



Australian Energy Market Commission

CONSULTATION PAPER

National Electricity Amendment (Enhancement to the Reliability and Emergency Reserve Trader) Rule 2018

Rule Proponent(s)
AEMO

21 June 2018

**RULE
CHANGE**

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Reference: ERC0237

Citation

AEMC 2018, Enhancement to the Reliability and Emergency Reserve Trader, Consultation Paper, 21 June 2018, Sydney

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.

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1 Introduction

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), including an increase in the amount of time AEMO has to enter into RERT contracts prior to projected shortfalls to one year (and beyond in some circumstances), taking into account a broader risk assessment framework when procuring the RERT and standardisation of RERT products.

At the same time, AEMO also submitted a rule change request which sought to reinstate the long-notice RERT on an urgent basis. The long-notice RERT rule change was expedited by the Commission and a final rule which reinstates the long-notice RERT (i.e. where there is a nine-month procurement lead time for the RERT) is being published on 21 June 2018 (the same day this consultation paper is published). The ability for AEMO to procure the long-notice RERT will commence on 13 July 2018. To avoid unnecessary confusion, this consultation paper, which has been prepared to facilitate consultation, assumes the long-notice RERT has already been reinstated.

1.1 Interaction with the National Energy Guarantee

The Energy Security Board is currently progressing the development of the National Energy Guarantee (Guarantee).¹ The proposed Procurer of Last Resort function of the reliability requirement of the Guarantee would use the RERT mechanism to provide a safety net to make sure adequate resources are committed to meet demand when there is an expected shortfall relative to the reliability requirement i.e. the Guarantee will set out the trigger for the procurer of last resort in the context of the reliability requirement of the Guarantee. The rules governing the RERT framework will provide the mechanism for the procurement of reserves through the procurer of last resort. Consultation on the RERT framework will occur through this rule change request. The AEMC is working closely with the ESB as the design of the NEG progresses.

The COAG Energy Council has yet to approve the Guarantee; however, stakeholders should bear the detailed design of the Guarantee in mind when responding to this consultation paper.

1.2 Structure of this consultation paper

The structure of this consultation paper is as follows:

- chapter 2 provides background information on the RERT and related work

¹ A draft detailed design of the Guarantee was published for public consultation on 15 June 2018, and can be found here:
<http://coagenergycouncil.gov.au/publications/energy-security-board-%E2%80%93-draft-detailed-design-national-energy-guarantee-consultation>

- chapter 3 summarises the details of the rule change request, including the stated problem and proposed solution
- chapter 4 sets out the assessment framework for this rule change request
- chapter 5 identifies a number of questions based on key issues to facilitate the consultation on this rule change request
- chapter 6 identifies further questions for consultation based on AEMO's high-level design proposal for an enhanced RERT
- chapter 7 outlines the process for making submissions.

2 Background

This chapter summarises background information on the RERT and related projects.

The RERT is one aspect of the reliability framework. Reliability in the NEM means that the power system has an adequate amount of capacity (both generation and demand response) to meet consumer needs. It therefore requires there to be an adequate pattern of investment and disinvestment as well as appropriate operational decisions, so that supply and demand are in balance at a particular point in time.

2.1 What is the RERT?

Reliability in the NEM is largely driven through market participants responding to financial incentives and information provided about the need for resources. If the market fails to respond to the information AEMO's next step is generally to engage in informal negotiations with market participants to alleviate any supply shortfalls. Further, AEMO can use network support and control ancillary services to the extent that the projected reserve shortfall is affected by a network limitation that can be addressed by such services. If these options fail, the NER give AEMO the ability to use a number of intervention mechanisms to intervene more directly.

The RERT is one of three existing intervention mechanisms in the NEM.² The RERT allows AEMO to contract for reserves (generation or demand-side capacity that is not otherwise available to the market through any other arrangement). AEMO can use the RERT in the event that it determines that market participants are not expected to meet 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) and, where practicable, to maintain power system security. The existing RERT can therefore be considered a "strategic reserve". The concept of a strategic reserve is discussed in more detail in section 2.1.2.

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

- long-notice RERT - between ten weeks' and nine months' notice of a projected reserve shortfall
- medium-notice RERT - between ten weeks' and one week's notice of a projected reserve shortfall

² 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. The directions and instruction mechanisms are being considered through the Commission's *Reliability Frameworks Review*

- 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 short-notice RERT and only triggers the procurement contract when it has identified a potential shortfall and after seeking offers from RERT panel members.³ There is no panel for the long-notice RERT; rather, contracts are signed following the close of a public tender process.

There are no specific compliance provisions with respect to the RERT. However, AEMO is required to report on a number of aspects of the RERT, including on the process that it followed to intervene.⁴

2.1.1 A brief history of the RERT

Some form of mechanism for the system operator to contract for reserves (sometimes referred to as a strategic reserve) such as the RERT or reserve trader provisions, has been a feature of the NEM since its commencement in December 1998. At the time, such a mechanism was deemed to be necessary due to uncertainty around how market participants would respond to price signals, but the intention was that it would be removed after a period of time and accordingly, a date was fixed for the expiry of the provisions.

Over time, periodic reviews of the reserve trader provisions have led to various amendments, including initially postponing and then removing its expiry date, as well as changes to its scope and operation. The RERT itself (as distinct from previous versions of a strategic reserve) was developed as part of the Reliability Panel's 2007 *Comprehensive Reliability Review*. The RERT was incorporated into the NER in July 2008, and replaced the reserve trader provisions.

While the RERT was originally designed with an expiry clause, in June 2016, the Commission extended it indefinitely.⁵ In its decision, the Commission noted that ongoing uncertainty raised the possibility that future electricity demand may not be adequately met, and also raised the possibility that the ensuing responses by market participants to address projected shortfalls⁶ may be insufficient. The Commission also noted that the RERT is more efficient than the other forms of interventions (that is, directions and clause 4.8.9 instructions) to manage potential shortfalls.⁷

³ AEMO has the discretion to use a tender process in addition to using panel members in the case of the medium-notice RERT.

⁴ Clause 3.20.6(a) of the NER.

⁵ AEMC, *Extension of the Reliability and Emergency Reserve Trader*, Final Determination, 23 June 2016.

⁶ Projected shortfalls generally refer to AEMO's determination of a breach of the reliability standard (i.e. a projection that unserved energy in a region is more than 0.002 per cent of total energy demanded in that region), noting that AEMO may also use the RERT for power system security reasons, where practicable.

⁷ AEMC, *Extension of the Reliability and Emergency Reserve Trader*, Final Determination, 23 June 2016.

In extending the RERT indefinitely, the Commission also decided to reduce the timeframe for its exercise, the effect of which was to remove the long-notice RERT from the framework. This was done in order to minimise the distortionary effects of the RERT on market participants which can contribute to increased costs to consumers. However, AEMO requested for the long-notice RERT to be reinstated in 2018, and the Commission has made the decision to do so.⁸

The RERT continues to be an enduring feature⁹ of the NEM's reliability frameworks, as noted above, and falls under the intervention umbrella of the reliability frameworks.

2.1.2 What is a strategic reserve?

The term strategic reserve is typically used to refer to additional reserves that are available outside of the market¹⁰ and used in emergency situations when the demand and supply balance is tight in order to avoid involuntary load shedding. A strategic reserve is a common feature of energy market designs and may take many different forms depending on particular design choices, with some types of strategic reserves being available all the time, while others are only available if there is an identified gap, e.g. a potential reliability or system security issue. Currently, the Reliability and Emergency Reserve Trader (RERT) is the NEM's strategic reserve.

Most jurisdictions have some form of 'safety net' that would fall into the broad category of strategic reserve. However, the design of these strategic reserves differs quite substantially. For example:

- In the NEM, the RERT may currently only be procured when AEMO identifies that the reliability standard will not be met (or to maintain power system security where practicable), having regard to the RERT principles¹¹ and the RERT guidelines¹² - this means that in some periods (e.g. years), there may not be any out-of-market reserves being procured.
- By contrast, Electric Reliability Council of Texas (ERCOT)'s strategic reserve, known as Emergency Response Service, are standing strategic reserves, i.e. they are procured every year regardless of the identification of a potential shortfall.

Table 2.1 compares the ERS, the current RERT and AEMO's enhanced RERT proposal.¹³

⁸ AEMC, *Reinstatement of long notice Reliability and Emergency Reserve Trader*, 21 June 2018.

