP) wholesale-level reliability events would have large impacts on consumers. Consumer preferences over wholesale level reliability risks will depend on the magnitude of the potential impacts that they face. Since the impacts of HILP wholesale level reliability events are relatively small on a per customer basis, there is no need to account for wealth-based risk aversion in measuring expected USE.

It is however possible that consumer preferences in relation to wholesale-level reliability risk might reflect loss aversion, another type of risk aversion, which is observed in other contexts in relation to small losses. If consumer preferences and expectations about wholesale-level reliability in the NEM include loss aversion so that they would prefer to avoid incremental reliability risk, then insurance would be valued by those consumers.

However, there is no obvious way for consumers to signal their preferences because there are no insurance-type products that cover the risk of interruptions caused by wholesale-level reliability events. Similarly, the AER's forthcoming update of consumer VCRs, focuses on valuing lost load conditional on an event having occurred, but does not assess consumer attitudes towards risk. Brattle concluded that it did not know whether consumers in the NEM are risk averse in relation to wholesale-level reliability. It might be possible to assess consumer preferences through surveys and directly asking about willingness to pay for insurance against wholesale-level reliability events.

If survey results indicate a material preference for additional insurance, then adjusting the reliability framework to deliver additional reserves is one form of insurance mechanism that could be implemented in order to address loss aversion. Another form of insurance mechanism would be to pass on to customers that are interrupted the avoided costs of the energy that was not supplied to them and which, in consequence, their supplier did not have to pay for (but would have paid for if the customers' load had not been shed).

Source: Brattle, High-Impact, Low-Probability Events and the Framework for Reliability in the National Electricity Market, January 2019.

#### Risk aversion, loss aversion and the reliability framework

Having had regard to the conclusions provided in Brattle's report and stakeholders' views with respect to risk aversion, the Commission considers that there is no need to introduce additional risk metrics or change the way that risk is taken into account in the reliability framework. As concluded by Brattle, since the impacts of HILP wholesale level reliability events are relatively limited on a per customer basis, there is no need to account for wealth-based risk aversion in measuring expected USE<sup>218</sup> - in other words, there would only be a need to put additional weight on rare events such as HILP events if their impact, as experienced by consumers, was significant.

As set out by the Commission in the previous section, reliability events are unlikely to be high-impact events as reliability events are managed through rotational load shedding, which means that consumers are affected for short periods of time (between 30 minutes to an hour), in order to minimise the impact on any one customer. On the other hand, high impact events are more likely to be power system security events, which are not managed through the reliability or RERT framework.

Since the impact of reliability events are unlikely to be high such as would be experienced in a system wide outage, the existing framework whereby risk aversion is not explicitly taken into account remains appropriate as it appears to continue to reflect consumers' preferences. Changing the reliability framework (e.g. by changing the way the reliability standard is operationalised by AEMO in its day to day operations) in order to be more risk averse with respect to high-impact events would not be in the long-term interest of consumers, and would lead to incurring more costs than consumers are willing to pay.

<sup>218</sup> Brattle, High-Impact, Low-Probability Events and the Framework for Reliability in the National Electricity Market, February 2019.

The Commission acknowledges that from an operational point of view, AEMO experiences reliability events differently and may have an incentive to procure more reserves in order to manage those types of events from a whole-system point of view. This is entirely appropriate for the system operator to be affected this way. However, additional reserves should not be procured for this reason, given that the cost impact would fall on consumers, who would be unlikely to benefit from these additional reserves being procured.

While rotational load shedding is undesirable because of the impact on the customers affected, its objective is to avoid an even wider loss of supply, or even an extreme grid shutdown. To avoid the rarity of rotational load shedding (the recent events being the third time rotational load shedding has been used in the NEM for reliability) would incur significant costs that consumers may be unwilling to pay.

Brattle's finding on loss aversion is that, loss aversion, if present, would suggest that consumers have certain preferences which would mean that they would either be willing to pay a premium to avoid incremental reliability risks, or that compensation should be paid to consumers in the event of involuntary load shedding.

With respect to Brattle's findings on loss aversion, the Commission notes that it has raised the prospect of a potential load shedding compensation mechanism through the wholesale demand response rule change requests.<sup>219</sup> This would act as an insurance product or provide compensation for those who were load shed. It is not clear why the market has not offered such a product in the NEM (in the absence of regulatory intervention).

The Commission also acknowledges that consumer preferences are complex and considers that there may be value in understanding consumer preferences better with respect to reliability and welcomes any work that progresses this understanding, including the AER's VCR study. The Commission also notes that the ECA's Energy Consumer Sentiment Survey, carried out every six months, also already provides a high-level understanding of consumers' preference with respect to reliability. However, to the Commission's knowledge based on the literature review provided by Brattle, no market (either electricity, nor other examples) incorporates loss aversion into modelling or studies.<sup>220</sup>

In its submission to the draft determination, AEMO stated that:<sup>221</sup>

- AEMO's view differs from the AEMC's reasoning that there is a lack of evidence of risk aversion and therefore a risk metric within the reliability standard is not required.
- The AEMC should undertake an empirical study to investigate the existence and extent of
  risk aversion towards reliability risks and should consider the abundant international
  examples showing system operators procuring more resources than their reliability
  standards to account for these risks.

The Commission's conclusion, summarised next, is not just based on the lack of evidence of loss aversion - it is also based on the rest of the evidence set out in this chapter, including

<sup>219</sup> See https://www.aemc.gov.au/news-centre/media-releases/have-your-say-introducing-mechanism-wholesale-demand-responsenational

<sup>220</sup> Ibid.

<sup>221</sup> AEMO, submission to draft determination, pp. 3, 9.

that stakeholders overwhelmingly do not think that a change is warranted, including consumer groups stating that consumer preferences are towards lower prices, rather than paying more for reliability.

#### 4.5.7 Conclusions

The Commission considers that there is no evidence that has been presented to it to suggest that the level (0.002 per cent) and metric (expected USE per region per year) of the reliability standard is no longer appropriate. The NEM has enjoyed high levels of wholesale-level reliability, with the bulk of supply interruptions being the result of distribution outages. Indeed, the vast majority of stakeholders, including all consumer representative bodies and consumers, have stated that the level of reliability they receive is appropriate (or if anything too high given the cost).

The reliability standard is a regulatory tool that is inevitably going to be imperfect. In particular, it is difficult for the reliability standard to capture the dynamic nature of VCR and consumer preferences with respect to reliability and risk. This is not unique to Australia - reliability standards across other jurisdictions, including those with metrics other than USE, tend to have the same limitations. Due to these limitations, the next best alternative is to have an independent body make decisions around the level of risks and reliability, on behalf of consumers - in the case of the NEM, it is the Reliability Panel and the Commission.

While typically set by a regulatory body, the reliability standard is typically operationalised by system operators. Consistent with lessons from overseas jurisdictions as concluded by Brattle, the way the reliability standard is operationalised by a system operator in its day-to-day operations has an element of conservatism, meaning that more extreme scenarios are often implicitly captured in the modelling, even if not explicitly so. In the NEM, this is particularly true in the short term, where the reliability standard is operationalised (and appropriately so) through a framework that is mathematically different from the USE standard. In the short term, AEMO is able to use the LOR framework to attempt to manage rare events (e.g. one-in-10 year events) should the market fail to do so.

The Commission recognises that some jurisdictions consider there needs to be interim measures in place in order for them to have higher levels of emergency reserves to assist in managing the system as the transition takes place. The Commission discusses these concerns and its responses further in Chapters 5 and 6.

The Commission also assessed the appropriateness of the reliability standard with respect to HILP events and considers that the reliability standard remains appropriate with respect to these types of events because:

- reliability events are typically, relatively low impact events due to rotational load shedding that minimises impact on consumers and excludes sensitive consumers such as hospitals
- weighing HILP events according to their likelihood of occurring (i.e. low) multiplied by their impact if they do occur (relatively high, but the same on a \$ per MWh basis as lower impact events) is appropriate to meet consumers' preferences with respect to risk
appetite and reliability because of the controlled, rotational nature of load shedding that occurs during reliability events.

As concluded by Brattle, it would only be appropriate to put more weight on low probability events if their actual impact on individual consumers was high, which is not the case for reliability related load shedding. Therefore, expecting the market to address these types of rare events or purchasing emergency reserves to manage them would not be in the longterm interest of consumers. While these events may have a high impact on the system operator, consumers should not pay for additional costs in order to mitigate these risks.

Further, the reliability framework provides AEMO with the flexibility to change its forecasting processes, by changing the inputs and assumptions behind its reliability assessments, through consultation with industry. While the Commission considers that the current framework is appropriate, the Commission acknowledges that flexibility continues to be important to make sure that the reliability framework remains fit for purpose in an environment where the power system is rapidly changing. Indeed, in its Reliability Frameworks Review, it made a number of recommendations with respect to improvements to forecasting processes in the NEM.

Therefore, the Commission encourages AEMO to use the existing framework and to work with industry, the AER and the Reliability Panel to better understand how consumers value wholesale-reliability risks, given the typical size of these events in relation to other types of supply interruptions, and given that they are managed through involuntary load shedding (i.e. rotational load shedding).

Finally, to the extent that HILP events are security-type events with a high impact on consumers (such as the South Australian system black event), then these are best managed through the existing power system security framework, e.g. security directions and frequency control. The RERT cannot address these types of events.

In conclusion, there is no change to the reliability standard as part of this final rule. Questions about the reliability standard and what it should be are dealt with by the Reliability Panel as part of its regular review, which considers the reliability standard in the context of the broader reliability framework. That review is separate from the consideration of the tools that the system operator has to maintain reliability, such as the RERT. A key determination of the Panel's thinking is estimates of the value of customer reliability. The AER is currently undertaking a survey of the value of customer reliability in the NEM, with numbers available at the end of the year. The Panel may consider turning its mind to the reliability standard and settings again, after that review has been finalised. In addition, stakeholders could raise issues directly with the Panel if at any time if there is an informed position that consumers value reliability more than reflected in the reliability standard.

5

# PROCUREMENT TRIGGER AND VOLUME

This chapter outlines stakeholders' views as well as the Commission's analysis on the Reliability and Emergency Reserve Trader (RERT or emergency reserves) procurement trigger and procurement volume. It also discusses the governance of the procurement trigger. Specifically, it sets out:

- the current arrangements with respect to the procurement trigger, governance of the trigger and procurement volume
- for the procurement and volume trigger, with respect to reliability:
  - AEMO's and stakeholders' views on each.
  - A summary of the options paper, which put forward procurement trigger and volume options, including stakeholders' views on each option.
  - The Commission's conclusions and analysis.
- AEMO's and stakeholders' views, as well as the Commission's conclusions and analysis, with respect to power system security.

# 5.1 Current arrangements

# 5.1.1 Procurement trigger

The procurement trigger refers to the defined circumstances under which AEMO may procure reserves under the RERT framework, and the governance arrangements regarding decisions to procure emergency reserves.

# Current procurement trigger provisions under the NER

Under the current arrangements in the National Electricity Rules (NER), AEMO:

- may determine to enter into emergency reserve contracts to "ensure that the reliability of supply in a region or regions meets the reliability standard for the region and, where practicable, to maintain power system security."<sup>222</sup>
- must consult with persons nominated by relevant jurisdictions with respect to any determination to enter into emergency reserve contracts.<sup>223</sup>

The clause allows AEMO the discretion to determine how "to ensure that the reliability of supply....meets the reliability standard". This clause is open to interpretation and may therefore create ambiguity as to exactly when AEMO can procure emergency reserves.

However, this is limited (to a certain extent) by the procurement lead time - i.e. AEMO cannot enter into emergency reserve contracts unless there is a reasonable expectation that such emergency reserves may be required to ensure reliability of supply.

AEMO is required under the NER to have regard to the RERT principles in exercising the RERT (including with regard to procuring emergency reserves), which are that:<sup>224</sup>

<sup>222</sup> Clause 3.20.3(b) of the NER.

<sup>223</sup> Clause 3.20.3(c) of the NER.

<sup>224</sup> Clause 3.20.2(b) of the NER.

- "actions taken should be those which AEMO reasonably expects, acting reasonably, to 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."

These principles limit to some degree AEMO's discretion with regard to the procurement of the RERT.

## Governance of the procurement trigger

There is no explicit oversight or governance arrangements for the procurement trigger, other than the governance arrangements implied by the reliability standard as discussed in Chapter 4. For example, it is AEMO's responsibility to operationalise the reliability standard.

AEMO must also consult with the relevant jurisdictions when determining to procure reserves.<sup>225</sup> There is little detail provided in the NER about how this consultation occurs.

## **RERT Guidelines**

The Reliability Panel prepares guidelines which provide further guidance to AEMO about using the RERT. This includes providing further guidance on what information AEMO must take into account when deciding whether to procure the RERT. There are currently three different types of RERT:

- Long-notice situations where AEMO determines it has more than ten weeks' notice of a projected shortfall in reserves.<sup>226</sup> When it is considering whether to enter into reserve contracts for long-notice situations, AEMO may take into account: the details of the outcome of the medium-term projected assessment of system adequacy (PASA); the outcome of the energy adequacy assessment projection; and any other information that AEMO considers relevant.
- Medium-notice situations where AEMO has between ten weeks' and seven days' notice of a projected shortfall in reserves. When considering whether to enter into reserve contracts here, AEMO may take into account the information identified above.
- Short-notice situations where AEMO has between three hours' and seven days' notice of a projected shortfall in reserves. When it is considering whether to enter into reserve contracts for short-notice situations, AEMO may take into account: the details of the outcome of the short-term PASA and pre-dispatch processes and any other information that AEMO considers relevant.

#### 5.1.2 Procurement volume

Procurement volume refers to the amounts under emergency reserve contracts (in MW or MWh, for example) that AEMO may procure, and the governance arrangements regarding decisions about the amount of reserves to procure.

<sup>225</sup> Clause 3.20.3(c) of the NER.

<sup>226</sup> This timeframe is effectively capped at nine months under clause 3.20.3(d) of the NER, which prevents AEMO from entering into (or renegotiating) reserve contracts more than nine months prior to the date AEMO reasonably expects that the reserve will be required to ensure reliability of supply.

The NER do not set the amount that AEMO should procure once it has identified a potential shortfall. That is, once the procurement trigger has been met, AEMO can decide how many emergency reserves to procure.

AEMO's decision is somewhat limited by the need for AEMO to have regard to the RERT principles when determining the procurement volume.<sup>227</sup> AEMO must also consult with the relevant jurisdictions when determining to procure emergency reserves.<sup>228</sup> The way that AEMO operationalises the reliability standard through the Reliability Standard Implementation Guidelines (RSIG) may influence how much it procures.

Box 10 shows an example of how AEMO has determined how much to procure in the past.

# BOX 10: HISTORICAL EXAMPLE

From 15 January 2006 to 10 March 2006, NEMMCO contracted for 375MW of additional reserves for the South Australian and Victorian regions based on its forecasts which showed a potential shortfall of at least 500MW (at a total cost of approximately \$4.4M). As some of the emergency reserves had very expensive offers, the AEMC understands that NEMMCO, in consultation with jurisdictions, intentionally short purchased emergency reserves such that the standard was not met.

The contracted emergency reserves were not used as conditions were more favourable than originally forecast, meaning that there was zero unserved energy (USE) in actuality, hence the total costs stated above only reflect availability charges and are likely to have been higher if the reserves were used.

Source: AEMO, AEMO Submission to Reliability Panel review of RERT expiry, 29 September 2010, https://www.aemc.gov.au/sites/default/files/content/8dd95d49-df99-47e8-8786-a84b6cee5ad7/AEMO.pdf, p. 2; Marsden Jacobs Associates, NEMMCO 2005/06 Tender for Reserve Assessment of Energy Response Bid, https://energyconsumersaustralia.worldsecuresystems.com/grants/134/AP-134-EUAA-Assessment.pdf, p. ii

#### 5.1.3 Power system security

In addition to reliability, the NER allows AEMO to use RERT for power system security reasons, where practicable.<sup>229</sup>

The RERT guidelines provide further guidance and state that:<sup>230</sup>

"AEMO may dispatch or activate reserves under reserve contracts to address a power system security event in a transmission network that it has oversight for, if there are suitable reserves that AEMO has contracted under the RERT for long, medium or shortnotice situations at an appropriate location, and there is sufficient notice of the power system security event to allow AEMO to dispatch or activate these reserves."

<sup>227</sup> Clauses 3.20.2(a) and 3.20.2(b) of the NER.

<sup>228</sup> Clause 3.20.3(c) of the NER.

<sup>229</sup> Clause 3.20.3(b) of the NER.

<sup>230</sup> Section 9 of the RERT guidelines.

#### 5.1.4 Reliable operating state

In its rule change request, AEMO noted that there was a disconnect between the objective of the current RERT (where the trigger to procure emergency reserves is driven by the reliability standard, which by definition allows some load shedding to occur) and directions, where the trigger to use directions is in relation to maintaining a reliable operating state (which means no load shedding).<sup>231</sup>

The NER state that the power system is in a reliable operating state when:<sup>232</sup>

- AEMO has not disconnected, and does not expect to disconnect, any points of load connection under clause 4.8.9
- no load shedding is occurring or expected to occur anywhere on the power system under clause 4.8.9 and
- in AEMO's reasonable opinion the power system meets, and is projected to meet, the reliability standard, having regard to the RSIG.

Even though the clause includes a reference to the reliability standard, it also means that the power system is in a reliable operating state when AEMO has not disconnected load - i.e. no involuntary load shedding is occurring or expected to occur.

# 5.2 Procurement trigger

5.2.1 AEMO's views in its rule change request, on the consultation paper, subsequent additional information and on the draft determination

#### Rule change request

In its rule change request, AEMO described the RERT as being a function conferred on AEMO to enter into emergency reserve contracts with resources not available to the market, to ensure reliability of supply meets the reliability standard and to maintain power system security.<sup>233</sup> It added that RERT is a last resort function, along with directions, exercised to address an expected shortfall in the market.<sup>234</sup>

AEMO considered that the trigger for procuring emergency reserves (i.e. procurement trigger) should occur within the context of a broader risk assessment. It stated that this should take into account the risk of USE, not just the "expected" value.<sup>235</sup>

AEMO also noted that jurisdictional governments are unwilling to tolerate load shedding and are intervening in the market as a result.<sup>236</sup>

AEMO stated that AEMO considers that there is inconsistency between the operational objectives of the current RERT (meeting the reliability standard, which allows some load

<sup>231</sup> Clause 4.8.9 of the NER.

<sup>232</sup> Clause 4.2.7 of the NER.

<sup>233</sup> AEMO, rule change request, p. 6.

<sup>234</sup> Ibid.

<sup>235</sup> Ibid. p. 7.

<sup>236</sup> Ibid. p. 6.

shedding in a financial year) and directions (maintaining a reliable operating state which implies no load shedding).<sup>237</sup>

## Submission to consultation paper

In its submission to the consultation paper, AEMO stated that linking the RERT procurement to the reliability standard may be inefficient and could lead to higher costs and reliability risk for consumers. The RERT procurement decision should be assessed against a broader framework that considers both the cost and risk of unserved energy versus the cost of the RERT.<sup>238</sup>

AEMO proposed to remove any explicit trigger for procurement, as the assessment will result in an amount of emergency reserves to be procured, which could be zero based on the projected market conditions. In addition to cost of USE and RERT procurement, the following factors should also be considered in the assessment:<sup>239</sup>

- Economic approach that also minimises total costs and 'regret' costs associated with opportunity losses under uncertainty
- Level of insurance provided by RERT
- The outcome of USE measured in terms of level (i.e. MWh), duration and probability of occurrence.

AEMO also stated that it does not think it is appropriate to link the RERT procurement to a reliable operating state, as it would mean no load shedding, which would be prohibitively expensive to maintain.<sup>240</sup>

# Additional information

In a paper providing additional information to the Commission, AEMO recommended that the procurement of RERT should be delinked from the reliability standard and that a standing reserve be created to provide the insurance function in the overall reliability framework.<sup>241</sup>

#### Submission to draft determination

In its submission, AEMO did not specifically comment on the procurement trigger but instead, noted that the reliability standard was inadequate, as discussed in Chapter 4.

# 5.2.2 Stakeholders' views on the consultation paper

In submissions to the consultation paper, stakeholders have raised concerns regarding the lack of parameters guiding AEMO's procurement decisions in the NER. Stakeholders explicitly expressed support for the RERT being a "safety net", "backstop" or "last resort", stating that

<sup>237</sup> Ibid.

<sup>238</sup> AEMO, submission to consultation paper, p. 2.

<sup>239</sup> Ibid. p. 8.

<sup>240</sup> Ibid. p. 7.

<sup>241</sup> AEMO, Additional information from AEMO to support its Enhanced RERT rule change proposal, p. 3

emergency reserves should only be procured in the event that the market fails to meet 99.998 per cent reliability, not beyond.<sup>242</sup>

Origin suggested that given the potential for increased use of RERT, the governance framework should be strengthened to clarify that the emergency reserves are only to be used to meet the reliability standard.<sup>243</sup> This was echoed by the Australian Energy Council (AEC).<sup>244</sup> A number of other stakeholders have suggested the procurement trigger is (or should remain) the reliability standard.<sup>245</sup>

However, the Energy Efficiency Council (EEC) stated that there may be a case for standing reserves (i.e. the removal of the procurement trigger).<sup>246</sup> The SA Government supported standing reserves, noting that emergency reserves should be considered as an insurance product to manage market risk on a routine and ongoing basis over a long-term period.<sup>247</sup>

Stakeholders also rejected explicitly linking the procurement trigger to a reliable operating state, as this would imply that AEMO would be required to avoid any load shedding at all time, and aiming for zero USE via the RERT would have significant cost implications.<sup>248</sup>

South Australian Council of Social Services (SACOSS) and St Vincent de Paul noted their concern that AEMO monetising what was previously procured through state governments and the jurisdictional coordinator, stating that energy consumers large and small are willing to act in the common good at times of scarcity, as was demonstrated in South Australia when the South Australian government called on people to reduce air-conditioning use.<sup>249</sup>

#### 5.2.3 Overview of the options paper

The Commission considered it was beneficial to test some of the potential design options for the key elements of the RERT with stakeholders in order to get a deeper understanding of stakeholder views.

In particular, it published an options paper in October 2018 which set out three ways in which the procurement trigger for the RERT could be set, and the associated implications for the procurement volume. The options paper is summarised next.

#### Potential issues

The options paper raised three potential issues relating to the current procurement trigger and volume.

- The reliability standard as a procurement trigger may be inefficient, as stated by AEMO.
- The procurement trigger is not clear which may lead to higher direct and indirect costs.<sup>250</sup>

<sup>242</sup> AEC, EA, Snowy Hydro, Meridian, TransGrid, Origin Hydro Tasmania, CS Energy: submissions to consultation paper

<sup>243</sup> Origin, submission to the consultation paper, p. 6.

<sup>244</sup> AEC, submission to consultation paper, p. 2.

<sup>245</sup> Submissions to the consultation paper: Clean Energy Council, p. 2; EnergyAustralia, p. 3; Snowy Hydro, p. 7; ERM Power, p. 3.

<sup>246</sup> EEC, submission to consultation paper, p. 2.

<sup>247</sup> SA Government, submission to consultation paper, pp. 2-3.

<sup>248</sup> EUAA, TransGrid, ENA, Meridian, Flow Power, AEC: submissions to consultation paper.

<sup>249</sup> SACOSS and St Vincent de Paul, submission to consultation paper, p. 2.

<sup>250</sup> AEC, submission to the consultation paper, p. 7. Meridian, submission to the consultation paper, pp. 2, 4.

• There may be a general lack of clarity regarding the procurement trigger and volume provisions in the NER and related guidelines leading to uncertainty for market participants, AEMO and RERT providers.<sup>251</sup>

## **Procurement options**

The options paper put forward three potential options to address the potential issues discussed above.

The table below summarises the key design features of the RERT for each of the three alternatives as well as current arrangements. More detail on these can be found in the options paper.

Options 1 and 3 are similar – they both explicitly link the procurement trigger to the reliability standard (whatever form this may take) but include a number of design choices aimed at addressing concerns relating to the level of discretion provided to AEMO in exercising emergency reserves and improving transparency and clarity.

The main difference is that option 3 would include an enhanced role for the NER and/or Reliability Panel in operationalising the reliability standard and so AEMO's day to day operations would change.

Option 2 delinks the procurement trigger from the reliability standard and in fact, removes the explicit procurement trigger altogether. Instead, under option 2 AEMO would procure reserves whenever it is efficient to do so as determined through an economic assessment of the estimated costs of procuring reserves and load shedding. This option primarily addresses AEMO's concerns that the reliability standard is not an appropriate trigger for procuring emergency reserves, leading to the inefficient under-procurement of emergency reserves.

<sup>251</sup> Snowy Hydro, pp. 9-10; Origin, p. 6; Energy Networks Australia, p. 5.: submissions to consultation paper.

Australian Energy Market Commission Rule determination Enhancement to the Reliability and Emergency Reserve Trader

# Table 5.1: Summary of options

KEY ASPECT OF RERT AND RELI- ABILITY FRAME- WORK	CURRENT ARRANGE- MENTS	1. RELIABILITY STAN- DARD DETERMINES PROCUREMENT TRIG- GER AND VOLUME	2. BROADER RISK AS- SESSMENT OF PROCURE- MENT TRIGGER AND VOL- UME	3. OPTION 1 + CHANGES TO OP- ERATIONALISATION OF THE RE- LIABILITY STANDARD
Procurement Trigger	NER "trigger" clause ambiguous in the NER	Unambiguous trigger in NER: reliability standard	Broader risk assessment used as trigger	Unambiguous trigger in NER: reliability standard
Reliability standard	Current reliability standard	Current reliability standard	Current reliability standard for non-RERT aspects of framework. No explicit standard for RERT	Current reliability standard
Operationalisatio n of the reliability standard	Using current RSIG method	Using current RSIG method	N/A. Broader risk assessment used to determine both whether to procure and how much	Changes specified in the NER or Panel guidelines about how the reliability standard is operationalised. Nature of those specific changes yet to be determined.
Procurement volume	Largely at AEMO's discretion	Explicit link to reliability standard	Broader risk assessment used to determine both whether to procure and how much	Explicit link to reliability standard. Changes specified in the NER or Panel guidelines about how the reliability standard is operationalised.
Governance	Governance shared by the NER, Reliability Panel and AEMO	Largely consistent with status quo	Overarching principles about risk assessment framework might be contained in the NER or Panel guidelines	Guidance given to AEMO as to how to operationalise the reliability standard either in the NER or the Panel's guidelines
Broader	One reliability standard for	One reliability standard for	RERT procurement framework	One reliability standard for both the

Australian Energy Market Commission Rule determination Enhancement to the Reliability and Emergency Reserve Trader

KEY ASPECT OF RERT AND RELI- ABILITY FRAME- WORK	CURRENT ARRANGE- MENTS	1. RELIABILITY STAN- DARD DETERMINES PROCUREMENT TRIG- GER AND VOLUME	2. BROADER RISK AS- SESSMENT OF PROCURE- MENT TRIGGER AND VOL- UME	3. OPTION 1 + CHANGES TO OP- ERATIONALISATION OF THE RE- LIABILITY STANDARD
reliability framework	both the market and RERT	both the market and RERT	disconnected from rest of the reliability framework	market and RERT. Changes to operationalisation of reliability standard would apply to the entire reliability framework.

In terms of the procurement trigger:

- Option 1 would clarify the NER to explicitly and unambiguously link the procurement trigger to the reliability standard
- Option 2 would delink the RERT procurement trigger from the reliability standard entirely and give AEMO the discretion to trigger RERT through its own processes
- Option 3 would, like option 1, clarify the NER to explicitly and unambiguously link the procurement trigger to the reliability standard, but the way the reliability standard is operationalised would change.

The governance of the procurement trigger would remain unchanged under option 1. Under option 3, the Panel or the NER would have an enhanced governance role around operationalisation. Option 2 would introduce different governance arrangements for the procurement trigger, with the decision about the both the trigger and volume ultimately falling to AEMO.

## 5.2.4 AEMO's views on the options paper

# Option 1

AEMO was the only stakeholder that explicitly opposed option 1. It stated that it does not consider that option 1 is in the long-term interest of consumers for the following reasons:<sup>252</sup>

- It might under-utilise cost effective resources to manage involuntary load shedding, leading to higher involuntary USE costs to consumers.
- It might expose the market to a large amount of load shedding risks in plausible but extreme USE events.
- It could increase the direct cost of emergency reserves as potential providers might need a higher availability payment to recover their costs if they are not certain whether they will be required in the future.

# Option 2

AEMO supported option 2 and proposed another slight modification to explicitly incorporate some risk metrics. Under this option, emergency reserves would be procured to minimise the combined load shedding and emergency reserve costs, subject to containing USE risk within a tolerable threshold. AEMO did not expand on the trigger aspect of this proposal.<sup>253</sup>

AEMO stated that its proposed assessment framework will deliver an efficient reliability outcome, which is the explicit objective of the procurement methodology and consistent with the NEO. It also noted that while some cost will be incurred for RERT procurement, it will result in lower USE cost and risk; and that ensuring an efficient reliability outcome should take primacy over the notional linkage between RERT and the reliability standard.<sup>254</sup>

<sup>252</sup> AEMO, submission to options paper, p. 7.

<sup>253</sup> Ibid. p. 9.

<sup>254</sup> Ibid. p. 11.

AEMO stated that under its proposed procurement option, emergency reserves can be used as an effective safety-net and insurance mechanism to fill in the gap (if any) between the optimal reliability level and that delivered by the market.<sup>255</sup>

## Option 3

AEMO also did not support option 3 and disagreed with the way the reliability standard was proposed to be "operationalised" under this option. AEMO was concerned about the methodology - for example, AEMO considered that using a single, or even a few "benchmark years" with 0.002 per cent USE would not lead to a representative monthly distribution of USE and would be contradictory to the very design of the current reliability standard.<sup>256</sup>

#### 5.2.5 Stakeholders' views on the options paper

#### Transparency and governance

In submissions to the options paper, some stakeholders commented on an additional oversight of the procurement trigger, drawing parallels with the retailer reliability obligation (RRO), where the AER verifies requests for the reliability instruments:

- ERM Power stated that there is a role for the Australian Energy Regulator (AER) (as
  proposed in the RRO to verify requests for reliability instruments) to review and approve
  AEMO's forecasts and RERT procurement plan prior to the commencement of any long- or
  medium-notice RERT procurement process. With regard to short-notice RERT
  procurement, ERM believes this would be better left to post procurement reporting.<sup>257</sup>
- AGL encouraged the AEMC to explore implementing an independent RERT trigger verification function, held by the AER to oversee AEMO decisions to activate the RERT. <sup>258</sup>

Stakeholders<sup>259</sup> stated that transparency was crucial to improve the RERT framework regardless of their views on the procurement options. Generally this was because of concerns that the existing lack of transparency has led to higher costs, inability to plan ahead or pass on costs, as well as ambiguity and uncertainty.

#### General views on RERT procurement

Enel X stated that the existence of emergency reserve mechanisms in energy-only markets is an acknowledgement that energy price signals alone cannot ensure that the reliability standard will be met, and/or that markets are not guaranteed to deliver politically acceptable combinations of reliability and cost.<sup>260</sup> Enel X also stated that it supported AEMO's recommendation to create a standing reserve because standing reserve frameworks serve to provide assurance that reliability can be delivered and they also give greater certainty to

<sup>255</sup> Ibid. p.3.

<sup>256</sup> Ibid. p. 7.

<sup>257</sup> ERM Power, submission to options paper, p. 4.

<sup>258</sup> AGL, submission to options paper, p. 2.

<sup>259</sup> Including Stanwell, EA, Alinta, ERM Power, Infigen, Enel X, EEC, Meridian: submissions to options paper

<sup>260</sup> Enel X, submission to options paper, p. 2

reserve providers and the industry more broadly regarding the volume of reserves required, the procurement process and associated costs.<sup>261</sup>

The Energy Efficiency Council (EEC) stated that it was not yet clear if there is a need for standing reserves in the NEM, but that this issue needs to be properly investigated.<sup>262</sup>

Other stakeholders reiterated their views that the RERT should be a last resort mechanism used in the event of market failure - generally speaking, stakeholders were concerned that if this was not the case, then consumers would face higher costs.<sup>263</sup>

Energy Users Association of Australia (EUAA) noted that if the RERT is meant to be a "last resort" insurance policy under AEMO's proposed changes, it risked becoming a second or third last resort, leading to higher costs to consumers from higher procured volume.<sup>264</sup>

## Option 1

Most stakeholders explicitly stated their support for option 1.<sup>265</sup>

The main reasons for support were that it would provide the following benefits:

- Providing clarity on the procurement of the RERT which promotes transparency
- Reducing ambiguity
- Decisions would continue to be linked to the reliability standard, thereby allowing the market to continue to respond first – thereby minimising indirect costs and so, market distortions
- Minimising direct costs to end consumers, consistent with consumers' concerns around costs as opposed to higher reliability

ERM Power acknowledged that option 1 may slightly increase the risk that actual USE may exceed the reliability standard and this small increase in risk could be difficult for both a system operator and governments to accept.<sup>266</sup> The Australian Energy Council (AEC) noted that while option 1 would restrict AEMO's ability to procure beyond the reliability standard, the limitations of those restrictions must be recognised, namely, that if AEMO is minded to target a higher level of reliability, given the complexity of the process, it will be very difficult to ensure substantive compliance with it.<sup>267</sup>

EnergyAustralia suggested linking procurement explicitly to low reserve condition (LRC) and lack of reserve (LOR) declarations in order to achieve the policy position of option  $1.^{268}$ 

Enel X did not explicitly support option 1 but stated that while it agreed that this option would provide greater certainty to industry and consumers, the success of the RERT

<sup>261</sup> Ibid.

<sup>262</sup> EEC, submission to options paper, p. 2

<sup>263</sup> Flow Power, Hydro Tasmania, Infigen: submissions to options paper.

<sup>264</sup> EUAA, submission to options paper, p.9

<sup>265</sup> Stanwell, Flow Power, Snowy Hydro, MEU, EUAA, EA, BlueScope, Alinta, ERM Power, AEC, AGL, ENA, Infigen, Origin: submissions to options paper

<sup>266</sup> ERM Power, submission to options paper, p. 3.

<sup>267</sup> AEC, submission to options paper, p. 2.

<sup>268</sup> Energy Australia, submission to options paper, p. 3.

framework under such an approach will rely on robust forecasting, and information about reliability shortfalls being revealed to potential capacity providers with sufficient time to enable the development of a portfolio of reserves once the decision to procure RERT has been made.<sup>269</sup>

# Option 2

Most stakeholders (excluding, as noted above, AEMO), including all consumer groups that commented on this topic, explicitly stated that they did not support option 2.<sup>270</sup> The main reasons for rejecting option 2 were that it would:

- Increase direct and indirect costs of emergency reserves as they would be procured more
  often and to a reliability standard that is higher than the market is expected to deliver.
- Create inefficiencies due to placing decision-making on reliability matters in the hands of AEMO, and AEMO is not best placed to manage these risks.
- Introduce a capacity-type mechanism or standing reserves which would be inconsistent with how the NEM works, and would be highly distortionary and reduce innovation.
- Significantly reduce transparency and accountability of the RERT process.

Enel X stated that it supported AEMO's recommendation to create a standing reserve as it would provide more certainty to reserve providers and assurance that reliability can be delivered. However, they are concerned that an entire "de-linking" of the reliability standard from the RERT framework and a move toward a dynamic assessment of risks and costs may induce further complexity and uncertainty in how AEMO procures and activates reserves.<sup>271</sup>

While Infigen does not support option 2 for longer timeframes, it stated that option 2 is attractive in that it provides a more explicit framework for implementing the underlying principles of the reliability standard. It noted that if it were applied to both the procurement of short-notice RERT and the activation of emergency reserves, this could potentially help AEMO better align the costs and benefits of RERT procurement.<sup>272</sup>

# Option 3

There were mixed views on option 3:

- Some stakeholders expressed explicit support for it<sup>273</sup> including a preference for it over option 1 in most instances, because it would provide further guidance on the reliability standard and amplify the benefits of option 1.
- A number of stakeholders<sup>274</sup> supported the idea of option 3 but stated they needed more information on how operationalisation and governance would work so as to be able to have a firm view, particularly given concerns around too much prescription being

<sup>269</sup> Enel X, submission to options paper, p. 4.

<sup>270</sup> Stanwell, Flow Power, Snowy Hydro, MEU, EUAA, EA, BlueScope, Alinta, ERM Power, AEC, AGL, ENA, submission to options paper

<sup>271</sup> Enel X, submission to options paper, p. 3.

<sup>272</sup> Infigen, submission to options paper, p. 5.

<sup>273</sup> Snowy Hydro, AEC, AGL, ENA, Alinta: submissions to options paper.

<sup>274</sup> Flow Power, EUAA, EA, ERM Power: submissions to options paper.

provided to AEMO in the NER, and the unintended consequences of limiting AEMO's discretion.

 AEMO, Stanwell, MEU and Infigen<sup>275</sup> did not support option 3 – for AEMO, the rationale is similar to why it did not support option 1. For other stakeholders, the concern was both around the complexity of the process, reduced transparency and concerns around prescription.

Snowy Hydro stated that the Reliability Panel should have the guidance role;<sup>276</sup> this was also supported by ENA (Energy Networks Australia).<sup>277</sup> The AEC also supported option 3 and saw this option as working as such:<sup>278</sup>

- It would require the Reliability Panel to commission expert advice into what finite USE AEMO should target in weekly, monthly and multi-monthly outlooks.
- These sub-annual USE targets would be used by AEMO as a cap on any RERT acquisitions.

Similarly Alinta supported a requirement for the Reliability Panel to provide expert advice into what set amount of unserved energy (USE) AEMO should be targeting for different time horizons.<sup>279</sup>

Flow Power suggested that option 3 should continue to be considered and recommend it be adopted after an initial (trial) period of 2 years of option 1. This means that option 1 needs to include a requirement, that after two years, it be reviewed on the basis to further codify AEMO actions and triggers.<sup>280</sup>

Stanwell stated that developing a methodology for sub-annual USE targets (as per option 3) would make the process more complex and less flexible, potentially decreasing market participant clarity and AEMO's range of operational responses.<sup>281</sup> The Major Energy Users (MEU) is concerned that, as the RERT is needed only occasionally, to include significant direction in the rules has the long term potential to lock in processes that in the future may not be appropriate to generate the lowest cost for emergency reserves or for the wider market.<sup>282</sup>

# 5.2.6 Stakeholders' views on the draft determination

In the draft determination, the Commission explicitly linked the procurement trigger to the reliability standard, through the declaration of low reserve conditions (LRCs) and lack of reserve conditions (LORs).

<sup>275</sup> Submissions to options paper.

<sup>276</sup> Snowy Hydro, submission to options paper, p. 2.

<sup>277</sup> ENA, submission to options paper, p. 4.

<sup>278</sup> AEC, submission to options paper, p. 4.

<sup>279</sup> Alinta, submission to options paper, p. 2.

<sup>280</sup> Flow Power, submission to options paper, p. 10.

<sup>281</sup> Stanwell, submission to options paper, p. 7.

<sup>282</sup> MEU, submission to options paper, p. 8.

Most stakeholders that commented on this aspect explicitly stated their support because:<sup>283</sup>

- It explicitly links the reliability standard and RERT, thereby retaining consistency.
- It removes the risk of market distortions and lowers costs for consumers.
- It provides clarity and improves transparency of the RERT framework.

ENGIE and AEC suggested that the Commission should continue to explore the possibility of the Reliability Panel having an enhanced role in providing AEMO with guidance on how to operationalise the reliability standard in the short term.<sup>284</sup>

However, a few stakeholders supported some form of a "standing reserve" - this would mean that emergency reserves would be available on an ongoing basis, typically without the need for a procurement trigger:

- Enel X stated its support for reserves being available in a standing minimum quantity at all times, with AEMO having discretion to procure more if needed, but also noted its support for the proposed changes that increase clarity around the procurement process.<sup>285</sup>
- The South Australia Government also supported standing reserves as it provides an insurance against the current market arrangements including the Retailer Reliability Obligation (RRO), through offering an assurance of greater certainty to reserve providers and the industry regarding the volume of reserves required.<sup>286</sup>
- When procuring reserves in advance, the Victorian Government suggested AEMO should be explicitly given a target probability of meeting the reliability standard on average and in one in-ten-year demand years. This would be a clearer and more readily understandable way of connecting quantities of reserves procured to estimated unserved energy outcomes.<sup>287</sup>
- The Victorian Government also suggested that a more practical approach to RERT procurement would be to procure these reserves as cost-effectively as possible through a multi-year contract (a standing reserve). This is discussed in more detail in Chapter 6.<sup>288</sup>

#### Technical working group

The technical working group discussed the stakeholder feedback on the three options on 14 December 2018. The technical working group noted that:<sup>289</sup>

- Most stakeholders explicitly stated their support for option 1.
- Most stakeholders explicitly stated that they did not support option 2, which would
  effectively delink RERT from the reliability standard and create two sets of standards.

<sup>283</sup> ENGIE, GreenSync, CEC, EUAA, ERM Power, Origin, MEU, EnergyAustralia, Stanwell, AEC, AGL, SnowyHydro, Meridian: submissions to draft determination

<sup>284</sup> ENGIE and AEC, submissions to draft determination

<sup>285</sup> Enel X, submission to draft determination, p. 2.

<sup>286</sup> South Australian Government, submission to draft determination, p. 2.

<sup>287</sup> Victorian Government, submission to draft determination, p. 2.

<sup>288</sup> Ibid.

<sup>289</sup> See https://www.aemc.gov.au/sites/default/files/2018-12/Technical%20Working%20Group%20%233%20-%20Discussion%20Notes.pdf

 Stakeholder views were mixed on option 3, and asked a number of clarifying questions about how this would work.

There was discussion that irrespective of which procurement trigger option was progressed, there might be merit in the AER providing additional oversight over both AEMO's forecasts and AEMO's RERT procurement plan.

It was recognised that developing the additional guidance required for option 3 would be mathematically challenging and may not be feasible.

#### 5.2.7 Commission's analysis and conclusions - procurement trigger

# BOX 11: FINAL RULE

The final rule clarifies the procurement trigger and links it explicitly to the reliability standard by stating that AEMO can only procure emergency reserves when it identifies and declares an LRC (identified through the medium-term PASA) or LOR (identified through short-term PASA and pre-dispatch), through clause 4.8.4.

The final rule promotes transparency and clarity of the RERT framework while making sure that the procurement process is aimed at minimising direct and indirect costs. Linking the procurement process explicitly to the reliability standard further limits the misallocation of reliability risks, in terms of how they are managed in the NEM. Delinking RERT from the reliability standard could result in distortions from emergency reserves being procured to a different standard to what incentivised in-market reserves being available.

The final rule also introduces and updates a number of reporting requirements to further support transparency and accountability as they required AEMO to provide detailed information to the market in terms of how it has made its procurement assessment, intended to give market participants enough information to assess and understand AEMO's actions with respect to procurement of RERT.

#### Changes between draft and final rule

There are no changes between the draft and final rule in relation to this aspect.

Following the receipt of stakeholder submissions on the options paper, in order to assess each option against the assessment framework described in Chapter 3, the Commission fleshed out each option further. For more detailed information on the refined options and the Commission's assessment of the options, see Appendix D.

#### **Refined options**

The options discussed next have been refined since the options paper but are referred to as option 1, option 2 and option 3 for simplicity.

Under option 1, the RERT procurement trigger would be explicitly linked to the reliability standard (through the LOR and LRC frameworks, i.e. the frameworks used by AEMO to operationalise the reliability standard). Consistent with the Commission's conclusions in

Chapter 4, the reliability standard and the way it is operationalised would remain unchanged under this option<sup>290</sup> and there would continue to be one reliability standard for the market and the RERT. There would be no additional oversight of the procurement trigger.

Option 2 would remove the explicit procurement trigger and give AEMO discretion on when and how much emergency reserves to procure through its economic minimisation model (ECM) and externally-set risk metrics. The ECM would minimise the cost of emergency reserve contracts and the cost of load shedding (derived from a value of customer reliability). There would be a high-level framework in the NER for the procurement of emergency reserves. The Panel would then be required to provide additional guidance on procurement (including on the ECM) and set the risk metrics. AEMO would be required to produce a methodology document to explain its assessment process, in accordance with the Panel guidelines and NER. There would be no oversight from the AER and the role of jurisdictions would remain unchanged. The reliability standard would remain as is and be delinked from the RERT framework, in effect, creating two sets of reliability standards.

Option 3 is the same as option 1 except in the following way:

- The Reliability Panel would provide guidance to AEMO on how to operationalise the reliability standard in relation to the RERT.
- In light of stakeholder feedback, this guidance would be quite prescriptive e.g. the Panel would work out what the USE target should be by month, if a monthly standard is achieved. AEMO would still forecast USE against that target as per current arrangements.

In the draft determination, the Commission recommended option 1 - in particular, the draft rule linked the procurement trigger explicitly to the reliability standard, through the declaration of low reserve conditions (LRCs) and lack of reserve conditions (LORs). The Commission received overwhelming support for linking the procurement trigger to the reliability standard, as it would minimise distortions and improve transparency.

However, a few stakeholders were still of the view that standing reserves were more appropriate, as discussed next.

# Assessment of standing reserves

Standing reserves in the context of this discussion would not only delink RERT procurement from the rest of the reliability framework, creating two different reliability standards, but would also have the effect of having no standard at all since the system operator could procure every year regardless of need. This is unlikely to be in the long-term interest of consumers.

While allowing for standing reserves could potentially result in cheaper emergency reserves being provided given emergency reserve providers would have more certainty about how often they would be procured, the Commission considers that, on balance, the increased costs for consumers would outweigh the potential benefits since:

<sup>290</sup> Unless AEMO chooses to consult on and amend the RSIG.

- Consumers would pay for emergency reserves every year regardless of whether or not the emergency reserves are required – thereby increasing electricity costs.
- It would likely disincentivise investment in generation (and demand response) in the market which would lead to higher wholesale market prices.
  - This is because AEMO would be buying emergency reserves at times when the market would normally be investing, likely reducing the incentives of market participants to invest and provide in-market reserves.
  - It would also undermine the Retailer Reliability Obligation (and any other market investment) liable entities such as retailers would likely be disincentivised in responding to the obligation if AEMO is intervening in the market all the time.

The last point is an example of a market distortion (i.e. an indirect cost), which is discussed in more detail in Chapter 7. In summary, if AEMO is intervening on a regular basis or has already procured capacity, this would reduce incentives for investment (even if retailers potentially face compliance action, under the RRO), since participants would know AEMO has already determined to intervene, before the market has had a chance to respond. This goes against how the reliability framework is set up to work in the NEM, as described in Chapter 2.

A standing reserve is likely to *worsen* the incentives for market investment as AEMO could act as a de-facto capacity purchaser, before market participants have had a chance to invest. Knowing that AEMO has capacity on stand-by to dispatch on demand, the economics of investing into market reserves would likely be eroded, further damaging reliability.

Standing reserves could also, as discussed further in Chapter 7, lead to some market reserves withdrawing from the market, to participate in emergency reserves, depending on how the standing reserve is set up. If this occurred, I reliability would then be met through emergency, rather than market reserves, at a higher cost to consumers - without any benefit to reliability outcomes.

# Assessment of more conservative procurement triggers

AEMO's option 2, while not being an explicit standing reserve, could lead to a more conservative trigger, as in addition to the expected USE metric, there would be an additional metric which would likely imply more regular triggering of RERT. This would be consistent with AEMO's view that consumers are willing to pay more to avoid a risk.

Indeed, in its submission to the draft determination, AEMO noted that:<sup>291</sup>

It seems premature to consider higher electricity bills to consumers are bad *per se* without considering the benefit of *reducing tail end reliability risks*. If empirical data shows risk aversion towards load shedding is real (see Section 3.3 [international comparisons and evidence of risk aversion]), it might be efficient to pay additional costs to reduce the risk. Not doing so might expose consumers to an inefficient level of risk and leave them worse off.

<sup>291</sup> AEMO, submission to draft determination, p. 9.

As discussed in Chapter 4, the Commission concluded that there is no empirical data or qualitative evidence in front of it that shows that consumers wish to pay more for electricity. On the contrary, consumer surveys as well as submissions to this process from consumer groups and consumer representatives tend to show that they value lower electricity bills over higher levels of reliability.

The Commission continues to be of the view that, in the absence of better evidence, the higher electricity bills that would result from an explicit risk metric outweigh any benefits that consumers would get from higher levels of reliability. This is particular true when considering that the reliability standard is already aimed at 99.998 per cent reliability - it is likely to be costly to reduce the risk of the additional 0.002 per cent and it is also impossible to guarantee 100 per cent reliability.

Other than AEMO, the Victorian Government also proposed a more conservative trigger. The Commission understands the Victorian Government's concern to be both about transparency and about a different procurement trigger.

On the transparency point, as discussed in Chapter 9, the Commission agrees with the Victorian Government that further transparency with respect to AEMO's reliability assessments would be beneficial to the market. Indeed, there are a number of recommendations and work under way that may go some way in addressing this:

- The Retailer Reliability Obligation introduces new reporting obligations on AEMO with respect to the Electricity Statement of Opportunities (ESOO). This includes a Reliability Forecast Guidelines which AEMO will need to publish, in accordance with the AER's forecasting best practice guidelines.
  - The Commission understands that AEMO intends to provide, for example, much more granular information to stakeholders on USE outcomes, modelled on the information outputs from the medium-term PASA.
  - This would include, as an example, detailed information on USE outcomes for 50POE and 10POE demand.
- The AEMC, in its Reliability Frameworks Review, recommended transparency changes to AEMO's forecasting processes. The Commission understands that the AER will submit rule changes with respect to this shortly.
- The Commission also notes that the changes made in this final rule will also improve transparency, as discussed next.
- The AEMC has also received a rule change request in relation to medium-term PASA transparency, including transparency of inputs and information provision.<sup>292</sup>

The Commission would be happy to work further with the Victorian Government to consider ways in which this transparency could be achieved in such a way that creates confidence for the market.

 $<sup>\</sup>label{eq:see https://www.aemc.gov.au/rule-changes/improving-mt-pasa-transparency-and-accuracy$ 

In its submission, the Victorian Government suggested that AEMO should be explicitly given a target "*probability* of meeting the reliability standard on average and in one in-ten-year demand years."<sup>293</sup> The Commission understands that the Victorian Government is suggesting a hybrid metric that combines the expected USE metric and loss of load probability in the former, and a loss of load probability of 10POE outcomes in the latter. As concluded in Chapter 4, different metrics have different advantages and disadvantages. Having examined multiple metrics, the Commission (as well as the Panel) considers that the expected USE metric remains appropriate.

Further, the Victorian Government's wish to link the procurement trigger to a "one-in-ten demand year" would be similar to introducing standing reserves, in the Commission's view. This is because using an un-weighted 10POE demand for USE outcomes would likely lead to a USE number that is greater than 0.002 per cent every year, given than 10POE demand represents extreme events typically with a significant amount of USE. As noted in Chapter 4, 10POE events are accounted for in the reliability standard but weighted according to their likelihood of occurring, which remains appropriate.

Linking the reliability standard to 10POE outcomes rather than on an expected basis would be costly for consumers as it would likely mean that nine years out of 10, emergency reserves would have been purchased even if they are not needed. It would lead to a permanent increase in prices for electricity consumers. Further, this was not supported by any other submissions to this rule change request.

# Assessment of options - the final rule meets the NEO

The Commission has assessed each option against the assessment framework, considered stakeholder feedback and concluded that option 1 remains the option that best meets the long-term interests of consumers and the NEO. The final rule, discussed in the next section, therefore introduces option 1 in the NER by clarifying the existing procurement trigger and associated rules.

This is because:

- The final rule improves transparency and clarity.
  - The final rule clarifies AEMO's use of the RERT to be its intended purpose, i.e. to be used as a safety net, as a last resort, potentially reducing emergency reserve costs for consumers compared to the status quo.
  - Option 2, on the other hand, would see the RERT being more like a mechanism aimed at meeting a reliability target that is different (and likely, more conservative) than the reliability standard. It would imply that the RERT would be used as an "insurance mechanism" targeting a different standard, which would be inconsistent with the intended purpose of the RERT.
  - The final rule also improves transparency and clarity of the RERT framework since it would be unambiguous and it would be known to all market participants when AEMO is likely to procure emergency reserves.

<sup>293</sup> Victorian Government, submission to draft determination, p. 2.

- Under the other options, but particularly option 2, there would likely be reduced transparency since the framework would be more dynamic and change frequently, introducing more uncertainty for market participants as procurement would be based on AEMO's assessment at a particular point in time.
- The final rule minimises direct and indirect costs.
  - The final rule best minimises market distortions (i.e. indirect costs) and minimises cost outcomes for consumers since it keeps the RERT framework and the reliability standard explicitly linked.
  - Option 2 would be highly distortionary, as it would delink RERT from the reliability standard, potentially leading to higher costs for consumers, such as the crowding out of investment. This is discussed in more detail in Chapter 4.
- The final rule limits the misallocation of risks with respect to how reliability is managed.
  - Reliability risks are best placed with those that can best manage it. In the NEM, risks
    are managed by the market, with the Reliability Panel also managing risks on behalf
    of consumers. Reliability risks are not typically managed by system operators, as they
    have an incentive, in their role, as appropriate, to be conservative with respect to
    reliability.
  - The final rule further strengthens the link between the reliability standard (with its associated governance structure) and the RERT, meaning that reliability risks continue to be managed primarily by the market, with the Reliability Panel continuing to manage reliability risks on behalf of consumers, in setting of the standard.
  - In contrast, option 2, would delink the RERT from the reliability standard and the reliability framework more generally leading to two standards. This would lead to a reliability being partly managed by AEMO, rather than the Panel on behalf of consumers.
- The final rule is also simpler to implement in relation to governance, promoting transparency and clarity of arrangements.
  - Option 3 would introduce an additional burden of regulation, level of governance and complexity for operationalisation.
  - Furthermore, the final rule is preferred to option 3 since the potential practical limitations associated with option 3 may lead to unintended consequences (such as the RERT being procured more often than needed).
- The final rule supports reliability of the power system while minimising cost for consumers
  - The final rule does so by providing certainty to the market that AEMO will only intervene after the market has had a chance to respond (within the known limitations of the RERT framework).
  - The final rule also delivers the level of reliability that reflects consumer preferences, as discussed in Chapter 4 and therefore, consumers' willingness to pay, as implied by the reliability standard as assessed by the Reliability Panel.

• In contrast, while option 2 would lead to higher levels of reliability, it has the potential to impose additional costs on consumers, beyond consumers' preferences and willingness to pay, as procurement would be delinked from the reliability standard.

The Commission notes that one of AEMO's reasons for delinking RERT from the reliability standard is that the market price cap (MPC) is lower than the VCR, and therefore, there are economically-efficient reserves above MPC but below the VCR that AEMO should be able to procure. The Commission agrees that these reserves are economically-efficient and notes that AEMO may procure emergency reserves above the MPC but below the VCR (specifically, the VCR of load shedding, or estimated load shedding VCR, as noted in Chapter 7), if the procurement trigger has been met.

The MPC in the NEM is specifically not set at the VCR as VCR is only one of the inputs into the Panel's decision when reviewing the level of the MPC. The Panel also takes into account other factors, such as the benefits of stability to the market and benefits of limiting exposure to excessive high prices. The MPC is then set at a level high enough to incentivise enough investment to meet the reliability standard. As noted in Chapter 4, the reliability standard remains appropriate, and there would be no need to delink RERT from it.

Stakeholders also suggested that the Commission should continue to explore the possibility of the Reliability Panel having an enhanced role in providing AEMO with guidance on how to operationalise the reliability standard in the short term. The Commission notes that the Reliability Panel may wish to consider this when it next reviews the reliability standard and settings.

# The final rule

The final rule introduces option 1 into the NER. In particular, the final rule introduces a procurement trigger for the RERT that is clear and unambiguous - by directly linking it to the reliability standard, i.e. through the low reserve and lack of reserve declarations under clause 4.8.4 of the NER. These declarations are the method by which AEMO currently identifies that the reliability standard is not being metthrough the medium-term PASA for an LRC and short-term PASA and pre-dispatch for LORs, and informs the market accordingly.

The final rule is:

# 3.20.3 Reserve contracts

# **Procurement trigger and lead time**

...

- (f) *AEMO* must not enter into a *reserve contract* for a *region* (or vary a *reserve contract* for a *region* that was entered into following a previous declaration under clause 4.8.4 for that *region*):
  - (1) unless it has made a declaration under clause 4.8.4 for that region; and
  - (2) more than 12 months prior to the:

(i) commencement of any time period specified in the declaration in

accordance with clause 4.8.5(a1)(2); or

(ii) where no such time period is specified, the date *AEMO* reasonably expects that the *reserves* under that contract may be required to address the *low reserve* or *lack of reserve* condition,

having regard to the reliability standard implementation guidelines.

For the avoidance of doubt, *AEMO* may negotiate with potential tenderers in relation to *reserve contracts* at any time.

Put simply, AEMO can only procure emergency reserves when it identifies an expected breach of the reliability standard, i.e. when it projects that expected USE is more than 0.002 per cent in the medium term. It cannot procure emergency reserves to bridge the gap between 0.002 per cent and zero in the medium-term. In the short-term, as per the Panel RERT Guidelines, AEMO may only procure emergency reserves when reserves in the market fall short of the reserve margin required, as implied by LOR2.

As a result, the final rule provides clarity to market participants and potential RERT providers as to when AEMO is likely to intervene in the market. AEMO stated in its submission that this option could increase the direct cost of emergency reserves as potential providers might need a higher availability payment to recover their costs if they are not certain whether they will be required in the future.

The Commission notes that the final rule does not specify that AEMO must use the latest available low reserve condition or lack of reserve declaration when entering into reserve contracts. Given that reliability assessments are regularly updated, it would be appropriate for AEMO to use the latest available data and information. The Commission expects that AEMO will have regard to this when deciding how much to procure or whether or not to enter into emergency reserve contracts.

The Commission notes that the reliability framework by definition cannot provide "certainty" that RERT will be needed. However, linking the procurement trigger explicitly to the reliability standard provides more clarity, not less, about when it will be needed given that AEMO regularly updates its reliability forecasts, i.e. its projections of when the reliability standard is not being met. The final rule also introduces a number of new reports, in addition to existing requirements, with respect to the procurement of reserves, to provide additional transparency, as discussed in more detail in Chapter 10.

These additional final rules relevant to the procurement trigger are:

# 3.20.6 Reporting on RERT by AEMO

# Information to include in RERT report – reserve contracts

....

(d) The RERT report must include a detailed explanation of:

....

# (2) AEMO's modelling, forecasts and analysis used to determine:

(i) whether to enter into those reserve contracts...

The Panel, under the final rule, continues to be required to provide any additional guidance that it sees fit with respect to the procurement trigger through the Panel Guidelines. AEMO's RERT procedures will also need to be updated to reflect the final rule. How this will occur is discussed in Chapter 11.

Other governance arrangements remain the same. For example, under the final rule, AEMO continues to have the ability to determine how to operationalise the reliability standard through its day-to-day operations. Operationalisation of the reliability standard is discussed in more detail in Chapter 4. Should AEMO pursue changes to operationalisation through consultation with industry, then the changes made would apply to the RERT procurement trigger. These arrangements are therefore the same as the current arrangements.

In addition, the final rule does not change the operation of the RERT panels.<sup>294</sup> While the operation of the panel is specified in the RERT guidelines, there final rule does not require any changes to the operation of the RERT panels. The RERT panels could continue to operate as they currently do, meaning that AEMO would continue to be able to add providers to the RERT panels at any point in time, regardless of whether or not there is a breach of the reliability standard. The procurement trigger only applies to the signing of RERT contracts.

#### Governance: Additional oversight is not introduced

The final rule does not introduce oversight by the AER or a different organisation as suggested by some stakeholders. The Commission considers that this is not necessary given the clarity that the final rule provides with respect to when AEMO may use the RERT. Compared to the status quo, the final rule also further limits the misallocation of risks with respect to reliability, through making sure that the procurement trigger is explicitly linked to the reliability standard.

Furthermore, the Commission notes that the RRO is a distinct framework from the RERT - the oversight that exists within the RRO is in context of that mechanism, which has specific design features that make oversight possible and desirable. For example, the RRO requires identified liable entities to provide contractual positions to the AER in the event of an identified gap. The AER would then be able to use these contracts to determine whether or not there is a gap, and ultimately, whether or not these entities were compliant.

This design feature is unique to the RRO and does not exist within the broader reliability framework under which the RERT operates. The RERT and the reliability framework do not contain such information disclosure and sharing requirements that would be needed for oversight to work in practice. If an oversight to the RERT procurement trigger were introduced, the AER would not have any additional information, other than AEMO's assessments and forecasts, to determine if a gap does exist.

<sup>294</sup> There are two RERT panels - a medium-notice panel and a short-notice panel.

However, the Commission agrees with stakeholders' comments about the importance of transparency in minimising direct and indirect costs. The final rule therefore introduces a number of new and updated reporting requirements for AEMO to report on RERT procurement in a timely and regular manner. These requirements are discussed in more detail in Chapter 9. For example, the final rule requires AEMO to report on the forecasts, modelling and analysis used to determine whether to trigger the RERT, which promotes transparency and accountability.

These enhanced reporting requirements also address concerns raised by stakeholders with respect to oversight of the procurement trigger and as they would provide detailed information to the market in terms of how AEMO has made its procurement assessment, giving market participants enough information to assess and understand AEMO's actions with respect to procurement of emergency reserves. This improves accountability and clarity around the procurement trigger.

## Governance: jurisdictional consultation

The final rule also does not make any changes to existing governance arrangements with respect to jurisdictions. Currently, the NER requirement in clause 3.20.3(c) of the NER is for AEMO to *consult* with jurisdictions. The intent of the clause is for AEMO to consult with jurisdictions with respect to the cost of procurement, should the procurement trigger be met. However, despite this consultation requirement it is ultimately AEMO's decision as to whether or not to procure emergency reserves, based on the procurement trigger.

The AEC, in its submission the draft determination, stated that RERT could operate with more confidence if this requirement were removed, or diminished to an advisory function. The AEC expressed concerns that:<sup>295</sup>

- The discussion has not engaged with the key concern: a scenario where a jurisdiction desires a more conservative approach than the NEM's reliability standard and uses this provision to pressure AEMO into doing so.
- The discussion appears to welcome jurisdictions using the provision to influence AEMO's selection of reserve contracts, which would undermine AEMO's independence, exactly highlighting the risks that the provision creates.
- The discussion also suggests jurisdictional consultation is necessary to determine cost sharing. The AEC suggests however this should be determined entirely independently by AEMO without inviting influence from jurisdictions who naturally seek to minimise their individual cost shares.

The Commission notes that the requirement is already an advisory function. The discussion in the draft determination focussed not only on this advisory function, but also on the broader role of jurisdictions in the reliability framework given the concerns that jurisdictions have raised with respect to emergency reserves.

<sup>295</sup> AEC, submission to draft determination, pp. 2-3.

To clarify and in response to the AEC's comments above, the Commission notes that clause 3.20.3(c) does not remove AEMO's independence - as discussed, the jurisdictional consultation requirement is advisory only.

Box 12 provides a stylised example of how a hypothetical event would work in practice, drawing on information set out in Chapters 2 and 3.

# BOX 12: ROLE OF JURISDICTIONS IN PRACTICE

Consider an extremely hot January where the Bureau of Meteorology is forecasting a rare and extreme heatwave in the following week. In addition, there is a high risk of bushfires. This event had been unexpected until then, and AEMO had not already procured emergency reserves.

AEMO's forecasting processes, including the forecasting uncertainty measure (FUM), would reflect the extremely high temperatures implied by the heatwave. As a result, its demand forecasts would reflect the extreme weather event. At the same time, the FUM would also increase the level of reserves needed in the market, due to the potential for forecasting deviations due to the extreme weather. Generators would also de-rate available capacity due to temperature ratings, leading to lower scheduled generation availability.

As a result, the short-term PASA would start forecasting LOR2s which indicate that there will not be enough reserves in the market to cover demand on the day of the extreme weather event.

Assume this occurs about seven days ahead of the projected heatwave day and shows a gap of 100MW for a Wednesday afternoon. AEMO would first seek a market response (including telling the market the latest time that it would intervene) and if one is not forthcoming, it would then contact its short-notice RERT panel members, and seek tenders for the projected shortfall.

The projected shortfall would reflect the amount of additional reserves needed to meet demand during the extreme weather event. AEMO would then seek to contract for 100MW of reserves through short-notice RERT contracts. Before doing so, it would contact the relevant jurisdiction, and discuss the extreme weather event, the shortfall and the costs of procuring reserves. Jurisdictions may provide feedback on, for example, which contracts to purchase given the costs of these contracts, although AEMO also has to have regard to cost minimisation when entering into contracts under the RERT principles. Under the final rule, this also includes an additional RERT principle regarding the cost of emergency reserves.

Following feedback from jurisdictions, AEMO would then seek to enter into 100MW of reserve contracts, four days ahead of the shortfall. On the Wednesday of the shortfall, close to the dispatch intervals of the shortfall, AEMO would then dispatch said reserves to meet demand, if the LOR2 persists.

Consumers would therefore be unlikely to experience supply interruptions as a result of the

extreme weather, at least not on the wholesale level. They may, however, still experience distribution outages due to the extreme weather caused by bushfires, for example.

In this simple example, emergency reserves were only needed in one region. In the event that they are needed in more than one region, the NER requires AEMO to agree with the jurisdictions on cost-sharing arrangements between the regions as well as consult with them on costs.<sup>296</sup>

# **Governance: Broader role of jurisdictions**

In addition to jurisdictions' role in the RERT, as described above, the Commission recognises that some jurisdictions remain concerned about reliability as the transition takes place. In particular, the Commission understands that some jurisdictions have concerns around the upcoming summers, due to the lack of investment in dispatchable capacity occurring in their regions. Some jurisdictions have suggested that it would be beneficial to have strategic reserves, in order to minimise the risk of any load shedding occurring during this transition period, over the next couple of summers.

The Commission is continuing to work with jurisdictions as well as the ESB, Reliability Panel, consumers, AEMO and market participants to consider ways in which these concerns can be addressed. Some of this work is already under way as mentioned above, including the RRO which will be in place on 1 July 2019; as well as the rule change requests that the Commission is currently considering how to facilitate wholesale demand response. Both of these are focussed on increasing the level of in-market reserves, which should minimise the use of emergency reserves. In addition, stakeholders could raise issues directly with the Reliability Panel at any time if there is an informed position that consumers value reliability more than reflected in the reliability standard.

In addition to the above, there are a number of other options for jurisdictions to have more emergency reserves if they consider these are needed, particularly in the short-term. Jurisdictions could, through jurisdictional processes:

- Provide availability-type funding for emergency reserve resources to be made available to the RERT panels, similar to the ARENA trial.
  - For example, the NSW Government provided additional funding to RERT providers through the ARENA trial in order to put emergency reserve providers on the RERT panel through the ARENA trial. Under the trial, emergency reserve providers are paid a payment to recover their capital or set up costs over three years - effectively a type of multi-year contracting. However, the costs of this are not recovered through the RERT or the NEM. Emergency reserve providers instead sit on the short-notice RERT panel (and receive no payment from AEMO for doing so) and energy consumers only incur costs if they are dispatched.

<sup>296</sup> Clause 3.20.3 (e) of the final rule, unchanged from the status quo.

- Any jurisdiction could therefore provided funding to potential RERT providers so that they may then sit on the RERT panel and be required to be available if called upon by AEMO, i.e. a condition of the funding would be that these providers would need to offer emergency reserves every time AEMO seeks tenders.
- **Participate in the RERT** themselves through unscheduled reserves.
  - For example, the South Australian Government invested in diesel generation to be used as emergency reserves. The Commission understands that the diesel generators were part of the RERT panel this carried no cost to electricity consumers since panel members do not get paid just to be on the RERT panels.<sup>297</sup> These reserve providers are only paid when AEMO enters into contracts with them to provide emergency reserves, which can occur up to seven days before a projected shortfall, under the short-notice RERT, or up to 10 weeks before a shortfall under the medium-notice RERT. In other words, the SA Government (through SA Power Networks (SAPN) in this instance) was like any other member of the panel. The effect of this was to increase the availability of emergency reserves available to South Australia and, unlike other emergency reserves on the RERT panel effectively guarantee that these would able to be used if shortfalls arose.
  - This emergency reserve was dispatched during the January 2019 event.
- Provide funding for emergency reserve resources, such as by subsidising the cost of the RERT for consumers:
  - The costs of the RERT per MWh of reserves should not exceed average VCR. However, if jurisdictions wish to avoid any load shedding, and are willing to pay more than average VCR, then it could help subside the costs of the RERT.
  - In this example, AEMO would only recover up to the average VCR from electricity consumers, consistent with the new RERT principle. Any additional costs would be borne by the jurisdiction. In effect, it would add like a "top-up" of RERT payments, but done outside of the RERT framework.
  - This could, for example, allow AEMO to contract with RERT providers that are too expensive under the existing framework.

Beyond the RERT framework, jurisdictions can also smooth the pathway to allow the market to invest in power stations in order to enable generation suppliers to come online more quickly - particularly in the face of projected shortfalls. This could include, as an example, helping mothballed plants provide market reserves through funding.

Further, jurisdictions have in the past, called on the public to reduce consumption during particularly hot days, for example, by pre-cooling houses prior to the afternoon peak or not running dishwashers at peak times. For example, the relevant Minister may have issued a press release; or appeared on the local evening news. In other words, jurisdictions have asked consumers to voluntarily reduce demand in order to relieve pressure on the grid and avoid possible involuntary outages.

<sup>297</sup> There are two RERT panels - a short-notice RERT panel and a medium-notice RERT panel.

#### Reliable operating state as a procurement trigger

The Commission notes that it remains appropriate in an operational timeframe for AEMO to use any of its available powers, on the day, to achieve no USE, i.e. no load shedding. AEMO considered there was a disconnect between the use of directions and procurement of emergency reserves. While this may be true over long term timeframes, in the short term (operational timeframes) there is no disconnect because the RERT has the same trigger as reliability directions, namely LOR2s.

The Commission agrees with AEMO and other stakeholders that it would not be appropriate to link the procurement trigger to a reliable operating state. Aiming for zero USE at all times would be extremely costly to consumers - especially for long-notice RERT, which is procured 12 months ahead of a forecast shortfall. AEMO would be required to procure a significant amount of reserves (in fact, an infinite amount) to avoid any load shedding at all times. It would also effectively delink RERT procurement from the reliability standard as well. As discussed above, this would likely be distortionary to market outcomes. AEMO would continually be required to provide a level of reliability that is much higher than the reliability standard. As a result, the Commission concludes that it is not appropriate to base the RERT procurement trigger on the reliable operating state.

# 5.3 Procurement volume

5.3.1

# AEMO's views in its rule change request, on the consultation paper and the draft determination

AEMO's views on procurement volume are reflected in its views on the procurement trigger, as under its proposal, they would be one and the same. Specifically, AEMO proposed that a "broader risk assessment" framework should be applied to the procurement trigger and volume. AEMO would use the same assessment framework to determine both whether or not to procure, and if so, how much to procure.

As noted in the procurement trigger section, in its rule change request, AEMO considered that the determination of the volume to be procured (i.e. procurement volume), should be in the context of a broader risk assessment. It stated that this should "take into account the risk of USE, not just the "expected" value."<sup>298</sup>

As noted above, in addition to cost of USE and RERT procurement, the following factors should also be considered in the assessment:<sup>299</sup>

- Economic approach that also minimises total costs and 'regret' costs associated with opportunity losses under uncertainty
- Level of insurance provided by RERT
- The outcome of USE measured in terms of level (i.e. MWh), duration and probability of occurrence.

AEMO did not explicitly comment on this aspect in its submission to the draft determination.

<sup>298</sup> AEMO, rule change request, p. 7.

<sup>299</sup> Ibid. p. 8.

## 5.3.2 Stakeholders' views on the consultation paper

In its submission to the consultation paper for the *Reinstatement of the long-notice RERT*, the Victorian Government stated that it requires accurate information on the level of reliability that should be targeted in order to prevent outages at a reasonable cost, and suggested that there should be a clear framework for setting a "capacity target for reserves, informed by an assessment of the reserve requirement over each hour of the peak demand event".<sup>300</sup> The Victorian Government also suggested that this target should be published before AEMO seeks contracts.

There were mixed views in submissions to the consultation paper with respect to being more prescriptive regarding the procurement volume, i.e. how much AEMO should be able to procure.

Some stakeholders opposed further prescription:

- TransGrid stated that due to complexity, it is not a matter for the NER.<sup>301</sup>
- Major Energy Users considered that AEMO should have flexibility to decide on what reserves it needs but the level acquired needs to be constrained by a requirement to minimise the cost that consumers will incur by having that reserve available.<sup>302</sup>
- Meridian considered the appropriate location for any linkage between procurement trigger and volume would be in the RERT guidelines as this would enable appropriate technical input and regular updating for experiences gained from RERT activations.<sup>303</sup>

Some stakeholders advocated for greater NER prescription:

- The AEC and Origin suggested the NER should clarify that the procurement volume must be limited to meeting the reliability standard.<sup>304</sup>
- ERM Power suggested that should the National Energy Guarantee be implemented, the definition of any reliability 'gap' should be used as a proxy for RERT volumes required.<sup>305</sup>
- Energy Networks of Australia supported clarification to the extent the NER are unclear as to the objective of procurement of reserves.<sup>306</sup>

Most stakeholders considered the current level of transparency to be unsatisfactory.<sup>307</sup>

# 5.3.3 Overview of the options paper

The options on procurement volume as set out in the options paper are summarised in section 5.2.3.

With respect to procurement volume:

<sup>300</sup> Victorian Department of Environment Land Water and Planning, Submission to the consultation paper of the Reinstatement of the Long Notice RERT, p. 2.

<sup>301</sup> TransGrid, submission to consultation paper, p. 3.

<sup>302</sup> MEU, submission to consultation paper, p. 4.

<sup>303</sup> Meridian, submission to consultation paper, p. 4.

<sup>304</sup> AEC and Origin: submissions to consultation paper.

<sup>305</sup> ERM Power, submission to consultation paper, p. 4.

<sup>306</sup> ENA, submission to consultation paper, p. 4.

<sup>307</sup> CEC, MEU, Flow Power, Meridian, EA, Snowy Hydro, ENA: submissions to consultation paper.

- Option 1 would clarify the NER to explicitly link the procurement trigger to the reliability standard through LORs and LRCs, thereby setting the amount to be procured to be around the amount needed to meet the reliability standard.
- Option 2 would delink the RERT from the reliability standard and give AEMO the discretion as to how much to procure through its own processes.
- Option 3 would, like option 1, set the volume to the identified breach of the reliability standard. The main difference would be that, under option 3, changes to how the reliability standard is operationalised would affect the volume to be procured.

#### 5.3.4 AEMO's views on the options paper

As noted in section 5.2.4, AEMO supported option 2 but not options 1 and 3. With respect to option 2, this would mean using the following inputs to determine the procurement volume:<sup>308</sup>

- Forecast USE outcomes: The USE forecast would come from a wide range of POE, weather pattern and outage scenarios.
- Cost of USE: The cost of USE would be informed by VCR based on the relevant characteristics such as time, duration, magnitude and (if possible) customer segment.
- Cost and operating characteristics of RERT resources: The cost of RERT would consist of availability, activation and usage cost. Operating characteristics of these resources, such as lead time and usage limit would also be taken into account.
- Some externally set metrics that set the limitation of allowable USE risk in the system.

AEMO would then procure the volume that minimises economic cost (the economic cost minimisation model or ECM), taking into account externally-set risk metrics.<sup>309</sup>

## 5.3.5 Stakeholders' views on the options paper

As noted in section 5.2.5, stakeholders<sup>310</sup> stated that transparency was crucial to improve the RERT framework regardless of their views on the procurement options - their comments on transparency typically applied to both the trigger, and the volume to be procured.

Similarly, stakeholders' views on the procurement volume is reflected in their views on the procurement trigger in section 5.2.5 above: there was strong support for option 1, mixed views on option 3, and little support for option 2.

The next few paragraphs summarise additional comments provided by stakeholders in submissions with respect to the procurement volume specifically.

#### Options 1 and 3

In the options paper, the Commission discussed the potential for adding a margin of error to how much AEMO can procure (in addition to the identified gap). Stakeholders were generally

<sup>308</sup> AEMO, submission to options paper, p. 9.x

<sup>309</sup> Ibid.

<sup>310</sup> Including Stanwell, EA, Alinta, ERM Power, Infigen, Enel X, EEC, Meridian.

against this,<sup>311</sup> stating that the USE projection process already factors in margins of errors through probabilistic modelling. AEC and Infigen, in response to comments that a margin of error may be needed for "non-firm" demand response resources, noted that probabilistic modelling should take firmness and other "uncertain" parameters into account as well.<sup>312</sup>

#### Option 2

AEC supported applying AEMO's economic cost minimisation model to any reserves purchased in order to meet the reliability standard, i.e. the approach once used by NEMMCO. $^{313}$ 

## 5.3.6 Stakeholders' views on the draft determination

In the draft determination, the Commission linked the RERT procurement volume to the gap implied by the breach of the reliability standard, with some discretion available to AEMO if it needs to procure more than implied by the gap, e.g. to account for non-firm demand response.

Most stakeholders did not explicitly comment on volume as distinct from the procurement trigger, with the exception of EnergyAustralia, Origin and Stanwell, who explicitly supported the draft rule.<sup>314</sup>

Stanwell noted that while it had previously advocated for the volume to be limited to the difference between forecast USE and 0.002 per cent USE, it appreciates that there may be circumstances under which the RERT costs could be minimised by procuring a volume of reserves that slightly exceeds the identified gap.<sup>315</sup>

The Victorian Government suggested that there could be clearer instruction for AEMO in relation to the volume of RERT reserves to procure to achieve a target reduction in the risk of unserved energy.<sup>316</sup>

# 5.3.7 Technical working group

The technical working group did not specifically discuss procurement volume as distinct from the procurement trigger. As noted above, there was discussion that irrespective of which procurement trigger option was progressed, there might be merit in the AER providing additional oversight over both AEMO's forecasts and AEMO's RERT procurement plan.

#### 5.3.8 Commission's analysis and conclusions

<sup>311</sup> ENA, Infigen, AEC: submissions to options paper.

<sup>312</sup> AEC and Infigen, submissions to options paper.

<sup>313</sup> AEC, submission to options paper, p. 3.

<sup>314</sup> EnergyAustralia, Origin and Stanwell, submissions to draft determination.

<sup>315</sup> Stanwell, submission to draft determination, p. 4.

<sup>316</sup> Government of Victoria, submission to draft determination, p. 3.

# BOX 13: FINAL RULE

The final rule sets the procurement volume to an amount that AEMO considers is reasonably necessary to meet the gap identified by a breach of the reliability standard (that is, the forecast shortfall identified in the relevant LRC or LOR declaration).

The final rule also includes reporting requirements with respect to the methodology AEMO will use to identify the amount to be procured, and details around how it has gone about doing so, including reasons why it has exercised its discretion and procured more than identified by the forecast gap.

The Commission considers that the final rule provides clarity and improves transparency around the use of the RERT, and minimises costs for consumers, while continuing to promote reliability.

# Changes between draft and final rule

There are no changes between the draft and final rule for this aspect.

As noted above, in order to assess each option against the assessment framework described in Chapter 3, the Commission fleshed out each option further and concluded on some design features which it consulted on through the options paper. For more detailed information on the refined options and the Commission's assessment of the options, see Appendix D.

# **Refined options**

Under option 1, the RERT procurement volume would be explicitly linked to the amount needed to meet the breach of the reliability standard (through the LOR and LRC frameworks, i.e. the frameworks used by AEMO to operationalise the reliability standard), but with some discretion provided to AEMO as to exactly how much to procure. There would be no changes to the governance structure of this, with AEMO ultimately deciding how much to procure, based on the identified gap.

As noted above, option 2 would remove the explicit procurement trigger and give AEMO discretion on when and how much to procure through its economic minimisation model (ECM) and externally-set risk metrics. There would be a high-level framework in the NER for the procurement of RERT. The Panel would then be required to provide additional guidance on procurement (including on the ECM) and set the risk metrics. AEMO would be required to produce a methodology document to explain its assessment process, in accordance with the Panel guidelines and NER. The procurement volume would be set through this document, with AEMO likely to use an ECM model, while taking into account the risk metrics set by the Panel.

Under option 3, procurement volume would be set in the same manner as under option 1 but changes to the procurement trigger through changes in how the reliability standard is operationalised would affect the volume procured. Since this was ruled out in the procurement trigger discussion, option 3 is not discussed separately here.

# Assessment of options - the final rule meets the NEO

In the draft determination, the Commission assessed each procurement volume option against the assessment framework and concluded that option 1 was the option that would best meet the long-term interests of consumers and the NEO. The draft rule therefore linked the procurement volume to the reliability standard, with some discretion provided to AEMO. Given the support from stakeholders for this aspect of the draft rule, the Commission's final rule reflects the draft rule.

The final rule, discussed in the next section, therefore introduces option 1 in the NER by introducing rules around how to set the procurement volume.

The final rule promotes the NEO because:

- The final rule improves transparency of the RERT framework.
  - It does so by setting in the NER how much AEMO should procure, which is an improvement on the status quo whereby this amount is not known or set in any form.<sup>317</sup> Knowing how much AEMO is likely to procure or how the volume is set enables market participants to manage operational and investment decisions better and improves transparency.
  - On the other hand, the amount to be procured under option 2 would be dynamic and depend on the outputs of AEMO's model, which would reduce transparency.
- The final rule provides more certainty.
  - The final rule sets AEMO's use of emergency reserves to be around the identified gap, implied by a breach of the reliability standard (be it expected USE or LOR2) albeit with some ability for AEMO to operationalise the reliability standard i.e. how this occurs in practice. This also has flexibility for AEMO to take into account firmness of emergency reserve products.
  - This will make it clearer for market participants as to how much will be procured, assisting participants in understanding what the costs of the RERT are. Under option 2, there would be no certainty around how much AEMO can procure.
- The final rule improves consistency of the RERT framework
  - The final rule makes sure that the procurement volume, like the trigger, is linked to the reliability standard, thereby clarifying that the purpose of the RERT is as a last resort mechanism after the market has failed.
  - This is in contrast with option 2, whereby the volume procured would not be related to the reliability standard, meaning that the practical outcomes associated with reliability would be delinked from the reliability standard. As set out in the procurement trigger section, this is distortionary for market participants and will likely lead to higher costs for consumers.

<sup>317</sup> Under the status quo the procurement volume is in part constrained by the RERT principles.

## Final rule

The final rule introduces a new clause which links how much AEMO can procure to the reliability standard. The Commission notes that the final rule is different from the status quo, whereby there is no explicit guidance in the NER with respect to how much AEMO can procure. The Commission considers that this should go some way in addressing the Victorian Government's concerns around transparency of the amount of reserves procured, as procurement volume is explicitly linked to the reliability standard.

Specifically, the final rule states that:

# 3.20.3 Reserve contracts

## Terms and conditions of a contract

- ....
- (m) Except as otherwise prescribed under the *Rules*, *AEMO* must use reasonable endeavours ensure that:

...

(2) the amount of *reserve* procured under a *reserve contract* is no more than *AEMO* considers is reasonably necessary to address the relevant *low reserve* or *lack of reserve* condition...

# having regard to the RERT principles.

The final rule does not set the volume that AEMO can procure at just the gap identified by the low reserve condition declaration or lack of reserve declaration, but rather, sets the amount at what AEMO thinks is *reasonably necessary* to address the gap. In other words, the final rule gives AEMO some discretion to determine how much it can procure in emergency reserves. This is because the Commission thinks it is appropriate to allow AEMO to procure the right combination and amount of reserves to ensure that the reliability standard is met, once there is an identified breach, i.e. to promote reliability of the power system.

The intent of this is to provide AEMO with the ability to assess the tenders it receives efficiently and provide it with the ability to minimise direct RERT costs once the procurement trigger has been met. For example, there could be non-firm reserves within the mix of tenders (likely if some of the emergency reserves are demand response), or reserves with other restrictions. Being too prescriptive with respect to how much it can procure may limit the number of providers and lead to expensive emergency reserves being procured ahead of less expensive ones.

In particular, the Commission understands that some emergency reserves, such as demand response, have characteristics which may mean that they are only able to participate X times in a 12-month period or that they may not be willing to provide the response two days in a row. In those instances, it would be appropriate for AEMO to use its discretion to procure more emergency reserves than implied by the gap, in order to accommodate for the firmness aspect of the particular emergency reserves.
The Commission considers that AEMO is best placed to adjust how much it needs to procure in order to meet the gap, as it would have the knowledge, information and experience needed to make such a decision. For example, if the gap is 100MW, but AEMO considers that 200MW is needed to account for firmness and availability, then it would be appropriate for AEMO to enter into 200MW of contracts.

AEMO is best placed, consistent with the rest of the reliability framework, to manage the power system and operationalise mechanisms such as the RERT, within the existing governance framework. It is therefore best placed to decide which contracts are the best RERT contracts and how much it needs to procure in order to ensure the reliability standard is met, while minimising costs.

The Commission considers that this addresses some of AEMO's concerns with respect to option 1 "under utilising cost effective resources" to manage reliability.

#### Reporting requirements

The final rule also introduces a number of reporting requirements, building on existing provisions, in order to promote transparency and accountability with respect to procurement volume, consistent with stakeholder feedback, including:

- requiring AEMO to update its RERT procedures to explain how it will determine the appropriate term of a reserve contract and how much to procure (i.e. its high-level methodology) in accordance with the NER
- reporting<sup>318</sup> the following with respect to reserve contracts:
  - how much it has procured
  - the analysis it has used to procure emergency reserves
  - if it has exercised its discretion and has procured more than what is implied by the LOR and LRC gap, explain why it has done so.

These reporting requirements will also go some way in addressing the Victorian Government's concerns around transparency. As discussed in Chapter 9, to the extent that AEMO considers it would useful, the Commission encourages AEMO to also provide information on the risk of unserved energy that takes into account the volume of RERT reserves procured — this could be achieved by adding further detail to AEMO's weekly MT PASA market notice, for example.

Specifically, the final rules are:

#### 3.20.6 Reporting on RERT by AEMO

#### **Post-dispatch or activation report**

(a) If *AEMO dispatches* or *activates reserves*, then *AEMO* must, as soon as practicable, and in any event no later than 5 business days thereafter, *publish* and make available on its website a report that includes details of:

<sup>318</sup> See Chapter 9.

....

(2) the total estimated volume (in MWh) of *reserves dispatched* or *activated* under each *reserve contract,* 

for the relevant *region*. In circumstances where *reserves* are *dispatched* or *activated* over consecutive days, the reference to "5 *business days* " in this clause 3.20.6(a) is to be read as "5 business days from the final consecutive day in which the *reserves* were *dispatched* or *activated*"

#### Information to include in RERT report – reserve contracts

- ....
- (d) The RERT report must, with respect to any *reserve contracts* entered into by *AEMO* include a detailed explanation of:
  - ....

....

....

- (2) *AEMO's* modelling, forecasts and analysis used to determine:
  - (ii) the amount of *reserve* procured under those *reserve contracts*, including how those amounts were determined in accordance with the methodology specified in clause 3.20.7(e)(2),
  - and where *AEMO* procured an amount of *reserves* greater than any shortfall identified in the relevant declaration under clause 4.8.4, an explanation of why a greater amount was procured.

#### Information to include in RERT report – dispatch or activation of reserves

- (e) The RERT report must, with respect to any *reservesdispatched* or *activated* under *reserve contracts*, include a detailed explanation of:
  - (7) the total amount of *reservesdispatched* or *activated*, and if applicable, why such amounts were different to those previously forecast or modelled by *AEMO*.

#### 3.20.7 AEMO's exercise of the RERT

(e) *AEMO* must develop, *publish*, and may amend from time to time, in accordance with the *Rules consultation procedures*, procedures for the exercise of the *RERT* under this rule 3.20 that take into account the *RERT* 

principles and RERT guidelines. These procedures must include:

....

(2) a methodology to be used by *AEMO* to determine the appropriate term of a *reserve contract* and the amount of *reserves* to procure in accordance with clause 3.20.3(m)(2)

With respect to AEMO's ECM model, the Commission is of the view that AEMO could use this model should it choose to assess which emergency reserves are procured, consistent with meeting any gap identified by a breach of the reliability standard based on their costs. As noted above, more prescription in this regard is not desirable in the NER. The Commission thinks it is best left to AEMO to decide if this model is the best approach to procuring reserves in order to promote reliability in the power system.

Furthermore, existing forecasting processes already involve an amount of conservatism and implied "margins of errors" which reduces the risk of the reliability standard not being met. This is why the Commission did not think that an explicit margin of error to the gap identified by the LOR and LRC declarations would be appropriate. The margins of error are already inbuilt within the forecasting processes, and the final rule also gives AEMO the discretion to consider the firmness of emergency reserves when deciding how much to procure, as discussed above.

The Commission notes that this clause does not prevent AEMO from putting any number of providers or volume of reserves on the RERT panel. The procurement volume only applies to the amount procured. RERT panel contracts are only signed when required (from real timeto 10 weeks ahead of real time), but members may sit on the RERT panel for any length of time. As a result, there is no restriction on how much emergency reserve can be on the RERT panel.

### 5.4 Power system security

In the consultation paper, the Commission asked stakeholders if it continues to be appropriate for AEMO to have the discretion to use the RERT for power system security.

#### 5.4.1 AEMO's views

AEMO did not comment on this aspect in its rule change request but in its submission to the consultation paper, noted that so far AEMO has not used the RERT for this purpose but considers this to be a valuable option in its toolkit and noted that its proposed assessment framework should not be applicable when assessing RERT for system security purposes.<sup>319</sup>

In its submission to the draft determination, AEMO stated that it does not favour removal of the system security procurement trigger, in light of considering the emerging system security issues, before an adequate framework for procuring these emergency services is in place.<sup>320</sup>

<sup>319</sup> AEMO, submission to consultation paper, p. 8.

<sup>320</sup> AEMO, submission to draft determination, p. 4.

It added that it seems premature to take away one of AEMO's only tools to procure mothballed plant prior to a suitable alternative being put in place.<sup>321</sup>

#### 5.4.2 Stakeholders' views

Some stakeholders were supportive of the use of RERT for power system security as long as it was the lowest cost option.<sup>322</sup> TransGrid and Origin disagreed, stating that security is managed through FCAS and other frameworks.<sup>323</sup>

Meridian considered it appropriate that AEMO retains the right to utilise RERT reserves procured for whatever purpose for system security events. Meridian stated that customers would be badly served if available reserves were not utilised when necessary.<sup>324</sup> The Australian Energy Council (AEC) clarified that the purpose the power system security provision is likely that if RERT has been procured for reliability purposes, may be subsequently dispatched for system security - this circumstance does not seem problematic to the AEC.<sup>325</sup>

Other than AEMO, the AEC was the only stakeholder that commented on this aspect in submissions to the draft determination. Unlike AEMO, however, the AEC supported the clarifications of the use of RERT for power system security, noting that other mechanisms exist for procuring services to manage security, such as ancillary services markets and that the concern is theoretical since RERT had never been used for system security.<sup>326</sup>

#### 5.4.3 Commission's analysis and conclusions

#### BOX 14: FINAL RULE

The final rule has removed certain references to "power system security", to clarify that only in circumstances where AEMO has already procured RERT services for reliability purposes and these resources could help with a power system security issue, then AEMO may dispatch said reserves if practicable to do so.

The final rule promotes transparency since it makes it clear that AEMO may dispatch RERT for power system security purposes if emergency reserves have already been procured, and not to procure RERT to meet power system security needs.

#### Changes between draft and final rule

There are no changes between the draft and final rule for this aspect.

<sup>321</sup> Ibid. p. 16.

<sup>322</sup> BlueScope, MEU ENA: submissions to consultation paper.

<sup>323</sup> TransGrid and Origin: submissions to consultation paper.

<sup>324</sup> Meridian, submission to consultation paper, p. 3.

<sup>325</sup> AEC, submission to consultation paper, p. 7

<sup>326</sup> AEC, submission to draft determination, p. 7.

The RERT is primarily a tool to manage reliability in the event of a market failure. It has been designed as such.

However, the Commission understands that AEMO can already use the RERT for power system security if AEMO *has already procured RERT* for reliability, and a system security issue emerges for which it would be appropriate to use RERT, then it may do so rather than risk the system being insecure.

Power system security and reliability are two distinct frameworks in the NEM and are managed through different frameworks and governance structures. System security issues are best addressed through security frameworks such as FCAS and power system security directions.

The RERT framework, as currently designed and assessed by the Commission, is a reliability mechanism. The design features in the final rule made by the Commission also assume that the RERT is a reliability mechanism.

Out-of-market provisions, for example, assume the RERT is procured for reliability purposes and the final rule clarifies that AEMO cannot contract scheduled emergency reserves if they are in the energy market for the term of the contract or at any time during the 12 months prior. However, if RERT is to be procured for power system security, this would not be appropriate.

Designing the RERT so that AEMO may use it to procure for power system security would involve a different assessment framework and different design features. Box 15 explores some of the considerations the Commission would need to make if out of market reserves (i.e. the RERT) were to be designed for security.

#### BOX 15: A RERT MECHANISM FOR POWER SYSTEM SECURITY

The following considerations would need to be taken into account with respect to the key RERT features:

- procurement trigger the procurement trigger would need to clarify which power system security events the RERT could be used for (all of them? some of them?) and what the precedence of use would be. For example, would RERT take precedence over 5-minute FCAS?
- procurement volume AEMO would be required to provide methodology assessment details for each type of power system security event the RERT would be used for. For example, how it would assess RERT procured for, say, managing voltage or system strength or FCAS and so on.
- procurement lead time and contracting duration the assessment with respect to these two design features would be in the context of all other power system security services or implied power system security services, and what length of time would be appropriate so

> as to minimise any distortions with respect to each service. This may also depend somewhat on which service takes precedence as well.

- product standardisation AEMO would need to standardise products specifically for each type of service to be provided as the requirements for each type of service would differ significantly.
- out-of-market provisions whether and how to limit the procurement of emergency
  reserves from providers who are otherwise "out of the market" would need to take into
  account all services provided. The length of time for which the restriction would apply
  may differ from product to product, for example.
- cost recovery the basis on which RERT costs should be recovered may need to change depending on which service is provided.

When considering such a mechanism, the Commission would also need to have regard to how power system security events are currently managed and whether such a mechanism would be more preferable to existing arrangements or other potential arrangements.

Despite the fact that reliability and power system security are governed by two different frameworks, the Commission considers that it continues to be appropriate for AEMO to use reserves that have already been procured for reliability purposes for power system security if practicable. The Commission agrees with Meridian that consumers would be badly served if all available reserves were not used by AEMO as necessary.

The final rule, therefore, clarifies the circumstances in which RERT can be used for power system security. The procurement trigger clearly links the RERT to the reliability standard, and in particular, to the declarations of LORs and LRCs.

As discussed in Chapter 10, the dispatch trigger in the NER is unchanged,<sup>327</sup> meaning that AEMO may still dispatch for power system security purposes if feasible, assuming it has also procured RERT for reliability purposes.

In its submission to the draft determination, AEMO noted that it opposed the draft rule and stated that it would be "premature to take away one of AEMO's only tools to procure mothballed plant prior to a suitable alternative being put in place".<sup>328</sup>

The Commission notes that there is already some alternatives in place. In the *Managing power system fault levels* final rule, the Commission introduced an obligation, if a shortfall is declared by AEMO, for transmission network service providers (TNSPs) to provide for the minimum level of system strength necessary to maintain the power system in a secure operating state (referred to as the 'minimum level of system strength'). This framework came into effect on 1 July 2018, with transitional arrangements in place for South Australia prior to 1 July 2018. In September 2017, AEMO declared an NSCAS gap related to system strength

<sup>327</sup> Clause 3.20.7(a) of the final rule.

<sup>328</sup> AEMO, submission to draft determination, p. 16.

and, in accordance with the transitional arrangements, ElectraNet elected to treat this as a fault level shortfall under the minimum system strength framework.

This framework is aimed at addressing system strength issues in South Australia - the RERT is not (unless it is convenient to dispatch RERT for it, if already procured for reliability purposes). The Commission is currently seeking stakeholder feedback on the operation to date of the minimum system strength and inertia frameworks through its *Investigation into Intervention Mechanisms and System Strength in the NEM*.<sup>329</sup> However, if AEMO considers that the framework it not fit for purpose, it may submit a rule change request to the Commission to address this issue through the appropriate system strength framework.

The Commission notes that the market bodies have already undertaken and continue to progress an extensive program of reform to address system security challenges. It takes time for these reforms to come into effect. An overview of the extensive work program can be found in the Reliability Panel's 2018 Annual Market Performance Review (AMPR).<sup>330</sup>

<sup>329</sup> See https://www.aemc.gov.au/market-reviews-advice/investigation-intervention-mechanisms-and-system-strength-nem

<sup>330</sup> See https://www.aemc.gov.au/market-reviews-advice/annual-market-performance-review-2018

6

# PROCUREMENT LEAD TIME AND CONTRACTING DURATION

This chapter considers the procurement lead time (i.e. how long in advance of the projected shortfall AEMO can enter into a Reliability and Emergency Reserve Trader (RERT or emergency reserves) contract) and contracting duration (i.e. the length of the emergency reserve contract). For these two elements of the framework, this chapter outlines:

- current arrangements in the NEM
- AEMO's views
- stakeholders' views
- the Commission's analysis and conclusions.

## 6.1 Procurement lead time

The procurement lead time refers to the amount of time AEMO has to enter into contracts (i.e. procure emergency reserves) prior to the date that AEMO expects the emergency reserves under the contract may be required to ensure reliability of supply (i.e. when a reserve shortfall is expected).

For example, the current procurement lead time of up to nine months means that AEMO cannot enter into an emergency reserve contract if the expected reserve shortfall is in a year's time. It can only enter into an emergency reserve contract for a shortfall expected to occur up to nine months ahead.

#### 6.1.1 Current Arrangements

Under the NER, AEMO must not enter into an emergency reserve contract, or renegotiate an existing emergency reserve contract, more than nine months prior to when AEMO reasonably expects the emergency reserves to be needed.<sup>331</sup>

#### BOX 16: REINSTATEMENT OF THE LONG-NOTICE RERT

On 9 March 2018, AEMO submitted a rule change request that sought to extend the period allowed for AEMO to contract for reserves ahead of a projected shortfall, in effect, reinstating the long-notice RERT. The AEMC considered this an urgent rule and so progressed it under an expedited process, making the final rule on 21 June 2018.

The final rule increased the lead time available for AEMO to procure out-of-market or emergency reserves through the RERT, to nine months ahead of a projected shortfall. This allowed AEMO to procure emergency reserves under the long-notice RERT for the 2018-19 summer.

<sup>331</sup> Clause 3.20.3(d) of the NER.

In the final determination for that rule change request, the Commission noted that the RERT has the potential to distort outcomes for market participants and in the wholesale market, and so is designed in such a way as to minimise these distortions.

The Commission noted that while the potential of the mechanism to distort market outcomes remains unchanged since the Commission considered similar issues in 2016, several conditions in the market have changed since then, including the changing generation mix and the ARENA-AEMO RERT trial, which has demonstrated the existence of resources, primarily demand response, capable of participating in the RERT. The trial also found that a longer lead time is required for these types of emergency reserves, e.g. to install relevant equipment. This was confirmed through stakeholder feedback to the reinstatement of the long-notice RERT rule change.

Further, the Commission considered that to the extent that the RERT is required, having more resources able to participate in the RERT through a longer procurement lead time may improve the efficiency of the procurement process. This may put downward pressure on the direct costs of the RERT, if it is needed.

Therefore, on balance, the Commission concluded that increasing the procurement lead time for the RERT from 10 weeks to nine months would contribute to the achievement of the National Electricity Objective and so promote the long-term interests of consumers.

Source: AEMC, Reinstatement of the long notice Reliability and Emergency Reserve Trader, final determination, June 2018.

#### 6.1.2 AEMO's views

#### **Rule change request**

In its rule change request, AEMO recommended that emergency reserves should be allowed to be procured up to one year ahead of an identified shortfall.<sup>332</sup> AEMO considered that the longer lead time would allow time for potential emergency reserve providers to make the necessary preparations (such as seeking demand response from consumers, installing any necessary control systems, procuring and shipping diesel gensets, etc.). AEMO also considered that this could reduce the significant overheads involved in planning, procurement and conducting due diligence on potential resources, for both AEMO and for providers, reducing the costs of emergency reserves.

AEMO went on to note that in extending the procurement lead time, care would need to be taken to avoid distorting market investment signals. The potential for longer contracts would need to be balanced against risk of drawing reserves out of the energy market (for example, if AEMO contracts for reserves were more attractive to potential providers than contracts being offered by retailers).

#### Submission to consultation paper

<sup>332</sup> AEMO, rule change request, p. 7.

In its submission to the consultation paper, AEMO reiterated its views expressed in its rule change request, that having a longer procurement lead time for reserves would provide more certainty to potential providers and reduce total procurement costs.<sup>333</sup> For example, a longer procurement lead time provides AEMO more time to plan the procurement process and carefully evaluate offers from a competitive tender.

AEMO also noted that a one-year procurement lead time would be consistent with Procurer of Last Resort (PoLR) function under the Retailer Reliability Obligation (RRO).<sup>334</sup>

#### Submission to draft determination

The draft rule proposed to extend the procurement lead time to 12 months, as proposed by AEMO. AEMO did not explicitly comment on this aspect of the rule change.

#### 6.1.3 Stakeholders' views

#### Submissions to consultation paper

In the consultation paper, the Commission sought stakeholder feedback on increasing the procurement lead time from nine months to one year. There were mixed views on increasing the procurement lead time, but on balance, there was support for having a one-year lead time.

Stakeholders<sup>335</sup> in favour of increasing the procurement lead time to one year argued increasing the procurement lead time would:

- encourage more demand response, since demand response providers typically require a longer lead time in order to set up portfolios of demand response capable of providing emergency reserve services, e.g. they need time to sign up customers
- ensure it is consistent with the procurer of last resort function under the RRO, where AEMO applies to the AER to make a 'T-1 reliability instrument' one year prior to where the forecast shortfall exists, and if approved, becomes the procurer of last resort for that shortfall
- reduce costs through greater participation and the associated benefits if the increase in lead time leads to a larger pool of emergency reserve providers.