⁹ Albeit subject to amendment through rule change requests.

¹⁰ In the NEM, outside of the market means capacity that is not otherwise be made available to the market for the relevant trading intervals for the duration of the contract. However, this may differ in other jurisdictions.

¹¹ Clause 3.20.2(b) of the NER.

¹² Clause 3.20.2(c) of the NER.

¹³ As noted in section 1.1, the rules governing the RERT framework will provide the mechanism for the procurement of reserves through the procurer of last resort.

Table 2.1 Examples of strategic reserves

	ERCOT's ERS	NEM's RERT	AEMO's enhanced RERT proposal
Procurement trigger	No trigger. Standing reserves procured annually across three auctions.	Expectation of failure to meet the reliability standard or maintain power system security.	A broader risk assessment framework.
Procurement volume	Amount is based on a maximum annual budget (US\$50 million).	There is no quantified minimum or maximum volume. AEMO must have regard to certain factors when determining the volume, including through consultation with relevant participating jurisdictions, but there is a level of discretion afforded to AEMO when making that decision.	Linked to procurement trigger - determined in the context of a broader risk assessment framework.
Type of products	Standardised - a 10-minute and a 30-minute product.	Bespoke. Negotiated.	Standardised with some variations allowed.
Procurement process	Three auctions across on year.	Open tender for long-notice situations; establishment of RERT panel through tender for medium- and short-notice situations.	Annual request for tenders, held mid-year in advance of the following summer. Tender offers to be standardised, with non-confirming offers allowed for specific items.
Eligible technologies	Demand response and distributed energy resources only.	Technologically neutral.	Response to be provided by range of technologies. However standardised product specifications could present barriers to certain technologies but this would not be prescriptive.
Procurement lead time	Not applicable since there is no need to identify a potential shortfall. Procurement occurs three times a year.	Up to nine months ahead of a projected reserve shortfall.	Up to one year ahead of a shortfall, but allowing for contracts up to three years if the overall cost would be lower.

2.2 NER framework

The NER provide the high-level framework within which AEMO may procure and dispatch the RERT,¹⁴ including requiring AEMO to comply with:

- the RERT principles in the NER¹⁵
- the RERT guidelines which are made and published by the Reliability Panel¹⁶
- the procedures for the exercise of the RERT, which are made and published by AEMO.¹⁷

The RERT principles provide that:¹⁸

- actions taken should be those which AEMO reasonably expects, acting reasonably, to have the least distortionary effect on the operation of the market
- actions taken should aim to maximise the effectiveness of reserve contracts at the least cost to end use consumers of electricity.

2.2.1 Procurement trigger

Under the NER, AEMO may determine to enter into reserve contracts to ensure that the reliability of supply in a region meets the reliability standard for that region, and where practicable, to maintain power system security.¹⁹

AEMO's ability to procure the RERT is limited by a number of factors, including that AEMO must consult with relevant jurisdictions with respect to its determination of whether to procure and how much to procure.²⁰

Operationalisation of the reliability standard

AEMO operationalises the reliability standard through its *Reliability Standard Implementation Guidelines* (RSIG). The RSIG is not part of the RERT framework but are a core part of the reliability framework as it specifies how AEMO implements the reliability standard. As a result, the RSIG specifies how AEMO triggers the RERT in practice and in accordance with the NER.

¹⁴ Rule 3.20 of the NER.

¹⁵ Clause 3.20.2(b) of the NER.

¹⁶ Clause 3.20.8 of the NER.

¹⁷ Clause 3.20.7(e) of the NER.

¹⁸ Clause 3.20.2(a)(3) and clause 3.20.2(b) of the NER.

¹⁹ Clause 3.20.3(b) of the NER.

²⁰ Clause 3.20.3(c) of the NER.

Over the medium-term (i.e. from seven days ahead to nine months ahead), this is done through the medium-term Projected Assessment of System Adequacy (PASA). The RSIG states that AEMO identifies a breach of the reliability standard when it declares a low reserve condition (LRC)²¹ i.e. when medium-term PASA probabilistically projects that expected unserved energy for a given year in a given region exceeds 0.002 per cent.

Over the short-term (seven-day ahead) to real time, the RSIG states that AEMO identifies a breach of the reliability standard when it declares a lack of reserve 2 (LOR2) or an LOR3 condition.²² The methodology for calculating LORs is described in AEMO's reserve level declaration guidelines, which AEMO is required to update in accordance with the NER.²³

The operationalisation of the reliability standard is discussed in more detail in section 5.2.1.

2.2.2 Procurement lead time and contracting period

Under the NER, AEMO must not enter into a reserve contract, or renegotiate, more than nine months prior to when AEMO reasonably expects the reserves to be needed.²⁴ The **procurement lead time** refers to the amount of time AEMO has to enter into contracts (i.e. procure the RERT) prior to the date that AEMO expects the reserves under the contract may be required to ensure reliability of supply, or maintain power system security (expected reserve shortfall). For example, a procurement lead time of up to 10 weeks means that AEMO cannot enter into a reserve contract if the expected reserve shortfall is in six months' time. It can only enter into a reserve contract for a reserve shortfall expected to occur up to 10 weeks ahead.

The **contracting period** refers to the duration of the reserve contract. Some contracts may last months, while others may only last for a few trading intervals. This is different from the procurement lead time. The NER do not prescribe a specific contract duration for reserve contracts; however, the procurement lead time specified in the NER acts as maximum limit on the duration of a 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. As an example, if AEMO identifies shortfalls for the next two summers, it would not be able to sign a two-year reserve contract. Instead, it could only enter into reserve contracts in respect of reserve shortfalls that will occur within nine months of the entry into the contract.

21 In accordance with clause 4.8.4(a) of the NER .

22 In accordance with clause 4.8.4(b) of the NER.

23 Clause 4.8.4A of the NER.

24 Clause 3.20.3(d) of the NER.

2.2.3 Procurement volume

The NER do not prescribe the amount that AEMO should procure once it has identified a potential shortfall. In relation to reliability, the NER *imply* that AEMO can only procure so much as would be reasonably necessary to ensure the reliability standard is met (and where practicable, to maintain power system security).²⁵ However, the way that AEMO operationalises the standard may influence how much reserves it procures - this is discussed in more detail in section 5.2.1.

2.2.4 Types of reserves

The NER specify that AEMO may enter into one or more contracts with any person in relation to the capacity of:²⁶

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

As such, the NER do not have restrictions on the types of technologies²⁷ that can participate in the RERT.

2.2.5 Out-of-market provisions

To minimise distortions, reserves contracted under the RERT must not otherwise be available in the market. Under the NER, AEMO must not contract for scheduled reserves if such reserves are likely to be submitted or otherwise available for dispatch in the trading interval(s) to which the contract would relate.²⁸ The NER also specify that any 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).²⁹ The term 'market' is defined in Chapter 10 of the NER and means any market or exchanges described in the NER, for so long as the market or exchange is conducted by AEMO, e.g. the spot market.

In other words, the capacity must not otherwise be made available to the market for the relevant trading intervals for the duration of the contract. This means that RERT capacity may not participate in the market, e.g. the spot market, for the duration of the contract but may do so when not contracted under the RERT.

²⁵ Clauses 3.20.2(a) and 3.20.2(b) of the NER.

²⁶ Clause 3.20.3(a) of the NER.

²⁷ The NER do not have any restrictions but some technologies may not be technically capable of participating in the RERT.

²⁸ Clause 3.20.3(h) of the NER.

²⁹ Clause 3.20.3(j) of the NER.

2.2.6 Payment structure and cost recovery

The NER do not prescribe any particular structure of payments under the reserve contracts.

The NER require that RERT costs incurred by AEMO be met by fees imposed on market customers in the region where the RERT has been procured and/or dispatched.³⁰

Cost per market customer is proportional to energy consumption of that customer.³¹ If reserves are required in multiple regions, cost sharing arrangements must be agreed between the regions and AEMO when entering the contracts.³² Costs are recovered through usual weekly settlement processes.³³

2.2.7 Information provided to the market

As soon as practicable after the RERT is dispatched, the NER require that AEMO publish a report detailing a number of things, including the circumstances giving rise to the need to dispatch reserves and the processes associated with such dispatch³⁴

The remainder of clause 3.20.6 of the NER requires AEMO to provide more information to the market, including reporting on the cost and recovery of the cost of the RERT.