Stakeholders<sup>336</sup> that opposed increasing the procurement lead time gave reasons including:

- it would be inefficient for AEMO to procure emergency reserves a year ahead of projected shortfalls, when, at that point in time, market participants have less information than they would closer to real time, such as information which would enable them to make more informed procurement decisions e.g. what demand response will be available
- existing arrangements are largely workable with the proposed design parameters and timeframes of the RRO, they are not so different that it would warrant a change in

<sup>333</sup> AEMO, submission to the consultation paper, pp. 2, 5.

<sup>334</sup> See Chapter 1 for more information on the RRO.

<sup>335</sup> Stakeholders included: EEC, MEU, BlueScope Steel, ENA, Meridian, EUAA, CitiPower Powercor & United, AEMO

<sup>336</sup> Stakeholders included: AEC, Snowy Hydro, Energy Australia and Origin

approach, and there are limited other compelling reasons as to why the lead time should be increased.

#### Submissions to options paper

The options paper did not explicitly discuss the procurement lead time. However, in its submission to the options paper, Enel X noted that there should be sufficient lead time to enable reserve providers to develop a portfolio of reserves. It stated that in its experience, at least six months is needed to build a portfolio of demand response capable of providing emergency reserves.<sup>337</sup>

It also stated that reserve providers prefer longer duration contracts,<sup>338</sup> including those longer than a year. This is discussed in section 6.2.3.

#### Submissions to draft determination

Most stakeholders supported increasing the procurement lead time to 12 months from nine months, noting that it would create consistency with the RRO and increase the pool of RERT providers.<sup>339</sup> No stakeholders suggested the lead time for procurement should be longer than 12 months, although AEMO and the Victorian Government suggested that multi-year contracting should be introduced, as discussed in the next section.<sup>340</sup>

However, some stakeholders either opposed the increase to 12 months or were not convinced that it was consistent with the RRO:  $^{\rm 341}$ 

- The AEC and Origin were concerned that it would not be consistent with the RRO as then it is likely AEMO will being tendering possibly 15 months ahead of T. This would place the RERT into direct competition with retailers who will be attempting to finalise their contracts under the RRO. This was echoed by a number of other stakeholders.<sup>342</sup> This issue is discussed in more detail in section 6.1.4.
- Further, Snowy Hydro was concerned that a further increase to 12 months would be distortionary.

To address this, AGL and CEC suggested that AEMO should be prevented from commencing any RERT activations prior to 12 months ahead of a gap.<sup>343</sup> Origin also suggested that the existing procurement lead time was largely consistent with the RRO as AEMO would be able to start negotiations at 12 months (after retailers have finalised their contract positions) and then enter into contracts at nine months.<sup>344</sup>

<sup>337</sup> Enel X, submission to options paper, p. 3

<sup>338</sup> Ibid, p. 5.

<sup>339</sup> GreenSync, CEC, EUAA, ERM Power, MEU, Energy Australia, Enel X: submissions to draft determination.

<sup>340</sup> AEMO and Victorian Government: submissions to draft determination.

<sup>341</sup> AEC, Origin and Snowy Hydro: submissions to draft determination.

<sup>342</sup> CEC, EnergyAustralia, Stanwell, AGL: submissions to draft determination.

 $<sup>\</sup>ensuremath{\mathsf{343}}$  CEC and AGL: submissions to draft determination.

<sup>344</sup> Origin, submission to draft determination, p. 2.

#### 6.1.4

#### **Commission's analysis and conclusions**

#### BOX 17: FINAL RULE

The final rule increases the maximum procurement lead time from nine months to 12 months. The final rule therefore allows AEMO to procure emergency reserves through the RERT mechanism up to a maximum of 12 months ahead of an identified shortfall. The final rule maintains AEMO's ability to negotiate RERT contracts at any time - the only restriction is that these contracts cannot be entered into (or existing RERT contracts varied) until 12 months before the projected shortfall.

The Commission considers increasing the procurement lead time to 12 months increases the range of resources that can potentially provide emergency reserves, which will place downward pressure on the cost of delivering emergency reserves. In addition, increasing the procurement lead time to 12 months creates consistency with the lead time under the RRO that is currently under development. Further, the Commission is of the view that the increase is unlikely to create significant, distortionary impacts on the market; particularly because other aspects of the final rule strengthen the out-of-market provisions to minimise indirect costs.

There are also a number of minor consequential changes in the final rule as a consequence of changing the procurement lead time.

#### Changes between draft and final rule

There are no changes between the draft and final rule for this aspect.

The Commission recently considered the issue of the procurement lead time through its consideration of the *Reinstatement of long notice reliability and emergency reserve trader* rule change request. In the final determination for this, the Commission set out that having a procurement lead time of nine months (an increase from 10 weeks) would promote the long-term interests of consumers, since it would have a net positive impact on the procurement process and the costs associated with procuring emergency reserves, leading to AEMO being able to access more emergency reserves, and more reserves efficiently, should they be needed. The Commission did not consider a longer procurement lead time at the time - only whether or not to reinstate the long-notice RERT, which at the time it was removed from the NER had a nine-month procurement lead time.

The Commission agrees with AEMO's and stakeholders' comments regarding the potential benefits of further increasing the procurement lead time to one year, and considers that a longer procurement lead time would further expand the pool of potential RERT providers, in particular, demand response providers or aggregators of behind the meter technologies, by reducing barriers to participation. These providers of emergency reserves require a longer lead time in order to participate in the RERT - the time is typically used to sign up customers and install any relevant equipment. Providers typically state that they need at least six months.

While a 12-month lead time is longer than six months, when taking into account AEMO's procurement process (typically lasting about three-to-four months, based on the last couple of years), and the typical shortfalls that tend to span across summer, the lead time under the final rule can result in more efficient outcomes. A longer lead time can increase the pool of potential providers, placing competition tension on the costs of procuring emergency reserves.

The benefits of increasing the lead time have to be weighed up against the costs of doing so. The longer the lead time, the higher the potential for market distortions e.g. if a market participant decides to withdraw existing capacity from the market because it is more lucrative for them to provide emergency reserves. The longer the lead time is, the more likely these distortions will arise; given that the potential for reserve providers to earn more money is increased. A longer lead time also means that AEMO may enter into contracts (and incur costs on behalf of the market) based on forecasts longer ahead of time, meaning that they might be less accurate. Such costs might have been avoided had AEMO only been able to enter into contracts nearer the time of the projected shortfall. However, on balance, the Commission considers that the 12-month procurement lead time strikes the right balance between reducing barriers to participation and the associated reduction in costs; and the potential costs of market distortions.

In addition, increasing the procurement lead time to 12 months creates consistency with the lead time under the RRO. It is important to have consistency between these frameworks since the trigger for emergency reserves under the RRO is a trigger for use of the RERT mechanism. This is discussed further below.

To conclude, the Commission considers that a 12-month procurement lead time is appropriate because it:

- Will decrease the barriers to participation in the RERT, enabling more potential providers to offer emergency reserves and so potentially reducing costs.<sup>345</sup>
- Is unlikely to give rise to significant market distortions such as those that might arise from longer procurement times.

The final rule therefore states the following regarding the procurement lead time:<sup>346</sup>

#### 3.20.3 Reserve contracts

#### **Procurement trigger and lead time**

....

(f) Except as otherwise prescribed under the Rules, AEMO must not enter into a reserve contract for a *region* (or vary a reserve contract for a region that was entered into following a previous declaration under clause 4.8.4 for that region):

<sup>345</sup> For example, a sufficient lead time to give potential providers the opportunity to sign up customers and install relevant equipment to engage in demand response.

<sup>346</sup> AEMO is only required to specify a time period when it declares an LOR or LRC under clause 4.8.5(a1)(2) of the NER to the extent reasonably practicable. As a result, the final rule introduces clause 3.20.3(f)(2)(ii) to address this.

(1) unless it has made a declaration under clause 4.8.4 for that *region*; and

(2) more than 12 months prior to the:

(i) commencement of any time period specified in the declaration in accordance with clause 4.8.5(a1)(2); or

(ii) where no such time period is specified, the date *AEMO* reasonably expects that the *reserves* under that contract may be required to address the *low reserve* or *lack of reserve* condition, having regard to the *reliability standard implementation guidelines*.

#### Interaction with the RRO

The Commission acknowledges the interactions between the RRO and the RERT. In particular, if a T-1 reliability instrument is made by the AER under the RRO, then AEMO would become the procurer of last resort and could purchase reserves through the RERT mechanism. Under the RRO this would need to happen one year ahead of a shortfall. As a result, there would need to be, in the NER, the ability for AEMO to procure emergency reserves, for the purpose of the RRO, one year ahead of a shortfall. Therefore, increasing the lead time to 12 months is consistent with this.

In submissions to the draft determination, stakeholders raised concerns about the fact that AEMO can start RERT negotiations as soon as a T-1 instrument under the RRO is issued – this could be up to 15 months ahead of a shortfall under the RRO, as shown in the figure below. AEMO has to publish the forecasts of reliability gaps that trigger the RRO by 31 August each year. As an example, AEMO could then request a T-1 instrument in August, and the AER could issue the instrument in October, for a gap that starts in December of the following year, i.e. more than a year ahead of the gap.



#### Figure 6.1: RRO and RERT timeframe

Source: Stanwell, submission to draft determination, p. 3.

Once the T-1 instrument is issued, retailers have until one year before the gap to finalise their contract position. The concern from stakeholders is that AEMO may start its RERT negotiations as soon as the AER issues a T-1 instrument - at exactly the same time that retailers would be finalising their contract positions, which means that they could be in direct competition with AEMO for demand response contracts.

The Commission agrees that in some years, this could lead to a situation whereby AEMO is seeking expressions of interest at the same time as retailers are finalising their contractual positions. However, the Commission does not consider that it would be appropriate to restrict AEMO's ability to negotiate at any time - such a restriction would be difficult to enforce as it would be difficult to ascertain that AEMO is not having confidential discussions with potential providers.

The final rule therefore does not restrict AEMO's ability to negotiate at any time, as long as it does not enter into a reserve contract more than 12 months ahead of a gap. The final rule also includes minor drafting changes to reflect this.<sup>347</sup>

## 6.2 Contracting duration

The contracting period refers to the duration of an emergency reserve contract. This is different from the procurement lead time. The procurement lead time refers to how long in advance of a projected shortfall AEMO can enter into emergency reserve contracts (up to 12

<sup>347</sup> For example, clause 3.20.3(b)(2) of the final rule replaces "re-negotiate" with "vary" in order to maintain consistency with the position expressed above.

months under the final rule) whereas the contracting duration refers to how long the term of the reserve contract can be, once that threshold has been reached.

#### 6.2.1 Current Arrangements

The NER do not prescribe a specific contract duration for emergency reserve contracts; however, the procurement lead time specified in the NER acts as a maximum limit on the duration of an emergency reserve contract because AEMO is not permitted to enter into reserve contracts in respect of reserve shortfalls that are expected to occur outside that lead time. Put another way, the procurement lead time implies that the term of the contract itself may not be longer than nine months. That is, the end of the contract must be no longer than nine months away.

As an example, if AEMO identifies shortfalls for the next two summers, it would not be able to sign a two-year emergency reserve contract. Instead, it could only enter into emergency reserve contracts in respect of reserve shortfalls that will occur within nine months of the entry into the contract, as implied by the procurement lead time of nine months.

#### 6.2.2 AEMO's views

#### **Rule change request**

In its rule change request, AEMO considered that allowing multi-year contracting could lower the barrier to entry for new demand side resources. The inability to enter into longer-term agreements means that resources may not be able to be procured in the most efficient way.<sup>348</sup>

#### Submission to the consultation paper

In its submission to the consultation paper, AEMO stated:<sup>349</sup>

While AEMO proposed to contract for up to three years, this will be done only if it is expected to lead to lower cost of RERT consistent with the RERT Guidelines and the RERT Principles under clause 3.20.2(b) of the NER. For example, in year t, AEMO identifies persisting gaps for year t+1, t+2 and t+3. In this case, signing a three-year contract for part of the volume gap could offer greater certainty to the resource provider and avoid administrative overheads, leading to lower total procurement costs.

#### Submission to draft determination

In the draft determination, the Commission considered that multi-year contracting would create significant distortions to market participants' investment incentives and as a result, the maximum contracting duration continues to be implied by the procurement lead time, in other words, a maximum of 12 months.

In its submission to the draft determination, AEMO continued to support its proposed multiyear contracting, noting that it would provide more certainty to RERT suppliers as it would

<sup>348</sup> AEMO, rule change request, p. 6, 10.

<sup>349</sup> AEMO, submission to the consultation paper, p. 5.

them to spread their fixed cost over potentially up to three years, which further reduces the cost of RERT reserves.  $^{\rm 350}$ 

#### 6.2.3 Stakeholders' views

#### Submissions to the consultation paper

In the consultation paper, the Commission consulted on AEMO's proposal to allow multi-year (three-year) contracting if it is cheaper to do so in the event of a multi-year shortfall. Stakeholders' views on contracting duration were mixed with some preference for the status quo (i.e. disallowing multi-year contracting) due to cost concerns.

Reasons provided by stakeholders<sup>351</sup> who opposed multi-year contracting included:

- The RERT is meant to be an emergency reserve mechanism and not a normal feature of the market<sup>352</sup> and so allowing multi-year contracting would make it more "normal".
- Allowing emergency reserves to be contracted for up to three years could impede market responses and may therefore undermine investor confidence.<sup>353</sup>

Reasons provided by stakeholders<sup>354</sup> supporting multi-year contracting included:

- Having the ability to procure for up to three years should further encourage demand response bids and assist in a lower cost provision of emergency reserves.<sup>355</sup>
- Allowing multi-year contracting would provide more certainty to emergency reserve providers by potentially providing a longer term stream of payments (i.e. over multiple years) in return for ensuring reserves are available.<sup>356</sup>

#### Submissions to the options paper

While this was not a specific subject for consultation in the options paper, a number of stakeholders commented on this aspect, including:

- The MEU stated that there are some significant set up costs in order to provide RERT services and that amortising the costs over a longer term could lead to lower overall RERT costs, noting that some providers may need multi-year contracts to help with this.<sup>357</sup>
- Enel X supported AEMO's proposal to have the option to sign multi-year contracts if it will lead to lower costs, noting that whether longer contracts result in a lower overall cost will

<sup>350</sup> AEMO, submission to draft determination, p. 11.

<sup>351</sup> Stakeholders who opposed multi-year contracting included: CEC, ENA, AEC, EnergyAustralia, Snowy Hydro, TransGrid, Hydro Tasmania and Origin.

<sup>352</sup> TransGrid submission to the consultation paper, p. 2.

<sup>353</sup> Hydro Tasmania submission to the consultation paper, p. 2.

<sup>354</sup> Stakeholders who supported multi-year contracting included: MEU, Flow power, BlueScope, EUAA, CitiPower Powercor & United, AEMO

<sup>355</sup> BlueScope submission to the consultation paper, p. 2.

<sup>356</sup> CitiPower, Powercor & United submission to the consultation paper, p. 2.

<sup>357</sup> MEU, submission to options paper, p.6

depend on the nature of the contracts – and their balance between availability and utilisation costs.  $^{\rm 358}$ 

- EEC noted that while AEMO should not require providers to provide contracts for longer than one summer, the auction process should consider the length of availability that is offered by a provider.<sup>359</sup>
- The AEC, however, stated that a three-year timeframe is well beyond the construction lead time of new market-based plant, meaning that it would not be possible for AEMO to undertake a meaningful economic trade-off when purchasing across an extended timeframe.<sup>360</sup>

#### Submission to draft determination

Most stakeholders explicitly supported limiting the maximum contract length to 12 months (consistent with the procurement lead time) because:<sup>361</sup>

- It minimises market distortions and improves confidence in the market
- It is consistent with the Retailer Reliability Obligation MEU in particular noted that while it considers that there could be benefits to multi-year contracting, the RRO provides an incentive for the market to respond up to three years ahead, meaning that RERT contracts should not be longer than 12 months.

Other than AEMO, the Victorian Government also considered that multi-year contracting was appropriate to create standing reserves, e.g. by building on the ARENA RERT trial. It stated that by offering a longer contract period, there would be a greater prospect of obtaining a sufficient level of reserves and that this approach would appear prudent for the next three-to-five years.<sup>362</sup>

#### 6.2.4 Commission's analysis and conclusions

#### BOX 18: FINAL RULE

Through the final rule the maximum term of the contract is implied by the procurement lead time (maximum of 12 months). The term of the contract must be for the period reasonably necessary to address the shortfall, having regard to the RERT principles.

The Commission considers that multi-year contracting would likely create significant distortions to market participants' incentives to invest and may lead to higher costs to consumers. It considers that the benefits in terms of lower direct costs that could accrue through multi-year contracts would likely be outweighed by pre-empting market responses over a time period that is well within investment timeframes.

<sup>358</sup> Enel X, submission to options paper, p. 5.

<sup>359</sup> EEC, submission to options paper, p. 3

<sup>360</sup> AEC, submission to options paper, p. 4.

<sup>361</sup> ENGIE, AEC, Origin, MEU, Snowy Hydro: submissions to draft determination.

<sup>362</sup> Victorian Government, submission to draft determination, p. 2.

The contracting duration for emergency reserves should be aligned with the procurement lead time.

#### Changes between draft and final rule

There are no changes between the draft and final rule for this aspect.

The potential benefit of multi-year contracting is that AEMO may be able to contract emergency reserves at lower cost through multi-year contracts. This is because multi-year contracts can provide more certainty for providers, thereby potentially increasing the number of potential providers and lowering RERT procurement costs. This was noted by a number of stakeholders, and is the main rationale for why AEMO wishes to implement multi-year contracting, which was echoed in the Victorian Government's submission.

However, the Commission considers that these potential benefits need to be weighed against the potential costs. In other words, greater certainty to emergency reserve providers and the benefits of lower RERT costs have to be balanced against the costs of market distortions and of procuring emergency reserves even when it is not needed, as discussed in the procurement trigger chapter (Chapter 6). The direct and indirect costscould be high under multi-year contracting.

Indeed, it is not clear that these benefits that would always accrue, or whether multi-year contracts are required for these benefits to accrue. Any benefits would be difficult to assess at the time of procurement and would be highly dependent on the level of information available three years ahead of a potential shortfall. As such, any assessment made three years ahead of a shortfall would also likely only include a direct cost assessment, and not include the costs associated with distortions to investment and operational incentives that affect market participants.

On the other hand, there are potential costs such as:

- direct costs direct costs may be higher because of costs incurred that turn out to have been incurred unnecessarily in hindsight (e.g. if what happens closer to real time shows that emergency reserves were not needed)
- indirect costs i.e. potential distortions to the investment and operational incentives that market participants have, as described in the section above, and in detail in Chapter 7.

As information changes, and more becomes available closer to real time, procurement decisions regarding emergency reserves are made more efficiently, which lowers direct cost. There is a trade-off since leaving the procurement decision too late could actually result in an insufficient amount of resources being procured; however, procuring emergency reserves early could result in them unnecessarily being procured.

The Commission considers that the potential costs of multi-year contracting (i.e. associated with market distortions) outweigh the potential benefits. In particular, the Commission has concerns around multi-year contracting reducing incentives for market participants to invest or respond to market signals, and provide reliability at minimal costs to consumers.

The Commission considers that three years is too long a time period for RERT procurement as it would likely pre-empt a market response. The Commission notes that three years is well within investment timeframes and intervening too early would significantly reduce investment incentives for market participants - as mentioned in the previous section, this is even more relevant with new technologies that can be deployed quickly.

In addition, the RRO - which would first be triggered three years out - aims to provide strong incentives on market participants to bring resources to the market that should fill any shortfall of capacity during this time, thereby reducing the need for emergency reserves. Allowing AEMO to procure these resources that cover this timeframe would overlap with the obligations put on market participants under the RRO.

This is consistent with the Commission's discussion in Chapter 6 around standing reserves. Multi-year contracting would, in effect, introduce standing reserves for, in this case, three years. The Commission considers that this would not be appropriate as, as discussed above, consumers would likely pay more for electricity since emergency reserve costs would be incurred every year regardless of whether or not the emergency reserves are required – thereby increasing electricity costs. It would also likely disincentivise investment in all forms of generation (and demand response) in the market, potentially leading to higher wholesale market prices.

As noted in Chapter 4, most stakeholders, and all consumer representatives that commented on the matter, were of the view that the reliability standard was appropriate. Consumer representatives, large energy users and other stakeholders stated that consumers are more concerned with lowering electricity prices, rather than paying more for reliability. The Commission found no evidence to suggest that consumers would value higher levels of reliability.

The issues with multi-year contracts are compounded by the fact that these contracts are likely to carry availability payments for providers, unlike shorter-term contracts. As expectations change closer to real time and shortfall amounts change (most likely disappearing), there could have been inefficient sunk costs incurred by consumers as a result of procurement of emergency reserves that were, in the end, potentially not needed. In contrast, in the market, the market participant investing into new generation or demand response would be the one bearing the risk of the investment, not consumers, as is the case under RERT.

Therefore, the Commission does not think on balance that multi-year contracting for emergency reserves is appropriate. The Commission's final rule makes it clear that the term of the contract must be for a period reasonably necessary to address the relevant shortfall (identified by the procurement trigger), which would prevent multi-year contracting, having regard to the RERT principles.

In other words, under the final rule:

• the maximum contracting duration, in effect, should be no greater than the procurement lead time (i.e. one year under the final rule)

• the expected contracting duration is to cover a timeframe that is consistent with the identified shortfall.

The final rule is:363

3.20.3 (m) AEMO must use reasonable endeavours to ensure that:

(1) subject to subparagraph (f)(2), the term of a *reserve contract* is no longer than *AEMO* considers is reasonably necessary to address the relevant *low reserve* or *lack of reserve* condition;...

In other words, AEMO still has some discretion as to exactly how long each contract is (with a maximum of one year), having regard to the RERT principles around minimising direct and indirect costs. Box 19 explains how this would work in practice.

#### **BOX 19: CONTRACTING DURATION**

Consider a situation where AEMO declares an LRC where it identifies shortfalls for 2019-20, specifically for the months of:

- November 2019
- January 2020
- March 2020
- June 2020

In this instance, it would likely be cheaper and more practical for AEMO to sign contracts that cover multiple months, rather than sign individual contracts for each distinct month.

In the example above, AEMO would be able to sign a contract in March 2019 (i.e. 12 months ahead of the end of the shortfall, i.e. March 2020), with the term of the contract being from November 2019 to March 2020, assuming that there are no availability payments accrued prior to November 2019. This would allow AEMO to procure emergency reserves 12 months ahead of a projected shortfall, and for these contracts to cover the entire summer period.

AEMO could only sign a contract covering November 2019 to June 2020 in June 2019 (i.e. 12 months ahead of June 2020) and only if it meets the RERT principles of minimising costs.

The Commission considers that it is appropriate to clarify that the term of the contract must be for a period reasonably necessary to address identified shortfalls.

This clarification minimises costs and situations where AEMO contracts for emergency reserves for the maximum allowed term (12 months) potentially with availability payments being incurred, even if the shortfall is only for say, one month.

The Commission notes that although multi-year contracting would not be able to occur under the final rule, the Commission is not proposing any changes to the medium- and short-notice

<sup>363</sup> In the final rule, subparagraph (f)(2) is the procurement lead time, i.e. a maximum of 12 months.

RERT panel arrangements - any emergency reserve providers could choose to be on the panel for as long as they wish - there are no restrictions for how long a provider can be on the panel.

Similarly, the final rule does not prohibit trials such as the ARENA RERT trial from occurring, or jurisdictions effectively enabling multi-year contracting as discussed in Chapter 5. The ARENA RERT trial involved multi-year contracting which was funded by governments, outside of the RERT framework. A condition of the trial agreements was that trial participants had to offer their emergency reserves to AEMO if asked. Trial participants were placed on the RERT panel, which as mentioned above, has no restrictions on how long a provider can be on the panel. Under the RERT panel, contracts are only signed very close to a gap (within seven days to several hours), well within the maximum contract length of 12 months.

7

# MINIMISING DIRECT AND INDIRECT COSTS

This chapter outlines stakeholders' views and the Commission's analysis on the potential for wholesale market distortions associated with a mechanism like the Reliability and Emergency Reserve Trader (RERT or emergency reserves), which increase costs for consumers.

It also outlines stakeholders' and the Commission's views with respect to two key features of the RERT that stakeholders have identified as being crucial to minimise the direct and indirect costs that occur from use of the mechanism, namely:

- the existing out-of-market provisions in the National Electricity Rules (NER)
- a payment structure.

# 7.1 Minimising indirect costs

#### 7.1.1 Current arrangements

Strategic reserves, like the RERT, can have the potential to distort the operational and investment incentives of wholesale market participants. For example, market participants may consider that they would get a higher payment from participating in a strategic reserve than they would in the wholesale market, and so withdraw capacity that is currently available in the market to participate in RERT. This outcome would likely lead to an increase in wholesale prices and additional costs for emergency reserves and create reliability concerns due to a lack of supply of reserves within the market.

There are a number of current provisions and design features in place to limit the indirect costs for consumers (i.e. market distortions) that could arise as a consequence of the RERT:

- NER out-of-market provisions, which aim to make sure that emergency reserves procured are meant to be in addition to what the wholesale market would otherwise provide, discussed in more detail in section 7.2.1.<sup>364</sup> These out-of-market provisions state that providers cannot be both in the market<sup>365</sup> and also participate in the RERT, for the trading intervals to which the emergency reserve contract relates.
- NER limitation on the procurement lead time (see Chapter 6 for more detail).<sup>366</sup> Currently, the procurement lead time limits AEMO's ability to procure emergency reserves up to nine months ahead of a projected shortfall. The final rule increases the procurement lead time to 12 months.
- The RERT principles in the NER, one of which states that AEMO should take actions that AEMO reasonably expects have the least distortionary effect on the wholesale market,<sup>367</sup> discussed in section 7.3.

<sup>364</sup> Clauses 3.20.3(h) and 3.20.3(j) of the NER.

<sup>365</sup> As defined by Chapter 10 of the NER, i.e. any of the markets or exchanges described in the Rules, for so long as the market or exchange is conducted by AEMO.

<sup>366</sup> Clause 3.20.3(d) of the NER.

<sup>367</sup> Clause 3.20.3(b) of the NER.

- Restriction prescribed in the RERT guidelines on availability payments for being a member of the RERT panel,<sup>368</sup> also discussed in section 7.3.
- NER provisions in relation to the dispatch of emergency reserves to require AEMO to dispatch all valid bids and offers ahead of using the RERT.<sup>369</sup> This clause applies during times of supply scarcity<sup>370</sup> and requires that AEMO dispatches scheduled bids and offers first before using emergency reserves.
- NER provisions around how to price during an intervention event, known as intervention pricing. It is meant to maintain/restore market signals during an AEMO intervention event, including exercise of the RERT.<sup>371</sup>

#### 7.1.2 AEMO's views

#### Rule change request

In its rule change request, AEMO stated that it could manage concerns around wholesale market distortions through setting appropriate caps on availability payments and restrictions on resources transitioning between the energy market and the RERT.<sup>372</sup>

#### Submissions to consultation paper

In response to the potential concerns around increased wholesale market costs raised by the Commission in the consultation paper and by stakeholders in submission to the consultation paper, AEMO stated that at times of supply scarcity, the NER provides for RERT to be activated only after all valid dispatch bids and offers have been dispatched.<sup>373</sup> It stated that this should not dis-incentivise responses from market participants in a competitive wholesale market, especially given intervention pricing will preserve the price signal to the participants.<sup>374</sup>

AEMO noted that the concern that the RERT would attract resources away from the energy market seems somewhat unfounded in a competitive wholesale market, where non-transient market power cannot be sustained due to competition from multiple suppliers:<sup>375</sup>

- Given the RERT is intended to be activated only after dispatching scheduled bids and
  offers first during times of supply scarcity, if a participant withholds its resources from the
  energy market in the hope of receiving a higher payment by signing the RERT, it will be
  out-ranked by other suppliers who directly offer their capacity into the energy market.
- AEMO stated however that it is possible that if the availability payment were too high, it could potentially make the provider favour the RERT even if they do not expect to be dispatched.

<sup>368</sup> Section 6 of the RERT guidelines.

<sup>369</sup> Clause 3.8.14 of the NER.

<sup>370</sup> Supply scarcity is not defined in the NER.

<sup>371</sup> Clause 3.9.3 of the NER.

<sup>372</sup> AEMO, rule change request, p. 4.

<sup>373</sup> AEMO, submission to consultation paper, p. 6

<sup>374</sup> Ibid. p. 4

<sup>375</sup> Ibid.

#### Submission to options paper

In response to the Commission's comments around indirect costs for consumers associated with the RERT that were discussed in the options paper and further stakeholder feedback on the potential for market distortions, AEMO agreed that in principle, generation resources at the margin might opt to participate in the RERT instead of the energy market.<sup>376</sup> However, it questioned the practical significance of such an effect and recommended that the AEMC should undertake some formal analysis to quantify the cost of market distortion and its impact on wholesale energy costs.<sup>377</sup>

It also stated that market distortions can be reduced by the following measures:<sup>378</sup>

- Implementing the recommendation in the AEMC's *Reliability Framework Review* with respect to wholesale demand response.
- Introducing its proposed procurement methodology, which will place a limit on the amount of availability cost a potential provider can receive from RERT.
- Strengthening out-of-market provisions in the NER for RERT providers.

#### Submission to draft determination

In the draft determination, the Commission set out the rationale behind the risks of increased costs to consumers from the RERT, and concluded that the concerns around such wholesale market distortions were significant enough to justify strengthening the out-of-market provisions.

Specifically, the Commission increased the limitation on participating in both the market and in emergency reserves to 12 months, and also clarified what it meant by "in the market", to include activities involving the trading of energy, e.g. being involved in the energy market or providing wholesale demand response.

AEMO raised the following concerns around the draft determination and rule:<sup>379</sup>

- "AEMO is not convinced by the AEMC's conclusion on RERT's potential to cause market distortion. Specifically, AEMO considers the concerns about market distortion could be misplaced when the market has not delivered the optimal outcome for managing reliability in the first place.
- AEMO is not convinced by the AEMC's assertion that the market is best placed to manage reliability risks for consumers.
- AEMO considers that market distortions should not be a material concern if the market itself does not deliver an efficient outcome for managing tail-end reliability risks.
- The current out-of-market provision does present an obstacle to procuring RERT for system security, as the resources that could provide system strength are large synchronous generators that currently operate in the energy market.

<sup>376</sup> AEMO, submission to options paper, p.12

<sup>377</sup> Ibid.

<sup>378</sup> Ibid. p. 12

<sup>379</sup> AEMO, submission to draft determination, pp. 12-13.

The new out-of-market provisions will lead to less RERT resources being available."

#### 7.1.3 Stakeholders' views

#### Submissions to consultation paper

In the consultation paper, the Commission asked for stakeholders' views on market distortions. There was overwhelming agreement that the RERT should be out of market and most stakeholders expressed concerns around the distortionary effects of the RERT and changes proposed in the rule change request. For example, stakeholders noted that they have knowledge of market distortions, specifically examples of in-market demand response being withdrawn from the market to participate in the RERT<sup>380</sup> or of potential in-market demand response providers choosing instead to participate in RERT.<sup>381</sup>

Two stakeholders thought the market distortionary aspect of the RERT was not a significant issue:

- As the frequency of such occurrences are relatively rare and so short lived, the Major Energy Users (MEU) is concerned that the weight applied by the AEMC about the RERT's ability to distort the market is excessively overstated and the market distortions caused by the RERT are modest in the extreme and have much less impact than other distortions already accepted in the market.<sup>382</sup>
- As noted in the section above, AEMO also thought that the distortionary aspect is overstated.<sup>383</sup>

#### Submissions to options paper

In submissions to the options paper, a number of stakeholders reiterated their concerns around market distortions and the risk posed by RERT with respect to dampening investment signals.<sup>384</sup>

#### Submissions to draft determination

Despite stakeholders' views being mixed when it came to the draft rule, as discussed in section 7.2.3, there was widespread support for the need to limit the risk of indirect costs arising from emergency reserves - a number of stakeholders stated that the Commission got the balance between minimising market distortions and maximising RERT providers right.<sup>385</sup> Even though some stakeholders though the draft rule was too inflexible or unclear, they still supported the principle that market distortions should be minimised.<sup>386</sup>

Specific comments are discussed in the next section.

<sup>380</sup> Meridian, submission to consultation paper, p. 5

<sup>381</sup> EnergyAustralia, submission to consultation paper, p. 6

<sup>382</sup> MEU, submission to consultation paper, p. 3

<sup>383</sup> AEMO, submission to consultation paper, p. 12.

<sup>384</sup> Flow Power, EUAA, AGL, Infigen and Enel X: submissions to options paper.

<sup>385</sup> ENGIE, Snowy Hydro, AEC, Mondo, MEU, ERM Power, Stanwell, EUAA, EnergyAustralia, AGL, Energy Efficiency Council, Enel X, Meridian: submissions to draft determination.

<sup>386</sup> EUAA, Brickworks, EnergyAustralia, AGL, Energy Efficiency Council: submissions to draft determination.

Besides AEMO (whose views were discussed above), a number of other stakeholders also opposed the changes and prefer the status quo noting that the changes would severely limit potential RERT providers - these stakeholders tended to either consider that the risk of distortions was not material, or were not convinced that there was a problem.<sup>387</sup> Specific comments are discussed in the next section.

Alcoa stated:388

- There is no quantitative analysis provided of the materiality of this risk although AEMO's submission is that to the extent it can exist within the RERT procurement framework (which is minimal) it is manageable.
- There is no analysis in the draft determination of the size and materiality of these feared market distortions nor is there any quantitative investigation of the likely impact of the change on the RERT provider pool.

#### 7.1.4 Commission's analysis and conclusions

#### Why is the Commission concerned with market distortions?

The Commission has set out its views on the potential for distortions in previous determinations that related to the RERT mechanism.<sup>389</sup> These are also set out below.

The indirect costs to the wholesale market mean that consumers end up paying more for reliability than they otherwise would. Minimising the indirect costs is therefore crucial to make sure that the costs of reliability are minimised for consumers.

#### Withdrawal of capacity

The RERT may lead to capacity being withdrawn from the wholesale market, where a revenue stream may be uncertain, in favour of guaranteed returns from participation in the RERT due to availability payments or even at the prospect of very high usage payments, if the emergency reserves are activated.

To the extent that capacity withdrawn from the energy market needs to be replaced, the remaining energy resources with a higher cost than those withdrawn are likely to be required, thus raising the average price of electricity. At the same time, availability payments for the capacity withdrawn from the energy market and offered via emergency reserves would still accrue, meaning additional costs for consumers.

#### Crowding out investment

Similarly, if market participants know that the system operator has capacity on stand-by to intervene on tight demand and supply balance days, this may dampen investment signals in capacity to participate in the wholesale market, most likely peaking capacity.

<sup>387</sup> Flow Power, Alcoa, SA Government, Victorian Government: submissions to draft determination.

<sup>388</sup> Alcoa, submission to draft determination, p. 2.

<sup>389</sup> See, for example AEMC, Extension of the Reliability and Emergency Reserve Trader, Final Determination, 23 June 2016 and AEMC, Reinstatement of long notice Reliability and Emergency Reserve Traded, Final Determination, 21 June 2018.

The implication is that this may crowd out potential in-market arrangements that would have occurred in its absence — even if the stand-by emergency reserves are not in the wholesale market. In some cases the crowding out effect may result in a higher overall system cost with no net "physical" increase in capacity available to the system, or even a decrease of capacity, compared to the counterfactual of not having emergency reserves.

#### Inefficient risk allocation

With a mechanism like the RERT, responsibility for the management of wholesale market risks may be considered to be placed in the hands of centralised bodies rather than the market participants who have clear commercial incentives to ensure the risks of non-supply are met in the most efficient manner.

In this instance, the management of wholesale market risk is placed in the hands of the system operator, which may have an incentive to be conservative with respect to reliability due to its role as operator, with the risks ultimately being borne by consumers.

Similarly, procurement lead time inefficiency may also occur due to inefficient risk allocation. For say, a two-year contract, procurement decisions would be occurring well ahead of dispatch, which may lead to inefficient decisions as to the amount, type and location of emergency reserve procured. This also applies to the pre-activation decisions or notification lead time, whereby, for example, contracting for capacity 24 hours ahead of a projected shortfall may dampen wholesale market signals to respond on the day of the shortfall.

The wholesale market, like the system operator, makes decisions in advance as well — however, they bear the risks of these decisions.

#### Cost inefficiency

The cost of emergency reserves are difficult to hedge and are likely to be unpredictable for retailers, resulting in cost inefficiencies being passed onto market customers (such as retailers), and ultimately borne by consumers.<sup>390</sup>

#### Is there a problem?

The Commission has responded to comments from AEMO questioning the significance of the potential for wholesale market distortions. In the options paper, the Commission explained that:<sup>391</sup>

- there are likely to be distortionary effects if availability payments are made
- there may be distortionary effects even without availability payments.

The Commission further noted that, unlike AEMO's comment made to the consultation paper that there is no market power and therefore no incentive for participants to withdraw capacity from the wholesale market to earn more in the RERT, *transient* pricing power is an inherent feature of a competitive wholesale market.<sup>392</sup>

<sup>390</sup> Some of these concerns have been addressed by the Commission's conclusions on transparency - see Chapter 9.

<sup>391</sup> AEMC, Enhancement to the Reliability and Emergency Reserve Trader, options paper, p.51

<sup>392</sup> Ibid. p.51

This transient pricing power tends to coincide with times when there is likely to be a RERT activation, i.e. when the demand and supply balance is tight. In these instances, it may therefore be more profitable to withhold resources from the wholesale market to receive a higher payment in the RERT. This can occur even without availability payments, although high availability payments would likely make it even more profitable to withdraw capacity.

As a result, in the draft determination the Commission noted that it continues to be concerned with the potential for wholesale market distortions, particularly in the context of an emergency reserve mechanism that is being used more frequently. Having said that, the Commission is conscious that there are new and different types of resources that are participating in the RERT these days, such as demand response, which have a different nature and characteristics compared to conventional generation.

AEMO subsequently suggested that the Commission should undertake a quantitative analysis to quantify these indirect costs associated with the RERT.

In the draft determination, the Commission noted that it was satisfied that the feedback it has received with respect to wholesale market distortions over the past decade and more recently through this rule change's consultation process is evidence enough that the RERT has the potential to be distortionary. Examples include:<sup>393</sup>

- Examples of withdrawal of capacity as reported by Meridian
- Examples of parties previously interested in in-market demand response instead choosing to participate in RERT, as reported by EnergyAustralia.

Indeed, previous decisions made with respect to the RERT have primarily been due to concerns from a broad range of stakeholders regarding the potential for distortions. This was particularly highlighted in the 2017-18 summer given the high availability costs associated with the emergency reserve contracts. The Commission is also concerned, like many other stakeholders, about the direct costs imposed on wholesale market participants (and ultimately end customers), and notes that the higher the direct costs (particularly for availability-type payments), the higher the possible non-direct (distortionary) costs are likely to be. As noted above, however, the potential for distortions exists even without availability-type payments - the existence of availability-type payments are only one of the ways in which emergency reserves can cause distortions.

The Commission also notes that strategic reserves, in other jurisdictions, also tend to have some design features aimed at making sure that the emergency reserves procured through these mechanisms are in addition to what is available in the wholesale market due to concerns around market distortions.<sup>394</sup>

Similarly, the AER, in its inaugural wholesale electricity market performance report, noted that during its enquiries with respect to the RERT, many markets participants stated the following: "It was argued market demand response products are now in direct competition with the RERT. Market participants stated the higher priced RERT mechanism is redirecting

<sup>393</sup> Meridian and EnergyAustralia: submissions to consultation paper.

<sup>394</sup> See, for example, Belgium and Texas strategic reserves, as described in appendix F of the AEMC's *Reliability Frameworks Review* - interim report.

customers from existing demand response agreements, rather than creating an incentive for new capacity and security services, or new demand response contracts. Large consumers are declining to continue demand response arrangements in favour of the possibility of securing a more lucrative RERT contract, for example."<sup>395</sup>

The AER noted that it will monitor the impact of the RERT on investment signals and demand-side participation, as a result.

In its submission to the draft determination, Alcoa raised further concerns around the lack of quantitative evidence on these indirect costs or distortions.

The Commission notes that while its analysis is theoretical in nature, it has received a number of submissions highlighting that these distortions are real concerns of stakeholders, including examples of market distortions occurring in the last few years, particularly in the lead up to summer. The Commission's analysis has included meetings with stakeholders, and is also based on additional real-life examples of distortions which were provided by stakeholders in confidence.

The Commission also acknowledges AEMO's scepticism towards the need for stronger out-ofmarket provisions "if the market itself does not deliver an efficient outcome for managing tail-end reliability risk."<sup>396</sup> However, the Commission considers that the way to ensure that the market does deliver an efficient outcome is to encourage resources to participate in the market itself, rather than in an out-of-market safety net; the very purpose of the out-ofmarket provisions.

In addition, the Commission considers that AEMO has the flexibility within the existing framework to change the way it operationalises the reliability standard in order to better incorporate extreme weather events and variations in forecasting. This is discussed in greater detail in Chapter 4.

Given this, the Commission continues to be concerned with the risk of market distortions and is satisfied that this is an issue that remains of significance.<sup>397</sup>

Given the widespread concerns around the risk of distortions from stakeholders in the past and at present, including from those that stated that the draft rule was too inflexible, the Commission is satisfied that there is no justification for commissioning quantitative analysis on the matter. The potential for market distortions arising from RERT seems to be accepted by stakeholders. The issues that stakeholders have around the draft rule mainly relate to whether the out of market provisions are flexible enough, particularly given the transition the NEM is going through where there is retirement of thermal plant, as well as increasing numbers of renewables and flexible demand response. These concerns, and how we have addressed them, are discussed further below.

<sup>395</sup> AER, wholesale electricity market performance report 2018, p.61.

<sup>396</sup> AEMO, submission to draft determination, p. 12.

<sup>397</sup> The Commission has also set out its views on the risk of market distortions over the years - see for example AEMC, Extension of the Reliability and Emergency Reserve Trader, Final Determination, 23 June 2016 and AEMC, Reinstatement of long notice Reliability and Emergency Reserve Traded, Final Determination, 21 June 2018.

7.2.1

**Rule determination** Enhancement to the Reliability and Emergency Reserve Trader

While minimising direct and indirect costs is part of the broader assessment framework of the Commission as described in Chapter 3 and informs other decisions within this determination, the Commission proposes to specifically address stakeholders' concerns regarding wholesale market distortions in two ways:

- by clarifying out-of-market provisions, discussed in section 7.2.
- through introduction of an additional RERT principle in relation to costs, discussed in section 7.3.

# 7.2 Out-of-market provisions

#### Current arrangements

The rationale for the below provisions is to minimise the potential for market distortions by making sure that only reserves that are not in the market are participating in the RERT. As discussed in the previous section, the market is the primary means by which reliability is met in the NEM, including through market reserves. It is important that market investment and reserves are incentivised first and foremost. Ensuring that the market is able to do everything it can to meet reliability minimises the need for AEMO to intervene through emergency reserves, and makes sure that reliability is met at lowest cost for consumers.

#### Clause 3.20.3(h)

Under the NER, AEMO must not contract for scheduled reserves for which dispatch offers or bids have been submitted (or considered by AEMO to be likely to be submitted), or if such reserves are otherwise available for dispatch, in the trading intervals to which the contract relates.<sup>398</sup> Paragraph (h) prohibits AEMO from entering into scheduled reserve contracts for which dispatch offers or bids have been submitted or are considered by AEMO to be likely to be submitted or otherwise available for dispatch in the relevant trading intervals.

#### Clause 3.20.3(j)

Clause 3.20.3(j) contains a requirement for emergency reserve contracts (scheduled and unscheduled) to include a provision that "the other party to the contract has not and will not otherwise offer the reserve...in the market for the trading intervals to which the contract with AEMO relates except in accordance with the contract".

"Market" is defined in Chapter 10 of the NER as "any of the markets or exchanges described in the Rules, for so long as the market or exchange is conducted by AEMO". This is a fairly broad definition and is not particularly prescriptive in terms of what types of markets are included or excluded.

#### Both clauses - length of restriction

The out-of-market restrictions only apply to the trading intervals to which the contract relates. For example, for short-notice RERT, this could be as short as a few trading intervals.

<sup>398</sup> Clause 3.20.3 (h) of the NER.

For long-notice RERT, this would typically be longer — typically covering business days over the summer peak, for example.

In the consultation paper, the Commission asked a specific question around this aspect, based on a suggestion by the South Australian Government to consider more rigorous ring-fencing between emergency reserves and the wider market if the Commission is concerned about market distortions, for example, by increasing the current restriction from the trading intervals to which the contract relates to an entire financial year.<sup>399</sup> In other words, this would increase the out-of-market restriction to one year.

#### The RERT guidelines

The RERT guidelines specify the steps AEMO may take to inform itself that the relevant emergency reserves are "not available to the market through any other arrangements".<sup>400</sup>

While the guidelines adopt the NER definition of "market", they do not expand on the meaning or types of "other arrangements". This gives AEMO broad discretion.

#### **AEMO's procedures**

AEMO's procedures contains a number of sections that are relevant:

- Section 3.3 of AEMO's procedures<sup>401</sup> requires RERT panel members to confirm that any offered reserve involving the reduction of load is not subject to any demand side management, network support or other similar contracts or arrangements.
- Section 4.3 replicates the wording in clause 3.20.2(h) of the NER and notes that "AEMO will investigate its own records to ascertain whether it is likely that dispatch offers or dispatch bids might be submitted...or might otherwise be available for dispatch..."
- Section 8.6.1 suggests that tenders will be rejected where the offered emergency reserve is the subject of any demand side management arrangement, network support agreement or other similar contracts or arrangements.
- Section 10.3.1 allows AEMO to assess any available information to determine whether a reserve is available to the market through any other arrangement.

The procedures adopt the NER definition of "market" and use the undefined phrase "other similar contracts or arrangements", giving AEMO broad discretion.

#### Contract templates

The long-notice RERT contract template used for the 2018 expression of interest round<sup>402</sup> also provides additional information with respect to this. Specifically, it states that providers must have an undertaking that the emergency reserve will not be offered in the market and third-party reserve providers must obtain written confirmation that the reserve is not being offered in the market through any other means or subject to any other arrangement.

<sup>399</sup> SA Government, submission to *Reliability Frameworks review* - interim report, p.3.

<sup>400</sup> Sections 7, 8.1 and 8.2 of the RERT guidelines.

<sup>401</sup> See https://www.aemo.com.au/-/media/Files/Stakeholder\_Consultation/Consultations/Electricity\_Consultations/2018/RERT/Draftof-Procedure-for-the-Exercise-of-RERT-v50-clean.pdf.

<sup>402</sup> The Commission notes that the contract template is no longer available online and may change for future rounds.

#### 7.2.2 AEMO's views

As noted in section 7.1.2, AEMO, in its submission to the options paper noted that market distortions could be reduced by strengthening out-of-market provisions in the NER.<sup>403</sup> It did not express a view as to how this could be done.

As noted above, AEMO opposed the out-of-market provisions in the draft rule, noting that the new out-of-market provision will lead to fewer RERT resources being available, including for system strength.<sup>404</sup>

#### 7.2.3 Stakeholders' views

#### Submissions to the consultation paper

In submissions to the consultation paper, a number of stakeholders raised concerns about the application and transparency of existing provisions:

- Meridian believed that the out-of-market provisions are appropriate but is concerned that their application be clear and transparent. Meridian is not sure that increasing the limitation to 12 months is appropriate.<sup>405</sup>
- TransGrid is concerned that AEMO's application of out-of-market provisions and contracts means that networks cannot access demand response for non-market services (e.g. network support).<sup>406</sup>
- EnerNOC (now known as Enel X) stated that there is a lack of a defined framework for AEMO to police the "no double dipping" principle. Last summer, AEMO was unable to provide participants guidance on this and some participants interpreted the "no double dipping" provisions more liberally than others.<sup>407</sup>
- EnerNOC recommends a robust set of eligibility criteria, administered by AEMO, to give participants clear guidance as to what constitutes dual-participation.<sup>408</sup>

ERM Power considers that there is a strong case to allow for on-market demand response to be used for the RERT if it would not otherwise be dispatched, as dispatch of emergency reserves occurs due to LOR2s, not due to high prices.<sup>409</sup>

#### Submissions to options paper

In submissions to the options paper, stakeholders provided general comments on market distortions, as noted above. AGL also added that it supported removing the risk of market participants "double dipping", whereby the same generation or customer load is offered into the RERT and wholesale demand response.<sup>410</sup>

<sup>403</sup> AEMO, submission to options paper, p.12

<sup>404</sup> AEMO, submission to draft determination, p. 16.

<sup>405</sup> Meridian, submission to consultation paper, p. 5. As noted earlier, the Commission asked a specific question around increasing the restriction from "the trading intervals to which the contract relates" to "12 months".

<sup>406</sup> TransGrid, submission to consultation paper, p. 2

<sup>407</sup> EnerNOC, submission to consultation paper, p.1

<sup>408</sup> Ibid.

<sup>409</sup> ERM Power, submission to consultation paper, p. 5.

<sup>410</sup> AGL, submission to options paper, p.2

#### Submissions to draft determination

The draft rule focussed on making sure the market is the primary means by which reliability is delivered, lowering costs to consumers by:

- restricting AEMO from entering into reserve contracts with reserve providers who have been in the market (or contracted the relevant capacity under a demand response arrangement with a registered participant) at any time during the 12 months prior to signing a RERT contract
- requiring AEMO to include a provision in reserve contracts that the reserve the subject of the contract will not be offered in the market or under a demand response arrangement with a registered participant for the term of the contract
- introducing an obligation on market participants to comply with the above out-of-market provisions.

Stakeholders' views on the draft rule were mixed - some stakeholders explicitly supported the draft rule, others supported the policy principle behind the draft rule, but recommended that more flexibility was needed, with some also explicitly opposed the draft rule.

#### Explicit or in principle support

There was some explicit support from a number of stakeholders - they generally noted that the provisions would limit the potential for market distortions and were appropriate.<sup>411</sup>

There was explicit support from GreenSync and Enel X on the ability to participate in RERT and provide FCAS and NSCAS.<sup>412</sup> GreenSync and Mondo however noted that it was unclear if they could also provide network support agreements.<sup>413</sup>

ERM Power noted that the generators that have provided three-year notice of closure should be allowed to participate in RERT. $^{414}$ 

Other stakeholders expressed their in principle support (in order to minimise the risk of distortions) but stated that the draft rule was too inflexible.<sup>415</sup> Generally, those stakeholders noted the following as being inflexible or unclear:

- The 12-month backward restriction is too inflexible and would lock out many potential efficient RERT providers (e.g. seasonal loads, mothballed plants, generators that have provided three years' notice of closure)
- A large customer with spot exposure through a retail contract would be disqualified
- It was not clear to stakeholders:
  - if one customer with multiple sites would be allowed to participate in both RERT and the market
  - if spot-exposed market customers would be disqualified

<sup>411</sup> ENGIE, Snowy Hydro, AEC, Mondo, MEU, ERM Power, Stanwell: submissions to draft determination.

<sup>412</sup> GreenSync and Enel X, submissions to draft determination.

<sup>413</sup> GreenSync and Mondo, submissions to draft determination.

<sup>414</sup> ERM Power, submission to draft determination, p. 3.

<sup>415</sup> EUAA, Brickworks, EnergyAustralia, AGL, Energy Efficiency Council: submissions to draft determination.

- if the draft rule disallowed a proportion of a load from participating in RERT if that proportion was not in the market (despite being at the same connection point)
- if the draft rule allowed part of an aggregator's portfolio to be in the RERT, and part in the market.

Meridian wanted assurances that current mechanisms (such as Meridian's behavioural market response tool called 'Curb Your Power') provided by retailers would not be affected by the proposed rules. They were also concerned that the final rule would be retrospective.<sup>416</sup>

#### No support

Besides AEMO, a number of other stakeholders also opposed the changes and prefer the status quo noting that the changes would severely limit potential RERT providers.<sup>417</sup>

Alcoa opposed most of the changes but noted that the introduction of a civil penalty provision on the proposed obligation for market participants having to comply with the outof-market provisions would be enough. They stated that:<sup>418</sup>

- Changes to the out-of-market provisions (especially for medium- and short-notice RERT) would lead to higher RERT costs or increased risk of load shedding due to the reduced pool of RERT providers.
- It does not consider that it is possible for the Commission to be satisfied that the draft rule will promote the achievement of the NEO unless the Commission can be reasonably certain that the availability and cost of RERT will not be materially adversely affected as a result of the change.
- The draft determination does not provide a sufficient explanation of why the current rule 3.20, when combined with the RERT principles and RERT Guidelines, do not provide adequate protection against the theoretical market distortions.

Alcoa proposed grandfathering as an alternative, i.e. for the definition of demand response arrangement to exclude arrangements in place prior to commencement of the final rule.<sup>419</sup>

The SA Government said that the draft rule would reduce the number of potential RERT providers noting that such an extraordinary provision introduces a significant risk to meeting the expressed need of providing the necessary quantity of RERT reserves at the time needed and at the most competitive price, as the restriction reduces the number of potential RERT providers.<sup>420</sup>

The Victorian Government stated that the proposed out-of-market provisions is very concerning for Victoria as it would effectively disqualify some of the most significant potential RERT contributions and could in effect reduce the amount of reserves available for procurement in summer 2019-20 by more than half (based on the nature of the 2018-19 RERT resources procured). It also noted that there was no evidence or analysis provided to

<sup>416</sup> Meridian, submission to draft determination, p. 1.

<sup>417</sup> Flow Power, Alcoa, SA Government: submissions to draft determination.

<sup>418</sup> Alcoa, submission to draft determination, p. 2.

<sup>419</sup> Ibid.

<sup>420</sup> SA Government, submission to draft determination, p. 2.

suggest that the proposed changes would increase in-market reserves and may exclude providers such as mothballed generation.  $^{\rm 421}$ 

#### Technical working group

This topic was discussed with the technical working group on 20 November 2018, i.e. prior to the draft determination. Discussion notes are available on the AEMC's website.<sup>422</sup> The discussion included:

- It was broadly considered that it would be appropriate for the restriction to be backward looking (i.e. previous 12 months from the date that the contract is signed) and also forward looking from the date that the contract is signed to the end of the contract.
- There was also broad agreement that a forward looking restriction beyond the end of the contract does not seem appropriate there is no need to restrict emergency reserves from participating in the market once they are no longer in the RERT.
- The implications of retiring generators was also discussed whether upon exit of the market, a recently retired generator should be permitted to participate in the RERT, but should be prevented from re-entering the market for a period of 12 months following expiry of the RERT contract.
- With respect to the definition of "market" in the out-of-market provisions, it was considered that, as a high-level principle, it is appropriate for providers to be able to participate in both the RERT and also provide other services as long as those services are unrelated to energy (e.g. a provider would be able to provide services to the RERT and FCAS). However, they may not work well in all circumstances.

Following the publication of the draft determination and given the feedback received, the technical working group reconvened to discuss out-of-market provisions. Discussion notes are available on the AEMC's website. The meeting included:

- A discussion of some potential scenarios of demand response and generation, and discussion of whether or not they should be included in the market:
  - For example, it was considered that it may be appropriate for part of a load to be both in the market and provide emergency reserves, but that it could be challenging in practice to separate the load.
  - With respect to spot price pass-through contracts or spot exposure, the decision could be based on how price responsive the load has been in the past noting again that there may be practical challenges in establishing this.
  - The decision for mothballed plants or other types of generating units could be based on whether or not they could be directed.<sup>423</sup>

<sup>421</sup> Victorian Government, submission to draft determination, p. 2.

<sup>422</sup> See: https://www.aemc.gov.au/sites/default/files/2018-11/Technical%20Working%20Group%20%232%20-%20Discussion%20Notes.pdf

<sup>423</sup> AEMO may direct scheduled generating units through clause 4.8.9 of the NER to maintain power system reliability. That is, AEMO can direct a mothballed plant to start generating.
- It would likely be appropriate for capacity offered through a network support agreement (NSA) to participate in the RERT, although there could be practical issues that would need to be considered.
- In terms of making sure that the out-of-market provisions were flexible enough (and to address stakeholder feedback on this matter), members supported introducing some flexibility to the draft rule through clarifications (in the NER, where possible) and through exemptions, especially if the exemption is in relation to some situations in which a generator that has provided three-year notice of closure.

#### 7.2.4 Commission's analysis and conclusions

# BOX 20: FINAL RULE - OUT-OF-MARKET PROVISIONS

The final rule focuses on making sure the wholesale market is the primary means by which reliability is delivered so that reliability is delivered at lowest cost to consumers by:

- requiring that AEMO ensures scheduled emergency reserve providers (e.g. scheduled generators or scheduled loads) who have been in the energy market at any time during the 12 months prior to signing a RERT contract do not participate in the RERT
- making sure that AEMO ensures scheduled emergency reserve providers are not participating in the wholesale market for the term of the reserve contract.

For unscheduled emergency reserves (such as demand response that is not scheduled, or non-scheduled generators), the out-of-market provisions remain largely the same as the existing rule - i.e. the unscheduled reserves cannot be both in RERT and in the wholesale market, for the trading intervals to which the RERT contract relates. However, the final rule also introduces:

- an obligation on both scheduled and unscheduled RERT providers to comply with their respective out-of-market provisions
- a requirement for AEMO to provide clear guidance on how it intends to implement the out-of-market provisions for unscheduled emergency reserves.

The final rule also clarifies that providers may offer the same capacity in both RERT and in any other markets that are unrelated to the trading of energy. In other words, providers may offer capacity in both RERT and ancillary services such as FCAS. The aim of the out-of-market provisions is to limit distortions to the wholesale market i.e. where energy is traded.

The final rule promotes reliability being delivered by market participants through the wholesale market, first and foremost, so that costs associated with reliability are minimised for consumers. The final rule provides clear signals to the market that the RERT is an out-of-market service that is only to be used after market responses have been exhausted.

It clarifies that the out-of-market obligations also apply to RERT providers, not just to AEMO when entering into contracts. These improvements introduced by the final rule will minimise the costs of meeting reliability for consumers, while also reducing the incentives for gaming

behaviour by potential emergency reserve providers, by restricting their ability to double dip. Importantly, the final rule does not prevent RERT providers from entering the wholesale market once their RERT contract has ended.

At the same time, the final rule makes sure that the out-of-market provisions are not unnecessarily restrictive, by limiting the strengthened provisions to scheduled emergency reserves only. For unscheduled emergency reserves, it is difficult to ascertain what is in and what is out of market - as a result, flexibility is warranted, particularly given the NEM's current transition. In particular, for unscheduled demand response, it would only be difficult to assess whether or not their value of customer reliability is below or above the MPC under the current wholesale market design. In other words, it is difficult in the absence of changes to the market such as a formal wholesale market mechanism for demand response or the compulsory scheduling of load.

The final rule also promotes transparency and reduces the likelihood of a double standard being applied as it clearly sets out what counts as being out of market, and requires AEMO to be transparent around how it intends to apply the above provisions for unscheduled reserves. This transparency will assist RERT providers in working out whether or not they can provide a particular resource as a RERT resource, and so by providing transparency is likely to increase the supply of RERT providers.

# Changes between the draft and final rule

The final rule includes the following main changes:

- The 12-month backward restriction only applies to scheduled emergency reserves and does not apply to unscheduled emergency reserves.
- The forward restriction proposed in the draft rule (the term of the contract) remains for scheduled emergency reserves. However, for unscheduled reserves, it is limited to the trading intervals to which the contract relates. This will provide clarity as well as increased flexibility as to how these emergency reserves can participate in the RERT.
- Clarification of the definition of "market" to make it clearer that non-market ancillary services such as NSCAS and network support agreements are excluded from the definition.

Based on feedback received from stakeholders, the Commission has narrowed down the issues associated with existing out-of-market provisions as such:

- The restriction for both scheduled and unscheduled reserves only applies to the "trading intervals to which the contract relates", which allows for providers to move in and out of market with relative ease, creating distortions to the wholesale market as discussed above.
- The definition of market is not prescriptive and implementation of what is in and out of market is unclear.

The Commission examines both in turn next.

### Length and time period for out-of-market restriction

The current restriction in the NER on participating in the wholesale market applies to the trading intervals to which the contract relates – this could be anywhere from a few trading intervals to particular trading intervals over a few months.

The Commission is concerned that the restriction is too short, which may make it easy for providers to move in and out of the market rapidly. For example, assume AEMO has identified that emergency reserves are needed for six trading intervals on a Monday. A RERT provider would be able to offer its services in the wholesale market throughout the rest of the year, and indeed, the week or day of the shortfall, except for the six trading intervals identified by AEMO.

In its submission to the draft determination, Alcoa noted that it was not clear why the existing rule did not provide sufficient protection against theoretical market distortions. The Commission has therefore expanded on this issue - for example, the existing provision, being only limited to the trading intervals to which the contract relates, could create the following situation:<sup>424</sup>

- A scheduled generating unit is currently in the energy market. Assume that this unit has 100MW of capacity in a region that is experiencing a tight demand-supply balance, where AEMO is already forecasting potential shortfalls.
- Scenario 1: The scheduled generating unit, seeing or expecting projections of high prices (say, MPC) due to the tight demand-supply balance, makes sure that its unit is available to generate, in the market, in summer. It makes a dispatch bid of MPC for the periods where the demand-supply balance is tight in response to spot prices, including during RERT events when prices are likely high.
  - Given the in-market response, reliability is met through the market at the MPC (or below). AEMO cancels the forecast shortfall and emergency reserves are not used.
- Scenario 2: Despite nothing else changing, including the generator's marginal costs, it decides instead to participate in emergency reserves (i.e. withdrawal of capacity that would have otherwise been in the wholesale market).
  - Assume in this example that this 100MW would have made a difference to the supplydemand balance - AEMO continues to forecast low reserves and eventually dispatches RERT.
  - Reliability is maintained through a market intervention, at a cost higher than in the MPC.

Scenario 2 is an inefficient outcome - the reliability outcome as experienced by consumers is the same but at a higher cost and through an intervention, with its associated impacts such as intervention pricing and compensation to affected participants. Scenario 2 is allowed to occur under the existing out-of-market provisions, given that the existing provisions make it relatively easy for the generator described above to move in and out of the market.

<sup>424</sup> The Commission notes that this is only one potential situation. As discussed in the previous section, there are many ways in which the RERT can be distortionary.

In other words, the ease of transitioning from the wholesale market to emergency reserves has the potential to be highly distortionary as it may incentivise in-market capacity to shift outside of the wholesale market — thereby providing reliability at a higher cost than if they had stayed in the market.

In theory, there is a clear principle for what should be in and what should be out of market; however, there are practical issues which make it difficult to delineate between the two, as shown in a demand response example in Box 21.

# BOX 21: DELINEATION BETWEEN WHAT IS IN THE MARKET AND WHAT IS NOT

Consider demand response as a case study on how capacity might be defined as being "in" or "out" of the market.

Theoretically, if a customer ("customer A") has a VCR higher than MPC, but below the avoided cost of load shedding, i.e. the average VCR of consumers to be shed when the market runs out of reserves, through rotational load shedding (or "average load shedding VCR") then it would be more efficient for these customers to be shed instead. Since their VCR is above the MPC it is evident that it is appropriate for them to be "out of the market".



# Figure 7.1: Delineation between what is in the market and what is not

Source: AEMC

However, in practice, the delineation of what is in market and out of market for demand response is not as "clean" as in the above figure:

 Customer A's value of customer reliability is not static – it will vary at different times depending on a variety of factors, including what it is consuming electricity for. For example, if Customer A is a restaurant that is only open for dinner, its VCR may be quite high (above the cost of involuntary load shedding) during the evening and night; but

during the afternoon when the restaurant is closed but the staff are at work preparing for dinner, its VCR may be lower, but still above the MPC; whereas when the restaurant is closed in the morning, its VCR may be lower than the MPC and so it may wish to engage in demand response with its retailer.

• Further, VCR is also difficult to measure, and its measurement depends on the point in time and circumstances people have recently experienced. It would be difficult to see how individuals could reflect their VCRs at all times under the current market arrangements.

It would therefore be difficult for AEMO or anyone else to inform itself if a provider's VCR is below or above the MPC at any particular point in time. The best estimate, at present, is from AEMO's 2014 VCR study (described in Chapter 3). As noted in that chapter, the AER is currently updating the methodology for calculating VCR and new values are expected by the end of 2019.

Given the theoretical potential for distortion associated with this aspect of the framework, The Commission considered it was worth exploring options to strengthen the existing provisions. These options have to be balanced against the practical issues associated with knowing exactly whether it is appropriate for a customer to be in or out of market in a dynamic manner.

There are three key questions with respect to strengthening the provisions:

1. How long should the out-of-market provision be for? (e.g. 12 months as suggested in the consultation paper or should the length remain the same (only for a few trading intervals)?)

2. To what time period should the provisions apply (e.g. prior to signing the contract as suggested in the consultation paper? or after signing the contract? Beyond the contract period?)

3. Should the same provisions apply to both scheduled and unscheduled reserve providers?

In terms of the third question, the Commission considered this was particularly important as a result of the significant feedback received from stakeholders on this aspect, as well as the fact that scheduled and unscheduled providers interact very differently with the wholesale market.

# Draft determination conclusions

With respect to the first question, the Commission is of the view that the appropriate length is one which is long enough to minimise distortions and yet not so long as to exclude a significant number of efficient emergency reserve providers.<sup>425</sup>

In the draft determination, the Commission concluded that the benefits of a longer out-ofmarket provision outweigh the potential costs in terms of limiting providers. The Commission

<sup>425</sup> Those with a VCR above MPC but below load shedding VCR.

considered that 12 months would be an appropriate length of time to minimise the indirect costs of the RERT. In the draft determination, the Commission noted that this may exclude some potential out of market providers. In addition, it recognised that there would be practical challenges associated with this - VCR is dynamic and difficult to capture in practice. Under the draft determination this position would apply to all reserves - regardless of whether or not they were scheduled or unscheduled. However, consistent with this being a draft determination, the Commission wanted to test this position with stakeholders.

Having decided on a longer provision (compared to the existing rule), the Commission also considered a number of options with respect to which time period it should apply to.

A backward-looking approach would see the restriction applied as follows: providers must not have been in the market in the previous 12 months at the time of signing the contract. A forward-looking approach could be applied to the length of the contract, for a set period of time from when the contract is signed, or for a set period of time from when the contract ends.

The Commission's view was that the provision should be backward-looking (i.e. previous 12 months at the time of signing the emergency reserve contract) and also forward-looking but only up to the end of the contract (i.e. the period covering the signing of the contract to the end of the contract, which would also include the dispatch intervals to which the contract relates).

This was because:

- The backward-looking element limits incentives to shift *existing* market capacity into the RERT - it would send a clear signal to the wholesale market that entering into an emergency reserve contract is a major decision with respect to which markets they should be participating in.
- The forward-looking element should end when the contract ends as it is appropriate for emergency reserve capacity to move into the market once a contract has ended should the provider wish to do so. As such, a forward-looking restriction beyond the end of the contract does not seem appropriate.

#### Analysis of submissions to the draft determination

The Commission received significant feedback in submissions to the draft rule with respect to the balance between minimising wholesale market distortions and in maximising the potential for RERT providers, including concerns that the restriction could significantly reduce the number of RERT providers. Other concerns were raised that on a transitional basis the restriction would effectively mean that some reserves would be neither in the market, nor the RERT. This is because potential providers would need to remove existing reserves from the wholesale market and wait one year before reserves can then be offered in RERT if they need to choose between RERT and the market. Without the backward restriction, the reserves would be available for emergencies straight away rather than having to remain both outside of the wholesale market and RERT, especially if a reliability issue were to occur. At the same time, the Commission also received feedback that wholesale market distortions that are associated with the RERT are a significant issue that need to be minimised.

In making its NEO assessment, the Commission considers the trade-off discussed above (i.e. minimising market distortions versus maximising RERT providers). Put another way, the Commission looks at the total cost of changing the out-of-market provisions - i.e. both the direct cost of the RERT and the indirect cost of the RERT.

Stakeholders provided numerous examples and scenarios to the Commission of instances where it would be difficult to determine whether or not a particular type of reserve would be in the wholesale market or out of the wholesale market under the draft NER. Further, examples were provided that provided evidence of the dynamic nature of VCRs. Therefore, while the Commission still considers that distortions arising from the RERT have the potential to be significant, given practical limitations raised by stakeholders, the Commission reconsidered how the out-of-market provisions could be defined.

Nearly all of the examples provided to the Commission were related to unscheduled emergency reserves.

A number of stakeholders, for example, noted concerns around existing demand response arrangements, such as a contract between a retailer and a user which allows the retailer to call on the user to reduce its demand X times a year, which would be restricted from participating in RERT if the 12-month restrictions were applied. The Commission understands that under the current framework, providers have been able to participate in emergency reserves, and maintain their wholesale demand response contracts, simply by agreeing to not reduce demand for their retailer for the duration of the RERT contract.

It is, however, not clear to the Commission whether these unscheduled reserves are in the wholesale market or not. Demand response arrangements, such as what were described above, are not currently transparent to the market, nor are they incorporated directly into the wholesale market. The Commission is currently considering three rule change requests that seek to increase transparency of such demand response by having these directly participate in the wholesale market.

Stakeholder comments also called this issue out, and suggested that it was nearly impossible to determine what was in the wholesale market and what was out of the wholesale market.

For example, consumers choose when to demand respond based on the consequences for them at the time. Even if market prices are high, a business that needs to meet an external contract on time in order to meet its obligation may turn down the opportunity to participate in wholesale demand response. Similarly, a retailer is likely to call on demand response in order to manage its position in the wholesale market - which may or may not coincide with when the market needs the emergency reserves. This is an example of the difficulties associated with trying to apply the 12-month backward restriction to these type of resources.

First, there is no clear and transparent way to determine whether or not these providers are in the wholesale market or not. Some party would have to make an assessment of whether or not this is the case. The assessment is likely to be subjective given the variety of different scenarios that could arise. Participants do not participate in wholesale demand response in

such a way that is clear to all market participants and to AEMO as to who is in or who is out of the wholesale market.  $^{\rm 426}$ 

Second, even if this transparency was provided, unscheduled reserves typically have VCRs that vary over time. For unscheduled reserves it is difficult to know at any one point in time what an individual provider's VCR is. For example, Flow Power provided the Commission with the example of seasonal loads, which have different VCRs in different seasons. The restaurant example that the Commission used in the draft determination is another example. The inflexibility of a 12 month restriction would only be detrimental for those providers whose VCR genuinely vary - prohibiting these reserves from participating in the RERT at times when theoretically they should be providing emergency reserves.

In contrast, scheduled loads and scheduled generators are clearly in the wholesale market given they have to declare their availability and submit bids and offers into AEMO's dispatch system, and their load and generation is dispatched accordingly. In this way, it is clear that these parties are in the market, and more importantly, there is transparent information available to assess whether or not these parties are in the wholesale market. For scheduled emergency reserves, it can be relatively clear to ascertain if they are in market - e.g. if a scheduled generator has submitted a dispatch offer, then it would be considered as being in the wholesale market.

These differences between scheduled and unscheduled reserves have resulted in the Commission making a final rule that recognises there are differences between these two types of reserves. It is worth noting that the Commission currently has several rule change requests in front of it that relate to the types of parties that would be scheduled. The wholesale demand response rule change requests are looking at ways to facilitate wholesale demand response in such a way that is transparent, and promotes reliability, including the resources being scheduled in some manner. In addition, the Commission has received a rule change request from the AEC that seeks to reduce the threshold for requiring generators to be scheduled from 30 MW down to 5 MW. Both of these changes, if made, would increase the amount of parties that would be scheduled in the market. The Commission therefore considers that tackling the issue of out of market provisions are achieved in a way that promotes flexibility, transparency and adaptability over time.

The Commission's final rule on these aspects is discussed further below.

#### Commission's conclusions - scheduled emergency reserves

On balance, the Commission concludes that, for scheduled emergency reserves, the benefits of stronger out-of-market provisions outweigh the potential costs in terms of limiting providers as well as the costs associated with determining whether these reserves are in the market or not. A longer provision remains appropriate - it is relatively straightforward to ascertain what is in, and what is out of market for scheduled providers given that these

<sup>426</sup> The Commission understand that participation in the demand side participation portal, which is aimed at improving transparency of wholesale demand response, has been poor to date and has not provided the level of transparency required to help with this matter.

parties directly participate in the wholesale market. As a result, the risk of unnecessarily prohibiting efficient providers from participating in RERT is limited. These providers should be in the market in order to promote reliability. As a result, for scheduled providers, the Commission's conclusion is unchanged from the draft determination.

For scheduled emergency reserves, the following applies, under the final rule (this is the same as the draft rule):

- Scheduled emergency reserve providers cannot participate in RERT if they have been in the market for the past 12 months.
- Scheduled emergency reserve providers cannot be in the market for the term of the emergency reserve contract.

Specifically, the final rule is:

#### 3.20.3 **Reserve contracts**

....

# Offering scheduled reserves into the market

- (g) When contracting for the provision of *scheduled reserves* under scheduled reserve contracts, AEMO must not enter contracts in relation to capacity of scheduled *generating units, scheduled network services* or *scheduled loads* for which *dispatch offers* or *dispatch bids* have been submitted or are considered by AEMO to be likely to be submitted or be otherwise available for dispatch at any time during:
  - (1) the period from the date of execution of the scheduled reserve contract until the end of its term; and
  - (2) the 12 month period immediately preceding the date of execution of the scheduled reserve contract, except where that capacity was *dispatched* under a *reserve contract*.

# Terms and conditions of a contract

....

(k) AEMO may only enter into a scheduled reserve contract if the contract contains a provision that the other party to the contract has not and will not otherwise offer the scheduled reserve the subject of the contract in the market at any time during the period from the date of execution of that contract until the end of its term.

The Commission notes that these out-of-market provisions would apply to all forms of scheduled RERT i.e. long-notice, medium-notice and short-notice RERT.<sup>427</sup> In terms of the RERT panel members, the Commission intends for this provision to apply to them as well. If a

<sup>427</sup> The NER do not prescribe any type of notice for RERT - these are prescribed in the RERT guidelines.

short-notice RERT contract is entered into at a point in time, the provider must not have been in the market for the previous 12 months if it is scheduled. The Commission expects that AEMO may need to update its procedures, contract templates and/or how it operates the RERT panel as a result. However, the Commission expects that most, if not all, panel providers would be unscheduled.

The Commission also notes that in most instances, the total effective restriction would be longer than 12 months, and could be up to 24 months in some instances. For example, if a long-notice RERT contract is signed on 1 November for the period of December to end March, the backward restriction would apply from 1 November (so previous 12 months) and from November to end March (so an additional four months). The Commission considers that this is appropriate for scheduled reserves given the need to make sure that emergency reserves are out of market and that the market is the primary means by which reliability is achieved.

#### Consideration of potential exemptions

One issue raised by stakeholders is how the 12-month restriction would operate in relation to scheduled generators who had provided three-year notices of closure, and who were going to close down anyway – should these generators be allowed to participate in the RERT? In order to operate a generating system (including participating in the RERT), generators must be registered or obtain an exemption from registration from AEMO. The effect of generators providing a notice of closure under clause 2.10.1 is that their classification of that generating unit as part of their registration would cease on the closure date. Therefore, even in the absence of the backward looking restriction, they could not immediately participate in the RERT since the generator would need to immediately re-register again or gain an exemption from registering.

Therefore, the Commission also considered whether it was worth providing an exemption for scheduled generators that have provided a notice of closure under clause 2.10.1 of the NER to allow those generators to be able to provide emergency reserves without having to wait 12 months once they have closed down. The Commission considers it would be preferable that if there was an emerging reliability issue, then the generator would simply extend its closure date and remain in the market. This is allowed for under the three-year notice of closure rule provisions. The generator would continue to support reliability, through the market first and foremost, consistent with how the reliability framework works. Therefore, the Commission does not think it is appropriate to waive this restriction for these parties.

There may be an instance where the generator would not consider it economically beneficial to extend its closure date and remain in the market, and so would prefer to participate in the RERT. However, the Commission considers these incentives change under the retailer reliability obligation. If there is a reliability issue then the retailer reliability obligation would be triggered, and so retailers would have an obligation to obtain qualifying contracts from three years to one year ahead of when the gap is projected. If there is a shortage of qualifying contracts, potentially caused by the generator closing, for example, then retailers would seek to enter into contracts, which would drive the price of the contracts up. This in turn would provide an additional, and more lucrative, revenue stream to the generator that

wished to close than it had originally anticipated at the time it made the decision to close. In this instance, one outcome could be that generators would be incentivised to offer qualifying contracts, and so have to stay in the wholesale market and extend their closure date (which is allowed for under the notice of closure rule). In this way, generators would remain in the market, and so would minimise the likelihood of needing them for the RERT.

Similarly, with work being undertaking in terms of valuing new or additional system services, it is likely that new value streams will be created which may make it more economic for some generators to remain in (or return to) the wholesale market. In the unlikely event that the incentives provided by the retailer reliability obligation were not effective, then it would be open to jurisdictions to provide some funding to keep the generator operating for longer.

In addition, given the set up of generators who need to secure fuel contracts such that they could participate in the RERT, these parties would likely demand high availability payments through the RERT. This may mean that these resources are deemed too expensive, when AEMO considers the RERT principles (discussed next).

The Commission did explore whether the 12-month backward restriction could be waived on a case by case basis by AEMO (e.g. if a significant shortfall suddenly emerges, such that it would be cost effective for this generator to continue operating and receive payments for doing so through the RERT). However, the Commission does not consider that it is appropriate to do this given that reliability in the NEM is driven by the market. It is also difficult to determine what the basis of AEMO's exemption would be and define it in such a way that would not create distortions in the wholesale market or unintended consequences.

Similarly, the Commission is of the view that it would not be appropriate for mothballed plants to be provided an exemption, as raised by a couple of stakeholders, as discussed next.

It is difficult to define what a mothballed unit is - e.g. is it one that is no longer providing PASA availability? Or is it in transition to retirement? Is it mothballed on a temporary or permanent basis? The reason for mothballing may also mean that different policy outcomes would need to apply. For example, if a plant is mothballed (or indeed, is closing down) as a result of ongoing safety issues, then this would be treated differently from a plant mothballing for economic reasons. However, regardless of what definition of mothballed applies, the key is that those parties are still registered with AEMO and required to maintain all of the various obligations that come along with being a registered generator in the NEM e.g. maintaining their generator technical performance standards and bidding into PASA and so on.<sup>428</sup>

Given they are still registered participants, mothballed plants are still able to be directed by AEMO for both power system security and power system reliability. However, the Commission acknowledges that in some instances, mothballed plants may not be *able* to be directed (and in time). For example, due to difficulty in getting fuel or due to non-maintenance of the unit while mothballed. For example, the Commission understands that this was the case on 8

<sup>428</sup> For more information on this, please see the Commission's final determination on Generator three year notice of closure. https://www.aemc.gov.au/rule-changes/generator-three-year-notice-closure

February 2017, when Pelican Point was unable to be directed. However, it was able to be directed the following day.<sup>429</sup>

As the power system and market transform to accommodate the changing generation mix, the Commission considers that a number of changes under way mean that concerns about mothballed units and generators that have decided to close down would become less material. The same incentives that are created by the retailer reliability obligation and the valuing of new system services, and which were described above, also apply here.

Further, as discussed in Chapter 5, if jurisdictions are concerned about mothballed generators being unable to be directed or generators having provided three-year notice of closure being unable to participate in RERT in time, there are options available to jurisdictions to address their concerns.

#### Commission's conclusions - unscheduled emergency reserves

For unscheduled emergency reserves, as discussed above, the challenge is that it is difficult to know if they are in or out of market under current arrangements. For example, in the absence of a formal wholesale market mechanism for demand response or the (compulsory) scheduling of load, the Commission agrees with stakeholders' concerns that the draft rule would have significantly limited the potential pool of emergency reserve providers. On balance, the Commission therefore considers that the benefits of minimising market distortions for unscheduled reserves would not outweigh the costs of restricting RERT providers.

For unscheduled emergency reserves, only the following applies, similar to the existing rule: unscheduled emergency reserve providers cannot be in the market for the trading intervals to which the contract relates. The Commission considers that the changes made to this in the final rule increase transparency and provide clarity about how these clauses operate.

Specifically, the final rule is:

### 3.20.3 Reserve contracts

### Terms and conditions of a contract

 AEMO may only enter into a *unscheduled reserve contract* if the contract contains a provision that the other party to the contract has not and will not otherwise offer the *unscheduled reserve* the subject of the contract in the market for the *trading intervals* to which the contract with *AEMO* relates.

The final rule also introduces an obligation on participants to comply with the out-of-market provisions, discussed in the next section.

The Commission notes that it considered, instead of the final rule, keeping the draft rule as is for unscheduled emergency reserves and instead applying an exemption framework, as

<sup>429</sup> Specifically, GT12 was directed.

discussed with the technical working group. However, the Commission decided against this, for the reasons outlined above - it would be highly subjective and difficult to ascertain what is in, and what is out of market. As a result, it would not be clear on what basis the exemption framework would apply.

The Commission also notes that it is currently progressing three rule change requests in relation to wholesale demand response, which is considering how demand response can be incorporated into the wholesale market including having it be scheduled. A draft determination is due in July 2019.

# **Conclusions**

In conclusion, the Commission's final decision is to clarify the existing out-of-market provisions in order to promote a market response by:

- preventing scheduled providers who have been in the market for 12 months prior to signing an emergency reserve contract from participating in the RERT
- preventing scheduled RERT providers from participating in the market for the duration of the contract (i.e. from the time the contract is signed to the end of the contract)
- preventing unscheduled RERT providers from participating in the market for the trading intervals to which their contract relates
- requiring AEMO to clearly articulate how it will apply out-of-market provisions for unscheduled emergency reserves to promote transparency and clarity.

The Commission thinks that these improvements will provide clear signals to the wholesale market that the RERT is an out-of-market service that is only to be used after market responses have been exhausted, meaning that the market, through investment in new generation or demand response in market if required, would remain the primary means by which reliability is met in the NEM, and at lowest cost to consumers. These improvements will limit the incentives for potential providers to partake in the behaviour described in section 7.1.1, such as withdrawing capacity from the wholesale market.

Finally, the final rule does not restrict providers from moving from providing emergency reserves into the wholesale market once the RERT contract is completed (or in the case of unscheduled reserves, after the end of the trading intervals to which the contract relates). This is appropriate as reliability is best met through the market first and foremost - the Commission would therefore want to encourage reserve providers to move from the RERT, into the market, thereby delivering reliability at a lower cost to consumers.

# Definition of market

The definition of market dictates which markets providers are excluded from participating in, if they participate in the RERT. The definition of market in the NER<sup>430</sup> would suggest that market includes the spot and FCAS markets but is likely to excludes network support and control ancillary services (NSCAS) (on the basis of it being a non-market ancillary service), and arguably, the retail market (on the basis of it being a market not operated by AEMO).

<sup>430</sup> Chapter 10 of the NER.

Stakeholders have raised concerns that the unclear definition of market and unclear implementation of the provision with respect to what is included in the definition of market has led to double standards and inconsistencies, for example, whereby providers with similar characteristics experienced different outcomes in terms of whether they were classified as out of market or not. The Commission agrees that what should be included in the definition of market should be clearer. In considering the best way to address this ambiguity, the Commission examined what should be included in the definition of market.

There are a number of potential approaches including:

- One approach could be to prevent providers that provide emergency reserve services from participating in *any* other conceivably related markets/services administered under the rules including for example NSCAS, FCAS etc.
- Another could be to allow providers to participate in the RERT and also provide other services as long as those services are unrelated to energy (e.g. NSCAS).

In considering what the best approach should be, the Commission had regard to the minimising market distortion principle i.e. whether participating in another market would affect investment and operational decisions made by participants with respect to energy.

While the first approach described above is simple and easy to implement, and therefore transparent and clear, the Commission does not think that it is appropriate, as it assumes participating in all other markets would be distortionary. Instead, the Commission explored the second approach further, as shown in Box 22.

# BOX 22: WHAT SHOULD BE INCLUDED IN THE DEFINITION OF MARKET?

This box explains how the approach that would allow providers to provide emergency reserves and also provide other services as long as those services are unrelated to energy would work in practice.

# Spot energy market

The Commission is of the view that the spot market (i.e. the wholesale or energy market) should be included in the definition of market (for the purpose of out-of-market provisions). Participating in both the spot market and providing emergency reserves would be distortionary and RERT providers should be excluded from it.

# FCAS

FCAS is a separate service to emergency reserves – it is not energy. Therefore, providers should be able to participate in the RERT and in FCAS markets.

However, providers that provide both FCAS and energy using the same unit (e.g. a generator) would not be allowed to provide emergency reserves. This would be captured under the spot market participation restriction above. Similarly, a demand response provider providing demand response in the FCAS market only and not the spot market would be able to

participate in the RERT.

#### NSCAS

As with FCAS, NSCAS is a separate service to providing emergency reserves and providers should be able to participate in both. However, there may be practical issues with this. There may be circumstances where the NSCAS service is needed for both emergency reserves and network support simultaneously. In theory, as these are two distinct services, there is no "distortionary" concern and it would be appropriate to reward providers for two services.

However, in practice, there may be a coordination problem - e.g. which service would take precedence, emergency reserves or NSCAS? There would be situation where the capacity is not available for network support if they are already providing a response through emergency reserves and a network issue emerges.

#### Any other non-market services/other ancillary services

As above – if it is a distinct service, then providers should be able to provide both emergency reserves and the other service. This includes network support agreements.

#### Retail

In the draft determination, the Commission examined ways to include wholesale demand response arrangements as part of the definition of market. However, as discussed in the previous section, under current market arrangements, there is no clear and unambiguous way to ascertain what is in, and what is out, of the wholesale market when it comes to demand response.

The Commission thinks that the second approach, i.e. allowing providers to provide emergency reserves and also provide other services as long as those services are unrelated to energy, is more appropriate. This is because offering reserves in markets where other services are traded would not affect the investment and operational incentives that market participants have with respect to the spot market i.e. investing in generation or wholesale (in market) demand response.

As a result, the final rule defines the meaning of market for the purposes of the RERT to clarify that AEMO must not enter into emergency reserve contracts if said reserves are in the wholesale market, as defined by the final rule. This provision applies to both scheduled and unscheduled reserves.

The final rule is:

# 3.20.1 Definitions

....

For the purposes of this rule 3.20:

(c) references to **market** mean a *market* in connection with the trading of

# *energy* only, and for the avoidance of doubt, does not include contractual or other arrangements for the provision of *ancillary services*.

To be clear, the references to market mean only the wholesale market and the final rule allows AEMO to enter into reserve contracts with providers that are offering the same reserves as emergency reserves and to other services such as FCAS, NSCAS and network support agreements. In the case of NSCAS and network support agreements in particular, it is possible that the same reserve would be needed at the same time, i.e. when the demand and supply balance is tight. The Commission considers that this is best left to AEMO and providers, through their contracts, to decide on how best to structure the implementation of such contracts. Compared to the draft rule, the final rule contains some minor changes to the definition of market to better capture network support agreements.

The draft rule also contained a definition for demand response arrangement, as well as a definition for unscheduled generating unit. The Commission considers that this is no longer needed because:

- The definition of market is broad enough to capture all types of unscheduled reserves it is not necessary to include a separate provision in the NER for the different types of unscheduled reserves, such as demand response.
- Prescribing a definition for "demand response" in the absence of changes in market arrangements (e.g. a formal mechanism for demand response) may lead to unintended consequences such as efficient RERT providers being unable to offer emergency reserves - this is discussed next.

As set out in the summary of submissions section above, stakeholders noted that the provisions in the draft rule were not clear with respect to:

- part of a load if behind one connection point
- part of an aggregator's portfolio
- one provider with multiple sites, where only some sites had a demand response arrangements
- spot-exposed or providers with spot price pass-through contracts.

Given that these are all examples of unscheduled loads, as mentioned above, it would only be difficult to clearly articulate whether or not they are under existing market arrangements.

Instead, the Commission considers that AEMO should be required to publish transparent guidelines on how it intends to assess what is in and what is out of market, for unscheduled reserves, be it demand response or other types of technologies. The final rule therefore builds on an existing requirement for AEMO to report on how it operationalises the out-of-market provisions to require AEMO to publish clearer guidance on this matter, as part of its RERT procedures.

The out-of-market guidelines would therefore be subject to the rules consultation procedure, giving market participants the opportunity to provide feedback on AEMO's application of the provisions.

# The final rule is:

# 3.20.7 **AEMO's exercise of the RERT**

- ....
- (e) AEMO must develop, *publish*, and may amend from time to time, in accordance with the *Rules consultation procedures*, procedures for the exercise of the *RERT* under this rule 3.20 that take into account the *RERT principles* and *RERT guidelines*. These procedures must include:
  - (1) the methodology, information and assumptions that *AEMO* uses to satisfy itself that a person complies with clause 3.20.3(i) in relation to generating units or loads that are the subject of unscheduled reserve contracts and the measures *AEMO* will adopt in order to reduce the possibility that *generating units* or *loads* likely to be activated under *unscheduled reserve contracts* are otherwise engaged at the time the unscheduled reserve contracts are required to be activated by AEMO.

The final rule is an improvement on existing arrangements as it:

- clarifies how the out-of-market provisions are to be implemented through AEMO's procedures, leading to more transparency and reducing the likelihood of a double standard being applied.
- improves efficiency by only restricting providers from participating in markets whereby it
  would be distortionary to do so, while enabling other potential emergency reserve
  providers to participate in the RERT market, potentially reducing RERT costs.

This is in the long-term interest of consumers as it would minimise the likelihood of market distortions further, meaning that, compared to the status quo, the costs of the emergency reserve mechanism will be lower, taking into account the impact that market distortions have on reliability. For example, it will minimise instances whereby a generator or demand response provider may withdraw capacity (priced under the MPC) to provide the exact same capacity at a higher price through emergency reserves.

# Out-of-market provision obligations for participants

At present, implementation of these provisions is carried out by AEMO - as mentioned above, this continues to be appropriate given the complexity of determining what is in and what is out of market. AEMO is required to inform itself that reserves are out of market.<sup>431</sup> The Commission understands that AEMO implements these provisions by requiring an undertaking from emergency reserve providers, and a confirmation letter from third-party emergency reserve providers<sup>432</sup> to inform itself that these providers are out of market as per the NER.

However, there is currently no similar requirement or obligation on emergency reserve providers themselves with respect to out-of-market provisions, other than the contract itself.

<sup>431</sup> Section 7 of RERT guidelines

<sup>432</sup> For example, a retailer providing demand response on behalf of a consumer.

The Commission thinks that it would be appropriate to introduce an obligation on potential emergency reserve providers under the NER so that they are required to comply with the out-of-market provisions. Both scheduled and unscheduled reserve providers would comply with their respective out-of-market provisions.

The Commission thinks that this will strengthen the existing contractual obligations on emergency reserve providers by making it clear that providers themselves are required to inform themselves and inform AEMO with respect to their out-of-market status. The final rule therefore further improves the implementation of out-of-market provisions and further minimises the risk of market distortions. The Commission will also recommend to the COAG Energy Council that these obligations for participants should be classified as civil penalty provisions.

The final rule is:

#### 3.20.3 Reserve contracts

# Offering scheduled reserves into the market

(h) A person must not enter into a scheduled reserve contract in relation to capacity for which dispatch offers or dispatch bids were submitted, or that was otherwise available for dispatch at any time during the 12 month period immediately preceding the date of execution of the scheduled reserve contract, except where that capacity was dispatched under a scheduled reserve contract.

# Offering unscheduled reserves during specified trading intervals

(i) A person must not enter into an *unscheduled reserve contract* if the person is party to another contract or arrangement under which it is required to offer the *unscheduled reserves* the subject of the *unscheduled reserve contract* in the market for the *trading intervals* to which the contract with *AEMO* relates.

# 7.3 Payment structure - additional RERT principle

# 7.3.1 Current arrangements

Payment structure refers to the types of payments with respect to emergency reserve contracts.<sup>433</sup>

There is no prescription or guidance as to payment structures with the exception of the RERT panel, whereby AEMO is not allowed to provide availability payments for being a member of the panel.<sup>434</sup>

<sup>433</sup> There are also administration costs accrued by AEMO in implementing the RERT and compensation costs paid to participants affected by a RERT dispatch - these are not contractual costs and are not covered here.

<sup>434</sup> See section 6 of RERT guidelines. The RERT Panel only applies to short-notice and medium-notice RERT. There is no RERT Panel and no availability payment restriction for long-notice RERT.

Based on summer 2017-18's RERT reports,<sup>435</sup> the Commission understands that contracts contain the following payments:

- Availability: the costs of being on stand-by, i.e. capacity payments. This is typically a \$/MW/contract period payment and not specific to one event.
- Pre-activation: the costs of being on stand-by for a specific event, i.e. pre-activation payments for specific events. It is usually expressed as \$/MW/event.
- Usage/activation: the cost of the emergency reserves themselves, e.g. usage/activation payments when the RERT is dispatched this is typically a \$/MWh payment.

Both availability and pre-activation payments are capacity-type payments.

Similarly, the NER is silent when it comes to any guidance on these payment types other than the RERT principles, which AEMO must have regard to when it exercises the RERT. One of these principles states that AEMO's actions should aim to maximise the effectiveness of emergency reserve contracts at the least cost to end use consumers of electricity, which effectively requires AEMO to think about cost minimisation (both direct and indirect) when exercising emergency reserves.<sup>436</sup>

How payments are structured and the size of payments affect incentives – as noted above, high availability payments can lead to strong incentives for participants to withdraw capacity from the wholesale market to participate in the RERT. In the consultation paper, the Commission asked for stakeholders' views on payment structures.

# 7.3.2 AEMO's views

In its rule change request, AEMO, proposed the following payment types, structure and caps:

Pricing approach	Structure	Price cap	10 minute notification	60 minute notification	24 hour notification	Notes
Availability	\$/MW per hour available	To be determined	Yes	Yes	Yes	Applies to all hours where the resource is contracted to deliver Reserves
Pre- activation	\$/MW per activation	To be determined	No	No	Yes	Applies even if activation is cancelled
Usage	\$/MWh delivered response	\$30,000/MWh	Yes	Yes	Yes	Would not be paid if the activation was cancelled by AEMO

Figure 7.2: Payment structure and price cap

Source: AEMO, high-level design

It noted that usage payments should reflect a "reasonable assumption for the avoided VCR" while availability and pre-activation payments may need to be capped to minimise costs.<sup>437</sup>

<sup>435</sup> See https://www.aemo.com.au/Media-Centre/AEMO-Summer-operations-review-report

<sup>436</sup> Clause 3.20.2 (b) of the NER.

<sup>437</sup> AEMO, rule change request, p. 13.

For availability payments, AEMO states that it could be structured as such:<sup>438</sup>

- Either a total availability payment for a specific amount of reserves offered, which would be translated into a \$/MW per hour payment for settlement purposes
- Or if the capacity isn't fixed, availability could be in the form of a fixed \$/MW per hour price

AEMO also noted that a cap of availability payments may be appropriate in order to minimise market distortions and proposed that a principle for enhanced RERT would have "low availability costs but comparatively high usage costs".<sup>439</sup>

# Submissions to consultation paper and options paper

AEMO did not comment in detail on this aspect on the RERT framework in its submissions. As noted in section 7.1.2, it did state the following:

- in the consultation paper submission, AEMO stated it is possible that if the availability
  payment were too high, it could potentially make the provider favour the RERT even if
  they do not expect to be dispatched.
- in the options paper submission, it stated that introducing its proposed procurement methodology will place a limit on the amount of availability cost a potential provider can receive from RERT.

# Submission to draft determination

To address stakeholder concerns around wholesale market distortions, the Commission introduced a payment guide in the draft rule. The payment guide stated that the average amount payable for emergency reserves should not exceed the avoided cost of load shedding. In practical terms, this would be the average value of customer reliability of the consumers that would have lost supply.

AEMO stated the payment guide introduced in the draft rule was inconsistent with the procurement trigger as the trigger is based on the reliability standard. Yet, conditional on the standard being exceeded, AEMO would then be required to undertake an assessment similar to option 2 (AEMO's economic minimisation model), for the purpose of the payment guide. At the same time, AEMO can only procure the lesser of the option 2 outcome and the amount required to meet the standard, even if its ECM may suggest more should be procured. AEMO considers this hybrid approach is even less transparent than implementing the AEMC's option 2.<sup>440</sup>

AEMO noted that the AEMC seem to be of two minds on this issue:441

 On one hand, it considers that the reliability standard balances the right trade-off for reliability.

<sup>438</sup> Ibid.

<sup>439</sup> Ibid. p. 3

<sup>440</sup> AEMO, submission to draft determination, pp. 15-16.

<sup>441</sup> Ibid.

• On the other, it seems unable to reconcile this with the possibility that an explicit examination of VCR and resource costs shows the optimal resource level differs from that implied by the standard.

AEMO also raised some practical concerns:<sup>442</sup>

- AEMO procures RERT to ensure the reliability standard is met. In operational terms, this
  includes forecast or actual LOR2 conditions, in which case the biggest contingency would
  lead to load shedding and potentially cause significant system security issues. It is
  unclear how this would work with the VCR cap.
- Different regions can have different VCR values due to different load shedding priority schedules. This may lead to issues with cost sharing arrangements between jurisdictions.
- The AER's review will not be completed until 31 December 2019, and the AEMC intends that the current rule be effective as of 31 October 2019. The current rule requires AEMO to develop a methodology of calculating the estimated cost of VCR as part of the RERT procedure. AEMO considers this timeline is impractical to develop such methodology and undertake the required consultation.

AEMO suggested that if the AEMC retains the VCR cap, it proposes that the Commission should:  $^{\rm 443}$ 

- Allow AEMO more freedom in determining the VCR, with the only requirement to have regard to the AER's most recent VCR review.
- Clarify how such a cap should not apply for LOR2 conditions.

#### 7.3.3 Stakeholders' views

#### Submissions to consultation paper

In submissions to the consultation paper, there was some support for a cap on availability payments or low availability payments due to cost (direct and indirect) concerns.<sup>444</sup>

EUAA and BlueScope note that pre-activation costs should be reflective of actual costs, citing the high pre-activation costs on the 18 January as a concern.<sup>445</sup>

In terms of activation/usage/dispatch payments, there was also some consensus that they should be capped or limited:

- Origin Energy stated that the combination of the usage and any availability payment should not exceed the MPC.<sup>446</sup>
- BlueScope wished to understand how AEMO calculated the proposed \$30,000/MWh usage cap and the rationale behind having a cap higher than the market cap.<sup>447</sup>

<sup>442</sup> Ibid.

<sup>443</sup> Ibid.

<sup>444</sup> BlueScope, EUAA, ENA, EA, TransGrid, Origin: submissions to consultation paper

<sup>445</sup> EUAA and BlueScope: submissions to consultation paper

<sup>446</sup> Origin, submission to consultation paper, p. 6

<sup>447</sup> BlueScope, submission to consultation paper, p. 3

There was also general support for more prescription around payment structure, although stakeholders did not explicitly state that they wish for this cap to be prescribed in the NER,<sup>448</sup> with the exception of Energy Networks Australia (ENA).<sup>449</sup>

#### Submissions to options paper

In its submission to the options paper, Stanwell requested that the AEMC consider whether the ability for AEMO to offer availability payments should be phased out or greatly restricted. For example, if availability payments are to be made for long-notice RERT, it could be limited to only new demand response customers who require capital upgrades to provide the service. It states that this should exclude customers who:<sup>450</sup>

- have previously entered into network support agreements
- have demonstrated an ability to respond to spot prices either through their retailer or on their own
- have entered into previous RERT contracts.

Stanwell also suggested that total RERT payments (on a per megawatt hour basis) should be limited to the VCR.<sup>451</sup> Similarly, Alinta considered it may be useful to utilise the VCR as an absolute price cap of RERT costs AEMO can employ when procuring RERT (or at least be a reference price) for AEMO when undertaking its procurement decisions.<sup>452</sup> On the other hand, MEU did not think it was appropriate to use VCR for the RERT at all given the existence of the MPC.<sup>453</sup> Meridian also mentioned the MPC, stating that at least for the long and medium term, the use of the MPC as a cap on RERT costs should be considered.<sup>454</sup>

On availability payments, Enel X<sup>455</sup> noted that low or no availability payments are likely to limit the number of providers offering RERT contracts, as many demand-side resources would not participate - a lack of competition is likely to drive the cost of RERT contracts higher, which is not in the long-term interests of consumers.<sup>456</sup> Energy Efficiency Council (EEC) stated that payments should consist of all three types of payments, including an availability payment that at least covers the cost of set up and providers a modest margin, since the capacity ideally would not be dispatched.<sup>457</sup>

#### Submissions to draft determination

Other than AEMO, there was widespread support for the concept of a payment guide based on estimated cost of avoided load shedding that provides a reference point for AEMO when it is entering into emergency reserve contracts.

<sup>448</sup> Meridian suggested that it should not be in the NER. Meridian, submission to consultation paper, p. 6

<sup>449</sup> ENA, submission to consultation paper, p. 4

<sup>450</sup> Stanwell, submission to options paper, p. 7

<sup>451</sup> Ibid.

<sup>452</sup> Alinta, submission options paper, p. 2

<sup>453</sup> MEU, submission to options paper, p. 5

<sup>454</sup> Meridian, submission to options paper, p. 4

<sup>455</sup> Formerly known as EnerNOC.

<sup>456</sup> Enel X, submission to options paper, p. 5

<sup>457</sup> EEC, submission to options paper, p.3

All stakeholders that commented on this aspect - including RERT providers - supported a payment guide due to significant cost concerns and for the benefits of such a guide for transparency.<sup>458</sup>

#### Technical working group

This topic was discussed with the technical working group on 20 September 2018. Discussion notes are available on the AEMC's website.<sup>459</sup> The discussion included:

- Given that there is no prescription at present, participants questioned whether prescription with respect to a payment structure and payment cap was necessary given that, ideally the RERT market should determine the breakdown of payment types.
- Some participants did note that a cap may be helpful in order to limit costs associated with the RERT.