AEMO is also required to inform the market every time it enters into a new contract³⁵ and there are a series of market notices that it must publish in the lead up and during the activation/dispatch of the RERT.³⁶

2.2.8 Activation/dispatch of the RERT

In the first instance, AEMO must determine the latest time for exercising the RERT and publish a notice of any foreseeable circumstances that may require implementation of the RERT.³⁷ 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

30 Clause 3.15.9(a) of the NER.

31 Clause 3.15.9(e) of the NER.

32 Clause 3.20.3(f) of the NER.

33 Clause 3.15.9(b) of the NER.

34 Clause 3.20.6(a) of the NER.

35 In accordance with the RERT guidelines.

36 See Clauses 4.8.5, 4.8.5A, 4.8.5B of the NER.

37 Clause 4.8.5A and clause 4.8.5B of the NER.

where practicable, to maintain power system security.³⁸ AEMO must also take into account the RERT guidelines before dispatching the RERT.³⁹

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 the exercise RERT and then implement directions and clause 4.8.9 instructions.⁴⁰

Note the obligation to dispatch all valid bids and offers, and to dispatch or activate reserves, is subject to “any adjustments which may be necessary to implement action under paragraph (c)” (i.e. further corrective action in terms of directions or clause 4.8.9 instructions).⁴¹ The obligation is also subject to “any plant operating restrictions associated with a relevant AEMO intervention event”.⁴²

2.3 RERT guidelines

The Reliability Panel's RERT guidelines provide additional guidance to AEMO on the RERT principles⁴³ and to the cost effectiveness of the RERT.⁴⁴ AEMO is required to take into account the RERT guidelines when exercising the RERT.⁴⁵ The RERT guidelines specify what AEMO may take into account when it is determining whether to enter into contracts for the RERT (that is, in procuring the RERT)⁴⁶ and in dispatching the RERT.⁴⁷ However, it is not prescriptive in doing so. For example, the RERT guidelines state that AEMO *may* take into account the details of the outcomes of the medium-term, and short-term Projected Assessment of System Adequacy (PASA), pre-dispatch, and the Energy Adequacy Assessment Projection (EAAP) and any other information that AEMO considers relevant when deciding whether to procure the RERT.⁴⁸

The RERT guidelines provide some guidance to AEMO as to how it may contract for reserves.⁴⁹ For example, AEMO *may* continually monitor for low reserve conditions or lack of reserve 2 (LOR2) conditions in the medium-term and short-term PASA and pre-dispatch. The RERT guidelines also provide some guidance around how actions

38 Clause 3.20.7(a) of the NER.

39 Clause 3.20.7(f) of the NER.

40 Clause 3.8.14 of the NER.

41 Paragraph (c) refers to the implementation of “further corrective action” under clauses 4.8.5B and 4.8.9, being the implementation of directions or instructions.

42 See clauses 3.8.14(a)(1) and (2) and 3.8.14(b)(1) and (2) of the NER. The RERT is an AEMO intervention event.

43 See section 5 of the RERT guidelines.

44 See section 5 of the RERT guidelines.

45 Clause 3.20.7(f) of the NER.

46 Section 4 of the RERT guidelines.

47 Ibid.

48 Ibid.

49 Section 8 of the RERT guidelines.

that AEMO *may* take to be satisfied that RERT capacity is not available to the market (in accordance with the NER requirement to be out of market), such as making reasonable enquiries in the market and requiring a prospective party to enter into an undertaking with AEMO that the reserve is not available to the market.⁵⁰

The RERT guidelines⁵¹ (and procedures for the exercise of the RERT, discussed next)⁵² specify how much time AEMO has to procure the RERT prior to the shortfalls occurring, namely, more than ten weeks for the long-notice RERT, between ten weeks and one week for the medium-notice RERT and between seven days and three hours for the short-notice RERT.⁵³

2.4 AEMO's procedures

AEMO publishes a procedure for the exercise of the RERT under clause 3.20.7(e) of the NER in accordance with the rules consultation procedures, to take into account the RERT principles and RERT guidelines.⁵⁴ AEMO also makes and publishes an operating procedure for the dispatch and activation of reserve contract.⁵⁵

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. This procedure is primarily to take into account the additional guidance provided by the RERT guidelines, but AEMO is also required to include measures to be adopted in order to reduce the possibility that RERT contracts are otherwise engaged at the time the contracts are entered into by AEMO.⁵⁶ AEMO's procedures state that some measures, including providing written confirmation that any offered reserve is not subject to market arrangements.⁵⁷

AEMO typically procures the RERT when, in the medium-term PASA that is run weekly, AEMO identifies low reserve conditions (LRC).⁵⁸ It may also procure the RERT when it identifies lack of reserve conditions (LOR), in the short-term PASA,

50 Section 7 of the RERT guidelines.

51 Section 4 of RERT Guidelines

52 Section 1.2.1 (Glossary) of the Procedure for the Exercise of Reliability and Emergency Reserve Trader, dated 19 October 2017.

53 Reliability Panel, RERT Guidelines, 2018.

54 Rule 8.9 of the NER.

55 See: AEMO's SO_OP3717 available from <https://www.aemo.com.au/>

56 Clause 3.20.7(e) of the NER.

57 See section 3.3 of the procedure https://www.aemo.com.au/-/media/Files/Electricity/NEM/Emergency_Management/2017/Procedure_for_the_Exercise_of_Reliability_and_Emergency_Reserve_Trader_RERT.pdf.

58 Clause 4.8.4 of the NER and section 8.1 of the Procedure for the Exercise of Reliability and Emergency Reserve Trader, dated 19 October 2017, or section 8.2 in the 2018 Guidelines.

pre-dispatch and / or dispatch.⁵⁹ AEMO may also use any other information it thinks is relevant.⁶⁰

Once AEMO has procured reserves, AEMO may then dispatch such reserves in an operational timeframe when it identifies that reserves are running low, typically through LOR2 or LOR3 declarations, typically after it has sought a market response and one has not been forthcoming.

2.5 Direct costs of the RERT

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

The information in this section is based on the Commission's understanding of RERT contracts (which are confidential) and based on AEMO's event reports⁶¹ of the two RERT activations that occurred in 2017/18 summer.⁶²

There are a number of direct costs associated with reserve contracts:

- the operational and administrative costs of arranging contracts ("admin costs")
- the costs of being on stand-by, i.e. capacity payments such as availability payments ("availability costs") - this is typically a \$/MW/year payment and not specific to one event
- the costs of being on stand-by for a specific event, i.e. pre-activation payments for specific events ("pre-activation costs")
- the cost of the reserves themselves, e.g. usage/activation payments when the RERT is dispatched ("activation costs") - this is typically a \$/MWh payment
- the costs associated with the intervention, i.e. impact of dispatching the RERT on participants ("compensation costs") - discussed in more detail below.

AEMO reported the following costs in relation to its RERT activities for the 2017/18 financial year⁶³ (most of which was incurred over the summer):⁶⁴

⁵⁹ Ibid.

⁶⁰ In accordance with the RERT Guidelines.

⁶¹ Available at <http://aemo.com.au/Electricity/National-Electricity-Market-NEM/Security-and-reliability/Summer-operations-report>

⁶² The Commission has not considered the situation that occurred on 7 and 8 June 2018 in NSW when AEMO contracted reserves through the RERT following a number of LOR2 conditions. This section therefore excludes costs, if any, that were incurred when these reserves were contracted. The costs, if any, are not yet known. The reserves were not ultimately dispatched.

⁶³ This excludes costs, if any, that were incurred when AEMO contracted reserves on 7 and 8 June 2018 in NSW. The costs, if any, are not yet known.

- Availability payments: \$26.29 million
- Pre-activation costs: \$21.56 million
- Activation costs: \$3.23 million
- Other costs (e.g. compensation costs): \$0.17 million.

The total costs add up to \$51.26 million for 2017/18. These costs were recovered from market customers (e.g. retailers) in Victoria and South Australia in accordance with Clause 3.15.9 of the NER.