#### 7.3.4 Commission's analysis and conclusions

# BOX 23: FINAL RULE - ADDITIONAL RERT PRINCIPLE

The final rule introduces an additional RERT principle by:

- introducing a definition for estimated average VCR (in \$/MWh) for the purposes of emergency reserves, i.e. the estimated average VCR determined by AEMO, but derived from the VCR values developed by the AER and having regard to the RERT guidelines.
- introducing a new RERT principle that the average amount payable by AEMO under reserve contracts for each MWh of reserves for a region should not exceed the estimated average VCR for that region.
- requiring the RERT guidelines to provide more guidance on how the average VCR would be determined by AEMO
- requiring AEMO to report on how it will determine the average VCR.

The final rule aims to minimise the direct costs of the RERT, noting that the costs of the RERT are ultimately borne by consumers.

To be clear, the new RERT principle does not prohibit AEMO from recovering costs above the \$/MWh value (as a cap would), in case it is exceeded, nor does it prohibit AEMO from entering into contracts above the average VCR number. This could occur due to uncertainties associated with forecasting reserves ahead of time. If average VCR is exceeded, then AEMO should provide reasons as to why that was the case. As a result, the final rule also introduces reporting requirements on AEMO which promote transparency.

# Changes between draft and final rule

<sup>458</sup> GreenSync, CEC, EUAA, ERM Power, AEC, Origin, MEU, Snowy Hydro and Enel X: submissions to draft determination.

<sup>459</sup> See: https://www.aemc.gov.au/sites/default/files/2019-

<sup>04/</sup>Technical%20working%20group%2C%20Meeting%20%234%20%E2%80%93%20Discussion%20notes.pdf

The final rule introduces an additional RERT principle rather than a payment guide imposed on AEMO as a best endeavours obligation. This is more consistent with the other cost provisions in the NER with respect to the RERT. The existing RERT principles largely relate to considerations when dispatching RERT resources; and so the Commission considers it appropriate for there also to be a principle that relates more to the procurement of resources. The final rule also provides more flexibility to AEMO in how to set the VCR for RERT purposes, to reflect challenges in operationalising such a number.

In order to assess whether or not there should be more prescription around payments, the Commission first examined what exactly the RERT is pricing, in a theoretical manner.

#### What is the RERT pricing?

If the RERT is seen as being an out-of-market energy market, consistent with the way the NEM's spot market works, then it would not be appropriate to pay for capacity. If the RERT is seen as being insurance, then the RERT would be more akin to a capacity market, with AEMO buying capacity as insurance. Table 7.1 shows what a "pure" payment structure would like look under these two approaches.

PAYMENT TYPES	A "PURE" OUT-OF-MAR- KET ENERGY MARKET	A "PURE" OUT-OF-MAR- KET CAPACITY MARKET	
Availability payments	None	Yes - in \$/MW	
Pre-activation payments	None	Yes - in \$/MW	
Usage payments	Yes - in \$/MWh	None	
Overall approach	This would be a \$/MWh approach.	This would be a \$/MW approach.	

#### Table 7.1: Pure pricing structures

Based on 2017-18 summer's costs, the pricing structure used was more reflective of a capacity payment, since availability and pre-activation payments accounted for the bulk (94 per cent) of emergency reserve costs.

This appears to be inconsistent with AEMO's original rule change proposal whereby availability payments would be low and usage payments high. The Commission does not think this is the most appropriate approach as it would also be inconsistent with how the spot market prices energy and places risks on consumers associated with availability payments incurred for resources which were ultimately not required.

As discussed throughout this determination, given that the RERT is a safety net in the event that all market and financial incentives have failed to deliver the level of reliability implied by the reliability standard, pricing emergency reserves using a \$/MWh energy approach would be more appropriate.

The Commission however notes that there were no availability payments in summer 2018-19, meaning that usage payments (i.e. dispatch) accounted for 100 per cent of contractual costs.

# Pricing RERT using a \$/MWh approach

In a pure out-of-market energy market pricing structure, the payment for emergency reserves should be no more than the avoided cost of load shedding, i.e. the cost of what would have happened had emergency reserves not been used (the counterfactual). In this instance, the cost of load shedding is reflected in VCR, specifically, in the estimated VCR of those who would have been load shed, had the RERT not been used - or the estimated load shedding VCR.<sup>460</sup>

Therefore, emergency reserve costs should be less or equal to estimated load shedding VCR. Above estimated load shedding VCR, it would be more cost effective and efficient to load shed consumers, rather than use the RERT.

In a *pure* out-of-market energy market, where payment was made exclusively through usage payments, this would translate to:

Usage payments (\$/MWh) = less than estimated load shedding VCR.

However, the RERT is not a pure energy product - emergency reserves tend to be unscheduled and only dispatched on rare occasions. As a result, a "pure" out-of-market market pricing structure (i.e. no capacity payments, only usage payments) may not be appropriate.

While the Commission acknowledges stakeholders' concerns around the distortionary aspects of availability payments and suggestions to restrict them, the Commission also accepts stakeholder feedback has suggested that demand response providers (who make up the bulk of RERT providers) typically require availability payments in order to be able to participate in the RERT.<sup>461</sup> The Commission acknowledges that disallowing availability payments altogether, in respect of contracts would limit the number of potential emergency reserve providers and promote inefficiency of the RERT process.

The Commission is therefore of the view that availability payments within contracts should continue to be allowed as they will promote participation in the tender process. Furthermore, in practice, it may also be difficult to implement the suggestion by Stanwell to restrict availability payments to certain types of providers. This is particularly true for demand response through a third-party, where it may not be clear whether the portfolio of customers has changed.

The Commission therefore thinks it would best be left to AEMO to assess whether a tender process from a particular provider is the most optimal one, based on its own analysis and system requirement. In addition, as the tender process becomes more mature, the tender process itself may converge to low availability payments.<sup>462</sup>

<sup>460</sup> In the NEM, when there is an involuntary load shedding events, prices are set to the MPC. This may be below the marginal VCR.

<sup>461</sup> See, for example, Enel X's submission to the options paper.

<sup>462</sup> As noted by the EEC in its submission to the options paper, maturity of emergency reserve products may lead to lower RERT costs.

The Commission is also of the view that no *individual* type of payments within RERT contracts should be disallowed or capped. While from a theoretical point of view, it would be appropriate to think of the RERT as having low or no availability payments and relatively high usage payments, in practice, it is best left to the competitive tender process to identify and optimise the right pricing structure.

As a result, an appropriate payment structure could be:

(availability payments + pre-activation payments + usage payments) = less than (estimated load shedding VCR), where AEMO's tender process would optimise between the three types of payments. This would not preclude some tenders from not have any availability or pre-activation payments.

A number of stakeholders stated that AEMO should pay no more than MPC for emergency reserves. However, the Commission thinks that the maximum amount payable for emergency reserves should reflect average VCR, which could be close to the cost of load shedding.

#### Commission's response - payment guide

The Commission's draft rule introduced a payment guide which would implement the payment structure above, in an ex ante manner when AEMO would enter into emergency reserve contracts.

AEMO, in its submission, noted that this was inconsistent with the procurement trigger, as the procurement trigger is based on the reliability standard (which is bound by the MPC) whereas the payment guide recognises that the value of loss load was different (and likely higher than) MPC, i.e. the load shedding VCR.

The Commission does not agree with AEMO's characterisation of this and considers that the reliability standard remains appropriate, as discussed in Chapter 4. The discussion in Chapter 4 recognises that the reliability standard is not perfect. Indeed, the Commission notes that the MPC is different from the VCR, but appropriately so to limit exposure to high prices for all consumers. This is why there may be resources above MPC and below VCR that could efficiently participate in RERT – but only after the reliability standard is breached and only up to the amount of the breach, consistent with the final rule, as discussed in Chapter 5.

The idea of a \$/MWh principle for RERT costs that is based on the cost of load shedding is not meant to override the reliability standard - the reliability standard remains the procurement trigger. Once triggered, the cost principle would then apply as a reference in considering cost effectiveness, not as a different trigger.

# Commission's conclusions on payment structures

To summarise, the Commission is not proposing to restrict or disallow any particular types of payments, or prescribe any particular type of payment structure, with respect to RERT contracts. However, consistent with current arrangements RERT panel members will not receive any availability payment, just for being on the panel. Availability payments under emergency reserve contracts would only be incurred once the procurement trigger (an

explicitly identified breach of the reliability standard) has been met, and only after the market has not responded to the breach.

The RERT panel operates on an ongoing basis - members of the panel do not have any obligations to respond to AEMO's requests for tenders, i.e. they are not required to provide emergency reserves. Panel members do not sign RERT contracts until AEMO seeks tenders through the short-notice or medium-notice RERT (once contracts are signed, availability payments may accrue in accordance with the contract). Paying members for being on the panel would introduce an ongoing cost for emergency reserves which would be ultimately recovered from retailers or consumers. It may also create perverse incentives for potential providers to sign up to be on the panel due to the availability payment, without necessarily ever needed to be called upon to deliver emergency reserves. The Commission is of the view that this could likely be distortionary.

However, there are ways for jurisdictions, for example, to make sure that the RERT panel has enough reserves on it, such as using the ARENA RERT trial model, as discussed in Chapter 5.

#### Commission's conclusions on payments

The Commission is cognisant of the significant direct costs incurred from the use of emergency reserve in summer 2017-18, as well as the fact that reserves in 2018-19 appear to be lower cost based on initial information. These costs are borne by market customers, and ultimately, by consumers when they are passed on through retailers. These costs were incurred despite the existing provisions in the NER that require AEMO to minimise direct and indirect costs when it exercises the RERT, i.e. the RERT principles.

In its submission to the draft determination, AEMO provided cost information on summer 2018-19. It noted that the January 2019 load shedding event demonstrated that RERT is cost-effective:<sup>463</sup>

- Nearly 3,000 MWh of RERT was activated including 1,252 MWh of avoided involuntary load shedding at a total cost of \$30.62 million (excluding compensation).
- The avoided load shedding cost therefore amounted to \$24,457/MWh, significantly less than the average Victorian VCR of \$32,620/MWh. The average cost (i.e. based on all RERT dispatched) was \$10,261/MWh.
- While RERT costs are passed through via higher electricity bills to end consumers, they must be weighed against the avoided load shedding cost. In the January event, the \$30.62 million cost helped avoid a load shedding cost of \$40 million.

The Commission welcomes AEMO's reporting of estimated cost information, including a \$/MWh figure which includes discussion of the cost of the counterfactual, i.e. the cost of RERT that avoided involuntary load shedding, estimated to be just under \$25,000/MWh, which the Commission notes is about the same as the VCR of residential consumers in Victoria, based on AEMO's 2014 VCR study. This type of information is important for transparency purposes and to understand whether or not the RERT is cost effective.

<sup>463</sup> AEMO, submission to draft determination, p. 6.

In the draft rule, the Commission proposed a "payment guide" which would provide a reference point for AEMO to use when considering cost effectiveness of RERT contracts in order to address stakeholders' concerns around costs. The payment guide was based on the avoided load shedding cost, which was used by AEMO in its submission to the draft determination to report on costs.

At the same time, AEMO raised concerns around the operation of such a guide, including that it could potentially limit AEMO's ability to enter into contracts (especially short-notice RERT) or dispatch RERT in some circumstances. For example, short-notice and dispatch of emergency reserves are based on LOR2s. LOR2s do not mean that load shedding is imminent - they typically mean that the market does not have enough reserves to withstand a large credible contingency event or a sudden drop in intermittent generation. As a result, the draft rule could have acted as a barrier to AEMO using RERT as the payment guide referred to estimated load shedding VCR. The Commission agrees that this would not be an appropriate outcome.

The aim of a cost principle for the RERT is to require AEMO to consider whether emergency reserves are cost effective before procuring those reserves. In hindsight, this is easy to establish. However, in an ex-ante manner, it is difficult to operationalise given the nature of forecasts, and the fact that emergency reserves can be contracted at any point in time within one year of a shortfall.

The Commission therefore considers that a more preferable approach would be to introduce a new RERT principle to complement the existing RERT principle in relation to cost effectiveness.

The final rule introduces the following RERT principle:

# 3.20.2 Reliability and emergency reserve trader

....

- (b) *AEMO* must have regard to the following principles (*RERT principles*) in exercising the RERT under paragraph (a):
  - (3) the average amount payable by *AEMO* under *reserve contracts* for each MWh of *reserves* for a *region* should not exceed the estimated average VCR for that *region*.

The Commission also considered AEMO's concerns around operationalisation of a payment guide, particularly in relation to the complexities of cost sharing arrangements across regions in the NEM.

Indeed, the idea of a load shedding VCR is problematic when applied in an ex-ante manner. For example, estimated load shedding VCR is not a fixed value in practice and differs from time to time and from jurisdiction to jurisdiction. Average load shedding VCR represents the average VCR of those consumers that are interrupted during a load shedding event, in the event that involuntary load shedding is required, i.e. after the market has run out of reserves.

Typically, in the NEM, this is set by jurisdictions based on a load shedding priority list.<sup>464</sup> Different jurisdictions may have different VCRs based on the list, e.g. in some jurisdictions, it may be residential consumers in an area with no essential service (e.g. a hospital) that are shed, in others, it may be smelters or a combination of industrials and residential consumers. The rotational nature of involuntary load shedding may also affect estimates of VCR. With rotational load shedding, each consumer is only interrupted for 30-60 minutes at a time, before the interrupted is rotated through to another group of consumers. The impact of consumers of a long outage would be far more significant than a 30-60 minute outage, and would be reflected in VCR figures, if they are granular enough. The Commission notes that the AER is currently working estimating VCRs at present and intends to examine more granular estimates of VCR as part of that work program.

Given these practical considerations and the fact that the reliability standard is operationalised through the LOR framework over the short term, the Commission considers that a highly prescriptive description of what the costs of RERT should be in the NER would not be appropriate.

Instead, the final rule defines the estimated average VCR as:

# 3.20.1 Definitions

For the purposes of this rule 3.20:

(a) **estimated average VCR** for a *region*, means the average value of customer reliability (expressed in \$/MWh) determined by *AEMO* having regard to the *RERT guidelines* and any values of customer reliability developed by the *AER* under rule 8.12; ...

The final rule also requires the Reliability Panel, through its RERT guidelines, to provide guidance to AEMO on the new RERT principle, particularly on determining the average VCR figure.

The final rule also requires AEMO to explain its methodology for how it intends to determine the new RERT principle and to report against the value of average VCR in the event that it is exceeded. The final rule gives AEMO flexibility to determine exactly how to set the "estimated average VCR" value. The only requirements are for AEMO to have regard to the AER's VCR figures and the RERT guidelines. The Commission considers that this flexibility is appropriate given the difficulties in using an average value of VCR for consumers, and the practicalities involved in the different load shedding lists around the jurisdictions.

Given the flexibility allowed to AEMO in the NER with respect to this principle, the Commission considered that it would be appropriate for AEMO to be required to report on its methodology for transparency purposes.

In terms of the estimated average VCR figure, the Commission expects that AEMO, for example, at the start of each financial  $year^{465}$  would determine which of the AER's VCR

<sup>464</sup> This list is confidential except in South Australia.

<sup>465</sup> The rules are not prescriptive about the time period and it would be up to AEMO to determine exactly which time period to use.

figures it would apply for the purposes of the estimated average VCR , and any other relevant information (in accordance with the RERT guidelines) and publish these figures.

While the Reliability Panel is required to provide guidance on this aspect, the Commission expects that some of the information that AEMO may take into account include cost sharing arrangements or the load shedding list. AEMO would then update its VCR figure if the information that it has used to set the VCR changes, for example, if the AER updates its VCR figures or if the load shedding priority list changes.

The intent is not for AEMO to be updating the average VCR figure dynamically. The Commission considers that the final rule has sufficient flexibility to allow AEMO to determine how to implement the new RERT principle without prohibiting it from dispatching or entering into RERT contracts, should the average VCR value be exceeded.

The Commission expects that the new RERT principle would work the same way that the existing RERT principles do, i.e. AEMO would apply them in a consistent manner, e.g. by having regard to the new RERT principle when entering into contracts.

The Commission considers that the additional reporting requirements will improve transparency and provide additional information to market customers that are liable for emergency reserve contracts.

The final rules with respect to reporting requirements and Reliability Panel guidance are:

#### **RERT guidelines**

#### 3.20.8 RERT guidelines

(a) For the purposes of this rule 3.20, the *Reliability Panel* must develop and *publish* guidelines (the *RERT guidelines*) for or with respect to:

....

(5A) the information, assumptions and parameters *AEMO* must take into account when determining the estimated average VCRs for the purposes of the *RERT principle* in clause 3.20.2(b)(3).

# **AEMO's procedures**

# 3.20.7 AEMO's exercise of the RERT

...

(e) *AEMO* must develop, *publish*, and may amend from time to time, in accordance with the *Rules consultation procedures*, procedures for the exercise of the *RERT* under this rule 3.20 that take into account the *RERT principles* and *RERT guidelines*. These procedures must include:

....

> (3) the basis on which AEMO determines the estimated average VCRs for the purposes of for the purposes of the RERT principle in clause 3.20.2(b)(3)

# **Reporting requirements**

#### 3.20.6 Reporting on RERT by AEMO

#### Information to include in RERT report – reserve contracts

- •••
- (d) The RERT report must, with respect to any *reserve contracts* entered into by *AEMO* include a detailed explanation of:
  - •••
  - (5) the basis on which AEMO had regard to the RERT principle in clause 3.20.2(b)(3) when entering into those reserve contracts, and where the average amount payable by AEMO underreserve contracts exceeded the estimated average VCR for the relevant region, an explanation of why this had occurred.

The final rule also includes general reporting requirements around a \$/MWh cost of load shedding as a result of the RERT dispatch (similar to what was reported by AEMO in its submission to the draft determination), which is only required on an ex-post reporting basis, in addition to AEMO reporting on the new RERT principle.

The final rules are:

#### 3.20.6 Reporting on RERT by AEMO

....

# Information to include in RERT report – dispatch or activation of reserves

•••

- (e) The RERT report must, with respect to any *reserves dispatched* or *activated* under *reserve contracts*, include a detailed explanation of:
  - (9) the estimated costs of *load shedding* (including an amount expressed in \$/MWh) in a *region* avoided as a result of the *dispatch* or *activation* of *reserves*;
- (f) Where *AEMO* has, in accordance with clause 3.15.9, included the amounts arising under a *reserve contract* in a *final statement* provided under clause 3.15.15, the RERT report must include a detailed explanation of:

- (1) *AEMO's* costs associated with exercising the *RERT* (including an amount expressed in \$/MWh), including the payments under the *reserve contract* for the relevant *billing periods*; and
- (2) a breakdown of the recovery of those costs (including an amount expressed in \$/MWh) from each *Market Customer*, as determined by *AEMO*, in each *region*.

# 8 COST RECOVERY

Costs incurred procuring Reliability Emergency and Reserve Trader (RERT or emergency reserves) resources are currently recovered from market customers (for example, retailers). There is a process in the NER which determines how such costs are allocated between market customers.

This chapter:

- discusses the current process by which RERT related costs are recovered from market customers (section 8.1)
- outlines AEMO's views on this topic (section 8.2) and other stakeholder feedback (section 8.3)
- provides analysis of the current process and makes a final determination to change the cost recovery process (section 8.4) to one which is more cost reflective, and hence encourage efficient consumption decision-making by market participants.

# 8.1 Current cost recovery arrangements

Three types of costs arise from the purchase and activation of emergency reserves:

- costs incurred in contracting for the provision of reserves
- costs to compensate affected participants and market customers if emergency reserves are activated
- administrative and operational costs associated with emergency reserves.

For completeness, a brief overview of current arrangements for each is provided below, although only the first of these is in scope for this rule change request. The second is in scope of the AEMC's work on *Investigation into intervention mechanisms and system strength in the NEM,* for which a consultation paper was published on 4 April 2019.<sup>466</sup> The third relates to broader issues associated with AEMO's cost recovery arrangements, which are clearly out of scope for this rule change.

# 8.1.1 Contracting costs

Costs incurred in contracting for the provision of reserves are met by fees imposed on market customers.<sup>467</sup>

The allocation of fees to market customers is in accordance with NER clause 3.15.9(e):

In respect of reserve contracts entered into by AEMO, AEMO must calculate in relation to each Market Customer for each region in respect of each billing period a sum determined by applying the following formula:

 $MCP = E \times RRC / \Sigma E$ 

<sup>466</sup> More information on this project can be found on our website. In addition, the Commission understands that AEMO plans to submit a rule change request on the recovery of the compensation costs associated with RERT activation in 2019.

<sup>467</sup> NER, clause 3.15.9(a).

where:

MCP is the amount payable by a Market Customer for a region in respect of a billing period;

E is the sum of all that Market Customer's adjusted gross energy amounts in a region (the "relevant region") in each trading interval which occurs between 0800 hours and 2000 hours (EST) on a business day in the billing period excluding any loads in that region in respect of which the Market Customer submitted a dispatch bid for any such trading interval

RRC is the total amount payable by AEMO under reserve contracts which relate to the relevant region in the billing period as agreed under clause 3.20.3(f); and

 $\Sigma$ E is the sum of all amounts determined as "E" in accordance with this paragraph (e) in respect of that region.

Simply, costs are recovered in proportion to a market customer's consumption (or, in the case of a retailer, the sum of its customers' consumption) between 8am and 8pm on business days for the billing period (one week) in which the costs were incurred, on a regional basis.<sup>468</sup>

A billing period is defined in the NER as the period of seven days commencing at the start of the trading interval ending 12.30am Sunday.<sup>469</sup>

As noted in section 7.3, there is currently no prescription in the NER regarding the payment structure of emergency reserve contracts. While the Commission understands that the payment structure typically includes one or more of the following features, this is not required by the NER:

- availability costs
- pre-activation costs
- activation costs.

In determining the total amount payable by AEMO under emergency reserve contracts (the RRC):

- Pre-activation and activation costs incurred within a billing period count towards the RRC for that billing period. For example, if \$10 million of pre-activation and activation costs are incurred on 8 December, then it would be recovered over the associated billing week.
- Availability costs are allocated to each billing period in proportion to the total contract length to which the availability payments relate. For example, if a total of \$12m of activation payments are incurred equally over a 12-week period based on agreed upon terms in the contract, \$1m is recovered in any individual billing period over the 12-week period.

<sup>468</sup> Throughout this chapter, the term "consumption" is used as shorthand for "adjusted gross energy amount in a region". Of course, many market customers are retailers and are not themselves consuming electricity, but instead are purchasing it from the wholesale market on behalf of their customers.

<sup>469</sup> NER, Chapter 10.

#### 8.1.2 Compensation costs

Affected participants and market customers (in respect of scheduled load) are entitled to receive compensation in the event of a RERT intervention.<sup>470</sup>

The compensation framework in the NER relates to when AEMO intervenes in the market, which includes directions and the RERT. The AEMC is considering possible amendments to compensation payments for affected participants holistically as part of the AEMC's work on intervention mechanisms and system strength.<sup>471</sup> This project is considering the appropriateness of the interventions framework<sup>472</sup>, and the cost implications of the compensation framework associated with it, in light of the increased use of interventions.

As such, this aspect of the RERT will not be considered as part of this rule change request, since it is more effectively considered through these other processes that holistically look at the overall compensation framework.

#### 8.1.3 Administrative and operational costs

AEMO incurs administrative costs associated with contracting for and operating reserves. This includes labour costs in preparing and analysing tenders, preparing contracts and determining to activate emergency reserves.

These costs are recovered by AEMO from all market participants as part of the fees.<sup>473</sup> AEMO's broader cost recovery process through fees is out of scope for this rule change determination since this is related to broader consideration of AEMO's cost recovery from market participants.

# 8.2 AEMO's views

AEMO have not raised the issue of how costs incurred in contracting for the provision of reserves are recovered from market customers in their rule change request or in subsequent submissions.

Nevertheless, given the broad scope of issues raised in the rule change request, and stakeholder views on this matter, the Commission considered this matter as part of the rule change.

# 8.3 Stakeholders' views

# 8.3.1 Submissions to consultation paper

EnergyAustralia<sup>474</sup> suggested changes to the cost recovery process are required in order to reflect usage more closely than under current rules. It suggested that:

<sup>470</sup> NER, clause 3.12.2.

<sup>471</sup> More information on this project can be found on our website. In addition, the Commission understands that AEMO plans to submit a rule change request on the recovery of the compensation costs associated with RERT activation in 2019.

<sup>472</sup> The intervention framework - the system's 'safety net' - includes not only the RERT, but also directions and instructions. The intervention framework has always been available to AEMO as a last resort to keep the lights on.

<sup>473</sup> NER, clause 3.15.9(g).

<sup>474</sup> EnergyAustralia, submission to the consultation paper, p.6.

- The recovery process needs to recover costs from participants that were benefiting (i.e. using energy) from the reserve at the time it was activated, i.e. the recovery of activation payments and pre-activation payments should be recovered on a usage (MWh) basis across the periods where the reserves were activated (or pre-activated).
- Recovery of availability payments cannot be recovered in this manner and should continue to be recovered as they are now.

EUAA also noted that its members, typically larger energy users, do not think that they should contribute to RERT costs given that they have a flat load, whereas RERT costs are largely due to peak demand, which are mainly caused by retail consumers.<sup>475</sup>

In a supplementary submission to the consultation paper, EUAA provided its members' experiences with respect to how retailers recover costs from end consumers and questioned whether retail customers are paying their fair share of RERT costs, or if commercial customers are cross-subsiding retail consumers due to having cost-pass through clauses in contracts.<sup>476</sup>

#### 8.3.2 Submissions to draft determination

In the draft determination, the Commission proposed changes to the cost recovery process such that costs associated with emergency reserves are recovered, where possible, from those that were consuming at the time that emergency reserves were needed.

Most stakeholders supported the draft rule, understanding the trade-offs that the Commission made in order to reach its policy position.<sup>477</sup> Reasons for supporting the draft rule typically included that the approach to recovery from those that were consuming at the time of the RERT event, where possible, was the most appropriate approach as it reflects a "causer pays"-type and cost-reflective approach.

Enel X, however questioned which is more valuable to the system: RERT customers carrying on business as usual so that they are ready to deliver the MW reduction they committed to in their contract, or reducing their demand to reduce their exposure to RERT activation costs (and affecting their baselines).<sup>478</sup>

In addition, some stakeholders raised a number of new concerns with the existing rule:

- Brickworks and EUAA questioned why scheduled loads are excluded from the RERT cost recovery amount as it believes pumped hydro and large scale batteries should be incentivised to not consume during a RERT event (by incurring RERT costs).<sup>479</sup>
- They also noted that it was not clear how demand management is currently accounted for, or could possibly be accounted for in the future, given the existing drafting around this aspect of the rules ("market customer's adjusted gross energy amounts").<sup>480</sup>

<sup>475</sup> Energy Users Association of Australia, submission to the consultation paper, p. 3.

<sup>476</sup> Energy Users Association of Australia, supplementary submission to the consultation paper, p. 3.

<sup>477</sup> Brickworks, EUAA, ERM Power, AEC, MEU, Stanwell, Snowy Hydro: submissions to the draft determination.

<sup>478</sup> Enel X, submission to draft determination, p. 4.

<sup>479</sup> Brickworks and EUAA: submissions to draft determination.

<sup>480</sup> Ibid.
In the draft determination, the Commission also concluded that "second-order" cost recovery, i.e. how retailers pass on RERT costs to end consumers is outside of the scope of this rule change, but that the changes made to reporting requirements and transparency should be beneficial with regards to this aspect.

This conclusion was acknowledged by the EUAA and Snowy Hydro.<sup>481</sup> Enel X however questioned whether the cost-reflective approach is fair (generators who provide RERT services would not be liable for dispatch costs under the proposed framework whereas demand response RERT providers could be, through second-order cost recovery) and whether it will erode that customer's benefit in offering RERT services in the first place.<sup>482</sup>

### 8.3.3 Technical working group feedback

The topic of cost recovery was discussed with stakeholders at a technical working group meeting on 20 November 2018.<sup>483</sup> All members of the group that spoke on the topic agreed that the current process is inappropriate because it does not send appropriate signals for consumption decisions. Most also emphasised that it was important that cost recovery be "fair".

### 8.4 Commission's analysis and conclusions

### BOX 24: FINAL RULE

The final rule requires AEMO to recover:

- costs associated with the direct and immediate activation of RERT resources (e.g. activation costs or usage charges) in proportion to market customers' consumption over each of the trading intervals in which the RERT resource is activated, in the region in which RERT was used
- all other costs associated with the procurement of reserves (other than administrative and operational costs) in proportion to market customers' consumption during each of the billing periods in which the costs were incurred, in the region in which RERT was used.

A billing period is defined in the NER as the period of seven days commencing at the start of the trading interval ending 12.30am Sunday.

The benefit of this approach reflects that costs should be recovered in a cost reflective manner, in order to provide efficient incentives for those parties to avoid the costs. Costs not able to be allocated in a cost reflective manner are recovered in as non-distortionary manner as possible by smearing the costs widely.

### Changes from draft to final rule

<sup>481</sup> EUAA and Snowy Hydro: submissions to draft determination.

<sup>482</sup> Enel X, submission to draft determination, p. 4.

<sup>483</sup> Minutes of the meeting can be found on the AEMC's website at: https://www.aemc.gov.au/sites/default/files/2018-11/Technical%20Working%20Group%20%232%20-%20Discussion%20Notes.pdf

There are no changes between the draft and final rule for this aspect.

### 8.4.1 Cost recovery principles

The AEMC considers that cost relating to the procurement of emergency reserves should be recovered in accordance with the following principles.

### 1. Emergency reserve procurement costs should be recovered in full

It is necessary for RERT procurement costs to be recovered in full, or else emergency reserve providers will be unable to be paid given AEMO is a not-for-profit organisation and has no other means of paying the providers.

### 2. Prices should reflect marginal costs

Cost recovery, is, in effect, the way in which the emergency reserves are *priced*. RERT costs allocated to market customers act as price signals, which in turn influence the behaviour of market participants.

Prices should reflect the marginal costs of providing emergency reserves, in order to incentivise efficient decision-making (such as a decision on whether or not to consume electricity at a particular time). In the context of the RERT the marginal cost is the cost associated with dispatching one more unit of RERT reserves.

Marginal costs are a forward-looking concept. Costs that are already incurred ("sunk" costs), by definition, cannot be avoided or influenced by decisions or behaviour going forward.

Prices which do not reflect costs may incentivise inefficient decision-making, for example, inefficiently high or low consumption levels of electricity. Consumers may consume an inefficiently low level of electricity if prices are too high (compared to cost reflective levels) or vice versa if prices are too low.

### 3. Residual costs should be recovered in a non-distortionary manner

Principles 1 and 2 above can be contradictory.

Marginal costs are, by definition, forward-looking, while total costs can include sunk, already incurred costs. This means that there are residual costs (the difference between total costs and marginal costs) that must be recovered somehow to conform with principle 1. In the case of the RERT, these are typically the availability payments, as discussed below.

The recovery of these costs should be done in a manner which is as non-distortionary as possible. In general, this involves smearing these costs as widely as possible, which in turn means that the difference between the price reflecting marginal costs and the price reflecting marginal cost plus a share of residual costs is minimised. Changes in behaviour in response to this minimised change in price should, in turn, be as small as possible (noting that efficient behaviour is best incentivised were prices to reflect marginal costs only).

### 4. Cost recovery should be transparent and readily understandable

Cost recovery should be transparent and readily understandable to assist with participant understanding and manage expectations of costs associated with emergency reserves.

### 8.4.2 What are the marginal costs of the RERT?

Determining the marginal costs of the RERT is challenging. Below, we consider each of activation costs, pre-activation costs and availability costs.

#### **Activation costs**

Activation costs are incurred immediately prior to (or simultaneous to) emergency reserves being required.

As a first degree of approximation, it is efficient for activation costs to be recovered from those consuming at the time the RERT resource is required because it:

- provides incentives for those parties to reduce their consumption to the extent that the value derived from that consumption is less than the cost
- avoids the costs being recovered from other parties who were unable to influence the cost from being incurred.

### **Availability costs**

At the other end of the timeline spectrum for RERT costs from activation costs are availability costs. Availability costs are typically incurred over the life of the emergency reserve contract (potentially many months) and are incurred regardless of whether or not the RERT ends up being activated.

Such costs are, clearly, not influenced by parties consuming at the time the RERT resource is activated. On this basis, availability costs should not be recovered in proportion to market participants' consumption at those times. To do so would provide disincentives to consume (despite that consumption potentially being efficient). For example, if all parties reduced their consumption by 10 per cent at the time the RERT resource is activated, all parties would have the same proportion of consumption, and would each receive the same share of the same, fixed availability costs. Consumption would have been reduced for no reliability or cost reducing benefit.<sup>484</sup>

Furthermore, if the emergency reserve resource is not activated at all, then costs would not be recovered if the recovery mechanism was based on recovering from consumers when emergency reserves are activated. This is inconsistent with principle 1 in section 8.4.1 above: costs must be recovered in full. In such circumstances, costs could instead be recovered on the basis of, for example, a market customer's demand at the time of system-wide peak demand over the life of the contract - but this would also incentivise market customers to reduce their consumption at these times when no such reduction is necessary.

This raises the question: on what basis should availability costs be recovered?

<sup>484</sup> At least until the next time AEMO enters into RERT costs.

In general terms, it may be possible to recover activation costs in a cost reflective manner, based on some identifiable and verifiable characteristic *at the time the costs were entered into*.

For example, AEMO may incur RERT related costs *now* based on its forecasts, which in turn are influenced by *current* forecasts of the level of generation and demand response in the market, which in turn are influenced by *current* financial contractual positions between market customers and generators/demand response providers. Current financial contractual positions could be used as an identifiable and verifiable cost reflective characteristic. The Commission understands that this is the logic behind the cost recovery mechanism of the retailer reliability obligation.

### **Pre-activation costs**

Pre-activation costs are incurred ahead of a possible activation of a RERT resource, on the basis of AEMO's forecast requirement of needing the resource. This typically occurs in the hours leading up to activating a RERT.

While the length of time over which pre-activation costs are incurred is far smaller than those for availability costs (typically hours versus months), as with availability costs it is the case that these costs are sunk. It would not incentivise efficient consumption behaviour to recover these costs in proportion to a party's consumption at the time the RERT was required, or during the period of time over which the pre-activated emergency reserves may be used.

Instead, as with availability costs, it may in theory be possible to determine some cost reflective characteristic *at the time the costs were entered into.* 

### 8.4.3 Analysis of cost recovery and conclusions

The Commission does not consider that the current cost recovery process is in the long term interest of consumers, because it does not send appropriate price signals to market participants to encourage efficient decision-making (i.e. it does not reflect principle 2). This is because the costs recovered do not reflect marginal costs.

### **Activation costs**

As discussed above activation costs are recovered in proportion to a market customer's consumption at specific times of the week, over a week-long period.

Such an approach does not send cost-reflective signals to market participants. Consumers (or their retailers) which are consuming at the specific time emergency reserves are actually required are provided price signals to consume which do not reflect the marginal cost of the RERT at that specific time. This has a number of negative consequences:

 The price signal sent to consumers at the time the emergency reserves are required (i.e. the market price for energy plus the cost associated with RERT) is less than the marginal cost of the emergency reserves plus the cost of energy, potentially encouraging consumption which has a value to the consumer which is less than the cost of its provision.

- The consequence of this could be consumers inefficiently consuming or increasing their demand at this time. Given there is already limited supply, hence emergency reserves being used, this would drive further inefficiencies, increasing the costs of emergency reserves which could exceed the benefits the individual users would get from increased consumption.
- The price signal sent to consumers at other times of the week encourages inefficient under-consumption at those times. This is because the marginal emergency reserve related costs of consuming at these times is zero, yet the price associated with the emergency reserves is greater than zero. Some customers may respond to the RERT related price signals and reduce their consumption, for no benefit with regard to reliability or cost reduction.
- Costs are borne by parties that were not consuming (or consuming less) when emergency reserves were required. This is most notably when a party undertakes demand response at the time that the RERT was required, only to incur RERT related costs largely regardless of their demand response due to consumption at other times of the week. The Commission understands that this was the case for several customers in Victoria over the last summer. Customers were participating in the RERT through demand response and were paid as such, but were still charged for the RERT itself, despite curtailing demand, creating confusion for such customers.

Instead, the Commission considers that the rules should be changed so that activation costs should be recovered, in full, from those market customers who are consuming (or whose customers - end consumers - are consuming) during the trading intervals in which the RERT is activated, in proportion to their consumption at that time. This will provide more cost reflective prices, consistent with principle 2 and avoiding the problems associated with the current arrangements, noted above.

The Commission appreciates that even this approach is not fully cost reflective. For example, in some circumstances emergency reserves may be activated and costs incurred ahead of the trading intervals where it is actually required. In these circumstances, a strict interpretation of the recovering of forward-looking, marginal costs would suggest that recovery in proportion to consumption during the time emergency reserves were activated is not cost reflective. A market customer modifying its behaviour to reduce its consumption would not impact whether the RERT costs are incurred. Nevertheless, the Commission considers the that cost recovery on the basis of those trading intervals that emergency reserves are activated is likely to be a reasonable approximation of cost reflective pricing. Furthermore, it may be complex for the arrangements to be more cost reflective, contradicting principle 4 (simplicity and transparency).

Similarly, there may be practical implementation aspects that would mean that this approach is not fully cost reflective. Indeed, because of the non-prescriptive nature of emergency reserve contracts, and the differences in terms and conditions of contracts, it may be difficult for AEMO to fully allocate the costs to the relevant trading intervals in an accurate manner.

For example, this could be due to overlapping contracts with different minimum run times and hours of availability. Practical considerations would also have to be made for, say, if

under a contract, the provider is to be paid different dispatch charges based on how much is dispatched (e.g. a certain \$/MWh for the first 20MW, then a different \$/MWh for the next 5MW and so on).

A further potential implementation consideration is that due to the nature of emergency reserves, the time period over which they were delivered is an ex-post calculation for most RERT contracts such that there is a difference between the requested duration of this activation, and final outcome.

A full cost reflective approach could therefore influence exactly what terms and conditions AEMO includes in its contracts, particularly with respect to payment types and forms. For example, a full cost reflective approach may require all reserves to be available between standard hours, and to have the same payment types (e.g. usage payments) and form (e.g. \$/MWh). As a result, the final rule, discussed next, requires AEMO to reasonably allocate usage payments to the relevant trading intervals.

The Commission notes that this may also be addressed if AEMO chooses to standardise products through standardised terms and conditions including payment types, as proposed in its high-level design attached to the rule change request and discussed further in Chapter 10.

The Commission notes Enel X's concern that the cost-reflective approach may incentivise RERT providers to pre-demand respond in order to avoid further RERT cost, which could then affect their baselines and/or ability to provide RERT later on in the day.

The Commission considers that it is appropriate to recover costs from all market customers, regardless of whether or not they have provided RERT. To the extent that they have provided RERT through demand response, the reduction in demand would reduce their exposure. Should they wish to demand respond further (assuming that they are allowed to under the out-of-market provisions), then it would be appropriate for these providers to provide additional demand response in order to further reduce their exposure.

The Commission considers that concerns around baselines for use in emergency reserves, as well as the providers' ability to deliver emergency reserves, is best left to AEMO to manage through its baseline calculations and RERT contracts.

### Availability and pre-activation costs

The current cost recovery of availability and pre-activation costs is also not cost reflective.

As noted above, availability and pre-activation costs are sunk at the time that emergency reserves are being used. Basing cost recovery on consumption during specific windows of time, as is currently the case, will send inefficient signals to reduce consumption, despite the fact that doing so will not avoid the costs from being incurred. In turn, to the extent that consumers respond to these signals, consumption will be inefficiently reduced.

Take for example, pre-activation costs of \$1m incurred six hours before an expected RERT event. Having incurred the costs, it is not cost reflective to recover these costs on the basis of consumption, either over those six hours, or over the time the emergency reserves are activated. Consumers may reduce their consumption, but this does not avoid the costs - it merely allocates them to those that do not reduce their consumption.

As noted above, it may be possible to allocate costs on the basis of some identifiable characteristic of a market participant *at the time that the costs are incurred*. However, the Commission does not consider such an approach to be appropriate for the RERT, for the reasons set out below. The Commission has considered a variety of measures that could be used, and considers that none of these are ideal, for example:

- One such measure (which the retailer reliability obligation (RRO) is using) is to assign it to retailers based on their contract positions. The rationale being that a retailer's contract position underpins reliability in the market, and so if a shortfall arises, then it must be the case that a retailer is underhedged. However, in the absence of broader framework changes to provide a third party with information on a market customer's contract positions on an ongoing basis (i.e. at any time when RERT activation costs are incurred) this is likely to be costly and difficult to administer, and would also require establishing a full framework around how this would occur. This is likely to be administratively burdensome compared to the cost of the RERT and so the Commission does not consider that this would be appropriate.
- Another measure would be to assign costs based on AEMO's expected demand forecasts. However, at the moment AEMO's demand forecasts are clearly within their control and remit. Given the NEM is not a two-sided market, it would be nigh on impossible to work out what retailer is responsible for causing the costs of the RERT.<sup>485</sup> Indeed, in some cases emergency reserve costs may be incurred, which, with the benefit of hindsight, were not necessary because actual demand was less than AEMO's forecast. Attributing the costs of this to retailers based on forecast demand is not cost reflective and would be inconsistent with the principles described above.

Instead, the Commission considers that availability and pre-activation costs be recovered in a manner which minimises distortions to consumption behaviour, consistent with principle 3 above. This is achieved by smearing it as broadly as possible. Pragmatically, the Commission considers that availability and pre-activation costs should be recovered in proportion to market customers' consumption over the relevant billing period (a week, commencing at the start of the trading interval ending 12.30am on Sunday) over which the costs were incurred.

This serves to keep the \$/MWh pricing impact low (because the fixed costs are being divided widely over all MWh consumed within the billing period), and so reduce the distortionary effects of pricing not at marginal cost.

### BOX 25: EXAMPLE OF EMERGENCY RESERVE COST RECOVERY

The following provides an example of cost recovery of emergency reserve costs.

<sup>485</sup> A "two-sided market" is one where generators offer quantities of electricity for sale at various prices, and market customers bid to buy quantities of electricity at various prices. In general in the NEM, currently market customers do not bid for electricity.

- In October 2018, AEMO enters into an emergency reserve contract. Availability costs relating to the contract are \$10,000, paid weekly by AEMO to the emergency reserve provider for a ten-week period starting from the first week of December 2018.
- On Tuesday 29 January 2019, AEMO requires the emergency reserve provider to preactivate so that it is available to be dispatched on Wednesday 30 January. \$50,000 in costs are incurred.
- On Wednesday 30 January, AEMO dispatches the emergency reserve between 3.00pm and 4.00pm. During the first trading period (3.00pm to 3.30pm), costs are \$100,000.
   During the second trading period (3.30pm to 4.00pm), costs are \$60,000.

Total costs are recovered as follows:

- \$1,000 of availability costs are recovered per week for the ten billing periods (of a week each), in proportion to market customers' consumption during the weekly billing period in which the costs were incurred.
- \$50,000 of pre-activation costs are recovered in proportion to market customers' consumption during the weekly billing period commencing at the start of the trading interval ending on Sunday 27 January at 12.30am.
- \$100,000 of activation costs are recovered in proportion to market customers' consumption during the trading interval starting at 3.00pm on Wednesday 30 January.
- \$60,000 of activation costs are recovered in proportion to market customers' consumption during the trading interval starting at 3.30pm on Wednesday 30 January.

### Beneficiary pays

Most stakeholders, such as EnergyAustralia in their submission to the consultation paper, articulated views consistent with a "beneficiaries pays" principle with respect to availability and pre-activation payments. Under this principle, instead of recovering costs on the basis of marginal costs, those that benefit from the RERT costs should pay for the related costs.

This principle, if applied, would likely lead to the same outcome as above for activation payments: it is cost reflective to recover the costs from those benefiting from the activation of the RERT (by being able to consume as a result of it being activated).

However, if applied, this principle would likely lead to very different outcomes for availability and pre-activation payments compared to the cost reflective recovery methodology outlined above. For example:

- It could be argued that the beneficiaries of a RERT pre-activation are all those that consumed on, for example, the relevant day that emergency reserves were activated (or all those that consumed at peak times on the day in which the RERT was activated).
- It could be argued that the beneficiaries of RERT availability payments are all those that consume at, for example, the peak hours on each day over which the contract is in place, or those that consume when the emergency reserves are activated, and hence it is they that should incur the availability payments.

This principle appears more consistent with the notion of "fair" cost recovery. Some technical working group members articulated that they considered it "fairer" for costs to be recovered in this manner.

While the Commission has carefully considered this feedback from the majority of stakeholders which commented on this matter, the Commission does not agree that this principle should be applied for a number of reasons:

- It conflicts directly with the cost reflective principle for availability and pre-activation
  payments, and hence may send inefficient pricing signals to consumers. By not smearing
  the costs as broadly as possible (for example, instead recovering it over specific hours of
  the day) consumers would have a greater incentive to reduce their consumption, despite
  this having no or limited impact on whether the costs are incurred.
- It is not clear to the Commission that those consuming at certain times are indeed the beneficiaries of the RERT. That is, it is not clear *who* the beneficiaries are in certain circumstances. For example, if pre-activation costs are incurred, but in the fullness of time the RERT is not required and so not activated, then arguably no one benefited from the RERT costs being incurred.
- While the beneficiaries pay model may appear "fairer", the Commission does not consider it sends the appropriate consumption signals and incentives, and hence is not in the long term interest of consumers.

### Treatment of demand response and scheduled loads

With respect to Brickworks' and the EUAA's concerns regarding scheduled loads and demand management, the Commission notes that the final rule is consistent with the principle that demand response is not counted in allocating RERT costs.

With respect to demand management, the final rule is unchanged from the existing rule - the RERT allocation calculation remains based on "adjusted gross energy amounts", which is net of demand response by definition. The adjusted gross energy is the consumer's energy consumed at its connection point, and so, if a market customer has responded during the relevant dispatch intervals, the metering data used by AEMO would reflect a lower consumption, which would mean a lower RERT allocation.

Should there be any future changes to demand response in the NEM, including through changes that may be made by the Commission under the wholesale demand response rule changes that are currently being assessed by the Commission, the Commission would then make any necessary changes to the clauses above to reflect the intent, e.g. to exclude demand response from RERT allocation for the relevant dispatch intervals.

With respect to scheduled loads, the Commission notes that scheduled loads are excluded if they have made a valid dispatch bid and that this remains appropriate, even if there are currently no scheduled loads in the NEM - the rationale is similar to the exclusion of demand response from the allocation of RERT costs. However, the definition of scheduled loads is outside of the scope of this rule change, but is within the scope of the wholesale demand response rule changes referred to above. Any changes made in that rule change request

would consider the existing definition and whether or not it is fit for purpose, including for the cost recovery of emergency reserves.

### 8.4.4 Final rule

As noted above, the categories of cost (availability, pre-activation and activation) that are typically incurred in procuring RERT contracts are not defined in the NER. Instead, they are used by convention by AEMO.

As such, the final rules are drafted in a way to give the policy effect explained above, but without defining these terms. This also allows AEMO to incur and recover costs which do not neatly fit into one of the above three categories, should such costs arise.

The final rules require AEMO

- to reasonably allocate usage charges (or equivalent charges) under reserve contracts to the trading intervals during which reserves were dispatched or activated
- to recover such usage charges in proportion to market customers' consumption over the period in which the RERT resource is dispatched or activated
- to recover all other costs associated with the procurement of reserves (other than administrative and operational costs) in proportion to market customers' consumption over the billing period in which the costs were incurred.

Costs are recovered on a regional basis, i.e. from market customers in the region in which RERT was used.

Specifically, the final rule is:

### 3.15.9 Reserve Settlements

(e) In respect of *reserve contracts* entered into by *AEMO*, *AEMO* must calculate in relation to each *Market Customer* for each *region* in respect of each *billing period* a sum determined by applying the following formula:

$$MCP = \left[\frac{E_{UC} \times UC}{\sum E_{UC}}\right] + \left[\frac{E_{oC} \times OC}{\sum E_{oC}}\right]$$

### Where:

MCP is the amount payable by a *Market Customer* for a *region* in respect of a *billing period*;

UC is the total usage charges (or equivalent charges) paid by *AEMO* under *reserve contracts*, as allocated in accordance with paragraph (e1);

EUC is the sum of all that Market Customer's adjusted gross energy amounts

in the relevant *region* (the "**relevant** *region*") in each *trading interval* during which *reserves* were *dispatched* or *activated* under a *reserve contract* in the *billing period*, excluding any *loads* in that *region* in respect of which the *Market Customer* submitted a *dispatch bid* for any such *trading interval*;

 $\Sigma E_{UC}$  is the sum of all amounts determined as " $E_{UC}$ " in accordance with this paragraph (e) in respect of that *region* for the relevant *billing period*;

OC is the total amount paid by *AEMO* under *reserve contracts* in the relevant *region* in the *billing period*, other than:

(1) amounts determined as "UC" in accordance with this paragraph (e) in respect of that *billing period*; and

(2) operational and administrative costs described in paragraph (g).

E<sub>OC</sub> is the sum of all that *Market Customer'sadjusted gross energy* amounts in the relevant *region* in the *billing period*, excluding any *loads* in that *region* in respect of which the *Market Customer* submitted a *dispatch bid* for any *trading interval* during that *billing period*; and

 $\Sigma E_{OC}$  is the sum of all amounts determined as " $E_{OC}$ " in accordance with this paragraph (e) in respect of that *region* for the relevant *billing period*.

- (e1) For the purposes of determining amount "UC" in paragraph (e), *AEMO* must reasonably allocate usage charges (or equivalent charges) under *reserve contracts* to the *trading intervals* during which *reserves* were *dispatched* or *activated* in the relevant *region* in the *billing period*.
- (f) A *Market Customer* is liable to pay *AEMO* an amount equal to the sum calculated under paragraph (e) in respect of that *Market Customer*.

### Note

This clause is classified as a civil penalty provision under the National Electricity (South Australia) Regulations. (See clause 6(1) and Schedule 1 of the National Electricity (South Australia) Regulations.)

### 8.5 Cost recovery by market customers from end consumers

So far, this chapter has focused on the recovery of costs incurred (in the first instance) by AEMO from market customers (i.e. typically retailer).

Market customers may or may not recover the costs allocated to them from their customers (i.e. end consumers), consistent with the contractual arrangements between the market customers and end consumers. This process is not currently regulated by the NER. Market customers may also absorb the costs themselves, or factor in these costs when determining tariffs.

Retailers do not consume the electricity they purchase on the spot market themselves, but do so on behalf of their customers (end consumers). As such, any cost-reflective price signals

sent to market customers to influence consumption (related to activation costs) may not, ultimately, be reflected to end consumers. This, of course, is also true of price signals from the spot market - consumers are not necessarily exposed to the spot price or other wholesale market price signals.

Nevertheless, it is appropriate for retailers to manage the risk associated with RERT costs. As with the electricity market more generally, through the competitive retail market, retailers may enter into contractual arrangements with their customers which allocate the RERT costs to those customers, or wear the risk themselves. It is through the competitive market that retailers are incentivised to manage the risks and costs associated with emergency reserves, and the failure to do so efficiently may result in decreased profitability or market share.

By market customers paying for activation costs in proportion to their consumption at the time at which the emergency reserves were activated, and by smearing other costs:

- the pre-conditions for incentives to be placed on consumers to consume when the value they derive from consuming is greater than the cost
- other market participants (and ultimately their customers other end consumers) do not contribute to the marginal cost of emergency reserves.

How market customers recover RERT related costs from end consumers is not in scope for this rule change. Nevertheless, some concern has been raised with this process throughout the Commission's consideration of the rule change requests.

Firstly, some stakeholders have noted that retailers may be passing on RERT costs with a margin to end consumers.  $^{\rm 486}$ 

Retailers are free to pass on (or not pass on) the costs associated with emergency reserves in any manner consistent with their contracts with end consumers. To inform whether cost recovery between a retailer and its customers is consistent with its contracts, and to improve confidence in this part of the RERT framework, transparency measures outlined in Chapter 9 will provide consumers with information about the RERT costs incurred by their retailer.

Secondly, stakeholders have suggested that an absence of transparency and clarity over the likely costs to be recovered from market participants has made it more difficult for market participants to manage the risk of RERT related costs. In turn, this may result in stakeholders passing this risk onto consumers, either through contractual arrangements with individual consumers, or by a general increase in tariffs representing both the quantum of RERT costs and a risk premium.

The Commission, as part of its annual surveying of retailers for the *Retail Competition Review*, asked retailers questions around cost recovery of emergency reserves, in particular, whether and how they are passing on the costs of the RERT. Cost recovery methods varied from retailer to retailer:

• Some retailers recover RERT costs from C&I customers as a separate line item.

<sup>486</sup> This was raised by stakeholders during roundtable discussions at the public stakeholder workshop held for this rule change request.

- For mass market (i.e. residential) consumers, retailers tended not to recover as a separate line item.
- Some retailers did not pass on any RERT costs at all, instead choosing to absorb those costs.
- Some retailers recover from all consumers (proportional to their usage) while some recover from C&I consumers only (but again, proportional to their usage).

The Commission considers that the differences in approaches across different retailers mean that it would not be appropriate to provide more prescription and guidance around this aspect of cost recovery, consistent with the discussion above.

However, greater clarity in the likely costs to be recovered from market participants (discussed in Chapter 9) should mitigate, to an extent, this issue. Retailers, and ultimately their end consumers, should have a better understanding of the likely RERT related costs ahead of time, allowing them to better manage this risk. This should help address Enel X's concerns around unfairness due to the potential for unfair recovery from retailers to end consumers.

9

# TRANSPARENCY AND REPORTING REQUIREMENTS

This chapter considers the transparency of the Reliability and Emergency Reserve Trader (RERT or emergency reserves) and reporting requirements, i.e. the information about the RERT framework that AEMO is required to provide to the market. This chapter outlines:

- current arrangements in the NER
- AEMO's views
- stakeholders' views
- the Commission's analysis and conclusions.

### 9.1 Current arrangements

Current arrangements in the NER and the RERT guidelines are set out below. An overview of AEMO's recent reporting practices is also provided.

### 9.1.1 National Electricity Rules

AEMO must report on the RERT in accordance with clause 3.20.6 of the NER.

Clause 3.20.6(a) of the NER requires that as soon as practicable after the RERT is dispatched/activated, AEMO publish<sup>487</sup> a report detailing:

- the circumstances giving rise to the need for the dispatch of scheduled reserves or activation of unscheduled reserves
- the basis on which it determined:
  - the latest time for the dispatch/activation of reserves
  - that a market response would not have avoided the need for the dispatch/activation of emergency reserves
- the changes in dispatch outcomes due to the dispatch/activation of emergency reserves
- the processes implemented by AEMO to dispatch/activate the emergency reserves
- if applicable:
  - the reasons why AEMO did not follow any or all of the processes set out in rule 4.8<sup>488</sup> either in whole or in part prior to the dispatch/activation of emergency reserves
  - the basis upon which AEMO considered it impractical to set spot prices and ancillary service prices in accordance with clause 3.9.3(b).<sup>489</sup>

<sup>487</sup> The term "publish" is a defined term in chapter 10 of the NER and in the case of AEMO means making the document available to registered participants electronically (i.e. not the general public).

<sup>488</sup> Rule 4.8 includes provisions relating to the determination of the latest time by which AEMO would need to intervene through an AEMO intervention event (see clause 4.8.5A).

<sup>489</sup> Clause 3.9.3(b) of the NER requires that AEMO must in accordance with the relevant methodology or assumptions to determine dispatch prices and ancillary service prices, set the dispatch price and ancillary service prices for an intervention price dispatch interval at the value which AEMO, in its reasonable opinion, considers would have applied as the dispatch price and ancillary service price for that dispatch interval in the relevant region had the AEMO intervention event not occurred.

Clause 3.20.6(b) of the NER requires that AEMO must, as soon as reasonably practicable after AEMO has included the amounts arising under a reserve contract in a final statement, publish details of:

- the payments under the emergency reserve contract for the relevant billing periods
- a breakdown of the recovery of those costs by each category of Market Customer, as determined by AEMO, in each region.

Clause 3.20.6(c) of the NER stipulates that within 30 days of the end of each financial year in which AEMO has exercised the RERT, AEMO must publish a report detailing:

- each occasion during the financial year on which it intervened to secure the availability of emergency reserves
- each occasion during the financial year when emergency reserves were dispatched or activated
- its costs and finances in connection with its RERT activities during the financial year according to appropriate accounting standards including profit and loss, balance sheet, sources and applications of funds.

There are also a series of market notices that AEMO must publish in the lead up to the activation/dispatch of the RERT which include:<sup>490</sup>

- the nature and extent of low reserve/lack of reserve conditions and the time period over which these conditions apply
- any foreseeable circumstances that may require implementation of an AEMO intervention event, and an estimate of the latest time AEMO would need to intervene
- AEMO's intent to implement an intervention event.

### 9.1.2 RERT guidelines

The Reliability Panel's RERT guidelines are not currently required under the NER to provide guidance or prescription to AEMO as to what information should be reported to the market (or how it should be reported).<sup>491</sup>

While the methodology by which emergency reserve requirements are determined is not detailed in the RERT guidelines, the guidelines outline the information AEMO may take into account when considering whether to enter into reserve contracts. This information is related to the procurement decisions, and Chapter 5 details what information may be considered by AEMO.<sup>492</sup>

The guidelines specify that AEMO may, within one month after entering into a contract for reserves, publish the name of the counterparty to the contract and the volume and timing of reserves procured under the contract.<sup>493</sup> The Commission may recommend that the Panel

<sup>490</sup> See Clauses 4.8.5, 4.8.5A, 4.8.5B of the NER.

<sup>491</sup> Clause 11.107.2 of the NER.

<sup>492</sup> For long and medium-notice situations this includes: the details of the outcome of the medium-term PASA, and the outcome of the energy adequacy assessment projection. For short-notice situations this includes: the details of the outcome of the short term PASA and pre-dispatch processes. See RERT guidelines, p. 4-5.

<sup>493</sup> RERT guidelines, pp. 13-16.

amend the RERT guidelines, to specify that AEMO *must* publish the name of the counterparty and volume and timing of emergency reserves. This would be consistent with section 11.2 of AEMO's RERT procedures. In this regard, the Commission notes there may be merit in AEMO developing and maintaining a clearer register of RERT providers by region and volume.<sup>494</sup>

#### 9.1.3 AEMO's recent RERT reporting practices

AEMO's recent reporting of its RERT activities is outlined below.

Ahead of the 2017-18 summer, where emergency reserves were procured for the first time in recent history, AEMO published its 2017-18 Summer Readiness Report to inform the public of its preparation and actions "designed to minimise, as far as possible, the risk of customer supply disruption in the National Electricity Market during the periods of highest demand for electricity from the grid".<sup>495</sup> The report, amongst other items<sup>496</sup>, listed the volumes of reserves (in MW) AEMO had procured under the RERT (consistent with the requirements of section 8 in the RERT guidelines) on a regional basis at that point in time and whether the resources were generation or demand response.<sup>497</sup> A share of the demand response resources were procured under the AEMO/ARENA RERT trial, which is discussed in Chapter 2. RERT providers that participated in this trial have published a series of knowledge sharing reports (see Box 26), available on ARENA's website.<sup>498</sup> While these reports primarily focus on the success and challenges experienced by trial participants they also provide some additional information on how the RERT was used and how demand response providers responded.

### BOX 26: AEMO/ARENA RERT TRIAL — KNOWLEDGE SHARING REPORTS

Participants in the AEMO/ARENA RERT trial have published a series of knowledge sharing reports that document the successes and challenges they have experienced with the trial to date. These are outlined below.

Key benefits/successes reported by participants:

- Communication with customers: The trial participants broadly reported success in communicating effectively with customers before, during and after DR events. This was generally done by text message and/or email.
- Achieving targeted load reductions: Overall, the trial participants were relatively successful in achieving all or a significant proportion of their targeted load reduction during demand response events. However, the level of success varied from event to event and between trial participants.

<sup>494</sup> Currently, new RERT provider information often means that older documents are removed from AEMO's website.

<sup>495</sup> This report was published on 28 November 2017. See: https://www.aemo.com.au/-/media/Files/Media\_Centre/2017/AEMO\_Summer-operations-2017-18-report\_FINAL.pdf

<sup>496</sup> The report also includes the implementation of a range of operational improvements, together with ensuring the availability of fuel for generators (coal, gas, water, and diesel) and the availability and capacity of the transmission network to carry power.

<sup>497</sup> Demand response resources were further broken down based on their sector (network, residential, commercial and industrial).

<sup>498</sup> The reports are available at: https://arena.gov.au/knowledge-bank/?project-value-start=0&project-value-end=500000000

Key challenges reported by participants:

- Securing customer participation: AGL reported difficulties convincing residential customers to cede control of their air conditioner to AGL, despite offering strong financial incentives to do so. Some commercial and industrial (C&I) customers were also reluctant to allow the installation of certain equipment or access to resources to facilitate demand response.
- **Conflicting incentives:** EnerNOC noted that some of its C&I customers who faced a critical peak pricing (CPP) tariff incentive or had bilateral network support agreements with their DNSP were unable to participate in the trial, as those customers would face an opportunity cost trade-off on days where ARENA DR events overlap with network DR events.
- Baselines generally: Most of the participants in the trial highlighted issues with AEMO's baseline methodology. AEMO's baseline calculations were found to be particularly problematic for temperature-sensitive or intermittent/fluctuating loads, with issues including false positives (i.e. detection of a reduction for customers who did not actively change their behaviour) and false negatives (i.e. failure to detect a reduction for customers who genuinely changed their behaviour). Some of these temperature-sensitive and intermittent loads are valuable contributors during DR events. As a result, some participants opted to develop their own baseline methodologies or renegotiate AEMO's baseline methodology during the trial.
- **Baselines for solar customers:** Powershop noted that solar customers have an added level of complexity when it comes to baselines due to weather conditions (i.e. solar radiance, cloud cover) affecting what is happening behind the meter. This means the baseline can be affected by conditions other than just the customer's energy usage. Powershop suggested that without visibility on what is happening behind the meter, it's impossible to get an accurate representation of the load available for demand response for solar customers. However, AGL developed an alternative baseline methodology which it claims worked equally well for both solar and non-solar customers.

Source: Findings from the individual knowledge sharing reports are summarised in the ARENA demand response RERT trial year 1 report, available at: https://arena.gov.au/assets/2019/03/demand-response-rert-trial-year-1-report.pdf. Knowledge sharing reports from individual providers are available at: https://arena.gov.au/knowledge-bank/?project-value-start=0&project-value-end=500000000

Chapter 2 discusses the recent use of emergency reserves. Given it was used in November 2017, in February 2018, AEMO published an event report for the RERT event that occurred on 30 November 2017. The report included an assessment of the intervention<sup>499</sup>, description of the intervention process and changes in dispatch outcomes. This event report was published in accordance with clause 3.20.6(a) of the NER. The information in this report was then updated on 23 May 2018 with a revised RERT report provided as an annex to AEMO's Summer 2017-18 operations review.<sup>500</sup>

<sup>499</sup> Including the timing and volume of reserve contracts enabled.

<sup>500</sup> AEMO, Summer 2017-18 operations review, 23 May 2018.

A second report detailing the activation of the RERT on 19 January 2018 was also provided as an annex to AEMO's Summer 2017-18 operations review, again in accordance with clause 3.20.6(a) of the NER. <sup>501</sup> The Summer 2017-18 operations review also outlined all the RERT costs for the financial year broken down across payment types, as required under clause 3.20.6(c) of the NER.

AEMO's Summer 2018-19 readiness plan specified the volume of long-notice RERT reserve contracts signed and the volume of short-notice and medium-notice RERT panel agreements AEMO has entered into for the 2018-19 summer (consistent with RERT guidelines, section 8). Also AEMO noted that it "advises against using last year's RERT costs as a guide for the upcoming summer as the type of RERT secured and the associated costs are different".<sup>502</sup>

AEMO dispatched the RERT on 24 and 25 January 2019. AEMO has provided an update<sup>503</sup> to the market on the reserve contracts it entered into on these days. The updates lists: the names of RERT providers dispatched; the contracted capacity (in MW) of each provider; and the location (i.e. region).

On 16 April 2019, AEMO published its operating incident report into the load shedding and RERT events that occurred in January 2019.<sup>504</sup> Consistent with the current rules, information provided by AEMO in the report included:

- the volume of RERT activated (in MW and MWh)
- the total costs of the RERT (total costs and average cost in \$/MWh)
- the timing, size and location of emergency reserve contracts activated
- its assessment of the intervention, including its decision to intervene through RERT.

In addition, in its submission to the draft determination for this rule change request, AEMO provided the following statistics for this event: $^{505}$ 

- the volume of RERT activated (in MWh)
- the total RERT cost (in \$, excluding compensation to affected participants)
- the average cost of the RERT (in \$/MWh)
- the avoided load shedding cost (in \$/MWh).

### 9.2 AEMO's views

AEMO did not specifically raise transparency or its existing reporting requirements in its rule change request. However, given that this rule change is considering the broader RERT framework, the Commission has turned its mind to considering the transparency of the RERT.

<sup>501</sup> It was similar in structure and content to the report provided for the 30 November 2017 event.

<sup>502</sup> AEMO, 2018-19 summer readiness program and publication of RERT-related costs, 9 November 2018

<sup>503</sup> For more detail see: https://www.aemo.com.au/-/media/Files/Electricity/NEM/Emergency\_Management/2019/RERT-contractedfor-24-and-25-Jan-2019.pdf. Accessed at 7 April 2019.

<sup>504</sup> See https://www.aemo.com.au/-/media/Files/Electricity/NEM/Market\_Notices\_and\_Events/Power\_System\_Incident\_Reports/2019/Load-Shedding-in-VIC-on-24-an d-25-January-2019.pdf

<sup>505</sup> AEMO submission to the draft report, p. 6.

This is reinforced in light of the significant stakeholder feedback received, that stated that transparency is a key aspect of the framework that could be improved.

AEMO briefly discussed transparency in its submission to the consultation paper for this rule change. AEMO stated:  $^{\rm 506}$ 

"The industry has asked for a more transparent procurement process. AEMO acknowledges that transparency is important and is happy to work more closely with the Reliability Panel or other relevant industry bodies at various important milestones of the procurement process. AEMO has published its Summer Operations Report 2017-18 which gives a detailed description of its activities in the 2017-18 summer. Ultimately AEMO is also required to consult with jurisdictions to finalise the procurement amount."

In the draft determination the Commission proposed the following new reporting requirements:

- a quarterly RERT report that has forward-looking and backward-looking elements with comprehensive reporting on costs (indicative and actual) and volumes as well as supporting analysis.
- a report to be published within five business days after the dispatch/activation of reserves, detailing estimated RERT costs and volumes.
- a methodology, explaining how AEMO determined the amount of reserves to procure.

In its submission to the draft report AEMO expressed a number of concerns in relation to the proposed reporting requirements:

- "It is impractical to incorporate information in modelling on how AEMO has determined the amount of reserve in accordance with its real-time operation of RERT, including how it determines the last time to intervene".<sup>507</sup>
- "the requirement to provide a detailed report on why the amount of reserve activated and the period of activation is different to its forecast is too prescriptive. It is expected that forecast and modelling will differ from actual outcome. This could arise because some real life factors cannot be included in forecast and modelling. The difference may also arise due to inputs changing outside the control of AEMO, such as an unexpected trip of a transmission line or a generator. More importantly, AEMO provides forecasts, including LOR and LRC conditions, so market participants can react to them."<sup>508</sup>
- "AEMO supports reporting on the amount and period of RERT dispatch and outlining the major drivers that contributed to the differences between the actual outcome and forecast. It would be impractical for AEMO to provide a detailed reconciliation that explains all factors (minor difference in inputs, known modelling methodology constraints and AEMO's operational decision to respond to unexpected events under high stress with little notice, etc.)."<sup>509</sup>

<sup>506</sup> AEMO submission to the options paper, p. 8.

<sup>507</sup> AEMO submission to the draft report, p. 13.

<sup>508</sup> AEMO submission to the draft report, p. 13.

<sup>509</sup> AEMO submission to the draft report, p. 14.

- AEMO does not believe reporting the maximum (or any other statistic) of estimated RERT cost will add material value to stakeholders.<sup>510</sup>
  - "it is likely that the maximum amount will be estimated based on the worst USE forecast. The probability of such event is likely to be very low. In general, there will be a significant amount of uncertainty about the cost, especially in relation to long and medium notice RERT. This could in fact cause more confusion rather than providing any useful information for budgeting purposes... However, if the AEMC still decides that AEMO needs to provide some cost estimate, AEMO proposes it reports on the average cost."
  - "It is also unclear how AEMO should report expected cost when market conditions have changed between when it signs contracts and when it produces the report."
  - "Even if AEMO's cost forecasts were accurate every time, it still provides very little information about how RERT will affect individual end users. This is because the total cost must first be allocated to market customers including retailers, who then decide how they pass the cost onto end users".

### 9.3 Stakeholders' views

Many stakeholders expressed strong views on the transparency of the RERT framework, via submissions to the consultation paper, submissions to the options paper and feedback in technical working group meetings.

### 9.3.1 Submissions to consultation paper

In the consultation paper the Commission asked stakeholders whether they considered there should be more transparency of the RERT framework. Most stakeholders that provided a submission to the consultation paper commented on transparency.

Almost all stakeholders advocated for greater transparency. The AEMC has summarised stakeholders' concerns on transparency, as being with respect to wanting more detail on:

- the costs of procuring and dispatching the RERT, including indicative costs and the presentation of relevant statistics to understand the impact of triggering the RERT<sup>511</sup>
  - for example, ERM suggested changes to the framework should: "include requirements on AEMO to report on projected and actual costs as well as providing improved and timelier analysis of the supply-demand balance at the time RERT is dispatched."<sup>512</sup>
- the payment structure, that is, information on availability (capacity) and dispatch (energy) payments<sup>513</sup>
  - for example, EUAA noted: "AEMO does not publish the cost/MWh for RERT whether availability, pre-activation or activation separately, or in total. When the EUAA sought

<sup>510</sup> AEMO submission to the draft report, p. 14.

<sup>511</sup> Stakeholders that commented on this included: Flow Power, Clean Energy Council, Snowy Hydro, ERM Power, Energy Users Association of Australia (EUAA), Hydro Tasmania, Brickworks, South Australian Council of Social Service and St Vincent's De Paul Society, Origin

<sup>512</sup> ERM Power submission to consultation paper, p. 4.

<sup>513</sup> Stakeholders that commented on this included: Australian Energy Council , Snowy Hydro, ERM Power, EUAA

this information, we were eventually provided with a large data set that we were not familiar with and asked to calculate it ourselves. We do not consider this is indicative of a transparent process we are seeking."<sup>514</sup>

- the methodology used by AEMO to assess reserve requirements<sup>515</sup>
  - for example, the Australian Energy Council supported: "transparency in the assessment of reserve requirements with enough information provided to parties to potentially challenge AEMO's decisions if it has either purchased excessive reserves or has not purchased the least cost reserves".<sup>516</sup>
- the procurement volume more generally<sup>517</sup>
  - for example, AGL considered: "it would be appropriate for the NER to embed some guidance linking the quantum of RERT to be procured with the expected amount required to meet the reliability standard. That said, there is a danger in overprescription, and a balance between prescription and discretion must be met, to allow for consideration of such factors as cost and availability."<sup>518</sup>
- reporting on past events, including on the accuracy of forecasts in relation to RERT activations<sup>519</sup>
  - for example Meridian stated: "all the information supporting decisions is subject to regular reporting and review; that AEMO produce detailed reports each time the RERT is activated, detailing not only what occurred but what steps AEMO is taking, and requires the market to take, to avoid such reserve requirements in future; and AEMO in their annual review of RERT activation providing detail of decisions made, lessons learned and future steps to be undertaken".<sup>520</sup>

### 9.3.2 Submissions to options paper

While the transparency of the RERT framework was not a core focus of the options paper a number of stakeholders provided their views on transparency in their submissions to the options paper. Stakeholders again reiterated the importance of transparency for the use of emergency reserves, regardless of their views on which of the procurement options put forward in the options paper was best. Stakeholders were generally concerned that the existing lack of transparency has led to higher costs for customers, inability for retailers to plan ahead or recover costs, and has created ambiguity and uncertainty more generally in the energy sector.<sup>521</sup>

Specifically, stakeholders noted:

<sup>514</sup> EUAA supplementary submission to consultation paper, p. 3.

<sup>515</sup> Stakeholders that commented on this included: Australian Energy Council, Snowy Hydro, Meridian, ERM Power, EUAA, Hydro Tasmania, AGL

<sup>516</sup> Australian Energy Council submission to consultation paper, p. 9.

<sup>517</sup> Stakeholders that commented on this included: Australian Energy Council, Energy Australia, AGL, Clean Energy Council

<sup>518</sup> AGL submission to the consultation paper, p. 4.

<sup>519</sup> Stakeholders that commented on this included: Bluescope, Energy Australia, Meridian

<sup>520</sup> Meridian submission to consultation paper, p. 6.

<sup>521</sup> The stakeholders that expressed these concerns included: Stanwell, EnergyAustralia, Alinta, ERM Power, Infigen, Enel X and Energy Efficiency Council.

- The timely and transparent publication of RERT information assists customers to appropriately plan for budgeting purposes.<sup>522</sup>
- AEMO is best positioned to understand the needs of the power system and the operational capabilities of reserve providers. Care needs to be taken to not over-prescribe what AEMO should do. However, this is on the provision that there are improvements to the current transparency and reporting requirements of the RERT framework.<sup>523</sup>
- Some commercial and industrial customers were also reluctant to pay the additional RERT charges without greater justification regarding the calculation of the charges.
   Stakeholders found it difficult to justify the charges given the lack of transparency.<sup>524</sup>
- It may be appropriate to require emergency reserve contract costs to be made public (like all other bids and offers), to facilitate transparency around AEMO's cost-benefit decisions.<sup>525</sup> AEMO would also need to publish more detail of its statistical models and the expectation value of projected USE.<sup>526</sup>
- AEMO should be required to develop and publish robust methodologies to determine both: whether it should procure emergency reserve capacity under the RERT, and the volumes of capacity that it should purchase under the RERT.<sup>527</sup>

Stanwell set out proposed reporting requirements on AEMO. These are shown in the table below.

<sup>522</sup> Alinta submission to the options paper, p. 3.

<sup>523</sup> EnergyAustralia submission to the options paper, p. 4.

<sup>524</sup> Stanwell submission to the options paper, p. 3.

<sup>525</sup> In the context of Option 2 for the procurement trigger.

<sup>526</sup> Infigen submission to the options paper, p. 6.

<sup>527</sup> Energy Efficiency Council submission to the options paper, p. 2.

### Figure 9.1: Stanwell's proposed reporting obligations and timeframes

Trigger	Timeframe	Contents
Procurement – on entering into RERT contract	Shorter than current one month optional requirement2	Name of the counterparty to the contract and the volume and timing of reserves
Procurement – before relevant quarter begins	Within 1 week of quarter beginning	Aggregated RERT costs categorised by payment type
Pre-activation	As soon as possible	Market notice indicating total pre- activation costs that will be incurred.
Activation	As soon as possible	Market notice of RERT activation.
	Within 2 days	Report detailing the total cost of intervention (allowing for the disclaimer that some costs may vary as meter data comes in).
End of quarter for which RERT was procured	Within one month of end of quarter	<ul> <li>System report detailing:</li> <li>The forecasts that indicated intervention was required;</li> <li>The key drivers of the forecast shortfall of reserves;</li> <li>Details of AEMO's intervention in the market, including; <ul> <li>The volume and cost of reserves procured;</li> <li>The volume and cost of reserves activated; and</li> </ul> </li> <li>The impact on market reliability.</li> </ul>

Stanwell submission to the options paper, p. 4.

### 9.3.3 Technical working group feedback

At the second technical working group meeting held on 20 September 2018, participants resoundingly supported enhancing the transparency of the RERT framework and made the following suggestions:<sup>528</sup>

- The preliminary incident report could include far more detail and data (e.g. dispatch forecasts and AEMO responses in relation to these forecasts).
- A tiered approach to reporting with the costs associated with a RERT event proportional to the level of detail required in the reporting of the event.

<sup>528</sup> Discussion notes from this meeting are available on the project page: https://www.aemc.gov.au/rule-changes/enhancement-reliability-and-emergency-reserve-trader

- It may be helpful to think through the trade-offs involved with regard to: the accuracy of reported data, the speed with which reports are published and the level of detail that needs to be provided.
- Regular reporting on the RERT could occur on a quarterly basis, with this quarterly report replacing the incident and final report. This quarterly report could be provided in place of the annual summary report that AEMO currently must publish after each financial year.
- Requiring AEMO to provide the characteristics (e.g. costs) of individual RERT providers could improve market participants' understanding of the RERT, would be consistent with the "open book" approach used for generators in the NEM and may lead to opportunities to bring RERT providers with costs less than the market price cap into the market.

### 9.3.4 Submissions to draft determination

With the exception of AEMO, stakeholders were resoundingly supportive of the proposed reporting requirements.<sup>529</sup> Stakeholders provided the following reasons for support:

- "Information on the RERT is critical in order to allow for an improved understanding of the costs involved with procuring RERT reserves, and a better explanation of the rationale behind dispatching them if the need arises."<sup>530</sup>
- "In recent years the absence of transparency and clarity over the likely costs to be recovered from market participants has made it more difficult for market participants to manage the risk of RERT related costs."<sup>531</sup>
- "Transparent processes and timely information flows are particularly important for smaller market participants that don't have large trading desks." <sup>532</sup>
- "Some of our members are about to receive large RERT invoices... Again, requests to AEMO for more transparency around how the costs are calculated have been unsuccessful."<sup>533</sup>

Stakeholders also proposed some amendments to the reporting requirements:

 The Australian Energy Council and Clean Energy Council suggested that AEMO should be required to provide as much detail in the quarterly and post-dispatch/activation reports as possible, such as clarifying which technology type was dispatched for each region (e.g. demand response, additional generation, battery). Providing this additional data will assist market participants and potential RERT participants in making investment decisions with regard to maintaining existing plant, and commissioning new plant.<sup>534</sup>

<sup>529</sup> Stakeholders that expressed explicit support for the proposed reporting requirements include: Engie, Greensync, Clean Energy Council, EUAA, MEU, Energy Australia, Origin Energy, Stanwell, Snowy Hydro, Enel X, Australian Energy Council and Meridian.

<sup>530</sup> ERM Power submission p. 2.

<sup>531</sup> Snowy Hydro submission to the draft report, p. 7.

<sup>532</sup> Greensync submission to the draft report, p. 1-2.

<sup>533</sup> EUAA submission to the draft report, p. 1.

<sup>534</sup> Australian Energy Council submission to the draft report, p. 3 and Clean Energy Council submission to the draft report, p. 2.

- The EUAA stated that AEMO should provide confidence limits on preliminary RERT costs e.g. "we expect the final costs will be ±, say, 10% of the costs indicated in this report". This will help in business budgeting decisions.<sup>535</sup>
- The EUAA supported some additional communication method, perhaps SMS updates when AEMO RERT reports are published. Another option is for AEMO to include in a new Market Notice where large users are given an option to specifically receive that notice only.<sup>536</sup>
- ERM Power recommended that AEMO also be compelled to report on the MW dispatched per dispatch interval. This would provide greater transparency on the impacts of RERT over the entire period while still providing the underlying data behind a total MWh volume.<sup>537</sup>
- ERM Power noted that the clauses 3.20.7 and 4.8.5B in the NER do not currently require AEMO to notify the Market that RERT pre-activation has occurred. ERMPower considers that the incentives for consumers to reduce consumption during RERT activations would be strengthened by improving the linkages between clauses 3.20.7 and 4.8.5B to require AEMO to inform the Market when RERT enters its pre-activation phase.<sup>538</sup>
- EnergyAustralia considered there could be benefit for the Australian Energy Regulator (AER) to complete a customer survey on the operation and costs of the RERT and publish an independent report on the process.<sup>539</sup>
- Meridian notes that AEMO has reporting and transparency concerns which seem to relate to either the difficulty of the process and/or the relevance of the data. Meridian considers these concerns are misguided, as primarily the rule as drafted requires AEMO to share with the market its best estimate of information already available to it.<sup>540</sup>
- The Victorian Government considers that more transparency should be provided on the amount of reserves procured and the level of risk mitigation achieved. AEMO should provide a revised risk of unserved energy that considers the reserves procured under RERT. <sup>541</sup>
- The Victorian Government recommends that more information is provided to the market on tail-risks through a supplement to the Electricity Statement of Opportunities (ESOO). This could present unweighted demand forecasts such as at 10POE and provide more insight into AEMO's assessment of risks and how these risks are incorporated into forecasts. <sup>542</sup>

<sup>535</sup> EUAA submission to the draft report, p. 2.

<sup>536</sup> EUAA submission to the draft report, p. 2.

<sup>537</sup> ERM Power submission to the draft report, p.2.

<sup>538</sup> ERM Power submission to the draft report, p. 3.

<sup>539</sup> Energy Australia submission to the draft report, p. 2.

<sup>540</sup> Meridian submission to the draft report, p. 1.

<sup>541</sup> Victorian Government submission to the draft report, p.3-4.

<sup>542</sup> Victorian Government submission to the draft report, p.3.

## 9.4 Commission's analysis and conclusions

### BOX 27: FINAL RULE

The final rule:

- introduces a quarterly RERT report with forward-looking and backward-looking elements. The forward-looking element details indicative availability costs, expected activation and pre-activation costs, and detailed analysis of any procurement of RERT. The backward looking aspect includes updated emergency reserve costs and volumes, forecasts that indicated RERT intervention was required, impact on market reliability and enhanced existing requirements under Clause 3.20.6(a) of the NER.
- requires a report to be published as soon as practicable, and in any event no later than five business days after the dispatch/activation of reserves, detailing estimated RERT costs and estimated volumes of emergency reserves dispatched/activated under each reserve contract.
- requires AEMO to develop a methodology, explaining how it determined the amount of reserves to procure, as part of its RERT procedures.

By introducing new reporting requirements that clearly explain the reasons for emergency reserve procurement the final rule improves the ability of retailers, consumer groups, governments and policy makers to explain costs and benefits of emergency reserves to consumers and the industry more broadly. It also allows lessons to be learned from past RERT events.

By requiring indicative emergency reserve costs to be provided the final rule could enable retailers and end customers to better budget and plan for RERT related charges ( for example, potentially hedging these risks and costs). Similarly, the timely provision of cost information would help with budgetary reporting.

### Changes between the draft and final rule

The final rule is largely the same as the draft rule except for the following changes:

- Requiring AEMO to report on expected activation and pre-activation costs on an average basis, rather than as a maximum.
- Clarifying that when emergency reserves are used over consecutive days AEMO is required to publish a single post-dispatch report, within five business days of the last day the RERT was used.
- Requiring AEMO to publish a market notice when it pre-activates a RERT contract.

A transparent emergency reserve framework is critical since it assists market participants and end users to understand AEMO's procurement decisions (on both a cost and volume basis) and helps them to make informed decisions.

The Commission considers there is a need for greater transparency in the emergency reserve procurement process, with many of these points also raised by stakeholders:

- Greater transparency will improve the ability of retailers, consumer groups, governments and policy makers to explain costs and benefits of emergency reserves to consumers and the industry more broadly.
- Transparency of the RERT is important since it will help parties (market participants and end users) to make efficient investment and operational decisions in response to the information that is revealed. For example, the provision of indicative costs could enable retailers and end customers to better budget and plan for emergency reserve related charges (e.g. potentially hedging these risks and costs). Similarly, the timely provision of cost information would help with budgetary reporting.
- Greater transparency would help to improve general market confidence in the RERT process because the market would have greater understanding of the reasons and conditions that required the procurement of the RERT.
- Greater transparency would also place an increased level of accountability on AEMO's decision making.
- Retrospective reporting would allow lessons to be learned from each RERT procurement/dispatch.

The Commission considers the above benefits associated with greater transparency will be realised through the framework changes detailed below. The benefits of transparency only occur if these offset the costs associated with providing increased transparency to the market. The only potential cost associated with increased transparency is the potential for an added administrative burden on AEMO, since AEMO may need to devote resources to fulfil regular reporting requirements. The Commission has considered this cost-benefit trade-off in developing its final rule on these aspects as detailed below.

The Commission has set out three distinct reporting streams to enhance information provision:

- 1. Quarterly RERT report with forward and backward looking elements
- 2. Report shortly after RERT dispatch
- 3. Methodology report

The reporting streams are summarised in the table below and described in detail in the text that follows.

### Table 9.1: Summary of reporting streams to enhance transparency

NA	ATURE OF REPORT	SPECIFIC TIME FRAME	REPORT CONTENT	PROPOSED CHANGE FROM CURRENT ARRANGEMENTS
			The forward-looking element of this report will provide	
			<ul> <li>Indicative availability costs based on reserve contracts procured</li> </ul>	
			• Expected average activation and pre-activation costs based on modelling outcomes	The forward-looking element is a new requirement.
Quarterly RERT report			<ul> <li>Costs broken down across payment types and on a regional basis</li> </ul>	The backward-looking element builds on existing
1.	1. Forward-looking		<ul> <li>Modelling/analysis used to assess reserve requirements (i.e. volumes)</li> </ul>	reports required under clause 3.20.6(a) and 3.20.6(c) of
	aspect - providing an	Within 30 business days	Periods in which reserves are expected to be required	the NER.
	update on expected	of the end of each	Terms of any reserve contracts	Main changes:
2.	RERT activities Backward-looking	quarter	<ul> <li>Basis on which estimated load shedding VCR was determined and applied for the payment guide.</li> </ul>	the frequency of     publication
; ; ;	aspect - reviewing the RERT activities that occurred		These indicative costs and volumes will be updated each quarter based on AEMO's latest expectations and procurement activities.	<ul> <li>the consolidation of the event reports into one main quarterly report on</li> </ul>
			The forward-looking reporting horizon will be defined by the lead time of the procurement, i.e.12 months into the future.	<ul><li>RERT activity</li><li>additional content.</li></ul>
			The <b>backward-looking</b> element of this report will include:	
			Updated RERT costs and volumes	
			•	

NATURE OF REPORT	SPECIFIC TIME FRAME	REPORT CONTENT	PROPOSED CHANGE FROM CURRENT ARRANGEMENTS
		<ul> <li>The forecasts that indicated RERT intervention was required</li> </ul>	
		The impact on market reliability	
		<ul> <li>Periods of time when reserves were activated or dispatched</li> </ul>	
		<ul> <li>Estimated cost of load shedding avoided as result of dispatch/activation of reserves</li> </ul>	
		<ul> <li>Key requirements (as per clause 3.20.6(a) of the NER) including:</li> </ul>	
		<ul> <li>circumstances giving rise to need for dispatch or activation of reserves (this should include the drivers of the forecast shortfall)</li> </ul>	
		<ul> <li>how AEMO determined the latest time for dispatch or activation of reserves</li> </ul>	
		<ul> <li>how AEMO determined a market response would not have avoided dispatch or activation of reserves</li> </ul>	
		<ul> <li>change in dispatch outcomes due to dispatch or activation of reserves</li> </ul>	
		<ul> <li>process implemented by AEMO to dispatch or activate reserves.</li> </ul>	
		The final quarterly report for the financial year will also include a financial summary of the costs and finances of all RERT activities for the financial year. In addition it will specify each	

NATURE OF REPORT	SPECIFIC TIME FRAME	REPORT CONTENT	PROPOSED CHANGE FROM CURRENT ARRANGEMENTS
		occasion AEMO intervened to secure reserves and dispatch/activate reserves in the financial year.	
Report shortly after RERT dispatch	As soon as possible following the dispatch/activation of the RERT, and in any event, within five business days. In cases where RERT reserves are dispatched/activated over consecutive days, within 5 business days from the final day the RERT was used.	<ul> <li>Preliminarily estimated RERT costs (pre-activation and activation)</li> <li>Estimated volumes of reserves</li> <li>Estimated costs and volumes provided on regional basis.</li> </ul>	As noted in section 9.1.1 above AEMO is currently required to publish notices relating to the RERT e.g. intent to intervene. The publication of a post- event report with estimated costs and volumes would represent a new requirement.
Methodology report	No set timeframe — updated as required	<ul> <li>Describes in detail the processes AEMO follows in procuring the RERT, including, if relevant, any models that AEMO uses to procure RERT and specifically how it determined the amount of reserves to procure. It will also specify the methodology used to determine appropriate term of a reserve contract.</li> </ul>	This would form part of AEMO's RERT procedures. Builds on existing requirement.

### 9.4.1 Quarterly RERT report

The Commission considers current reporting requirements do not provide sufficient detail on:

- the procurement of emergency reserves, including expected costs and analysis of required reserve volumes — in advance of the activation/dispatch of the RERT
- the dispatch/activation of the RERT, including reasons why emergency reserves were used — in post-event reporting.

This view is supported by stakeholder submissions.

The Commission considers it appropriate that AEMO provide thorough detail on these two items in a comprehensive consolidated report that is published each quarter ("the quarterly RERT report"), specifically, no later than 30 business days after the end of each calendar quarter. The Commission notes that if for a particular quarter, there is no new information pertaining to the RERT (with respect to either the procurement or dispatch/activation of reserves) AEMO does not need to publish a report for that period.

### 3.20.6 Reporting on RERT by AEMO RERT report

- (b) AEMO must:
  - (1) *publish* a report (**RERT report**) that includes the information specified in paragraphs (d) to (f); and
  - (2) update the RERT report from time to time

in accordance with paragraph (c).

- (c) AEMO must:
  - (1) *publish* the first RERT report no later than 30 business days after 31 December 2019;
  - (2) *publish* any updated RERT report no later than 30 business days after the end of each calendar quarter; and
  - (3) maintain on its website a copy of the RERT report as updated.

# Reporting of expected RERT costs and analysis of required reserve volumes in advance of the activation/dispatch of emergency reserves

The Commission acknowledges that AEMO's Summer 2018-19 Readiness Plan<sup>543</sup> provides useful detail on the volume of reserves procured in each region, but notes that information on expected RERT costs is lacking.<sup>544</sup>

<sup>543</sup> See: https://www.aemo.com.au/-/media/Files/Electricity/NEM/Security\_and\_Reliability/AEMO-2018-19-Summer-Readiness-Plan.pdf) .

A number of stakeholders have advocated for the provision of indicative costs of expected RERT activities to improve transparency. The Commission considers it appropriate that AEMO is required to publish indicative costs of expected RERT actions, aggregated on a region and payment type basis (i.e. availability, pre-activation and activation). The Commission recognises AEMO should have a relatively accurate figure for availability costs once the RERT tender process is completed. Estimates of pre-activation and activation costs will be based on modelling outcomes. The forward-looking reporting horizon will be defined by the lead time of the procurement, i.e. 12 months into the future.

Noting the uncertainty around indicative costs (discussed below) and concerns expressed by AEMO<sup>545</sup> the Commission considers it appropriate for cost estimates to be presented by AEMO on an average basis, rather than as a maximum as proposed by the draft rule.<sup>546</sup> The Commission acknowledges that the maximum indicative RERT cost is likely to be derived from a catastrophic modelling run that is extremely unlikely to occur — making it less useful for participants.<sup>547</sup>

The Commission is cognisant that the actual activation/dispatch of emergency reserves is subject to a large degree of uncertainty and will depend on real-time system conditions and factors that vary over operational timeframes, such as local network conditions, weather conditions, generation availability (planned and unplanned outages), location of emergency reserve resources and availability of emergency reserves resources. Indeed, AEMO carries out reliability assessments on a weekly basis, which reflect the most recent update of the power system, at that point in time so as to provide more accurate information to the market. As a result, emergency reserve requirements for a future period of time are dynamic.

Notwithstanding these factors, AEMO in determining whether to procure emergency reserves in accordance with the procurement trigger (detailed in Chapter 5) models the system over long-notice and medium-notice timeframes and estimates of pre-activation and activation costs should be derived from this modelling, noting there may be a very wide variation in costs. However, the Commission still considers that this information would be helpful for stakeholders, noting that such estimates would in most instances not be reflective of what actually ends up occurring.

The above requirement may enable market customers (and potentially end users, such as large industrial users) to use indicative cost information to roughly estimate their expected emergency reserve costs by comparing projected emergency reserve costs and their forecast demand with the cost of previous RERT activations and the level of demand during periods of cost allocation. This would directly assist with their budgeting and could help to prevent "bill shock". Indicative costs may also assist with the cost recovery process for retailers, as

<sup>544</sup> The only commentary of expected costs provided for this coming summer in AEMO's latest 2018-19 Summer Readiness Plan was "The total cost is expected to be lower than last summer (this expectation is based on current understanding of resources made available to the market)." p. 15.

<sup>545</sup> The maximum cost will be estimated based on the worst USE forecast. The probability of such event is likely to be very low. AEMO, submission to draft report, p. 14.

<sup>546</sup> To be clear, the Commission expects that AEMO would report actual figures of known costs (such as availability costs associated with RERT contracts already signed), while expected or anticipated costs (such as pre-activation costs, activation costs or potentially availability costs associated with contracts not yet signed) would be presented on an average basis.

<sup>547</sup> As noted by AEMO, submission to draft report, p. 14.

emergency reserve cost estimates may inform decisions relating to cost pass through for large users and the setting of tariffs for small users. While AEMO argued that providing indicative costs may cause confusion,<sup>548</sup> stakeholders overwhelmingly supported the provision of indicative costs - for example, Meridian noted cost estimates would assist participants in their price setting and budgeting processes, and also enhance the operation of the market and lower risks and prices.<sup>549</sup> Also, the Commission, as part of its annual surveying of retailers for the *Retail Competition Review*, asked retailers questions around transparency of emergency reserves, in particular, around the types of information that would help improve transparency around costs. Retailers overwhelmingly stated that forecast or estimated RERT costs and volume, provided in a transparent and regular manner, would help them manage and plan for RERT costs.

The Commission considers a transparent process for procuring reserves is critical to promoting market understanding and confidence in the RERT mechanism. This was recognised by a number of stakeholders. To this end, the Commission considers it is appropriate to require AEMO to publish the analysis/modelling (including all assumptions, inputs and outcomes) used to assess reserve requirements (i.e. volumes) accompanied by detailed explanation of the circumstances that necessitate the expected RERT intervention. This analysis should clearly detail the periods in which emergency reserves are expected to be required.

Any decisions around whether AEMO is seeking new RERT Panel members that could be called upon or seeking tenders from the RERT panel, in conjunction with reserves procured under the long-notice RERT, will need to also be explained so that market participants can understand the nature and reason behind the projected shortfall. AEMO should provide the term of any reserve contract.

The Commission considers the above information (expected costs and procured volumes) should be provided as part of a consolidated quarterly RERT report, which is updated every quarter based on the latest expected RERT procurement costs and contracted volumes, i.e. it is updated on a "rolling basis". For example, if after an initial RERT tender process is completed, market conditions change such that a greater supply shortfall is projected and AEMO tenders for more emergency reserves this will be captured in the next quarterly RERT report.<sup>550</sup> AEMO has raised some questions as to how to report updated RERT cost information.<sup>551</sup> The Commission notes that if events (such as changes in generator availability) occur that lead to material changes in expected RERT costs, these revised cost expectations would be published as part of the next quarterly update to the RERT report.

<sup>548</sup> Due to the associated uncertainty. AEMO submission to the draft determination, p.14. AEMO also commented on second-order cost recovery in its submission to the draft determination, this is addressed in Chapter 8.

<sup>549</sup> Meridian submission to the draft report, p. 2.

<sup>550</sup> The Commission recognises that as expected RERT costs are updated on a quarterly basis a situation may arise where if only a few RERT providers are contracted in a particular quarter, it may be possible to calculate the costs associated with an individual RERT provider (as AEMO may announce the counterparties of reserve contracts) by comparing against costs from the previous quarter. It is the Commission's view that is consistent with current arrangements whereby in some cases it is possible to determine costs associated with a particular RERT provider due to the timing of contract announcements and RERT events.

<sup>551</sup> AEMO submission to the draft report, p. 14

To maintain consistency with existing arrangements, the way the reliability standard works and is operationalised, the Commission thinks that it remains appropriate to report total emergency reserve costs for each financial year. This does not preclude AEMO to also report costs covering other timeframes if they are relevant to market participants or if there are significant costs that have been incurred and that could be reported sooner than in a financial year basis.

Similarly, as discussed in Chapter 7, the final rule introduces: a new RERT principle with respect to cost as well as reporting requirements associated with this principle, and general reporting requirements around cost of avoiding load shedding. These reporting requirements will be captured in the quarterly RERT reports. For more information refer to Chapter 7.

Publishing this report every quarter ensures the market receives the latest RERT volumes and projected costs in a timely manner. It also provides flexibility, which will be useful, if in the future emergency reserves are procured for periods outside the summer when the supply-demand balance has historically been the tightest in the mainland regions. If for a particular period, there was no use or procurement of emergency reserves in the preceding or upcoming period, or otherwise no further updates to any of the information AEMO is required to include in the report, then AEMO would not be required to publish the report.

The Commission considers that visibility of the analysis underpinning the procurement of emergency reserves would help market participants to better understand the circumstances and drivers for emergency reserve procurement, as well as potentially help them to better (more quickly) respond to avoid future RERT procurement.

The Commission notes these reporting requirements will be imposed in addition to existing reporting requirements.

### 3.20.6 Reporting on RERT by AEMO

Information to include in report- reserve contracts

- (d) The RERT report must, with respect to any *reserve contracts* entered into by *AEMO* include a detailed explanation of:
  - (1) the estimated average amount payable by *AEMO* under those *reserve contracts* for each *region*, broken down by payment type;
  - (2) AEMO's modelling, forecasts and analysis used to determine:
    - (i) whether to enter into those *reserve contracts*; and
    - (ii) the amount of *reserve* procured under those *reserve contracts*, including how those amounts were determined in accordance with the methodology specified in clause 3.20.7(e)(4), and where *AEMO* procured an amount of *reserves* greater than any shortfall identified in the relevant declaration under clause 4.8.4, an explanation of why a greater amount was procured;
  - (3) the periods in which the *reserves* are expected to be required to address the

relevant *low reserve* or *lack of reserve* condition, including whether they align with any time periods identified in the relevant declaration under clause 4.8.4;

- (4) the term of the *reserve contract*, including the basis on which *AEMO* considered the term to be reasonably necessary to address the relevant *low reserve* or *lack of reserve* condition; and
- (5) the basis on which *AEMO* had regard to the *RERT principle* in clause 3.20.2(b)(3) when entering into those *reserve contracts*, and where the average amount payable by *AEMO* under *reserve contracts* exceeded the estimated average VCR for the relevant *region*, an explanation of why this had occurred.

### Post event reporting reviewing the dispatch/activation of the RERT

The Commission considers it appropriate that existing RERT event reports<sup>552</sup> be consolidated into a comprehensive report published on a quarterly basis, i.e. the quarterly RERT report as described above. As part of the quarterly RERT report, AEMO will review in detail any RERT events that occurred. The policy intent behind this report is that each activation/dispatch of emergency reserves is thoroughly reviewed and detailed within three months (i.e. one quarter) and that the reporting on any particular RERT event is updated if any additional information becomes available. The Commission also considers there is merit in imposing the stricter timeframe for the quarterly RERT reports (i.e. 30 business days after the end of the calendar quarter, replacing the current timing requirement of "as soon as practicable").

The Commission considers the quarterly RERT report should, therefore, include all the key content requirements of clause 3.20.6(a) for each RERT event namely:

- circumstances giving rise to need for dispatch or activation of reserves
- how AEMO determined the latest time for dispatch or activation of reserves
- how AEMO determined that a market response would not have avoided the need for the dispatch or activation of reserves
- change in dispatch outcomes due to dispatch or activation of reserves
- process implemented by AEMO to dispatch or activate reserves.

In addition, as largely recommended by Stanwell<sup>553</sup>, for each RERT activation/dispatch this quarterly report should also detail:

- the forecasts and analysis that indicated RERT intervention was required
- the impact on market reliability
- verified RERT costs (expressed in \$/MWh) and volumes, to the extent possible including, the respective shares of RERT costs allocated to market customers<sup>554</sup>

<sup>552</sup> Currently required to be published by clause 3.20.6(a) of the NER

<sup>553</sup> See Figure 9.1

<sup>554</sup> This refers to the costs per individual market customers as opposed to the costs per *category* of market customers as required in clause 3.20.6(b)(2) of the NER.

- the estimated costs of load shedding (including an amount expressed in \$/MWh) in a region avoided as a result of the dispatch or activation of reserves<sup>555</sup>
- periods of time when reserves were activated or dispatched.

The Commission notes that AEMO supports reporting on the amount of RERT reserves and the period of RERT dispatch and outlining the major drivers that contributed to the differences between the actual outcome and forecast, but considers that detailed reconciliation as to why the amount of reserves activated and the period of activation is different to its forecasts is too prescriptive and impractical.<sup>556</sup> To clarify, the Commission envisages the discussion on forecast differences would be on a whole event basis (rather than an overly granular assessment of discrete dispatch intervals) and would focus on the key reasons for any differences.<sup>557</sup>

The final rule provides AEMO with the flexibility to structure the quarterly RERT report as appropriate.

While the Commission notes that NER requirements for power system operating incident reports<sup>558</sup> and direction reports<sup>559</sup> do not specify a specific timeframe (i.e. "as soon as reasonably practicable" in the case of directions reports), given the significant costs associated with the RERT and that timely reporting was a key concern for many stakeholders, the Commission considers it appropriate to place a time requirement on the completion of the RERT review report, i.e. within 30 business days of the end of a calendar quarter.<sup>560</sup> This specific timeframe adds certainty and regularity to the reporting.

At present under clause 3.20.6(c) of the NER, AEMO is required to provide a report that includes (amongst other things) all the costs and finances in connection with its emergency reserve activities for the financial year. This requirement will be incorporated into the new arrangements by requiring the final quarterly RERT report for a financial year to include a financial summary of all RERT activities for that financial year. In addition, it will specify each occasion AEMO intervened to secure reserves and dispatch/activate reserves in the financial year.

A quarterly reporting time frame strikes an appropriate balance between timeliness and quality/quantity of information provided, as well the costs associated with the provision of information:

 Resulting in the timely provision of post event analysis that may allow lessons to be learned that may, for example, enhance the prospect of the appropriate amount of reserves being procured, or avoid unnecessary activations of emergency reserves.

<sup>555</sup> For more information refer to Chapter 7.

<sup>556</sup> AEMO submission to the draft report, pp.13-14.