2.6 Implications of dispatching the RERT

2.6.1 Intervention pricing

Intervention pricing occurs when AEMO intervenes in the market through either a direction issued in accordance with clause 4.8.9 or when the RERT is dispatched (each an "AEMO intervention event"⁶⁵ under the NER).⁶⁶

If the RERT is dispatched, AEMO applies intervention pricing (also known as 'what-if' pricing or 'but for' pricing) in all circumstances.⁶⁷

Intervention pricing works as follows:

- AEMO runs a base case target run (also known as an "out-turn" run or "dispatch" run) which incorporates the intervention (in this case, the RERT). This run sets dispatch targets. The price in this run is ignored.
- AEMO then runs a what-if run (also known as the "pricing" run), which assumes that the intervention never occurred. This run sets the what-if price, which is used for settlement purposes. Dispatch targets in this run are ignored.

Intervention pricing is meant to preserve market price signals to minimise the distortionary aspect of an intervention. From a theoretical point of view, the what-if price should be higher than the dispatch run price when the RERT is dispatched for reliability purposes. In other words, market participants are settled on the higher price - which maintains the market signal absent the intervention.

⁶⁴ See <http://aemo.com.au/Electricity/National-Electricity-Market-NEM/Security-and-reliability/Summer-operations-report>

⁶⁵ See Chapter 10 of the NER for the definition.

⁶⁶ Clause 3.9.3 of the NER.

⁶⁷ For a direction, there is an additional test that needs to be passed before intervention pricing is implemented. The test states that intervention pricing must only apply for directions that affect a whole region. If a direction is only to manage a localised issue, then intervention pricing does not apply. This test does not apply to the RERT.

2.6.2 Compensation

Compensation with respect to AEMO intervention events (including exercise of the RERT) is payable under NER clause 3.12.2.

AEMO is required to determine compensation amounts when it dispatches the RERT for each intervention price trading interval and is required to notify affected participants.⁶⁸ Affected participants and market customers are entitled to receive compensation from AEMO following the dispatch of the RERT.⁶⁹ Affected participants and market customers are entitled to make additional claims to AEMO's compensation determination.⁷⁰

The NER state that AEMO must take into account the direct costs incurred by affected participants as a result of the intervention, revenue amounts affected participants are entitled to receive and the prevailing regional reference price.⁷¹

Compensation payments are recovered in the same way as usage payments - through market customers in the relevant region.⁷²

2.7 The RERT in practice

Prior to 2017, the RERT had only been procured three times and had never been dispatched. In 2017, AEMO procured reserves through the long-notice RERT and introduced new panel members to the short-notice RERT panel through the ARENA-AEMO demand response trial.

On 30 November 2017, the RERT was activated (i.e. dispatched)⁷³ for the first time. AEMO also entered into reserve contracts in January 2018 and dispatched the RERT in Victoria and South Australia. AEMO has noted that both short- and long-notice RERT providers were used. These two events are summarised in Box 2.1.

⁶⁸ Clause 3.12.2(c) of the NER. In relation to the RERT, affected participants generally refer to a scheduled generator or scheduled network service provider affected by the intervention (e.g. if its dispatched quantity was affected by the intervention) and an eligible person entitled to receive compensation due to a change in interconnector flow.

⁶⁹ Clause 3.12.2(a) of the NER.

⁷⁰ Clause 3.12.2(f) of the NER

⁷¹ Clause 3.12.2(j) of the NER

⁷² AEMO has identified, as part of its work for the Intervention Pricing Working Group, that there is no specific rule relating to recovery of compensation to affected participants. We understand that costs are therefore recovered in the same way as usage costs are.

⁷³ The term activation is used to refer to the dispatch of unscheduled reserves.

Box 2.1 RERT activations

30 November 2017

On 30 November 2017, following a forecast LOR2 in Victoria, a RERT contract was procured and RERT providers were dispatched for the first time.

AEMO first issued a LOR2 notice for Victoria on the day at 04:51⁷⁴ on 30 November 2017 when pre-dispatch PASA identified a reserve shortfall for the time period starting from 15:30 that afternoon and lasting until 17:00. It sought a market response. This was followed by another notice at 11:10.

At 13:53, AEMO issued a market notice to inform the market that it had entered into a reserve contract and may activate the RERT for the time period starting 15:30 until 21:30. At 15:20, AEMO issued another notice informing the market that the RERT had been activated.

AEMO noted in its event report that, given there was insufficient market response, AEMO activated a total of 32 megawatts (MW) of unscheduled reserves from three reserve contracts. The reserve was activated at 15:30. The first reserve contract was deactivated at 21:30, after completion of its minimum continuous run time of six hours. The second and third reserve contracts were deactivated at 16:30, after completion of their minimum continuous run times of 1 hour.

One contract had a pre-activation lead time of one hour, with an activation lead time of two hours. The other two contracts had activation lead times of one hour, with no pre-activation required. There were no pre-activation costs incurred for this event. Total event cost (i.e. excluding any availability payments that may have been incurred previously) amounted to \$0.89 million in Victoria, made up entirely of activation costs.

18 and 19 January 2018

On 18 January 2018 at 17:00, following a forecast LOR2 in Victoria, AEMO informed the market that it has entered into a RERT contract and may dispatch the RERT on 19 January 2018 from 14:30 to 18:30.

On 19 January 2018, AEMO continued to issue forecast LOR2s. At 11:22, it informed the market of its intention to seek additional reserves through the RERT panel. At 13:43, AEMO informed the market that RERT contract(s) were activated/dispatched and would apply from 14:00 until 20:00.

AEMO noted in its report into the event that, given that there was insufficient market response, it activated 130 MW of unscheduled reserves across eight reserve contracts in Victoria, and 6.5 MW of unscheduled reserves across two

⁷⁴ All times are AEST.

reserve contracts in South Australia. These contracts were activated between 14:00 and 15:30 on 19 January 2018, with all ten contracts being deactivated by 20:00. On 18 January 2018, about 500 MW was pre-activated in Victoria (due to pre-activation lead times of 20+ hours); however these contracts were not subsequently activated on 19 January 2018. AEMO stated that these reserves were pre-activated to ensure availability in case of a large contingency event which did not eventuate.

The direct costs associated with this event amounted to \$24.1 million, \$21.6 million of which were pre-activation costs, \$2.3 million being activation costs and \$0.2 million being other costs such as compensation. This excludes availability payments. Costs were incurred in both Victoria and South Australia.

Source: AEMO's market notices and RERT event reports, available at <http://aemo.com.au/Electricity/National-Electricity-Market-NEM/Security-and-reliability/Summer-operations-report>.

In June 2018, following a number of LOR2 notices in New South Wales, AEMO entered into reserve contracts (i.e. it procured the RERT) on 7 June and again on 8 June. The RERT was not dispatched on either of those events. Costs in relation to those events are not yet known.

2.8 Related work and projects

2.8.1 ARENA-AEMO trial

The three-year pilot program, announced in May 2017 provides up to 200 MW of reserve capacity (primarily, demand response) which AEMO can call upon when reserves are low, i.e. through the RERT. Specifically, the ARENA-AEMO demand response trial has contracted for 143 MW in year 1, 190 MW in year 2, and 203 MW in year 3, across New South Wales, Victoria and South Australia.

Under the program, energy users or their service providers (for example, aggregators and energy retailers) receive a grant from ARENA as an incentive, or availability payment, to provide standby capacity to be used during emergency or reserve shortfall events. Recipients of ARENA funding through the trial are also short-notice RERT panel members and so are paid a usage payment by AEMO through the RERT should they be dispatched. Usage payments through the trial are capped at \$1,000/MWh.

The trial consists of two standardised products, a 60-minute product and a 10-minute product. ARENA has stated that seven of its 10 providers have offered an under 10 minute product, while three have offered to provide reserves under the 60 minute product - the latter are typically residential consumers with behavioural demand response, which requires a longer lead time.⁷⁵

⁷⁵ ARENA-AEMO joint submission to *Reliability Frameworks Review* - directions paper, p.6.

Costs of the program

About \$28.55 million was provided by ARENA and a further \$7.18 million was provided by the NSW government to develop additional demand response capacity in that state, for a total funding of \$35.7 million.⁷⁶

Based on three-year contracts, the minimum capacity cost revealed through the trial is \$10,788/MW/year, with a maximum of \$92,071/MW/year and a weighted average cost of \$66,658/MW/year.⁷⁷ ARENA also stated that ARENA/NSW funding was primarily used for the establishment of capacity, such as the costs of customer procurement and upfront capital costs - these establishment costs had a weighted average of \$0.2m/MW compared to the average capital cost of a diesel engine which is estimated at \$1.0m/MW.⁷⁸

Lessons learned so far

The early lessons learned that may be relevant to this rule change, in particular for demand response, may be summarised as such:⁷⁹

- Short procurement timeframes create risks for proponents, particularly with regard to residential and commercial customer recruitment, and affects service costs and performance. Providers at a feedback session with ARENA noted that it takes time and effort to recruit customers into their portfolio, to implement systems and, in some cases, to train participants.
- The operation of the selected baseline is complex.⁸⁰ Feedback from trial participants was that the baseline method was not suitable for non-variable loads or those with solar PV. AEMO and ARENA are working together to review and develop additional baselines to reflect different load profiles and features.

2.8.2 The Finkel Panel's strategic reserve

The Finkel Panel's recommendation 3.4 states that:⁸¹

“By mid-2018, the Australian Energy Market Operator and the Australian Energy Market Commission should assess:

76 Ibid. p.6.

77 Ibid. p.7.

78 Ibid. p.6

79 Ibid. pp. 9-10

80 In order to measure the response provided by demand, a baseline is required. In simple terms a baseline should reflect the consumption that would have occurred in the absence of demand response. The difference between the calculated baseline and actual energy consumed is the measured response. Calculation of the baseline is complex.

81 Finkel Panel, Independent Review into the Future Security of the National Electricity Market: Blueprint for the Future, June 2017, p.103.

- The need for a Strategic Reserve to act as a safety net in exceptional circumstances as an enhancement or replacement to the existing Reliability and Emergency Reserve Trader mechanism.”

The Finkel Panel noted that a strategic reserve would have the purpose of increasing available measures to maintain a reliable system. It commented that a strategic reserve is a type of targeted mechanism that compensates surplus capacity for being available at times of scarcity – that is, to address short-term reliability.⁸² It further noted that changes to the RERT may be warranted because the short procurement timeframe puts AEMO in a sub-optimal negotiating positioning when trying to contract for reserves.⁸³ It also noted that the lack of availability payments does not provide sufficient incentives to encourage participation from distributed demand response programs.⁸⁴

In describing a potential out-of-market strategic reserve for the NEM, the Finkel Panel noted the following:⁸⁵

- A strategic reserve could involve equipping AEMO with the power to contract for a targeted level of capacity that would be held in reserve outside the market.
- If implemented, this policy should be designed as an enhancement or replacement to the Reliability and Emergency Reserve Trader (RERT) to avoid adding additional complexity and uncertainty
- Making better use of demand response in the NEM represents a low cost and as yet under-developed opportunity to maintain reliability.
- To avoid interventions crowding out private sector investment or creating other perverse outcomes, there would need to be a clear and transparent set of criteria under which the reserve could be called upon. For example, where the reliability standard is expected to not be met.

The AEMC was progressing this recommendation through its *Reliability Frameworks Review*. However, this workstream ceased as part of the review once AEMO submitted this rule change. The Commission is now progressing the consideration of a strategic reserve, and so giving effect to the Finkel Panel recommendation, as part of this rule change.

82 Ibid., p.85.

83 Ibid., p.101.

84 Ibid., p.101.

85 Ibid., pp. 100-101.

3 Details of the rule change request

3.1 Issues raised in AEMO's rule change request

In its rule change request, AEMO notes that in the context of greater uncertainty being experienced in the NEM and a tightening supply-demand balance, it considers that there is a need for a reserve arrangement to mitigate against the risks associated with unanticipated shortfalls.⁸⁶ It states that an enhanced RERT, as presented in its high-level design document attached to the rule change request, would be a stronger safety net to mitigate against the risks associated with unanticipated shortfalls.⁸⁷

AEMO states that its high-level design has identified three key areas requiring enhancement to the regulatory framework, namely: "procurement horizon and contracting period", "RERT and the reliability standards" and "standardisation of reserve products."⁸⁸

These are discussed in turn next.

3.1.1 The procurement lead time and contracting duration are too short

AEMO states that the current 10-week limit on signing contracts for reserves has the potential to limit the availability, or increase the cost of reserves.⁸⁹ It also 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.⁹⁰ 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.⁹¹ AEMO's recent experiences support the position that greater reserves could be made available at lower cost if greater certainty could be offered to potential reserve providers.⁹²

AEMO notes that the ARENA trial process revealed that significant quantities of reserves are available, and that the volume of reserves increases and the unit costs decreases over time if a firm contract is available. Although AEMO could potentially negotiate ahead of signing a contract (as can be done under the current RERT framework), AEMO states that the lack of a firm commitment (i.e. that comes with signing a contract) may prevent these reserves from being made available.⁹³

⁸⁶ AEMO, *Enhancement to the RERT*, rule change request, p. 2

⁸⁷ *Ibid.*, p.2

⁸⁸ *Ibid.*, p.2

⁸⁹ The Commission is today making a final rule to increase the procurement lead time to nine months.

⁹⁰ AEMO, *Enhancement to the RERT*, rule change request, p.6.

⁹¹ *Ibid.*, p.6.

⁹² *Ibid.*, p.6.

⁹³ *Ibid.*, p.6.

3.1.2 There is a lack of comprehensive risk assessment framework

AEMO considers 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).⁹⁴

AEMO is concerned that its market projections indicate a heightened risk of significant load shedding over upcoming summers. In particular, AEMO's modelling highlights a heightened risk of load shedding in 2018-19 and 2019-20 in Victoria and, potentially, South Australia, even when the projected unserved energy over a broad range of scenario meets the reliability standard:⁹⁵

- For example, AEMO notes that 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 unserved energy is approximately 25 per cent (i.e. every four years).
- It says 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 unserved energy) will be met across the average of all scenarios.
- AEMO states that this analysis means that significant load shedding could occur during severe demand and supply conditions, which does not meet the expectations of most stakeholders.

AEMO also notes that jurisdictional governments are unwilling to tolerate load shedding and are intervening as a result (e.g. the SA battery and NSW government funding the ARENA-AEMO RERT trial).⁹⁶

3.1.3 Bespoke products are problematic

AEMO currently procures RERT through highly bespoke, negotiated contracts. AEMO states that this creates uncertainty for potential providers and makes it difficult for AEMO to compare offers, and is highly time consuming for all parties. AEMO notes that the ARENA trial, which offers standardised products, has shown strong and competitive offers from potential providers – this made the offers directly comparable.⁹⁷

94 Ibid., p.6.

95 Ibid., p.6.

96 Ibid., p.6.

97 Ibid., pp.6-7.

3.2 The solution proposed by AEMO

3.2.1 A longer lead time and contracting duration

AEMO proposes that the RERT be procured over a longer time horizon. In particular, AEMO recommends that:⁹⁸

- reserves be procured up to one year ahead of an identified shortfall under an annual contract (i.e. an increase in the procurement lead time to one year)
- if a longer-term requirement is projected, taking into account committed or highly likely new projects, reserves be procured for up to three years ahead if analysis indicates this would be lower overall cost for procuring annually.

3.2.2 A broader risk assessment framework

AEMO considers that the trigger for procuring 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 states that this should take into account the risk of unserved energy, not just the “expected” value.⁹⁹ The Commission notes that the purpose of AEMO's proposed changes to have the trigger for the RERT being in the context of a broader risk assessment is not clear. The purpose may, for example, be to reduce the likelihood of shortages, or it may be to minimise instances of involuntary load shedding, regardless of the reliability standard. Given this, the Commission has canvassed a range of ways that the procurement trigger could be considered in section 5.2 of this consultation paper.