<sup>557</sup> The Commission also notes Meridian's comment: "The suggestion that AEMO cannot explain why its decisions to activate the RERT did not match its forecasts is disingenuous. AEMO must be aware of what changed to require it to activate the RERT in these cases otherwise it should not have chosen to activate the RERT" (submission to the draft report, pp.2-3)

<sup>558</sup> See clause 4.8.15 of the NER

<sup>559</sup> See clause 3.13.6A of the NER

<sup>560</sup> The Commission notes the lack of reserve framework reporting introduced in 2018 requires a summary report to be published within one month of the end of each calendar quarter, as per clause 4.8.4B of the NER.
- Providing AEMO the time to comprehensively explain each RERT event and verify the cost information provided.
- Providing stakeholders with more information in a more timely manner than under the status quo.

In response to individual stakeholder comments, the Commission notes that:

- While Stanwell suggested the forward and backward looking elements could be provided in separate reports with different timeframes, the Commission considers that a single consolidated report would reduce the administrative burden on AEMO, while still striking the right balance between timeliness, information provision and costs, as noted.<sup>561</sup>
- EnergyAustralia stated there may be a role for the AER to undertake a customer survey of the operation and costs of the RERT.<sup>562</sup> In light of the heightened transparency resulting from the new reporting requirements, particularly around costs, the Commission considers that a new extensive survey is unlikely to yield additional useful information, especially given the AER's significant VCR work program already underway.
- The Australian Energy Council and Clean Energy Council requested that the technology type of individual RERT providers should be published by AEMO.<sup>563</sup> The Commission considers that it would be overly prescriptive to require this of AEMO and notes there may be confidential contractual considerations as well. As the identities of RERT providers are known, in some cases it may already be possible to discern the technology type of certain RERT providers.
- The Victorian Government suggested that there could be clearer instruction for AEMO in relation to the volume of RERT reserves to procure to achieve a target reduction in the risk of unserved energy.<sup>564</sup> The Victorian Government stated that when publishing information AEMO should provide a revised risk of unserved energy that considers the reserves procured under RERT. The Commission notes it has clearly linked RERT procurement volumes to the reliability standard discussed in Chapter 5. Furthermore, the enhanced reporting requirements will require AEMO to provide increased detail on volumes of RERT procured and dispatched. To the extent that AEMO considers it would useful, the Commission encourages AEMO to also provide information on the risk of unserved energy that takes into account RERT reserves procured this could be achieved by adding further detail to AEMO's weekly MT PASA market notice.
- The Victorian Government supported the provision of more information to the market on tail-risks through a supplement to the ESOO. The Victorian Government notes this supplement could present unweighted demand forecasts such as at 10POE.<sup>565</sup> The Commission agrees with the Victorian Government that further transparency with respect to AEMO's reliability assessments would be beneficial to the market. Indeed, there are a

<sup>561</sup> Stanwell submission to the options paper, p. 4.

<sup>562</sup> EnergyAustralia submission to the draft report, p. 2.

<sup>563</sup> Australian Energy Council submission to the draft report, p. 3 and Clean Energy Council submission to the draft report, p. 2.

<sup>564</sup> Government of Victoria submission to the draft report, p.3.

<sup>565</sup> Government of Victoria submission to the draft report, p.3.

number of recommendations and work under way that may go some way in addressing this:  $^{\rm 566}$ 

- The Retailer Reliability Obligation introduces new reporting obligations on AEMO with respect to the ESOO. This includes a Reliability Forecasting guidelines which AEMO will need to publish, in accordance with the AER's forecasting best practice guidelines.
  - The Commission understands that AEMO intends to provide, for example, much more granular information to stakeholders on USE outcomes, modelled on the information outputs from the medium-term PASA.
  - This would include, as an example, detailed information on USE outcomes for 50POE and 10POE demand.
- The AEMC, in its Reliability Frameworks Review, recommended transparency changes to AEMO's forecasting processes. The Commission understands that rule changes in relation to these recommendations will be submitted shortly.
- The AEMC has received a rule change request in relation to medium-term PASA transparency, including transparency of inputs and information provision.<sup>567</sup>

In the Commission's view a transparent, thoroughly-detailed procurement process would promote understanding of the RERT mechanism, and help to alleviate industry concerns that AEMO is purchasing excessive amounts of high cost reserves.<sup>568</sup>

The final rule is that:

#### 3.20.6 Reporting on RERT by AEMO

# Information to include in RERT report - dispatch or activation of reserves

- (e) The RERT report must, with respect to any *reserves dispatched* or *activated* under*reserve contracts*, include a detailed explanation of:
  - (1) the circumstances giving rise to the need for the *dispatch* of *scheduled reserves* or *activation* of *unscheduled reserves*, including the modelling, forecasts and analysis used by *AEMO* to determine the need for such *dispatch* or *activation* of *reserves*;
  - (2) the basis on which it determined the latest time for that *dispatch* of scheduled reserves or activation of unscheduled reserves and on what basis it determined that a market response would not have avoided the need for the *dispatch* of scheduled reserves or the activation of unscheduled reserves;
  - (3) the changes in *dispatch* outcomes due to the *dispatch* of *scheduled reserves*

<sup>566</sup> While changes to the transparency of the ESOO or other forecasting processes are not within scope of the Enhancement to the RERT rule change, the Commission looks forward to working with the Victorian Government on this matter through any relevant rule changes or processes.

<sup>567</sup> For more detail see: See https://www.aemc.gov.au/rule-changes/improving-mt-pasa-transparency-and-accuracy

<sup>568</sup> Concerns expressed by the Australian Energy Council, EUAA and ERM Power (amongst others).

or activation of unscheduled reserves;

- (4) the processes implemented by *AEMO* to *dispatch* the *scheduled reserves* or *activate* the *unscheduled reserves*,
- (5) if applicable, reasons why *AEMO* did not follow any or all of the processes set out in rule 4.8 either in whole or in part prior to the *dispatch* of *scheduled reserves* or the *activation* of *unscheduled reserves*;
- (6) if applicable, the basis upon which *AEMO* considered it impractical to set *spot prices* and *ancillary service prices* in accordance with clause 3.9.3(b);
- (7) the total amount of *reserves dispatched* or *activated*, and if applicable, why such amounts were different to those previously forecast or modelled by *AEMO*;
- (8) the periods of time in which *reserves* were *dispatched* or *activated*, and if applicable, why such periods were different to those previously forecast or modelled by *AEMO*;
- (9) the estimated costs of *load shedding* (including an amount expressed in \$/MWh) in a *region* avoided as a result of the *dispatch* or *activation* of *reserves*;
- (10) the impact of the *dispatch* of *scheduled reserves* or *activation* of *unscheduled reserves* on:
  - (i) the reliability of *supply* into the *market*, or
  - (ii) where applicable, power system security
- (f) Where *AEMO* has, in accordance with clause 3.15.9, included the amounts arising under a *reserve contract* in a *final statement* provided under clause 3.15.15, the RERT report must include a detailed explanation of:
  - (1) *AEMO's* costs associated with exercising the *RERT* (including an amount expressed in \$/MWh), including the payments under the *reserve contract* for the relevant *billing periods*; and
  - (2) a breakdown of the recovery of those costs (expressed in \$/MWh) from each *Market Customer*, as determined by *AEMO*, in each *region*.

#### Information to include in RERT report - end of financial year

- (g) The first updated RERT report following the end of each financial year must, in addition to the requirements of paragraphs (d) and (e) specify:
  - (1) each occasion during the *financial year* on which it intervened to secure the availability of *reserves*;
  - (2) each occasion during the *financial year* when a *scheduled generating unit*,

> scheduled network service or scheduled load under a scheduled reserve contract was dispatched or generating units or loads under an unscheduled reserve contract were activated; and

(3) its costs and finances in connection with its *RERT* activities during the *financial year* according to appropriate accounting standards including profit and loss, balance sheet, sources and applications of funds (including an amount expressed in \$/MWh of *reserves* procured).

#### 9.4.2 Report shortly after RERT dispatch

The Commission recognises the importance of the timely reporting of RERT costs, with the implications it has for the budgets of participants and end users. To this end, the Commission considers it appropriate that in addition to current requirements under the NER, AEMO provides information to the market on total preliminarily estimated emergency reserve costs (pre-activation and activation) and volumes<sup>569</sup> as soon as possible, and in any event, within five business days of a RERT event. The Commission expects this information would normally be provided within 48 hours, but notes that RERT events may occur on weekends or public holidays<sup>570</sup> and hence considers that five business days is an appropriate timeframe. This would be new information provided to the market, compared to current arrangements.

The Commission notes that RERT events may span multiple days. In cases where emergency reserves are used on consecutive days the Commission considers it appropriate that a single post-dispatch report would be provided, within five business days of the last day the RERT was used.<sup>571</sup>

Costs will be broken down on a regional basis, such that participants in individual regions can have indication of the costs for which they are liable. The Commission notes that the EUAA commented that AEMO should provide confidence limits around actual RERT costs.<sup>572</sup> While acknowledging this might be beneficial to consumers seeking to budget for RERT costs the Commission considers that providing bounds on RERT costs (especially preliminary estimates) would impose an additional administrative burden on AEMO and might be difficult to calculate in practice, especially given the proposed reporting timeframes (e.g. five business days).

This requirement is consistent with stakeholder feedback. The Commission notes there is international precedence for the quick provision of non-validated data relating to the activation of strategic reserves.<sup>573</sup>

<sup>569</sup> The Commission has determined that AEMO is to report on the total volume of RERT dispatched or activated (in MWh). ERM Power (submission to draft report, p. 2) notes there may be benefits to reporting reserve volumes on a MW dispatched per dispatch interval basis. Given the short publication timeframe for this report and the extensive detail that would be provided in the quarterly RERT report, in the final rule the Commission has not required volumes to be reported on this more granular basis.

<sup>570</sup> I.e. periods when AEMO may have fewer internal resources available

<sup>571</sup> For emergency reserves dispatched over non-consecutive days the Commission considers separate post-dispatch reports should be published.

<sup>572</sup> EUAA submission to the draft report, p. 2.

<sup>573</sup> For example in Belgium, data on the volumes of strategic reserve required and its impact on prices is provided within 15 minutes of a reserve activation.

#### 3.20.6 Reporting on RERT by AEMO

#### **Post-dispatch or activation report**

- (a) If AEMO dispatches or activates reserves, then AEMO must, as soon as practicable, and in any event no later than 5 business days thereafter, publish and make available on its website a report that includes details of:
  - (1) the total estimated payments made under reserve contracts; and
  - (2) the total estimated volume (in MWh) of *reserves dispatched* or *activated* under *reserve contracts*,

for the relevant *region*. In circumstances where *reserves* are *dispatched* or *activated* over consecutive days, the reference to "5 *business days"* in this clause 3.20.6(a) is to be read as "5 *business days* from the final consecutive day in which the *reserves* were *dispatched* or *activated"*.

#### 9.4.3 Methodology report

To promote understanding of, and confidence in AEMO's use of the RERT, the final rule requires AEMO to clearly set out and maintain its methodology for the procurement of emergency reserves. This will describe in detail the processes followed by AEMO in procuring the RERT. Specifically, the report will set out how AEMO determines the amount of reserves to procure, for more information refer to Chapter 5. The methodology report will also specify how AEMO determines the appropriate term of a reserve contract, for more information refer to Chapter 6. The methodology report will form part of AEMO's RERT procedures. The methodology will need to be updated as required, via the same consultation process required for AEMO's RERT procedures, i.e. the rules consultation process.

The Commission notes that AEMO expressed concerns that it is impractical to incorporate information in modelling on how AEMO has determined the amount of reserve in accordance with its real-time operation of RERT, including how AEMO determines the last time to intervene.<sup>574</sup> To clarify the Commission emphasises that AEMO is required to explain what methodology it uses, and it is not required to model LOR3 conditions.

#### 3.20.7 AEMO's exercise of the RERT

- (e) *AEMO* must develop, *publish*, and may amend from time to time, in accordance with the *Rules consultation procedures*, procedures for the exercise of the *RERT* under this rule 3.20 that take into account the *RERT principles* and *RERT guidelines*. These procedures must include:
  - •••
  - (2) a methodology to be used by AEMO to determine the appropriate term of a

<sup>574</sup> AEMO submission to the draft report, p. 13.

*reserve contract* and the amount of *reserves* to procure in accordance with clause 3.20.3(m);

#### 9.4.4 Who needs RERT information?

The Commission considers that all RERT-related information and reports should be publicly available given the cost of the RERT is passed through to energy consumers, the level of public interest in the RERT and system reliability generally. The final rule amends the NER to allow this to occur. <sup>575</sup>

As suggested by ERM Power, the Commission considers there would be merit in requiring AEMO to publish a market notice when it pre-activates a RERT contract, similar to how it publishes a notice when it intends to implement an AEMO intervention event (as per clause 4.8.5B of the NER).<sup>576</sup> This would help to keep market participants informed in the preliminary stages of a potential RERT event.

#### 4.8.5B Notifications of last time of AEMO intervention

If the latest practicable time for an AEMO intervention event, as estimated by AEMO under clause 4.8.5A, is reached and, taking into account relevant AEMO intervention events, the circumstances described under clause 4.8.5A(a) have not been alleviated, AEMO must:

•••

(b) *publish* a notice that *AEMO* has pre-activated a *reserve contract* as soon as practicable following such pre-activation.

The Commission notes that some stakeholders (for example, the Australian Energy Council<sup>577</sup> and Snowy Hydro<sup>578</sup>) have asserted that the characteristics and costs of individual providers should be publicly provided. The Commission is cognisant that there may be potential confidentiality concerns associated with providing this information. In light of the significant improvements to transparency that will likely be achieved via increased reporting requirements (e.g. quarterly RERT report) the Commission is not convinced that any additional benefit gained from the publication of the characteristics and costs of individual providers would outweigh confidentiality concerns. If stakeholders consider information on individual providers should be provided, the Commission encourages stakeholders to express this in their submissions to the draft determination.

The EUAA noted that AEMO could provide SMS mobile alerts when it publishes new RERT reports.<sup>579</sup> The Commission notes that AEMO's regular newsletters often highlight key reports

<sup>575</sup> The reporting requirements under clause 3.20.6 currently only require such reports to be made available to registered participants electronically.

<sup>576</sup> ERM Power, submission to the draft report, p.3

<sup>577</sup> Australian Energy Council submission to the consultation paper, p. 9.

<sup>578</sup> Snowy Hydro submission to the consultation paper, p. 12.

<sup>579</sup> EUAA submission to the draft report, p. 2.

that AEMO publishes. The Commission considers this to be a matter for AEMO's communications department to consider, rather than a matter for the NER.

As per Meridian's suggestion<sup>580</sup>, the Commission will consider revising the terms of reference for the Reliability Panel's AMPR to explicitly require the Panel to detail any lessons learned from RERT events as well as reflect on costs of RERT activities. The Commission notes that given the wide readership of the AMPR this may help to reach and educate a broader public audience on emergency reserves.

<sup>580</sup> Meridian submission to the consultation paper, p. 6.

10

# DISPATCH TRIGGER AND STANDARDISATION OF PRODUCTS

This chapter considers the following issues:

- dispatch trigger, i.e. when and how AEMO dispatches Reliability and Emergency Reserve Trader (RERT or emergency reserves) once RERT has been procured
- standardisation of RERT products, including prescription of emergency reserve products and two specific product design features, namely, notification lead time and eligible technologies.

For each of these issues, the chapter outlines:

- current arrangements in the NEM
- AEMO's views
- stakeholders' views
- the Commission's analysis and conclusions.

### 10.1 Dispatch trigger

The dispatch trigger refers to the decision to dispatch or activate reserves.<sup>581</sup> This decision occurs close to real time, i.e. based on the impending occurrence of a forecast shortfall or power system security event.

#### 10.1.1 Current arrangements

There are a number of steps that AEMO must take before it dispatches emergency reserves, which means that in practice, AEMO cannot wait until the very last minute to dispatch emergency reserves. These steps are discussed next.

Under the NER, AEMO must first determine the latest time for exercising the RERT, and publish a notice of any foreseeable circumstances that may require implementation of the RERT.<sup>582</sup>

Once such time has arrived, the NER state that AEMO may dispatch reserves to ensure that the reliability of supply meets the reliability standard, and where practicable, to maintain power system security.<sup>583</sup> AEMO must also take into account the Panel's RERT guidelines before dispatching the RERT.<sup>584</sup>

Section 4.2 of the current RERT guidelines state that AEMO may monitor the outcome of short-term PASA, the pre-dispatch schedule in terms of availability of reserves and any other information it considers relevant when deciding whether or not to dispatch RERT.<sup>585</sup>

<sup>581</sup> The term dispatch in the NER only applies to scheduled reserves. Activation applies to unscheduled reserves. They are used interchangeably in this determination.

<sup>582</sup> Clause 4.8.5A and clause 4.8.5B of the NER.

<sup>583</sup> Clause 3.20.7(a) of the NER.

<sup>584</sup> Clause 3.20.7(f) of the NER.

<sup>585</sup> The Panel will be reviewing the RERT guidelines post this rule being made as discussed further in Chapter 11.

In practice, the trigger for dispatching the RERT is how AEMO operationalises the reliability standard over the short term, i.e. through the lack of reserve declaration framework, as discussed in Chapter 4. Specifically, AEMO dispatches emergency reserves following a forecast LOR2, actual LOR2 or for very fast reserves, it may wait until an LOR3. To date, there have only been two instances of emergency reserves activations - in both instances, RERT was activated based on forecast LOR2s - see Box 29 for more information on the second event and the consultation paper provides a summary of the events.<sup>586</sup>

In addition to this, the NER specify a particular sequence of events when it comes to interventions during supply scarcity, namely that AEMO should use its reasonable endeavours to: first dispatch all valid bids and offers, then exercise emergency reserves (both subject to "any adjustments which may be necessary to implement action under paragraph (c)"<sup>587</sup> and "any plant operating restrictions associated with a relevant AEMO intervention event"), and finally, issue directions and clause 4.8.9 instructions.<sup>588</sup>

The Commission notes that this specified sequence of events, as well as how the market is priced once the emergency reserves are dispatched, are outside of the scope of this rule change request, but is being examined as part of the *Investigation into Intervention Mechanisms and System Strength in the NEM* project.<sup>589</sup>

#### 10.1.2 AEMO's views

In its high-level design attached to the rule change request, AEMO did not propose any changes to the current dispatch trigger framework. It noted that it would continue to dispatch reserves as it is currently does i.e.:<sup>590</sup>

- in response to an LOR2 or LOR3 condition
- to make sure that the system remains secure, if activating reserves is lower cost than directions.

AEMO did not comment on this aspect of the rule change in submissions to the consultation paper or the options paper.

#### 10.1.3 Stakeholders' views

Few stakeholders have commented on this aspect. EUAA and BlueScope stated that they saw no reason to change the current framework. $^{591}$ 

A number of stakeholders raised the following concerns which are related to the dispatch trigger and how RERT is operationalised over the short term:<sup>592</sup>

<sup>586</sup> See p. 16 of the consultation paper https://www.aemc.gov.au/sites/default/files/2018-06/Consultation%20paper\_0.pdf

<sup>587</sup> Paragraph (c) states "any further corrective actions required are implemented in accordance with clauses 4.8.5B and 4.8.9."

<sup>588</sup> Clause 3.8.14 of the NER

<sup>589</sup> See the Commission's website for more detail on this project.

<sup>590</sup> AEMO, Enhanced RERT - high level design proposal, Enhancement to the RERT rule change request, p.15

<sup>591</sup> EUAA and BlueScope: submissions to consultation paper.

<sup>592</sup> Flow Power, Snowy Hydro, ERM Power and Origin: submissions to consultation paper.

- Emergency reserves are dispatched following an LOR2 that is not alleviated by a market response, taking into account the reserve activation lead time. In other words, it is based on a forecast supply shortfall and often activated before the forecast shortfall is meant to occur, meaning that emergency reserves are activated before an actual need is present, which is problematic if the forecast shortfall then does not occur.
- Retailers tend to dispatch demand response based on high prices. While a forecast tight
  demand and supply balance suggests high prices, in the case of the RERT, spot prices are
  not always high during the entirety of an activation, even with intervention pricing in
  place.

There were no changes made to this aspect of the RERT in the draft rule and determination. Only one stakeholder commented on this. Stanwell, in its submission to the draft determination, continued to support LOR2s as the current dispatch trigger.<sup>593</sup>

#### 10.1.4 Commission's analysis and conclusions

#### BOX 28: FINAL RULE

There are no changes to the NER in relation to what triggers the RERT being dispatched with respect to reliability and power system security, other than a minor clarification. A minor change has been made to Clause 3.20.7(a) of the NER which clarifies that reserves may be dispatched for reliability *or* power system security. The previous drafting stated that reserves may be dispatched for reliability *and* power system security.

Therefore, AEMO continues to have the discretion as to how to trigger the dispatch of the RERT based on how it operationalises the reliability standard through the Reliability Standard Implementation Guidelines (RSIG), and guided by the Panel's RERT guidelines. The final rule continues to provide AEMO with the flexibility to operationalise the reliability standard as needed to promote reliability.

The final rule does however introduce and enhance reporting requirements with respect to dispatch, in order to promote transparency.

#### Changes between draft and final rule

There are no changes between the draft and final rule for this aspect.

Based on feedback received from stakeholders and further analysis, the Commission is of the view that the concerns raised with respect to the dispatch trigger are primarily associated with either:

 the limitations of the nature and purpose of the RERT framework (i.e. a last resort mechanism only to be used once the market has failed to meet the reliability standard)

<sup>593</sup> Stanwell, submission to draft determination, p. 4.

• broader forecasting processes - which are out of scope of this rule change request.<sup>594</sup>

As a result, there are no changes to the final rule with respect to the dispatch trigger. Under the final rule, AEMO continues to be able to dispatch or activate emergency reserves to ensure that the reliability of supply in a region or regions meets the reliability standard or, where practicable, to maintain power system security.<sup>595</sup> The Reliability Panel may continue, as it currently does, to provide additional guidance on the dispatch/activation of RERT in its RERT guidelines.

Procuring emergency reserves for power system security is discussed in more detail in Chapter 5.

Finally, enhancements to reporting requirements through the final rule, as discussed in Chapter 9, would also help improve transparency around the decisions that AEMO makes when it decides to dispatch RERT. Of particular importance to the dispatch trigger and process for dispatching/activating emergency reserves, the final rule enhances existing reporting requirements with respect to dispatch/activation of emergency reserves including by requiring AEMO to provide:

- A detailed explanation of why it dispatched emergency reserves, including any modelling, forecasts and analysis used.
- If applicable, reasons why: the amount of emergency reserves that were dispatched or activated; or the periods in which the reserves were dispatched or activated was not in accordance with AEMO's forecasts or modelling.
- The impact that dispatching emergency reserves has on the reliability of supply into the market or on power system security (where applicable).

The relevant final rules are:

#### 3.20.6 Reporting on RERT by AEMO

#### Information to include in RERT report – dispatch or activation of reserves

- •••
- (e) The RERT report must, with respect to any *reserves dispatched* or *activated* under *reserve contracts*, include a detailed explanation of:
  - (1) the circumstances giving rise to the need for the *dispatch* of *scheduled reserves* or *activation* of *unscheduled reserves*, including the modelling, forecasts and analysis used by *AEMO* to determine the need for such *dispatch* or *activation* of *reserves*;
  - (7) the amount of *reserves dispatched* or *activated*, and if applicable, why such amounts were different to those previously forecast or modelled

<sup>594</sup> The Commission, however, examined forecasting as part of its *Reliability Frameworks Review* which concluded in 2018. Recommendations in relation to forecasting are being progressed.

<sup>595</sup> Clause 3.20.7 (a) of the final rule, which is unchanged from the current rules, apart from the clarification noted in the footnote in Box 28.

#### by AEMO;

(8) the periods in which reserves were dispatched or activated, and if applicable, why such periods were different to those previously forecast or modelled by AEMO;

. ..

(10) the impact of the *dispatch* of *scheduled reserves* or *activation* of *unscheduled reserves* on: (i) the reliability of *supply* into the *marke*t; or (ii) where applicable, *power system security*.

#### Nature of the RERT

The RERT is an out-of-market, last resort mechanism. As a result, emergency reserves typically have a pre-activation (getting ready to be called upon, which usually occurs about 20+ hours ahead of a shortfall) and activation lead time (getting ready to be dispatched), as well as deactivation lead times (ramping down to zero or ramping up in the case of demand response). AEMO tends to dispatch emergency reserves based on a forecast LOR2, rather than waiting for an actual LOR2 or an LOR3 to occur partly due to reserves being unscheduled (for the most part) and having the requirements that were described above around pre-activation and de-activation.

At the time of a forecast LOR2, prices are generally forecast to be high, approaching or at MPC, for the dispatch intervals to which the LOR2 relates. However, forecast prices, and indeed actual prices, may not be high for the entirety of the RERT activation event, as shown in Box 29.

#### BOX 29: PRICES DURING RERT EVENTS

#### January 2018 event

On 19 January 2018, AEMO activated emergency reserves for six hours.

During a RERT event, AEMO prices the market through what is known as intervention pricing or 'what-if' pricing. Intervention pricing aims to restore market signals by ignoring the effect of the intervention on the demand and supply balance. It aims to simulate the counterfactual of how the market would have been prices had the intervention not occurred.

The what-if pricing run in the figure below shows how the market was priced on the 19th of January - these prices would be expected to be high due to the tight demand-supply balance as the what-if run ignores the effect of dispatching RERT (i.e. it assumes the demand and supply balance remained tight).

The dispatch run shows what prices were, including the effect of dispatching emergency reserves. These prices would be expected to be lower as dispatching RERT reduces demand typically (or may increase supply).

Prices were higher in the what-if run on a number of occasions but not consistently high throughout the intervention event.



Source: AEMC analysis based on MMS data

It could be implied from the chart that the emergency reserves were not needed for the entirety of the intervention event (as consistently high prices would be expected in the whatif run if the RERT had been needed for the entire six hours) – however, this was likely known by AEMO, with reserves dispatched for longer than strictly required due to minimum running times specified in contracts, as well as limitations such as activation lead times. These imperfections associated with the use of the RERT are likely unavoidable given the nature and limitations associated with out-of-market reserves, and procuring reserves ahead of real time when perfect information is known.

This means that energy dispatched/activated under RERT is not the same as avoided load shedding (i.e. what the counterfactual would have been had the emergency reserves not been activated).

#### January 2019 event

The January 2019 RERT events were different from the 2017-18 summer events in that in addition to dispatching emergency reserves, AEMO also instructed involuntary load shedding (on both 24 January and 25 January 2019) due to LOR3 conditions. When AEMO instructs involuntary load shedding, prices in the NEM are automatically set at the MPC - effectively bypassing the what-if run price.

On 25 January, following sustained high prices, including prices at MPC for lengthy periods of time, the cumulative price threshold (CPT - or \$216,900/MWh in 2018-19) was reached. When the CPT is reached, prices are set at the administered price cap (APC), i.e. \$300/MWh, to limit market participants' exposure to sustained high prices.

The figure below shows how the market was priced on 25 January during the RERT event:

- RERT was dispatched at 09:10 NEM time (until 16:30), which means that intervention pricing was in place. Market prices are shown in blue.
- However, at 11:05, involuntary load shedding started, meaning that prices were overriden by the MPC.



• At 11:35, the CPT was reached. The MPC was then further overriden by the APC.

Source: AEMC analysis based on MMS data.

Involuntary load shedding concluded at 13:50 while emergency reserves continued to be dispatched until 16:30 on the day - yet, prices remained at \$300/MWh until the following morning.

Note: There are two runs when RERT is dispatched for the purpose of intervention pricing. The what-if run clears the market as if the intervention had not occurred and sets the price. The dispatch run clears the market taking into account the intervention and sets the quantity.

The Commission notes that the LOR framework is how AEMO operationalises the reliability standard in the short term and the LOR2 trigger for RERT is part of AEMO's RERT procedures. As noted, AEMO may wait until closer to real time to dispatch reserves - one of its obligations is to determine the latest time by which it will intervene. This obligation exists not only for transparency purposes, but it also exists for practical reasons because AEMO has to consider lead times and minimum run times, including potentially differing ones based on each contract.

The Commission notes that AEMO intends to standardise RERT products, including introducing three products with different notification lead times (i.e. the time the product needs ahead of an activation): a 10-minute product, a 60-minute product and a 24-hour product. The ARENA RERT trial is currently trialling the first two types of products. Products with short "notification" or "activation" or "pre-activation" lead times are likely to allow AEMO to act closer to real time. Notification lead times are discussed in more detail in section 10.2. The Commission encourages AEMO to continue to explore those types of products, particularly those with very short lead times in order to minimise the limitations of the RERT

framework. Clearly, however, a trade off must be made if flexible resources with very short lead times are also more expensive.

The Commission also encourages AEMO to continue to choose the latest possible time by which to intervene to be as close to real time as possible, in order to minimise intervening too early, before market participants have had a chance to respond or in case demand conditions do not eventuate as forecast.

Meridian, in its submission to the draft determination, stated that the application of the APC saw almost all wholesale demand response being withdrawn from the market and requested that the AEMC should consider this carefully.<sup>596</sup> EnergyAustralia also suggested that the Commission should examine this issue.<sup>597</sup> The Commission will consider these issues through its consideration of the wholesale demand response rule change requests, since it considers this is out of scope of this project.

#### **Broader forecasting processes**

To the extent that stakeholders are concerned about the forecasting processes themselves, particularly the difference between their own forecasts and expectations and that of AEMO's, the Commission notes that this is outside of the scope of this rule change. However, the Commission recently made recommendations with respect to this issue in its *Reliability Frameworks Review*. The Commission recommended that the AER submit a number of rule changes to improve the transparency of the methodology associated with AEMO's forecasts.

In addition, the Retailer Reliability Obligation includes changes to forecasting transparency, such as requiring the AER to publish a best practice guideline, and AEMO to also publish a guideline in relation to its reliability forecasts in the Electricity Statement of Opportunities (ESOO). These additional transparency requirements will provide additional information to the market in relation to AEMO's inputs and processes, which should help to address stakeholder concerns. The AEMC has also received a rule change request in relation to medium-term PASA transparency, including transparency of inputs and information provision.<sup>598</sup>

## 10.2 Standardisation of products

In its rule change request, AEMO included a proposal to standardise RERT products.

#### 10.2.1 Current arrangements

#### Standardisation and prescription in the NER

The NER do not provide any specific provisions for the types of products that may participate in the RERT. The NER only state that there may be two types, scheduled and unscheduled reserve products. At present, products are bespoke based on tenders obtained by AEMO, and given effect by bilaterally negotiated contracts.

<sup>596</sup> Meridian, submission to draft determination, p. 2.

<sup>597</sup> EnergyAustralia, submission to draft determination, p. 3.

<sup>598</sup> See https://www.aemc.gov.au/rule-changes/improving-mt-pasa-transparency-and-accuracy

#### Specific design feature - notification lead time

Notification lead time refers to the length of time a particular RERT provider needs before it can have a RERT product ready for dispatch. For example, a 10-minute product would require 10 minutes' notice in order to be ready for dispatch. There is no prescription around this in the NER.

RERT products are bespoke and subject to negotiated contracts between RERT providers and AEMO. There is no publicly available information on what notification periods exist in existing and historic RERT contracts, although AEMO's RERT event report into the 19 January 2018 activation notes that it pre-activated a reserve contract a day before the shortfall, indicating that it has at least one product with a lead time of more than 20+ hours.<sup>599</sup>

However, the ARENA RERT trial is currently trialling a 10-minute and a 60-minute product.

#### Specific design feature - eligible technologies

The RERT is technologically neutral and there is no prescription in the NER with respect to this aspect of the RERT. The Commission understands that, to date, emergency reserve contracts have primarily included demand response, diesel generators and network response, noting that the out-of-market requirements may have an impact on the types of technologies that may be offered into RERT, to some extent.

#### 10.2.2 AEMO's views

#### Standardisation

As stated by AEMO in its rule change request, AEMO may choose to standardise products or offer standardised contacts under the NER - AEMO does not require a rule change to do so.<sup>600</sup>

Based on the lessons to date from the ARENA-AEMO trial and other consultation, AEMO developed product specifications for its proposed standardisation of products. It should be noted that AEMO has stated that in the first instance, it intends to allow non-conforming offers to submit tenders to the process, effectively allowing for semi-standardisation of products.<sup>601</sup>

The key design specifications identified by AEMO in its high-level design are:602

- time periods: this refers to the time periods for which AEMO will seek to procure reserves to be available, e.g. in summer from 12pm to 4pm on business days
- notification periods: this identifies the lead time required before activation of a reserve product e.g. a 10-minute product would mean that reserves would need to be ready to respond in 10 minutes, as discussed below
- length of contracts: this refers to the contract duration, as discussed in Chapter 6

<sup>599</sup> See http://aemo.com.au/Electricity/National-Electricity-Market-NEM/Security-and-reliability/Summer-operations-report

<sup>600</sup> AEMO, Enhancement to the RERT, rule change request, p.8

<sup>601</sup> Ibid. p. 18.

<sup>602</sup> Ibid. pp 17-31.

- eligible technologies: this would identify the technologies that may offer reserves, as discussed below
- out-of-market provisions: this would ensure that offered reserves are in addition to any market response, i.e. that they are not otherwise available to the market, as discussed in Chapter 7
- measuring the response offered: this would set the baseline methodology which would be used to measure the volume of response in the case of demand response
- testing: this would set the testing requirement, e.g. in the case of demand response, providers would need to show that demand is able to be curtailed, say, twice a year.

#### Prescription in the NER

AEMO did not propose for standardisation to be prescribed in the NER in its rule change request, noting that some aspects of the high-level design are already part of the NER, namely, the out-of-market provisions. Length of contracts is not explicitly part of the NER but is limited by the procurement lead time, as discussed in Chapter 6.

#### Specific design feature - notification lead time

AEMO proposed a 10 and 60 minute lead time, as well as a 24 hour one in its high-level design. AEMO did not propose that this be prescribed in the NER.

#### Specific design feature - eligible technologies

In its high-level design, AEMO proposed to specify examples of technologies that would be eligible to participate in the RERT, but other technologies may be eligible with approval from AEMO.<sup>603</sup> The example technologies include demand response (industrial, commercial, aggregated), and distributed energy resources, energy storage (e.g. batteries).<sup>604</sup>

AEMO did not propose that this be prescribed in the NER.

AEMO did not provide any specific comments on this aspect of the rule change in any of its submissions.

#### 10.2.3 Stakeholders' views

While AEMO is able to develop standardised products without a rule change, the Commission sought stakeholder views on standardisation of products in its consultation paper, including whether governance arrangements around the standardisation of reserves should be contained within the NER, and sought feedback on two key design features - notification lead time and eligible technologies.

The Commission then concluded, in the draft determination, that while standardisation was appropriate, prescription in the NER was not necessary. The draft rule therefore only included a requirement for AEMO to publish its standardised terms and conditions should it choose to standardise RERT products.

<sup>603</sup> Ibid. p. 22.

<sup>604</sup> Ibid.

#### Standardisation

Snowy Hydro explicitly opposed AEMO's proposal to standardise products.<sup>605</sup> AEC raised concerns around the potential to limit out-of-market providers due to standardisation.<sup>606</sup>

However, most stakeholders responding to this aspect of the rule change supported standardisation in principle.<sup>607</sup> A number of stakeholders,<sup>608</sup> while supporting standardisation in principle, raised concerns around the potential for standardisation to restrict the number of RERT providers or lead to inefficient outcomes.

In its submission to the options paper, Enel X supported product standardisation as a means to reduce contracting complexity, noting however that care should be taken to make sure that the products are standardised in a technology-neutral way, or in a way that recognises the capabilities and characteristics of different reserves.<sup>609</sup>

#### Prescription in the NER

There was almost no support for prescription in the NER from the few stakeholders that commented on this aspect:

- ENA stated that specifications should be in a guideline so as to allow innovative offers.<sup>610</sup>
- Meridian suggested that there may be value in some product specifications being in the RERT guidelines (but not in the NER).<sup>611</sup>
- EUAA suggested that there might be benefit in product specifications being in the NER but only so far as it does not restrict flexibility.<sup>612</sup>

In response to the draft determination which did not introduce prescription, Stanwell noted its support for this approach.<sup>613</sup> This was echoed by Origin, noting that transparency of the contract terms and conditions was important.<sup>614</sup>

#### Specific design feature - notification lead time

Some stakeholders supported AEMO's proposal or noted that AEMO is best placed to decide what the appropriate lead time is.<sup>615</sup>

EnerNOC (now known as Enel X) supported AEMO's proposal but noted its concerns around the distortionary effects of the 24-hour notification product.<sup>616</sup> EnergyAustralia's concerns

<sup>605</sup> Snowy Hydro, submission to consultation paper, p. 12.

<sup>606</sup> AEC, submission to consultation paper, p. 9.

<sup>607</sup> EEC, MEU, Flow Power, BlueScope, ENA, EA, Meridian, TransGrid, EUAA, CitiPower, EnerNOC and Origin: submissions to consultation paper.

<sup>608</sup> MEU, EUAA, Origin, EA, Meridian: submission to consultation paper

<sup>609</sup> Enel X, submission to options paper, p. 5.

<sup>610</sup> ENA, submission to consultation paper, p. 5.

<sup>611</sup> Meridian, submission to consultation paper, p. 5.

<sup>612</sup> EUAA, submission to consultation paper, p. 6.

<sup>613</sup> Stanwell, submission to draft determination, pp. 4-5.

<sup>614</sup> Origin, submission to draft determination, p. 1.

<sup>615</sup> Flow Power, BlueScope, ENA and EUAA: submissions to consultation paper

<sup>616</sup> EnerNOC, submission to consultation paper, p. 1.

were similar to EnerNOC's, noting that it could lock in a significant cost to the market without the forecast conditions eventuating.<sup>617</sup>

#### Specific design feature - eligible technologies

In the consultation paper, the Commission sought stakeholder views on whether the RERT should be restricted to certain types of technologies. For example, in some overseas jurisdictions, the equivalent of the RERT is limited to demand response or demand response and distributed energy resources. Furthermore, the Commission sought views on whether it is appropriate that networks can provide voltage reduction services as demand response into the RERT.

Most stakeholders supported a technologically neutral approach.618

A number of stakeholders commented on networks providing demand response, especially through voltage reduction:

- ENA stated that it is important that demand response resources which do not otherwise respond to wholesale market price signals can participate in RERT.<sup>619</sup>
- AEC noted that a better approach is to refer this matter to the AER and its ring-fencing arrangements surrounding the separation of prescribed and competitive services.<sup>620</sup>
- Meridian stated that the use of voltage reduction has the potential to create adverse impacts for consumers and additional costs.<sup>621</sup>
- CitiPower Powercor & United stated that its provision of RERT is consistent with its ring fencing<sup>622</sup> obligations.<sup>623</sup>

In its submission to the options paper, the Energy Efficiency Council stated that electricity networks are monopolies providing an essential service, and should be expected to provide emergency capacity as part of their contract.<sup>624</sup>

The draft determination keeps the RERT technologically neutral. Meridian however noted that with respect to networks providing RERT through voltage reduction, network companies being paid more through RERT to do what they are already paid for is an unacceptable outcome and an unnecessary impost on consumers. If voltage reduction at times of high demand is not already best industry practice and already required of networks then the AEMC should impose such an obligation rather than customers being charged for it.<sup>625</sup>

<sup>617</sup> EnergyAustralia, submission to consultation paper, p. 5.

<sup>618</sup> Flow Power, BlueScope, ENA, Snowy Hydro, Meridian, EUAA, CitiPower Powercor & United and Origin: submissions to consultation paper.

<sup>619</sup> ENA, submission to consultation paper, p. 5.

<sup>620</sup> AEC, submission to consultation paper, p. 10.

<sup>621</sup> Meridian, submission to consultation paper, p. 5.

<sup>622</sup> Ring-fencing refers to the separation of monopoly services and contestable services where a regulated business also offers services into a competitive market.

<sup>623</sup> CitiPower Powercor & United, submission to consultation paper, p. 1.

<sup>624</sup> EEC, submission to options paper, p. 3.

<sup>625</sup> Meridian, submission to draft determination, p. 2.

#### Implementation

In submissions to the draft determination, stakeholders raised the following:<sup>626</sup>

- The CEC recommended that the AEMC provide a clear understanding of how it envisages AEMO may develop any requisite changes and that appropriate guidance should also be made available to market participants and the Reliability Panel in advance of the Reliability Panel's next review of the RERT Guidelines and AEMO's revision of its RERT procedure and then on an ongoing basis.
- AGL echoed the CEC's suggestion that the appropriate guidance should be provided ahead of the next RERT guidelines' review, due to concerns that highly standardised products could exclude some RERT providers.
- Enel X suggested that AEMO should consult with relevant stakeholders if it chooses to standardise products.

#### **10.2.4** Commission's analysis and conclusions

#### BOX 30: FINAL RULE

The final rule does not introduce prescription in the NER with respect to a high-level framework for standardised products or for specific design features.

The final rule does make changes to one product feature, namely the out-of-market provisions, as discussed in Chapter 7.

The final rule also introduces a new reporting requirement requiring AEMO to publish its standardised emergency reserve contract terms and conditions should it wish to standardise emergency reserve products.

This will provide clarify and support transparency, in the event that AEMO chooses to standardise products.

#### Changes between draft and final rule

There are no changes between the draft and final rule for this aspect.

#### Standardisation

The Commission considers that product standardisation for emergency reserves has the following benefits:

- It simplifies the procurement process, making it easier for AEMO to compare different RERT offers.
- It improves transparency for stakeholders as well as reserve providers. At present, AEMO is comparing vastly different products and stakeholders do not have visibility of how AEMO decides between those products.

<sup>626</sup> CEC, AGL, Enel X: submissions to draft determination.

 It also provides more certainty as to when AEMO will intervene - for example, if there is a 60-minute product (given effect through the standardised terms and conditions), market participants would have more certainty that AEMO would intervene 60 minutes before the projected shortfall and therefore the market would be able to respond until then.

In other words, implementing standardised products would make it easier for AEMO to manage reserve contracts. AEMO would implement these standardised products through introducing standard contractual terms and conditions. It improves efficiency of the RERT procurement process by making it easier for AEMO to compare the different tenders. This is likely to drive down costs for consumers as well, in the event that the RERT is needed, as it will be far easier for AEMO to "rank" contracts and identify lowest-cost contracts. Standardised products also make it clearer for any interested party to understand exactly what RERT products are, providing additional information to the market in terms of the RERT process.

However, standardised products may limit the number of potential RERT providers if the design features are too restrictive or narrow, which could therefore lead to higher procurement costs. Particular design features may suit particular types of technologies and not others. Products with specifications that are too restrictive may exclude innovative offers.

On balance, the Commission considers that product standardisation is appropriate and the benefits of product standardisation would outweigh the costs if designed properly. The Commission therefore encourages AEMO to continue to take on board lessons from the ARENA RERT trial when designing emergency reserve products, including by allowing for variations as it noted its rule change request so as not to restrict the RERT participation to only a few providers.

#### Prescription - high-level framework in the NER

Having concluded that standardisation of RERT products is appropriate, the Commission, however, does not consider that prescription around a high-level framework for standardised products in the NER would be helpful.

This is because the Commission considers that AEMO is best placed to make product standardisation decisions based on its understanding of RERT products that exist and its own system requirements, as those may change over time. AEMO already has to comply with high-level principles (the RERT principles) such as minimising market distortions. A high-level framework for standardised products would be unlikely to be significantly different from these existing principles.

The final rule, therefore, does not introduce more prescription in the NER in terms of a highlevel framework for standardised products.

The final rule introduces a requirement for AEMO to publish standard terms and conditions should it wish to standardise products. This is so that the benefits of standardised products would only accrue to the entire market and any interested party if the standard terms and conditions (i.e. the product design features) are known to everyone, through its website.

Specifically, the final rule is:

#### 3.20.7 AEMO's exercise of the RERT

- ....
- (e1) If AEMO develops standardised forms of reserve contracts, it:
  - (1) must *publish* and maintain on its website a document that specifies the standard terms, conditions and specifications for each type of *reserve contract*, including permitted variations from those standard terms, conditions and specifications; and
  - (2) may amend such document from time to time.

The Commission considers that this would provide the information that market participants and potential emergency reserve providers need in order to make the best decision that they can.

The Commission also encourages AEMO to consider the feedback received from stakeholders on implementation, in particular, with respect to consulting with stakeholders so as not to lock out potential efficient RERT providers. The Commission notes that the standardised products proposed in the rule change request were developed in consultation with stakeholders and includes options for variations.

The Commission also encourages AEMO to provide as much timely information if it does intend to standardise emergency reserves. The Commission notes that AEMO's exercise of the RERT has to be consistent with the RERT guidelines and AEMO's procedures, and that includes the standardisation of products.

#### Prescription - Specific design features

Generally speaking, the Commission considers that it would also be inappropriately restrictive to embed design features in the NER – it would undermine flexibility and lead to inefficient outcomes. This applies to notification lead time and eligible technologies, discussed next.

The exceptions to this relate to payment structure, which is discussed in Chapter 7 as well as out-of-market provisions, discussed in the same chapter. In both of these cases, the Commission considers some prescription is warranted due to cost issues, as discussed in that chapter.

#### Notification lead time

The shorter the notification period or notification lead time, the more time the market has to respond to a shortfall, and the less chance that emergency reserves are unnecessarily dispatched due to changing forecasts. A shorter notification period also means that AEMO is able to use such reserves for unexpected or sudden shortfalls that were not previously forecast.

As noted in the consultation paper, on the other hand, some reserve products require a long notification period, including potentially some industrial loads or behavioural-based demand response,<sup>627</sup> in order to be able to offer their products into the RERT.<sup>628</sup>

On balance, the Commission considers that prescribing notification lead times for products would be restrictive and may limit the number of providers participating in the RERT. As a result, the final rule does not introduce any prescription with respect to notification lead time.

However, the Commission acknowledges stakeholders' concerns regarding the potential costs of products with long notification lead times. These concerns are being addressed through enhanced reporting requirements, whereby the final rule requires AEMO to explain its procurement and dispatch decisions, as well costs of the RERT, in more detail.

The Commission also notes that AEMO is required to comply with the RERT principles when exercising RERT, i.e. AEMO is required to minimise costs. The final rule also includes a new RERT principle with respect to costs.

#### Eligible technologies

The Commission considers that prescription is not required with respect to eligible technologies.

As with most other design features, it is best left to AEMO and the tender process to determine which technologies would be best to participate in the RERT, noting that the NEM is in a period of rapid technology change and technologically neutral approaches tend to work best, rather than picking winners.

With respect to distribution network service providers (DNSPs) providing demand response through voltage reduction, stakeholders have raised concerns around potential ringfencing breaches or that networks are effectively getting paid twice, suggesting that providing voltage reduction should be mandated in the NER.<sup>629</sup>

However, the Commission considers that this is a matter for the AER rather than for this rule change. Notably, the AER is able to classify RERT services through its distribution service classification processes and then apply its ringfencing obligations to those services based on their classification.

In September 2018, the AER published its final decision on the Distribution Service Classification Guidelines and Asset Exemption Guideline. The AER concluded that RERT services are not to be listed or classified in the baseline services list.<sup>630</sup> This means that the RERT is an unregulated service operating in a contestable market, and therefore, DNSPs would need to comply with its ringfencing obligations in order to participate in the RERT, or

<sup>627</sup> This generally means that consumers change their behaviour in response to a signal to do so, as opposed to demand response that can be remotely controlled and "automatically" deployed.

<sup>628</sup> AEMO, Enhanced RERT - high level design proposal, Enhancement to the RERT rule change request, p.6

<sup>629</sup> Ringfencing obligations addresses the risk that a network service provider will cross-subsidise non-distribution services with regulated revenue earned from the provision of distribution services. For example, using its regulated revenue to gain an advantage in the provision of RERT services. Stakeholders expressed concerns that providing RERT services would be in breach of this.

<sup>630</sup> See https://www.aer.gov.au/system/files/AER%20-%20Explanatory%20Statement%20-%20Distribution%20Service%20Classification%20Guideline%20-%2028%20September%202018.pdf

seek a ringfencing waiver. Otherwise, they would be in breach of its ringfencing arrangements.

The AER also noted that issues in relation to the RERT will be addressed on a case-by-case basis through the framework & approach process and through regulatory determination processes if relevant and if raised.

# 11 IMPLEMENTATION

This chapter sets out the proposed steps and timetable for implementing the final rule, including the interim steps that will need to be taken by AEMO and the Reliability Panel.<sup>631</sup> The chapter also discusses transitional rules.

The Commission has determined to adopt a staggered, two-stage approach to implementation:

- 1. New specific reporting requirements will commence by **31 October 2019**.
- 2. All the remaining elements of the final rule (i.e. the new RERT framework) commence on **26 March 2020.**

The Commission has revised the implementation time frame set out in the draft determination (which required substantive parts of the rule to commence on 31 October 2019) in recognition of AEMO's concerns that this time frame "does not provide AEMO enough time to develop the required new methodology [for RERT procurement] and undertake consultation."<sup>632</sup> AEMO therefore proposed the new Rule apply after summer 2020.<sup>633</sup>

## 11.1 Staggered implementation approach

The Commission notes that AEMO did not comment on implementation and time frames in its rule change request. The Commission did not directly consult on the implementation of the rule in either its consultation paper or options paper. As such, stakeholders did not discuss the implementation of the rule in their submissions to these two papers.

Previously, the Commission understood that AEMO wanted the enhanced RERT (as proposed by AEMO) in place for summer 2019-20. However, in its submission to the draft determination AEMO clarified its position on implementation:<sup>634</sup>

The AEMC proposes that the new rule will take effect on 31 October 2019. AEMO is expected to start consultation on the RERT procedure, post 27 June 2019 after the reliability panel publishes the RERT guideline. AEMO does not consider this timeline will provide sufficient time to undertake the proper design and full stakeholder consultation on the updated procedures including developing the new methodology for procurement and determining the estimated load shedding VCR. As discussed earlier, the VCR review will not be finalised by the AER until 31 Dec 2019, which presents further obstacles for AEMO to design the estimated load shedding VCR.

In addition, having a new rule starting at the very start of summer could interfere with the process of RERT procurement and AEMO's daily operations. For example, it might affect contracts that are under negotiation around the kick-off date, and AEMO might

<sup>631</sup> The Commission does not expect the implementation of the draft rule would require any other parties to take additional steps.

<sup>632</sup> AEMO submission to the draft report, p. 4.

<sup>633</sup> Ibid.

<sup>634</sup> AEMO submission to the draft determination, p. 4

> need to update the relevant procurement documents following the publication of the new RERT procedure (e.g., contracts, Invitation to Tender). This could cause delays and risk to the system if AEMO needs to sign new RERT contracts urgently. Further, AEMO might have less available staff resources available for administrative work during summer due to summer operations taking priority for AEMO staff and leave arrangements.

Therefore, AEMO proposes the new Rule apply after summer 2020. However, AEMO recognises the importance of providing additional transparency to the market and is willing to undertake the reporting requirement (with the appropriate transition arrangement for methodologies that still will be under development) from 31 October 2019.

The EUAA was the only other stakeholder to directly comment on implementation. Its submission supported the "fast track timetable that enables the new rule to be in place prior to summer 2019/20."<sup>635</sup>

In determining an appropriate commencement date the Commission considered:

- The time frames required by the Reliability Panel and AEMO to review required documents, i.e. the RERT guidelines and procedures.
- The desire for the enhanced RERT to be fully implemented in a timely manner, such that, if required, AEMO can procure emergency reserves under the new framework as soon as practical.
- The pressing need for the transparency of the RERT framework to be improved, as noted by many stakeholders.