AEMO also intends to propose and consult on changes to the *Reliability Standard Implementation Guidelines* (RSIG) which would provide more clarity on the conditions under which AEMO would procure reserves, and the volume to be procured - this does not require a rule change.¹⁰⁰ AEMO notes that it plans to undertake an annual risk assessment of the potential for unserved energy over a one-to-three year time period. If shortfalls are identified relative to the standards defined in the RSIG, AEMO will seek to procure RERT reserves.¹⁰¹ AEMO considers that even if the risk of unserved energy is low, if there are reserves that required no or low availability payments, but with usage costs between the market price cap and the estimated value of customer reliability, this should be an economically efficient outcome.¹⁰²

98 Ibid., p.7

99 Ibid., p.7

100 Ibid., p.8

101 Ibid., p.8

102 Ibid., p.8

3.2.3 Standardisation of products

Based on consultation with industry providers, the findings of the ARENA trial, and AEMO's operational requirements, AEMO intends to move towards standardised RERT products. AEMO proposes to define distinct products to be procured from the market that would deliver AEMO's operational requirements but also reflect the supply constraints on the system.¹⁰³ AEMO considers that implementing these changes can be addressed through revising the Reliability Panel's RERT Guidelines and AEMO's RERT procedure - a rule change is therefore not required.¹⁰⁴

3.2.4 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:¹⁰⁵

- Specifications for AEMO's standardised products, e.g. which technologies would be eligible and what additionality requirements are appropriate (i.e. provisions that seek to minimise market distortions by making sure that 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 non-delivery of reserves).

AEMO's high-level design is available on the AEMC's website as an attachment to the rule change request.¹⁰⁶

103 Ibid., p.8

104 Ibid., p.8

105 AEMO, *Enhanced RERT - high level design proposal*, Enhancement to the RERT rule change request

106 See https://www.aemc.gov.au/sites/default/files/2018-03/Rule%20change%20request_3.pdf.

4 Assessment framework

The Commission's assessment of this rule change request must consider whether the proposed rule promotes the National Electricity Objective (NEO).

4.1 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 national electricity objective (NEO).¹⁰⁷ This is the decision making framework that the Commission must apply.

The NEO is:¹⁰⁸

“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.”

Based on a preliminary assessment of this rule change request, the Commission considers 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 primarily 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 RERT has an impact on prices, while the indirect costs such as market distortions also have implications for reliability and prices.

In assessing the rule change request, the Commission proposes to consider whether or not the rule change improves the efficiency of the RERT process and reliability of the power system. In particular, it will consider the following principles:

- **Minimising market distortions:** Minimising distortions on market participants (i.e. market distortions) is important in order to minimise indirect costs, which could be substantial. The Commission will have regard to the distortionary impact of the proposed solution.

¹⁰⁷ Section 88 of the NEL.

¹⁰⁸ Section 7 of the NEL.

- **Minimising direct costs:** In addition to market distortions, the RERT also carries direct costs in terms of availability and activation payments, as well as compensation costs. The Commission will assess the effects of improvements to the RERT framework as proposed by AEMO.
- **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 will have regard to the potential benefits to reliability brought about by the proposed rule change, weighed against the likely costs, including market distortions.

4.2 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.

4.3 Northern Territory

From 1 July 2016, the NER, as amended from time to time, apply in the Northern Territory, subject to derogations set out in Regulations made under the Northern Territory legislation adopting the NEL.¹⁰⁹ Under those Regulations, only certain parts of the NER have been adopted in the Northern Territory. As the proposed rule relates to parts of the NER that currently do not apply in the Northern Territory (i.e. chapter 3 of the NER) and any consequential changes to other chapters of the NER will have no practical effect in the Northern Territory (i.e. if transitional arrangements were introduced under Chapter 11 of the NER), the Commission does not consider that the proposed rule needs to be assessed against additional elements set out under the Northern Territory legislation.¹¹⁰

Question 1 Assessment framework

(a) Is the assessment framework appropriate for considering the changes proposed in the rule change request?

(b) Are there any other relevant considerations that should be included in the assessment framework?

¹⁰⁹ National Electricity (Northern Territory) (National Uniform Legislation) (Modifications) Regulations.

¹¹⁰ See section 14A of Schedule 1 to the National Electricity (Northern Territory) (National Uniform Legislation) Act 2015, inserting section 88(2a) into the NEL as it applies in the Northern Territory and section 14B of Schedule 1 to the National Electricity (Northern Territory) (National Uniform Legislation) Act 2015, inserting section 88AA into the NEL as it applies in the Northern Territory.

5 Issues for Consultation

Taking into consideration the assessment framework, the Commission has identified a number of issues for initial consultation. Stakeholders are encouraged to comment on these issues as well as any other aspect of the rule change request or this paper, including the proposed assessment framework.

5.1 Procurement lead time

The current procurement lead time is nine months as a result of a final rule made by the Commission to extend the lead time from 10 weeks to nine months. In making its decision to increase the procurement lead time to nine months, the Commission noted that:¹¹¹

- While the potential of the mechanism to distort outcomes remains unchanged since the Commission considered similar issues in 2016, the Commission agrees with AEMO that several conditions in the market have changed since then, including the changing - driven by the retirement of thermal generation, an influx of variable renewable generation and a tightening of the demand-supply balance, as well as the effect that these changes are having on the operation of the power system - indicates that it would likely be beneficial, consistent with the national electricity objective, to reinstate the long-notice RERT.
- Since 2016, the ARENA and AEMO RERT trial has demonstrated that there are more resources, primarily demand response, that have the capability to change their energy consumption in response to an instruction, but that are not expected to respond to wholesale price signals and so are not participating in the wholesale market. The trial also found that a longer lead time is required for these types of reserves
- 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.
- Reinstating the long-notice RERT will also promote reliability since AEMO will be able to, if there is a shortfall, have access to a broader range of reserves than it otherwise would.

On balance, therefore, the Commission concluded that increasing the procurement lead time for the RERT to nine months will, or is likely to, contribute to the achievement of the National Electricity Objective and so promote the long-term interests of consumers.

As concluded by the Commission, a longer procurement lead time in the context of moving from 10 weeks to nine months can have benefits, particularly to the

¹¹¹ AEMC, *Reinstatement of long notice RERT*, final determination, 21 June 2018.

procurement process and in terms of increasing the number of potential providers of economically-efficient reserves. However, the counter-argument to this remains the same - a longer procurement lead time may also carry additional costs, including market distortions such as the crowding out of arrangements that could be occurring in the market, e.g. retailers offering demand response to their customers.

It is worth noting that the Energy Security Board's detailed design for the Guarantee proposes a procurement lead time of one year for the Procurer of Last Resort.¹¹²

Question 2 Procurement lead time

(a) What are stakeholders' views on increasing the procurement lead time from nine months to one year?

(b) Is one year an appropriate lead time? What are the pros and cons of a longer lead time?

5.1.1 Contracting period

As noted in Chapter 2, the contracting period refers to the duration of the reserve contract, which is different from the procurement lead time (i.e. the time window within which AEMO may contract for reserves to meet an expected reserve shortfall). The NER do not prescribe a specific contracting duration although they imply that the duration is limited by the procurement lead time.

AEMO is proposing that in the event that it projects a longer-term requirement, that reserves be allowed to be procured for the RERT up to three years (in circumstances where this would be at a lower overall cost), which AEMO states would "in effect enable standing reserves to be put in place".¹¹³

AEMO considers that the benefits of multi-year contracting are similar to the benefits of increasing the procurement lead time - in addition, multi-year contracts may provide more certainty to reserve providers, which may further increase the number of providers available for reserve contracts and lower the cost of reserves. AEMO considers that multi-year contracting may lead to lower cost reserves as fixed costs may be spread out over a number of years.

However, under AEMO's preferred multi-year contracting proposal, the procurement lead time would, in practice, be three years. Such a long procurement lead time may carry significant costs, both in terms of direct and indirect costs. The longer the lead time, the less change the market can respond before an intervention occurs. If the market knows that AEMO has procured the RERT three years ahead of an identified

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<http://coagenergycouncil.gov.au/publications/energy-security-board-%E2%80%93-draft-detailed-design-national-energy-guarantee-consultation>.

113 AEMO, *Enhancement to the RERT*, rule change request, p.7

shortfall, this would likely reduce the incentives for the market to invest in in-market capacity and so could result in inefficiencies.

Question 3 Multi-year contracting

(a) Is multi-year contracting appropriate?

(b) If so, is a three-year outlook an appropriate duration?

5.2 Procurement trigger

In its rule change request AEMO does not propose a specific solution to the issue that it raised with the procurement trigger. Instead, it states that it wishes to have a trigger that takes into account a broader risk assessment, which would include the risk of unserved energy, not just the expected value of unserved energy.¹¹⁴ The Commission has therefore approached this issue comprehensively, by seeking to explore the current appropriateness of the current trigger for the RERT, i.e. the reliability standard, as well as seeking views on alternatives to the reliability standard.

5.2.1 The reliability standard

What is the reliability standard?

Under the NER, AEMO may determine to enter into reserve contracts to ensure that the reliability of supply in a region meets the reliability standard for that region, and where practicable, to maintain power system security. In other words, the reliability standard is a procurement trigger for the RERT.

The reliability standard (for generation and inter-regional transmission elements) is the maximum expected unserved energy (USE) in a region for a given financial year. 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. Crucially, this is not set at zero per cent. The current reliability standard is 0.002 per cent *expected* unserved energy and is defined in the NER. 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.¹¹⁵

Importantly, 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 involves increased costs. This also needs to be

¹¹⁴ Ibid. p.7

¹¹⁵ See definition of 'unserved energy' in Chapter 10 of the NER and clause 3.9.3C of the NER. The Reliability Panel has recently completed a review of the reliability standard and settings - the reliability standard was not reviewed in detail in the latest review as the Panel decided that the materiality test to determine if the reliability standard should be reassessed was not met.

considered alongside the capacity of networks - networks must be able to manage higher levels of reliability at the wholesale level, particularly if achieved through higher levels of generation.

According to the latest *Annual Market Performance Review* performed by the Reliability Panel,¹¹⁶ in 2016/17, at a wholesale level, 0.00036 per cent unserved energy¹¹⁷ was recorded in South Australia. This is within the reliability standard (i.e. an expectation that no more than 0.002 per cent of demand for energy will be unmet in any region of the NEM). At a wholesale level, there was no other unserved energy recorded due to reliability events for any other region in the NEM. The Reliability Panel noted that while the NEM has performed well over the last decade in terms of reliability, projections show that some unserved energy, within the reliability standard, is forecast over the medium term (2018/19 to 2026/27).¹¹⁸

Operationalisation of the reliability standard

It is AEMO's responsibility to incorporate the reliability standard within its day-to-day operation of the market, and to inform the market that the reliability standard is expected to not be met. AEMO operationalises the reliability standard through its *Reliability Standard Implementation Guidelines* (RSIG), which it updates from time to time through the rules consultation procedure with industry and in accordance with guidance in the NER on the procurement triggers..¹¹⁹

Currently, AEMO identifies a breach of the reliability standard through its forecasting and information processes - namely, the medium-term projected assessment of system adequacy (PASA) over a two-year timeframe, the short-term PASA over a seven-day timeframe and pre-dispatch looking a day ahead.¹²⁰

In simple terms, AEMO's forecasting processes, and medium-term PASA in particular, projects the expected value of unserved energy by:¹²¹

- carrying out a number of iterations of power system simulation runs for 10 per cent probability of exceedance (POE)¹²² demand and 50POE demand¹²³

¹¹⁶ See <https://www.aemc.gov.au/markets-reviews-advice/annual-market-performance-review-2017>

¹¹⁷ Unserved energy being from events which the NER define as reliability events.

¹¹⁸ Ibid.

¹¹⁹ Clause 3.20.2(a) of the NER.

¹²⁰ It does so through the Electricity Statement of Opportunities as well, although this goes beyond the RERT timeframe.

¹²¹ In accordance with clause 3.7.2 of the NER.

¹²² 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 one every 10 years.

¹²³ 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.

- *averaging* (i.e. taking the mean) all unserved energy 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.

This expected unserved energy 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 is projected USE in excess of the reliability standard.¹²⁴

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.¹²⁵

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 the Reserve Level Declaration Guidelines.¹²⁶ AEMO identifies that reserves are running low if reserves available in the market fall below the required reserve level as determined by the LOR methodology.¹²⁷ The required level relevant to the RERT is called an LOR2.¹²⁸ This is calculated as follows:¹²⁹

- 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 errors such as wind or demand forecast errors. If the FUM is larger than the largest credible contingency event, then the FUM sets the LOR2 reserve level.

¹²⁴ This is the relevant as monitoring LRCs is one of the actions that AEMO may take in relation to the RERT according to the RERT guidelines. The RSIG also state that AEMO will use an LRC to decide to intervene.

¹²⁵ In accordance with clause 4.8.4(a) of the NER.

¹²⁶ In accordance with clause 4.8.4A of the NER. AEMO's reserve level declaration guidelines are available at <https://www.aemo.com.au/Stakeholder-Consultation/Consultations/Consultation-on-initial-version-of-Reserve-Level-Declaration-Guidelines>

¹²⁷ In accordance with Clause 4.8.4(b) of the NER. For more information, see AEMO's reserve level declaration guidelines.

¹²⁸ This 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. The RSIG also state that AEMO will use an LOR2 to decide to intervene.

¹²⁹ See AEMO's reserve level declaration guidelines are available at <https://www.aemo.com.au/Stakeholder-Consultation/Consultations/Consultation-on-initial-version-of-Reserve-Level-Declaration-Guidelines>

In simple terms, the forecast volume of reserves (i.e. the forecast excess of supply over demand) in the market must be equal to or more than the LOR2 reserve level.

AEMO's views

In its rule change request, and in particular, in its high-level design proposal, AEMO does not specifically refer to these above processes but instead notes that it would undertake a risk assessment of potential for load shedding over the next one to three years and that this will be compared to the reliability standard to determine the volume of reserves required.¹³⁰ AEMO also notes that it is projecting that the risk of some unserved energy is high compared with recent levels. For example, in Victoria in 2018-19 under AEMO's "neutral" demand growth scenario, the risk of breaching the reliability standard is projected to be nine per cent, and the risk of *some* unserved energy is approximately 25 per cent.¹³¹

In submissions to the *Reinstatement of long notice RERT* rule change, stakeholders commented on the operationalisation of the reliability standard, particularly for the purpose of triggering the RERT.

Stakeholders' views

In relation to AEMO's projections on the risk of load shedding, Infigen noted that while AEMO's modelling shows that nine per cent of iterations whereby unserved energy exceeds 0.002 per cent, this is distinct from the definition reliability standard.¹³² Infigen considered that this is inconsistent with the RSIG, which state that: "if the expected annual USE, averaged across the simulations, exceeds the maximum level specified by the reliability standard, a low reserve condition is identified."¹³³

The Australian Energy Council expressed similar views, stating that the reliability standard recognises and accepts that in some years the target USE may be exceeded - and this is by design, as the reliability standard allows for this to happen during an exceptionally "peaky" simulated year and/or one with multiple simultaneous forced outages.¹³⁴ The Australian Energy Council also noted that the statement "the risk of breaching the reliability standard is nine per cent" is incorrect - either the standard is forecast to be met or not met.¹³⁵

ERM Power also raised a number of issues in relation to the forecasting processes identified above, including in relation to the accuracy of demand forecasts in the

130 AEMO, *Enhanced RERT - high level design proposal*, Enhancement to the RERT rule change request, p. 2

131 AEMO, *Enhancement to the RERT*, rule change request, p.6

132 Infigen, submission to *Reinstatement of long notice RERT* - consultation paper, p.3

133 Ibid. p.3

134 Ibid. p.4

135 Ibid. p.4

medium-term PASA timeframe and the impact that the introduction of the forecasting uncertainty measure (FUM) has had on the procurement of the RERT.¹³⁶

Question 4 Operationalisation of the reliability standard

Do stakeholders have views on how the reliability standard is operationalised, including on the approaches described above?

Appropriateness of the reliability standard

The reliability standard can be thought of as having:

- a metric – i.e. annual expected USE per region
- a number relating to that metric – i.e. 0.002 per cent.

AEMO notes in its rule change request 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. It also states 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.¹³⁷

One way of addressing these issues may be to tighten the reliability standard by changing the number relating the reliability standard metric i.e. to have a more conservative reliability standard, say, 0.001 per cent expected unserved energy per region per year, or put another way, 99.999 per cent expected reliability per region per year. This is discussed in this section.

Another way of achieving this is by examining alternatives to the metric of the reliability standard, which is discussed in the next section.

The Reliability Panel has recently completed a review of the reliability standard and settings.¹³⁸ The reliability standard was not reviewed in detail in the latest review as the Panel decided that the materiality test to determine if the reliability standard should be reassessed was not met.