Based on these considerations and in recognition of the concerns expressed by AEMO the Commission has determined to adopt a **staggered**, **two-stage approach to implementation** of the enhanced RERT framework:

- 1. Specific reporting requirements will commence by 31 October 2019, with the first RERT report published in January 2020.
- 2. All the remaining elements of the final rule commence on 26 March 2020.

This allows the reporting framework to be in place prior to the 2019-20 summer, so that stakeholders can benefit from the increased transparency of RERT for the upcoming summer.

Not all reporting requirements are able to be reported by 31 October 2019 as some of the enhanced reporting requirements rely on the enhanced RERT framework (i.e. the new framework to be introduced by the final rule) to be in place before they can be reported on. For example, the new forward-looking requirements on the detailed methodology and assumptions for entering into RERT contracts, as this would depend on the new framework. As a result, the Commission assessed which reporting requirements are able to be reported by 31 October 2019 and considered that the ones in the table below could be reporting earlier.

<sup>635</sup> EUAA, submission to draft determination, p.2.

With respect to clauses 3.20.6(e)(7) and 3.20.6(e)(8), which required AEMO to report on the differences between what was dispatched, and what was not dispatched (such as the differences in volumes or periods), the Commission expects AEMO to report these based on its existing methodology. Given that this methodology is not detailed, the Commission would expect AEMO to report the differences at a high level only. Once the new methodology is in place in March 2020, AEMO would then be expected to report more comprehensively on this aspect of the requirements.

The specific reporting requirements ("initial reporting requirements") that will commence by 31 October 2019 are listed in the table below. AEMO is able to undertake these requirements independently of its review of its procedures.

#### Table 11.1: Reporting requirements AEMO will undertake by 31 October 2019

REPORTING STREAM	NER REFERENCE	DESCRIPTION OF REPORTING REQUIREMENT	NEW OR EXISTING RE- QUIREMENT?
Quarterly RERT report -Forward looking element	Cl. 3.20.6(d)(1)	Provide the estimated average amount payable by AEMO under reserve contracts for each region, broken down by payment type	New
<b>Quarterly RERT report</b> -Backward looking element	Cl. 3.20.6(e)(1)	Explanation of circumstances giving rise to need for dispatch/activation of reserves including analysis	New rules more specific than existing
	Cl. 3.20.6(e)(2)	Explanation of how AEMO determined latest time for the dispatch/activation of reserves and how it determined that a market response would not have avoided the need for RERT	Existing
	Cl. 3.20.6(e)(3)	Explanation of changes in dispatch outcomes due to the dispatch/activation of RERT	Existing
	Cl. 3.20.6(e)(4)	Explanation of process implemented by AEMO to dispatch/activate the reserves	Existing
	Cl. 3.20.6(e)(5)	If applicable, explanation of why AEMO did not follow any or all of the processes set out in rule 4.8	Existing
	Cl. 3.20.6(e)(6)	If applicable, explanation of why AEMO considered it impractical to set spot prices and ancillary service prices in accordance with cl. 3.9.3(b)	Existing
	Cl. 3.20.6(e)(7)	Explanation of the amount of reserves dispatched or activated, and if applicable, why such amounts were different to those previously forecast or modelled by AEMO	New
	Cl. 3.20.6(e)(8)	Explanation of the periods in which reserves were dispatched or activated, and if applicable, why such periods were different to those previously forecast or modelled by AEMO	New

REPORTING STREAM	NER REFERENCE	DESCRIPTION OF REPORTING REQUIREMENT	NEW OR EXISTING RE- QUIREMENT?
	Cl. 3.20.6(e)(10)	Explanation of the impact of the dispatch of scheduled reserves or activation of unscheduled reserves on: the reliability of supply into the market; or where applicable, power system security	New
	Cl. 3.20.6(f)(1)	Provide AEMO's costs associated with exercising the RERT (including an amount expressed in \$/MWh)	New rules more specific than existing
	Cl. 3.20.6(f)(2)	Specify the recovery of costs (including an amount expressed in \$/MWh) from each Market Customer, as determined by AEMO, in each region	New rules more specific than existing
	Cl. 3.20.6(g)(1)	Specify each occasion during the financial year on which it secured the availability of reserves by entering into reserve contracts	Existing
	Cl. 3.20.6(g)(2)	Specify each occasion during the financial year when reserves were dispatched or activated	Existing
	Cl. 3.20.6(g)(3)	Specify its costs and finances in connection with its RERT activities during the financial year according to appropriate accounting standards.	Existing
<b>Post-</b> <b>dispatch/activation</b> <b>report</b> published within five business days of an event	Cl. 3.20.6(a)(1)	Provide the total estimated payments made under reserve contracts for the relevant region	New
	Cl. 3.20.6(a)(2)	Provide the total estimated volume (in MWh) of reserves dispatched or activated under reserve contracts, for the relevant region.	New

New reporting requirements that are dependent on the new RERT principle in relation to the cost of the RERT or relate to clarifications made by the final rule to the procurement trigger and volumes cannot be undertaken by AEMO by 31 October 2019 - this includes the new methodology on RERT procurement volumes (required under cl. 3.20.7(e)(2)) because the other changes in relation to cost, procurement trigger and volume, have not yet been implemented at that time. These requirements ("subsequent reporting requirements") along with all the other elements of the final rule (i.e. new RERT framework) will commence on 26 March 2020.

The commencement dates for the different schedules of the final rule and the transitional provisions in schedule 3 of the final rule provide for a staggered approach to implementation. Specifically, the new reporting requirements that do not rely on the new RERT procurement and cost recovery provisions commence on 31 October 2019, with the first RERT report to be made following the first quarter of the those reporting obligations being in place (i.e. 30 business days after 31 December 2019). Under the transitional provisions, AEMO is not required to report on the subsequent reporting requirements until after the first RERT report after the RERT procurement and cost recovery provisions commence on 26 March 2020.

The final transitional rule also clarifies how the new reporting requirements in clause 3.20.6 apply to existing reserve contracts and reserves dispatched under those contracts:

- The reporting requirements under clause 3.20.6 of the existing rules will apply to reserve contracts entered into, and reserves dispatched or activated prior to 31 October 2019.
- The initial set of new reporting requirements under clause 3.20.6 as modified by the final rule will apply to reserve contracts entered into, and reserves dispatched or activated from 31 October 2019 until 26 March 2020; and
- All the new reporting requirements under clause 3.20.6 as modified by the final rule will apply to reserve contracts entered into, and reserves dispatched or activated from 26 March 2020.

Prior to 26 March 2020, AEMO is still able to use the existing RERT framework, including the long-notice RERT, to procure reserves in response to projected shortfalls of supply.

The Commission notes AEMO will also need to make some operational and administrative changes, for example, to comply with additional reporting requirements (set out in Chapter 9) and changes to cost recovery (set out in Chapter 8) for the final rule to commence.

The Commission will work with both the Reliability Panel and AEMO to reduce implementation risks.

## 11.2 Documents requiring revision if the rule is made

In terms of process, for the final rule to commence two key documents will need to be revised:

• first, the Panel will need to update its RERT guidelines

 then, once the Panel has updated its guidelines, AEMO will need to update its RERT procedures.

#### 11.2.1 Panel's RERT guidelines

The Panel's RERT guidelines provide additional guidance to AEMO on the RERT principles and to the cost-effectiveness of the RERT.<sup>636</sup> The RERT guidelines specify what AEMO is required to take into account when exercising the RERT.<sup>637</sup>

The guidelines will need to be updated by the Panel to ensure they reflect the final rule. The review of the guidelines must be completed in accordance with the Panel consultation process, outlined in Clauses 8.8.3(d)-(I) of the NER. This consultation process involves:

- The publication of a notice of commencement of the review of the guidelines.
- A period of at least four weeks for stakeholders to provide submissions, following publication of the notice (or such other time specified by the Commission in any request for a review).
- The Panel holding a public meeting (either at its own initiative or if requested).
- The Panel publishing a report,<sup>638</sup> following its consideration of submissions.

#### 11.2.2 AEMO's RERT procedures

AEMO publishes a procedure for the exercise of the RERT under clause 3.20.7(e) of the NER. This procedure takes into account the RERT principles and RERT guidelines. AEMO's procedure for the exercise of the RERT document provides information on AEMO's procedures in relation to the RERT panel, the evaluation of tenders, procurement of the RERT, the publication of information and the activation/dispatch of the RERT.

Once the Panel has completed its review of the RERT guidelines, AEMO will need to update its procedures to ensure they reflect the final rule and revised guidelines. AEMO's review of its procedures must be completed in accordance with the rules consultation procedures outlined in Rule 8.9 of the NER. The rules consultation process involves:

- The publication of a notice of commencement of the review of the procedures.
- A period of at least five weeks for stakeholders to provide submissions, following publication of the notice.
- AEMO considering all submissions within four weeks, with any public meetings to be held within a further five weeks.
- AEMO publishing a draft report,<sup>639</sup> following the conclusion of any meetings.

<sup>636</sup>  $\,$  See section 5 of the RERT guidelines.

<sup>637</sup> The RERT guidelines list what AEMO may take into account when it is determining whether to enter into contracts for the RERT and in dispatching the RERT. The guidelines also provide some guidance to AEMO as to how it may contract for reserves and how much time AEMO has to procure the RERT prior to the shortfalls occurring,

<sup>638</sup> The report must set out the Panel's recommendations or determinations, its reasons for these recommendations or determinations, and the procedure followed in undertaking the review or determination.

<sup>639</sup> The draft report is to set out: AEMO's conclusions and any determinations; its reasons for those conclusions; the procedure followed by AEMO in considering the matter; summaries of material issues raised by stakeholders in submissions and meetings and AEMO's response to each such issue; and in a notice at the front of the draft report, an invitation to make written submissions on the draft report.

- A period of at least two weeks for stakeholders to provide submissions on the draft report (or such longer period as determined by AEMO).
- AEMO considering all submissions to the draft report within six weeks.
- AEMO publishing a final report,<sup>640</sup> following its consideration of submissions.

#### 11.2.3 Proposed approach to the review of the guidelines and procedures

Consistent with the relevant consultation processes stipulated by the NER, via transitional arrangements the Commission will require:

- The Panel to publish its final RERT guidelines, taking into account the amending rule, by **30 August 2019**.
- AEMO to publish its RERT procedures, taking into account the amending rule and the updated RERT guidelines, by 26 March 2020.

These timeframes allow the enhanced RERT to be fully implemented in a timely manner, such that, if required, AEMO can procure emergency reserves under the new framework after summer 2019-20, consistent with AEMO's preferences on these matters.

Noting feedback from AEMO, the Commission considers these timeframes provide sufficient time for the Panel and AEMO to comprehensively review the required documents, in accordance with the consultation process stipulated by the NER. The Commission emphasises that two rounds of consultation for the review of RERT procedures should be conducted by AEMO (as required by the NER) given the significant concerns around transparency raised by stakeholders.

The updated implementation date also addresses AEMO's concerns around the time that it needs to implement the enhanced RERT framework, particularly in avoiding the summer period. It gives AEMO almost 11 months to implement the new framework, including almost seven months to update its procedures once the Reliability Panel has updated the RERT guidelines.

At the same time, AEMO is required to report on a number of reporting requirements this summer, which addresses significant stakeholder feedback received by the Commission on the need to improve the transparency of the RERT framework.

## 11.3 Other transitional rules

#### 11.3.1 Reserve contracts that are signed and in place prior to rule commencement

The final rule will not be retrospective. That is, none of the amendments to the final rule affect any reserve contract entered into prior to the commencement date. For example, if AEMO entered into a reserve contract with provider ABC in January 2020 for the 2020 spring period, and the final rule came into effect in March 2019, the terms of AEMO's existing contract with provider ABC would be unaffected by the new RERT framework. To be clear, prior to the commencement of the rule, AEMO would still be able to use the existing RERT

<sup>640</sup> The final report is to set out: AEMO's conclusions and any determinations; its reasons for those conclusions; the procedure followed by AEMO in considering the matter; summaries of material issues raised by stakeholders in submissions and meetings and AEMO's response to each such issue.

framework, including the long-notice RERT, to procure reserves in response to projected shortfalls of supply.

Therefore, the final transitional rule states "nothing in the amending rule affects any reserve contract entered into prior to the commencement date".

# **ABBREVIATIONS**

AEC	Australian Energy Council
AEMC	Australian Energy Market Commission
AEMO	Australian Energy Market Operator
AER	Australian Energy Regulator
ARENA	Australian Renewable Energy Agency
CBD	Central Business District
COAG	Council of Australian Governments
Commission	See AEMC
C&I	Commercial and industrial
DR	Demand response
EAAP	Energy Adequacy Assessment Projection
ECA	Energy Consumers Australia
ECM	Economic cost minimisation
EEC	Energy Efficiency Council
ENA	Energy Networks Australia
ESB	Energy Security Board
ESOO	Electricity statement of opportunities
EUAA	Energy Users Association of Australia
EY	Ernst & Young
FCAS	Frequency control ancillary services
FUM	Forecast uncertainty measure
GWh	Gigawatt hour
HILP	High-impact low-probability
LOLE	Loss of load expectation
LOLP	Loss of load probability
LOR	Lack of reserve
LRC	Low reserve conditions
MCE	Ministerial Council on Energy
MEU	Major Energy Users
MPC	Market price cap
MW	Megawatt
MWh	Megawatt hour
NEL	National Electricity Law
NEM	National Electricity Market
NEO	National electricity objective
NER	National electricity rules
NSCAS	Network support and control ancillary services

Panel	Reliability Panel	
PASA	Projected assessment of system adequacy	
POE	Probability of exceedance	
POLR	Procurer of Last Resort	
RERT	Reliability and Emergency Reserve Trader or	
	emergency reserves	
RRO	Retailer reliability obligation	
RSIG	Reliability standard implementation guidelines	
SACOSS	South Australian Council of Social Services	
SAPN	South Australia Power Networks	
SRMC	Short run marginal cost	
UPS	Uninterruptible power supplies	
USE	Unserved energy	
VCR	Value of customer reliability	

Australian Energy Market Commission Rule determination Enhancement to the Reliability and Emergency Reserve Trader

Α

# SUMMARY OF OTHER ISSUES RAISED IN SUBMISSIONS

This appendix sets out the issues raised in the first (consultation paper), second (options paper) and third (draft determination) rounds of consultation on this rule change request and the AEMC's response to each issue. If an issue raised in a submission has been discussed in the main body of this document, it has not been included in this table.

STAKEHOLDER	ISSUE	AEMC RESPONSE			
Minimising market distortions					
ERM Power, submission to consultation paper, p. 5.	ERM Power suggested that there is a case for in- market demand response to participate in the Reliability and Emergency Reserve Trader (RERT or emergency reserves) if they would not otherwise be dispatched because prices during RERT activations remained low, meaning that their in-market demand response was not activated but the RERT was.	The Commission acknowledges that prices are not always high across the entire RERT event. This is discussed in Chapter 10. However, this does not justify allowing in-market resources to participate in RERT. The Commission notes that RERT is an out-of-market mechanism in order to minimise distortions and that the final rule strengthens those provisions. The Commission is currently considering wholesale demand response through three rule change requests submitted by PIAC/TEC/TAI; South Australian Government; and the AEC. These three rule change requests look at ways to facilitate wholesale demand response and so in-market reserves.			
Flow Power, submission to draft determination, p. 2.	Flow Power suggested that since wholesale demand response and RERT programs are entirely measurable and visible to AEMO, a system could be put in place with an appropriate mechanism to measure the outcome of each program to avoid duplication and	The Commission considers that there is merit in this concept. However, as it would require a re-think of how demand response works, the Commission concludes that it may be more appropriately progressed through the three demand response rule changes currently			

#### Table A.1: Summary of other issues raised in submissions
STAKEHOLDER	ISSUE	AEMC RESPONSE	
	gaming of both systems: For example, RERT payments may be reduced by the prevailing market price during any RERT events. This is an efficient price signal and allow the market to not compromise the development of the demand resource resources.	under way.	
Cost recovery			
		The Commission considers that all loads that are on at the time of a reliability event contribute somewhat to the event.	
EUAA, submission to consultation paper, p. 1.	EUAA stated that it has members with flat loads that are now facing very large and unexpected emergency reserve bills for a problem they believe they did not contribute to.	The final rule introduces a number of reporting requirements aimed at improving transparency, particularly with respect to the expected costs of the RERT and so the impact on customer bills. In addition, the final rule makes it clear that the amount of reserves that AEMO can purchase is set at an amount that is guided by the reliability standard: this is reviewed by the Reliability Panel and encompasses a trade off between the costs to consumers of load shedding and the costs of having a more reliable system.	
Procurement trigger and volume and general procurement process			
Infigen, submission to options paper, p. 5.	Infigen tentatively supported option 2 for procurement of short-notice RERT as it provides a more explicit framework for implementing the underlying principles of the reliability standard.	The Commission notes that applying AEMO's assessment model for the short-notice RERT procurement only as proposed under option 2 would have the same impact as applying it for long-notice RERT, i.e. it would lead to two standards resulting in increased costs.	

STAKEHOLDER	ISSUE	AEMC RESPONSE
		Under the final rule, AEMO may still use its economic cost assessment model to help guide its decisions about how many reserves to procure, if it has identified a breach of the reliability standard.
Flow Power, submission to options paper, p. 10.	Option 1 could be adopted as a transitional measure. For example, this could be in place for two years, with option 3 replacing option 1 after two years.	The Commission does not consider that this is appropriate as introducing a sunset clause would limit the benefits of option 1 with respect to certainty and clarity of the emergency reserve framework.
Intervention framework		
Meridian, submission to consultation paper, p. 6.	A short duration direction (i.e. under clause 4.8.9 of the NER) of minimal impact should be reasonably preferred against an alternative that might require an expensive reserve trigger.	The Commission notes that the sequence in which interventions occur is outside of the scope of this rule change but is being examined through the Commission's <i>Investigation into Intervention</i> <i>Mechanisms and System Strength in the NEM</i> .
Origin, submission to consultation paper, p. 4.	Consideration should also be given to the appropriateness of using RERT ahead of directions. Given RERT is designed to operate as a last resort mechanism, it is not clear why generation capacity within the system is not called upon through the directions framework ahead of such intervention.	The Commission notes that the sequence in which interventions occur is outside of the scope of this rule change but is being examined through the Commission's <i>Investigation into Intervention</i> <i>Mechanisms and System Strength</i> .
Meridian, submission to options paper, p. 5.	Given the RERT is only intended to be activated at times when the market has failed to deliver sufficient capacity to meet the reliability standard, there is a strong basis for the argument that the market price should be set to the MPC whenever the RERT is activated.	The Commission notes that the way the market is priced when RERT is activated is outside of the scope of this rule change but is being examined through the Commission's <i>Investigation into Intervention</i> <i>Mechanisms and System Strength.</i>

STAKEHOLDER	ISSUE	AEMC RESPONSE
	Broadening the definition of unserved energy (USE) in the National Electricity Rules (NER), used by AEMO to inform the market, may result in the need for strategic reserves less often.	
TransGrid, submission to consultation paper, p. 2.	The current definition of unserved energy in clause 3.9.3C of the NER excludes occurrences from multiple contingency events, protected events and non- credible contingency events. Occurrences similar to load shedding such as voluntary curtailment, mandatory restrictions and large market responses are also not included, even when the effect on consumers is similar to unserved energy.	The Commission notes that the definition of unserved energy is outside of the scope of this rule change. It is being examined through the Reliability Panel's review of the definition of unserved energy.
Major Energy Users, submission to options paper, p. 3.	The MEU considers that load shed (whether voluntary or involuntary) should be included in the calculation of the reliability standard.	The Commission notes that the definition of unserved energy is outside of the scope of this rule change. It is being examined through the Reliability Panel's review of the definition of unserved energy.
	Meridian noted that large users are being shed due to automatic voltage protection (often installed as a requirement of the network).	
Meridian, submission to draft determination, p. 2.	It further noted that these load shedding events are not recorded for any calculations (i.e USE, STPIS or SAIDI). It is also possible, if not likely, that solar generation may be facing similar unrecorded disconnections. Customers face the potential of paying twice for reliability and actually receiving an unreliable service.	The Commission notes that the definition of unserved energy is outside of the scope of this rule change. It is being examined through the Reliability Panel's review of the definition of unserved energy.

STAKEHOLDER	ISSUE	AEMC RESPONSE
AEC, submission to draft determination, p. 2.	The AEC stated that there remains a widespread misconception that short-term interventions target zero USE, noting that confusion arises from the use of a reserve margin. It notes that this margin is derived from an economic trade off of USE versus cost (through the FUM or through the concepts of credible contingency events)	The Commission agrees with the AEC's characterisation of the reserve margin. Indeed, the LOR framework allows for a more conservative approach to the reliability standard - but it does not target zero USE. As noted by the AEC, this would not be possible as it would imply that AEMO would need to purchase an infinite amount of emergency reserves in order to meet that goal, which would be very costly. This is discussed in Chapter 5, under the reliable operating state (i.e. implies no load shedding). The Commission ruled out linking the procurement trigger to a reliable operating state for that reason. However, the reliability framework, itself provides that, in real time, AEMO is required to maintain the system to a reliable operating state. In real time, AEMO is required to avoid load shedding, using the tools available to it, if the market fails. However, it is not expected to do so at any costs nor is it expected to purchase an infinite amount of emergency reserves to do so - the RERT only allows AEMO to procure up to a certain amount. Similarly, the framework also recognises that if power security becomes an issue, then reliability can be compromised.
Forecasting		
Stanwell, submission to options paper, p. 6.	Given the impact of AEMO's forecasts on market participants and consumers through RERT	The Commission notes that forecasting is outside of the scope of this rule. The recommendations mentioned by

STAKEHOLDER	ISSUE	AEMC RESPONSE	
	procurement costs, Stanwell supports a more collaborative and transparent approach to AEMO's forecast development. Stanwell is pleased to note the developments in this area such as the forecast recommendations in the AEMC's Reliability Frameworks Review.	Stanwell are in progress, with the AER expected to submit rule change requests on these recommendations shortly. The RRO should also improve forecasting transparency, due to new guidelines and reporting requirements that will be in place.	
Snowy Hydro, submission to options paper, p. 10.	AEMO's over forecasting of demand has unnecessarily triggered the activation of the RERT with the direct cost of the RERT being passed on to consumers. As a consequence, AEMO's RERT is impacting market participants.	The Commission notes that demand forecasting is outside of the scope of this rule change but agrees that unnecessary RERT costs are borne by consumers, and should be minimised. The final rule will minimise the potential for this to occur (e.g. through the clarifications made to the procurement trigger).	
EUAA, submission to options paper, p. 2.	Alternative simulation-based approaches have merit but are ultimately limited by the quality of forecasts, assumptions and the computational resources deployed. The key demand forecasts by AEMO underpinning these simulations have been demonstrated repeatedly to have a bias toward overestimating demand (particularly in Victoria).	While demand forecasting is outside of the scope of this rule change, the Commission notes that it has examined the way AEMO operationalises the reliability standard in Chapter 4.	
Retailer Reliability Obligation			
Snowy, submission to draft determination, p. 7.	Snowy Hydro stated that it was important that the cost recovery approach by the ESB's Procurer of Last Resort remains consistent with RERT cost recovery.	The Commission notes that the ESB has consulted on the Procurement of Last Resort under the RRO. This is a separate process from this rule change request.	
MEU, submission to draft determination, p. 3.	As the RRO will potentially recover some of the RERT costs incurred in any year, the MEU considers that the cost recovery approach needs to be more explicit in	The Commission notes that the ESB has consulted on the Procurement of Last Resort under the RRO. This is a separate process from this rule change request.	

STAKEHOLDER	ISSUE	AEMC RESPONSE
	managing the recovery of costs. Specifically, the MEU considers that out of the total RERT cost in a year, the cost of the RRO liability should be the first element allocated out of the RERT and then the draft rule proposed approach for cost recovery should apply to any amount remaining in the RERT account after the RRO liability has been paid by those that are liable for RRO payments.	
Enel X, submission to draft determination, p. 3.	Enel X would argue that the success of the RRO relies on AEMO being able to accurately forecast expected breaches of the reliability standard. A number of factors are challenging AEMO's ability to do this. Enel X questions whether the RERT framework, as proposed in the draft determination, will be sufficient in itself if the RRO framework fails to forecast reliability shortfalls. Enel X also questions whether the proposed RERT framework will be robust to any changes to the RRO framework in the future.	The Commission notes that forecasting is outside of the scope of this rule. However, the Commission has made a number of recommendations on this in the past to improve transparency. Rule changes on this are expected shortly. The Commission also notes that the RRO introduces a number of obligations with respect to forecasting, including a best practice guidelines and forecasting guidelines. The Commission considers that the enhanced RERT framework is fit for purpose with or without the existence of the RRO. The Commission would assess the impacts of any changes to the RRO rules in the future as it would with any other rule changes.
AEMO, submission to draft determination, p. 12.	The RRO only requires retailers to cover up to 1-in-2- years but might not address the tail-end risks that are	The Commission notes that the RRO is one of the many aspects of the reliability framework in the NEM. The aim

STAKEHOLDER	ISSUE	AEMC RESPONSE
	caused by POE10 events.	of the RRO is to incentivise investment and contracting, which will promote reliability in the NEM.
Other issues		•
TransGrid, submission to consultation paper, p. 2.	TransGrid supported consideration of the development and use of a 'pre-qualification' panel of reserve providers ahead of time, which could avoid the use of costly contracts a long way in advance, while giving potential reserve providers an indication of the likely need for their services.	The Commission notes that there is already a Panel for short-notice and medium-notice RERT for that purpose. Therefore, the Commission does not consider that anything additional is required in the NER.
CitiPower, Powercor & United, submission to consultation paper, p. 2.	AEMO's high level design should discuss the communication methods it will use to alert RERT participants of an event, and that the communication options be expanded. Currently participants must check a web portal established by AEMO to know whether an event is being called. A direct link to participants' control centres would enable us to respond faster and potentially offer more products.	The Commission considers that operational matters of this nature are matters for AEMO to consider, rather than the Commission through this rule change.
Flow Power, submission to options paper, p. 8.	Reviews of the cost of the RERT (the costs can be well in excess of the VCR) are needed in order to review the economic assessments being undertaken for using RERT and whether these need to be improved. This is also essential to avoiding a regime where the RERT is used every or most years.	The Commission's final rule improves transparency of the cost and use of the RERT through regular, detailed reporting. The final rule also clarifies the circumstances in which AEMO may procure emergency reserves.
Major Energy Users, submission to options paper, p. 4.	As there is demonstrably an adequate tool for incentivising supply or a decision to voluntarily not	As noted by the Commission, the VCR and MPC are different. The Commission's final rule introduces a new

STAKEHOLDER	ISSUE	AEMC RESPONSE
	take supply in the wholesale market (the MPC) the MEU does not consider that VCR should be used in	RERT principle that the cost of RERT should not exceed estimated average VCR.
the wholesale market for any purpose and specifically should not be used for developing the RERT supplies by AEMO.		The Commission also notes that the MEU, based on its submission to the draft determination, now supports the concept of using VCR for RERT costs.
ERM Power, submission to consultation paper, p. 3.	ERM Power was concerned that the discussion fails to consider that the RERT is not a one shot procurement process, but in fact allows AEMO to procure emergency reserves under different timeframes as the need for procurement is determined.	The Commission understands that there are three different types or notices of emergency reserves. The different types of notice are discussed throughout this determination. For example, the Commission explains the different triggers that exist over the long term, and the shorter term triggers through the lack of reserve framework.

# B LEGAL REQUIREMENTS UNDER THE NEL

This appendix sets out the relevant legal requirements under the National Electricity Law (NEL) for the AEMC to make this final rule determination.

### B.1 Final rule determination

In accordance with s. 102 of the NEL the Commission has made this final rule determination in relation to the rule proposed by AEMO.

The Commission's reasons for making this final rule determination are set out in Section 3.4.

In accordance with section 103 of the NEL that Commission has made the *National Electricity Amendment (Enhancement of Reliability and Emergency Reserve Trader) Rule 2019 No. 3.* The final rule accompanies the Commission's final rule determination and its key features are described in section 3.1.

### B.2 Power to make the rule

The Commission is satisfied that the more preferable final rule falls within the subject matter about which the Commission may make rules. The more preferable final rule falls within s. 34 of the NEL as it relates to the regulation of the operation of the national electricity market<sup>641</sup> and the operation of the national electricity system for the purposes of the safety, security and reliability of that system.<sup>642</sup>

### B.3 Commission's considerations

In assessing the rule change request the Commission considered:

- its powers under the NEL to make the rule
- the rule change request
- submissions received during first, second and third rounds of consultation
- views expressed from stakeholders at the workshop held for this rule change, as well as broader stakeholder views expressed through bilateral meetings
- input from the technical working group
- the Commission's analysis as to the ways in which the proposed rule will or is likely to, contribute to the NEO.

There is no relevant Ministerial Council on Energy (MCE) statement of policy principles for this rule change request.<sup>643</sup>

<sup>641</sup> Section 34(1)(a)(i) NEL

<sup>642</sup> Section 34(1)(a)(ii) of the NEL

<sup>643</sup> Under s. 33 of the NEL the AEMC must have regard to any relevant MCE statement of policy principles in making a rule. The MCE is referenced in the AEMC's governing legislation and is a legally enduring body comprising the Federal, State and Territory Ministers responsible for energy. On 1 July 2011, the MCE was amalgamated with the Ministerial Council on Mineral and Petroleum Resources. The amalgamated council is now called the COAG Energy Council.

The Commission may only make a rule that has effect with respect to an adoptive jurisdiction if satisfied that the proposed rule is compatible with the proper performance of AEMO's declared system functions.<sup>644</sup> The more preferable final rule is compatible with AEMO's declared system functions because it is unrelated to them and therefore it does not affect the performance of those functions.

# B.4 Civil penalties

The Commission cannot create new civil penalty provisions. However, it may recommend to the COAG Energy Council that new or existing provisions of the NER be classified as civil penalty provisions.

The final rule does not amend any clauses that are currently classified as civil penalty provisions under the NEL or National Electricity (South Australia) Regulations.

However, the Commission proposes to recommend to the COAG Energy Council that clause 3.20.3(h) and clause 3.20.3(i) of the final rule be classified as a civil penalty provision. The Commission considers these provisions to be important to the effective operation of rule 3.20 (in particular, the out-of-market provisions discussed in Chapter 7) and that a civil penalty will act as an appropriate deterrent for persons entering into reserve contracts with respect to reserve already committed to the market or through any other relevant arrangement. This is intended to supplement any contractual remedies available to AEMO under reserve contracts for breach by the counterparty.

# B.5 Conduct provisions

The Commission cannot create new conduct provisions. However, it may recommend to the COAG Energy Council that new or existing provisions of the NER be classified as conduct provisions.

The final rule does not amend any rules that are currently classified as conduct provisions under the NEL or National Electricity (South Australia) Regulations. The Commission does not propose to recommend to the COAG Energy Council that any of the proposed amendments made by the final rule be classified as conduct provisions.

<sup>644</sup> Section 91(8) of the NEL.

С

# RELIABILITY PANEL ADVICE ON RELIABILITY STANDARD

This appendix sets out the advice provided by the Reliability Panel to the Commission. The Commission had requested the Panel for advice in September 2018 on:

- whether the reliability standard i.e. 0.002 per cent unserved energy remains appropriate for the NEM
- whether there was any evidence in the recent review of the reliability standard and settings that the standard may need to be tightened, in some or all conditions, to meet community expectations, including any stakeholder submissions on this point
- the potential costs and benefits arising from any tightening of the reliability standard
- whether the Panel considered a different metric to the reliability standard (i.e. a metric that is different from unserved energy per region per year) as part of its analysis and any views on its appropriateness
- the implications that might arise if the RERT's procurement trigger was delinked from the reliability standard and what implications this may have for the reliability settings.

The advice was provided to the Commission on 28 September 2018. Both the request for advice and the advice itself can be found on the Commission's website.

The Panel's views are summarised below.

# Whether the reliability standard i.e. 0.002 per cent unserved energy remains appropriate for the NEM

The Panel acknowledged the reliability standard is "a crucial market standard". The Panel reitrerated its recommendation from its 2018 review of the reliability standard and settings:<sup>645</sup>

"the materiality threshold for reassessing the level of the reliability standard has not been met at this time for the following key reasons:

- the absence of any change in AEMO's value of customer reliability measure
- changes in the way consumers use electricity do not suggest they are markedly less reliant on grid-supplied electricity
- other factors such as changes in the costs of new entrant generation since 2014 and the benefits of predictability and stability."

The Panel noted that "nothing has changed in relation to these factors since the Panel made its final determination, and so there is no new evidence for the Panel to consider in order to change its earlier views that the current reliability standard is still appropriate".<sup>646</sup>

<sup>645</sup> Reliability Panel, 2018 Reliability standard and settings review, final report, p. 13

<sup>646</sup> Panel, 2018, Reliability Panel advice on the Enhancement to the Reliability and Emergency Reserve Trader rule change, p. 2

However, the Panel acknowledged that "the NEM is transforming, and these materiality criteria may be met in the future".<sup>647</sup> In this regard, the Panel noted that:<sup>648</sup>

- "the AER must publish the results of a VCR study by end of 2019. It is likely that these
  new VCRs will be different to the previous values that were used in the market. This
  could therefore be a trigger for the Panel to consider a future reassessment of the
  reliability standard at or prior to the next four yearly review, particularly, if the study
  reveals material changes in the value of customer reliability.
- the Panel will also continue to monitor emerging trends and uncertainties that bear on the effectiveness of the reliability standard and settings and which may affect the other two limbs of the materiality threshold to warrant reassessing the reliability settings."

# Evidence that the standard may need to be tightened, in some or all conditions, to meet community expectations, including stakeholder submissions on this point

The Panel restated its findings from its *2018 Reliability standard and settings review*, "notwithstanding the current level of the standard, EY modelling [conducted for the Panel's review] forecasts the system will provide a level of reliability significantly better than then 0.002 per cent reliability standard in all national electricity market regions, for the review period".<sup>649</sup>

The Panel reported that "submissions received during the consultation process for the 2018 review considered the current level of standard was appropriate.<sup>650</sup> All of the submissions that commented on this issue supported keeping the reliability standard at its current level" i.e. none suggested changing the level.<sup>651</sup>

#### Potential costs and benefits arising from the tightening of the reliability standard

The modelling conducted for the 2018 Reliability standard and settings review provided an estimate of the indicative costs associated with tightening the reliability standard. The Panel noted:<sup>652</sup>

"The modelling indicated that the expected unserved energy under the base scenario conditions in Victoria was very low at around 0.0000003 per cent in 2020-21. EY indicated that reducing this already low level of expected unserved energy to zero would require an additional 1,000 MW of capacity to be in place in Victoria in 2021-21. The additional cost of moving to (close to) zero expected unserved energy under the base scenario would increase wholesale energy costs by nearly 7 per cent (\$200 million per annum) in that region, as measured against current market outcomes in Victoria."

<sup>647</sup> Panel, 2018, Reliability Panel advice on the Enhancement to the Reliability and Emergency Reserve Trader rule change, p. 3.

<sup>648</sup> Panel, 2018, Reliability Panel advice on the Enhancement to the Reliability and Emergency Reserve Trader rule change, p. 3.

<sup>649</sup> Panel, 2018, *Reliability Panel advice on the Enhancement to the Reliability and Emergency Reserve Trader rule change*, p. 3. The Panel notes that the unserved energy outcomes presented by AEMO in its 2017 and 2018 Electricity Statement of Opportunities (ESOO) were higher than the unserved energy outcomes forecast by EY. It is important to note that the rationales that underpin these two models are different (as are the accompanying assumptions and sensitivities) so different results are unsurprising.

<sup>650</sup> Submissions from EnergyAustralia, Engie, PIAC, ERM Power, Snowy Hydro, EUAA and Origin all supported retaining the current level of the reliability standard.

<sup>651</sup> Panel, 2018, Reliability Panel advice on the Enhancement to the Reliability and Emergency Reserve Trader rule change, p. 4.

<sup>652</sup> Panel, 2018, Reliability Panel advice on the Enhancement to the Reliability and Emergency Reserve Trader rule change, p. 4.

#### Consideration of different metrics for the reliability standard

Alternative metrics for the reliability standard were not considered by the Panel in the 2018 Reliability standard and settings review.<sup>653</sup>

However, other metrics such as loss of load probability, were considered in the preparation of the 2016 Guidelines that guide the Panel's work on these matters.

As noted in its advice, in 2016 the Panel concluded that the form of the standard should be retained as USE and that it should not be automatically reassessed at each review, for the following reasons:<sup>654</sup>

- "Firstly, the NEM is an energy only market, with no separate market to incentivise investment in capacity. The Panel considers that the best way to determine if there has been sufficient capacity investment to meet customer demand is to measure the extent to which all customer demand has been met. A volumetric measure of energy demand met, such as USE, provides an optimal measure of the relative effectiveness of the NEM to meet customer demand.
- There are benefits in retaining the same form of standard to provide a level of certainty and stability to market participants and USE has been used for the reliability standard since market start. Maintaining the status quo has no inherent value, although a perception that it may be subject to regular change could create market uncertainty, potentially increasing the cost of investment. In the absence of any clearly identifiable benefit of changing the form of the standard, however, and given the limitations of each of the alternative types of measures, the Panel considers that these costs are not justified.
- Finally, the Panel remains satisfied that the form of the standard should remain defined as a probabilistic target for the purposes of system planning, defined as the maximum expected unserved energy. This measure of expected unserved energy is very important, as it recognises that there are many factors that may impact on the level of USE in a given year, with very different probabilities attached to each. A measure of reliability like expected USE recognises that in any given year, there is a risk that outlier events could result in the standard not being met."

Although the above considerations were made in 2016, the Panel acknowledged that:655

"Nothing material has changed that would necessitate further consideration of the reliability standard. If there are concerns that the reliability standard is not appropriate in the face of an increasingly peaky supply-demand balance, then the inputs and assumptions in operationalising the reliability standard may need to be reassessed rather than the standard itself. The Panel will continue to monitor system and market trends to confirm that the above conclusions remain valid."

<sup>653</sup> The 2016 guidelines establish that the form of the reliability standard should be retained as unserved energy and should not be assessed at each reliability standard and settings review.

<sup>654</sup> Reliability Panel, 2016, Review of the reliability standard and settings guidelines, final determination, p. 22

<sup>655</sup> Panel, 2018, Reliability Panel advice on the Enhancement to the Reliability and Emergency Reserve Trader rule change, p. 6.

# Implications that might arise if the RERT's procurement trigger was delinked from the reliability standard

The Panel considered that "the market price settings and the reliability standard are well integrated and encourages the Commission to maintain that integration. In other words, the Panel does not consider that the RERT's procurement trigger should be delinked from the reliability standard – at least in the long-term".<sup>656</sup>

The Panel elaborated:657

"Delinking the procurement trigger from the reliability standard would effectively create a separate standard. Imposing another standard that only relates to procurement of the RERT could distort investment signals. This would be problematic given the current frameworks for reliability in the NEM. So, the Panel would advise against delinking the RERT's procurement trigger from the reliability standard in the NEM, particularly in relation to the long-notice and medium-notice RERT (reserves procured up to nine months, and up to ten weeks, respectively, in advance).

In relation to the short-notice RERT (reserves procured up to ten days in advance), the Panel considers it less clear whether or not the procurement of the reserves should be linked to the reliability standard."

<sup>656</sup> Panel, 2018, Reliability Panel advice on the Enhancement to the Reliability and Emergency Reserve Trader rule change, p. 6.657 Ibid.

D

# PROCUREMENT OPTIONS ASSESSMENT

This Appendix provides more detail and analysis on the procurement options, set out in the options paper, assessed by the Commission. In particular, it:

- summarises stakeholder submissions
- sets out the process for assessing options
- discusses options 2 and 3 in detail.

### D.1 Summary of stakeholder submissions to the options paper

In submissions to the options paper, there was overwhelming support for option 1, little support for option 2, and mixed views on option 3, as shown in the table below. For a more detailed discussion, refer to Chapter 5.

Stakeholder	Option 1	Option 2	Option 3
Consumer groups and energy us	sers		
BlueScope	Yes	did not comment	did not comment
Energy Consumers Australia	did not comment	No	did not comment
Energy Efficiency Council	did not comment	Maybe	did not comment
EUAA	Yes	No	Maybe
MEU	Yes	No	No
Market bodies			
AEMO	No	Yes	No
Generators			
AGL	Yes	No	Yes
Alinta	Yes	No	Maybe
EA	Yes	No	Maybe
ERM Power	Yes	No	Maybe
Infigen	Yes	Maybe	No
Meridian	did not comment	No	No
Origin	Yes	No	did not comment
Snowy Hydro	Yes	No	Yes
Stanwell	Yes	No	No
Hydro Tasmania	did not comment	did not comment	did not comment
Networks			
ENA	Yes	No	Yes
Industry associations			
AEC	Yes	No	Yes
New tech and other			
Enel X	Maybe	Maybe	Maybe
Flow Power	Yes	No	Maybe

#### Figure D.1: Stakeholders' views on each option

Source: Stakeholder submissions to options paper.

To be clear, in the table above:

- Option 1 support means supporting linking the procurement trigger explicitly to the reliability standard and setting the procurement volume to the gap identified by a breach of the reliability standard.
- Option 2 support means removal of the explicit procurement trigger, and allowing AEMO to make procurement trigger and volume decisions through its assessment model. It also means support for delinking RERT and reliability standard.
- Option 3 support means option 1 support plus the additional constraint on AEMO provided by a different body (most likely the Reliability Panel) through additional guidance provided on how to operationalise the reliability standard. This would apply to entire reliability framework.

# D.2 Assessment of options

In order to assess each option against the assessment framework described in Chapter 3, the Commission fleshed out each option further and concluded on some design features which it consulted on through the options paper. These differences are noted in italics in the table below.

Option 1 is described and discussed in Chapter 5. Options 2 and 3, along with the Commission's conclusions and analysis, are described in more detail below.

### Table D.1: Refined procurement options

RERT FRAMEWORK	OPTION 1	OPTION 2	OPTION 3
Procurement trigger	Reliability standard (LOR and LRC) (Clarification that it would be through LOR and LRC)	None, except for high-level framework in NER to AEMO's assessment framework	Reliability standard (LOR and LRC) (Clarification that it would be through LOR and LRC)
Reliability standard	<ul> <li>No changes to reliability standard</li> <li>One standard for entire reliability framework</li> </ul>	<ul> <li>No changes to the reliability standard</li> <li>Two standards, one for RERT, one for rest of reliability framework</li> </ul>	<ul> <li>Changes to reliability standard through operationalisation.</li> <li>One standard – changes apply to entire framework</li> </ul>
Operationalisation of the reliability standard	Status quo – i.e. as per AEMO's methodology, which AEMO has the discretion to change through the rules consultation procedures.	N/A. AEMO's assessment framework used to determine both whether to procure and how much.	Reliability Panel provide more guidance which would be quite prescriptive e.g. effectively setting sub-annual targets (Clarification that the Panel would set the target, rather than having just an advisory role)
Procurement volume	Only as much as AEMO reasonably expects (i.e. there is discretion) is needed to address the gap identified by a breach of the reliability standard ( <i>Clarification that there would be</i> <i>some discretion on how much to</i> <i>procure for practicality</i> )	AEMO's assessment framework used to determine how much to procure. Framework based on ECM and additional risk metrics. (Addition of risk metric to take into account AEMO's submission)	Only as much as AEMO reasonably expects is needed to address the gap identified by a breach of the reliability standard - operationalisation changes would affect this. ( <i>Clarification that there would be</i> <i>some discretion on how much to</i> <i>procure for practicality</i> )

RERT FRAMEWORK	OPTION 1	OPTION 2	OPTION 3
AEMO's economic cost minimisation (ECM) model	AEMO discretion to use ECM.	Assessment framework includes ECM and additional risk metrics. (Addition of risk metric to take into account AEMO's submission)	AEMO discretion to use ECM.
Governance	<ul> <li>No changes.</li> <li>No oversight from the AER.</li> <li>(Confirmation that there is no oversight of the procurement trigger)</li> </ul>	<ul> <li>High-level framework in NER.</li> <li>Risk metric guidance from Panel in RERT guidelines.</li> <li>No oversight from the AER.</li> <li>(Addition of explanation of how the governance structure would work)</li> </ul>	<ul> <li>No changes.</li> <li>No oversight from the AER.</li> <li>(Confirmation that there is no oversight of the procurement trigger)</li> </ul>

Note: Italicised text shows what has been fleshed out or refined since the options paper was released.

Australian Energy Market Commission **Rule determination** Enhancement to the Reliability and Emergency Reserve Trader

# D.3 Option 2 - delinking the reliability standard

#### **Key design features**

The refined option 2 is designed to reflect AEMO's position based on its submissions to date, given that they are the main proponent of this option. Some design choices were also made by the AEMC to reflect what is commonly the case within the existing RERT framework, e.g. by leveraging off the role of the Panel.

Option 2 would remove the explicit procurement trigger and give AEMO discretion on when and how much to procure through its economic minimisation model (ECM) and externally-set risk metrics. The ECM would minimise the cost of emergency reserve contracts and the cost of load shedding (via the value of customer reliability).

There would be a high-level framework in the NER for the procurement of emergency reserves. The Panel would then be required to provide additional guidance on procurement (including on the ECM). The Panel would be required to set the risk metrics.

AEMO would be required to produce a methodology document to explain its assessment process, in accordance with the Panel guidelines and NER. There would be no oversight from the AER and the role of jurisdictions would remain unchanged.

The reliability standard (0.002 per cent expected USE) would remain as is and be delinked from the RERT framework, in effect, creating two reliability standards.

### **Commission's conclusions and analysis**

#### Impact of delinking the RERT procurement trigger

This option would delink the RERT from the reliability standard and the reliability framework and so would have the effect of creating two standards. The Commission thinks this is inefficient because it would create distortions with respect to the operational and investment incentives that market participants have and would lead to higher costs for consumers.

Even though under option 2 there would a role for the Panel to play in providing additional guidance to AEMO on the procurement process, the Commission is of the view that the distortions that would arise from delinking the RERT from the reliability framework (for example, it could potentially reduce the incentive that participants have to invest into generation or demand response within the market, if they think AEMO is already intervening to meet a higher level of reliability; or participants make be incentives to shift existing capacity from the market, into the RERT, particularly if RERT pays high availability payments would be significant and would occur even with guidance from the Panel. Market distortions are discussed in more detail in Chapter 7.

Put simply, delinking RERT and the reliability standard would mean that market participants would be expected to provide reliability up to the level of the reliability standard. AEMO, on the other hand, would be able to intervene in the market based on a *different* level of reliability. Given that AEMO's proposal in its submission to the options paper suggested that it wishes to have an additional trigger through a "risk metric", it could be expected that the

level of reliability through the RERT would be higher than what the market would be expected to provide, through the reliability standard. The reliability standard itself balances the risks of reliability and the costs/benefits of higher reliability. The Panel then reviews the level to make sure it is still consistent with consumer preferences, risk levels and cost of providing higher reliability.

It could therefore be expected that AEMO would be intervening regularly so as to meet the higher reliability standard implied by the RERT procurement standard. This would be inconsistent with how the reliability framework works and with the purpose of the RERT as well, whereby the market is expected to respond first, and AEMO is expected to intervene only when the market has failed to respond to meet an agreed upon level of reliability, i.e. the reliability standard. This would also lead to higher RERT costs for consumers compared to the status quo.

#### Impact on transparency

Even if the standard implied by RERT procurement under this option were less conservative than the reliability standard (i.e. if it implied a lower level of reliability), the Commission would have concerns about this option since it would not be transparent and clear to market participants what level of reliability AEMO would be targeting versus what the market would be targeting. The Commission considers that it is important that participants are provided with certainty about how the framework will operate over time. This option would introduce more ambiguity into an already ambiguous process.

Compared to the status quo, even with Panel guidance around procurement, this option would promote uncertainty around when AEMO would likely intervene in the market and potentially create distortions, such as those described above (crowding out of investment, e.g.). It would further allocate the risks associated with managing reliability to AEMO (rather than to the market, and to the Reliability Panel, through its role in reviewing the reliability standard) which has the potential to create inefficiencies and investment distortions.

The Commission is strongly of the view that there should only be one reliability standard - for the market and for the RERT. As a result and for the reasons mentioned above, it does not think that option 2 meets the NEO. Ultimately, this option would be most costly and less transparent than the final rule.

# D.4 Option 3 - enhanced role for Reliability Panel in operationalising the reliability standard

### **Key design features**

Option 3 is the same as option 1 except in the following ways:

- The Reliability Panel would provide guidance to AEMO on how to operationalise the reliability standard in relation to the RERT.
- In light of stakeholder feedback, this guidance would be quite prescriptive e.g. the Panel would work out what the USE target should be by month, if a monthly standard is achieved. AEMO would still forecast USE against that target as per current arrangements.

#### Commission's conclusions and analysis

The Commission considers that this option would have similar benefits as option 1, and that additional prescription around how to operationalise the reliability standard would amplify some of the benefits, such as shifting the allocation of how reliability risks are managed in favour of the Panel, since they would have a greater role to play in setting the reliability standard. It could further reduce direct and indirect costs.

On the other hand, the potential drawbacks of this option include the introduction of further prescription, regulation and complexity in a system that is already complex. It would also, in effect, remove the discretion that AEMO currently has in operationalising the reliability standard, even though AEMO is the system operator.

Furthermore, it is yet unclear whether it is technically feasible to aim for a weekly/monthly target or operationalise the reliability standard in a better way than it is currently done as noted by a number of stakeholders, including AEMO, in submissions to the options paper.<sup>658</sup> The Commission also considers that in practice it may have unintended consequences, such as AEMO having to procure RERT regularly (and far beyond the reliability standard), depending on how the monthly target is set.

On balance, the Commission does not think that this option is the best option because:

- The benefits are unclear and may lead to unintended consequences.
- The additional burden of regulation and complexity would, on balance, not outweigh the benefits.
- It continues to be appropriate for AEMO to be responsible for operationalising the reliability standard.

Instead, the reporting requirements introduced in final rule discussed in Chapter 9 will help address stakeholder concerns with respect to AEMO's role in operationalising the reliability standard, which then has a flow on effect on the procurement trigger and volume. For example, the final rule enhances reporting requirements with respect to the procurement process and volume, requiring AEMO to provide detailed information on its assessment processes, including explaining its forecasts and any deviations from projections of how much RERT was needed. This will improve accountability.

Similarly, to the extent that concerns relate to AEMO's forecasting processes, the Commission notes that it recommended a number of actions with respect to forecasting in its *Reliability Frameworks Review*.<sup>659</sup> Rule change requests on these are expected shortly.

Stakeholders have also suggested that the Commission should continue to explore the possibility of the Reliability Panel having an enhanced role in providing AEMO with guidance on how to operationalise the reliability standard in the short term. The Commission notes that the Reliability Panel may wish to consider this when it next reviews the reliability standard and settings.

<sup>658</sup> The Commission understands that AEMO and the Reliability Panel have examined the possibility of sub-annual targets in the past but did not pursue it further due to technical difficulties.

<sup>659</sup> See https://www.aemc.gov.au/sites/default/files/2018-07/Final%20report\_0.pdf