Similarly, the value of customer reliability (VCR), which shows the value that consumers place on reliability in terms of \$/MWh, has not been updated recently but is due to be updated in 2019.¹³⁹ A significant change in this value would demonstrate that community expectations towards reliability have shifted.

¹³⁶ ERM Power, submission to *Reinstatement of long notice RERT* - consultation paper, p.3

¹³⁷ AEMO, *Enhancement to the RERT*, rule change request, p.6.

¹³⁸ See

<https://www.aemc.gov.au/markets-reviews-advice/reliability-standard-and-settings-review-2018>

¹³⁹ The Commission is also currently considering a rule change request which is examining who should be responsible for calculating and updating VCR. See <https://www.aemc.gov.au/rule-changes/establishing-values-of-customer-reliability>

The Commission is therefore interested in stakeholders' views on whether or not the reliability standard, i.e. 0.002 per cent USE is appropriate and whether or not there is evidence that it needs to be tightened, in some or all conditions, to meet community expectations. On the one hand, a tighter reliability standard may indeed lead to higher reliability than the already high levels currently being experienced. On the other hand, tightening the standard would likely involve significantly more costs than would be incurred under the current reliability standard. Indicative modelling carried out by Ernst & Young shows that, to achieve zero expected unserved energy compared to a base scenario in Victoria, an additional 1,000 MW of capacity would be needed, which would increase wholesale energy costs by nearly seven per cent (\$200 million per annum) in that region.¹⁴⁰

The Commission also intends to write to the Reliability Panel asking for advice on this matter in order to consider this in preparing the draft determination.

Question 5 Appropriateness of the reliability standard

(a) Do stakeholders consider that the current reliability standard remains appropriate?

(b) If the current reliability standard is considered appropriate, is there evidence that a tighter reliability standard is needed, i.e. one which allows less tolerance for unserved energy?

Alternatives to the reliability standard metric

For the purpose of this consultation paper, the Commission is interested in stakeholder views on whether one or more alternatives or additions to the reliability standard metric (i.e. a maximum expected unserved energy as a share of demand per year) are required. For example, in its rule change request, AEMO describes its projection for the risk of any load shedding. This is often referred to as a "loss of load probability" (LOLP). There are many definitions for the term; however, the Commission understand that in this instance, it refers to the probability that there is any unserved energy in a given year.¹⁴¹ In other words, this metric does not take into account the magnitude of the unserved energy and is based on any unserved energy, even when within the reliability standard.

When it comes to alternative metrics to the reliability standard, to the extent that stakeholders identify that a different metric is needed, the Commission is interested in views on whether or not this metric(s) would replace the standard, or whether this metric(s) would exist alongside the existing reliability standard metric, or be relevant only to the RERT:

¹⁴⁰ Reliability Panel 2017, Reliability standard and settings review 2018, draft report.

¹⁴¹ This is generally calculated by dividing the number of simulations with any unserved energy by the total number of simulations.

- In the first two options, the new metric(s) would apply to the entire reliability framework in the NEM, which would have a significant impact on how the market currently works.
- The third option would essentially create a second standard. There would also be implications for the reliability framework if a different standard is established for the RERT - under this option, there would be two standards, one for the triggering of the RERT and one for the overall reliability framework. In other words, there would be a different standard for out-of-market procurement (i.e. the RERT) and what is expected of the market (i.e. the reliability standard).

In 2007, the Reliability Panel assessed the possibility of a "hybrid standard", which would combine the existing reliability standard metric (i.e. an expected USE per region per year metric) with a second one, e.g. a LOLP standard. As an example, a hybrid standard could be a Loss of Load Probability and USE metric, e.g. that the probability that USE will be greater than 0.002 per cent. The Panel, at the time, 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.¹⁴² 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.

Question 6 Alternatives to the reliability standard metric

(a) Should the Commission consider alternative metrics, i.e. metrics other than the current reliability standard metric such as the loss of load probability? If so, which metrics should the Commission be assessing?

(b) If a different metric(s) is considered, should this metric(s):

(1) replace the reliability standard and therefore apply to the entire reliability framework; or

(2) apply in addition to the current metric; or

(3) apply only to the RERT trigger, which would in effect, create a second standard, with the existing reliability standard intact?

5.2.2 Power system security trigger

In addition to reliability, the RERT may also be procured for power system security reasons. AEMO did not specifically refer to the power system security trigger in its rule change request (except in the context of discussing the existing arrangements under the NER). However, in light of the broad nature of the request regarding the procurement

¹⁴² AEMC Reliability Panel 2007, Comprehensive Reliability Review, Final Report, December 2007, Sydney.

trigger, the Commission considers it is appropriate to seek stakeholders' views on this aspect of the RERT.

The Commission understands that AEMO has never procured the RERT for power system security reasons before, only for reliability purposes. Most unexpected power system security events in the NEM, such as non-credible contingency events, are typically dealt with through contingency frequency control ancillary services (FCAS) for up to five minutes after the event.

Question 7 Power system security trigger

(a) Does it continue to be appropriate for AEMO to have the discretion to use the RERT for power system security?

(b) What effect would changes to the procurement trigger or other changes being considered through this rule change have on this aspect of the framework?

5.2.3 Linking the procurement trigger to the reliable operating state

AEMO considers that there is inconsistency between the objective of the current RERT (where the trigger to procure 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).

The NER state that the power system is in a reliable operating state when:¹⁴³

- 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 reliability standard implementation guidelines.

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.

While the RERT may only be *procured* through the identification of a breach of the reliability standard,¹⁴⁴ because of the way it is operationalised in the short term, the RERT and directions have the same operational trigger in real time – the lack of reserve

¹⁴³ Clause 4.2.7 of the NER.

¹⁴⁴ And for power system security where practicable.

notices.¹⁴⁵ AEMO will typically seek to intervene following a lack of market response to LOR2 notices.¹⁴⁶ It may then use the RERT, directions and/or clause 4.8.9 instructions, with RERT prioritised ahead of directions in order to maintain a reliable operating state.¹⁴⁷

However, AEMO can only use the RERT in response to a declaration of LOR2 if the RERT has already been procured or is able to be procured under the short-notice RERT.¹⁴⁸ The NER do not specify a *minimum* procurement lead time for the RERT,¹⁴⁹ but the RERT guidelines specify that AEMO may procure the short-notice RERT from three hours to a week ahead of a projected reserve shortfall.¹⁵⁰

If the RERT has not been procured then it could be argued that this could potentially lead to an inefficient outcome where there could be some unserved energy (within the reliability standard) that could have been avoided through the procurement of reserves whose cost is less than the cost of unserved energy.

The current RERT framework, with its procurement trigger linked to the reliability standard (i.e. 0.002 per cent expected USE per region per year), may therefore not allow for this to occur. If the market is forecast to be meeting the reliability standard, then the RERT will not be procured. Then, to the extent that there are shortfalls of reserves AEMO can only use directions,¹⁵¹ or issue a clause 4.8.9 instruction for involuntary load shedding. Both directions and involuntary load shedding are not without costs.¹⁵²

One option could therefore be to change the procurement trigger for the RERT from being linked with the reliability standard to being linked with the concept of a 'reliable operating state'. This would have implications for how procurement trigger of the RERT is used in practice since the reliability standard would no longer be the trigger.

¹⁴⁵ AEMO may also trigger the RERT based on LRCs. For the purpose of this section, the analysis is focussed on the short term only and excludes the medium-term PASA timeframe.

¹⁴⁶ It is not a direct NER requirement for AEMO to intervene following an LOR2. However, it does so operationally as part of its intervention powers, e.g. as guided by the RERT Guidelines when it comes to the RERT. AEMO must also keep the system operating to a reliable operating state.

¹⁴⁷ See clause 3.8.14 of the NER with respect to the sequencing of intervention events.

¹⁴⁸ The NER only allow AEMO to procure the RERT when it identifies a breach of the reliability standard. AEMO operationalises the procurement trigger of the RERT as being an LOR2 over the real time to seven-day ahead timeframe. The real time dispatch trigger is also an LOR2 or an LOR3.

¹⁴⁹ They do specify a maximum procurement lead time of nine months.

¹⁵⁰ The ARENA-AEMO demand response program is trialling products with even shorter lead times, namely, 10 minutes and 60 minutes.

¹⁵¹ It is likely, in the case of a reliability event (i.e. very tight demand and supply balance), that there is no spare plant available for AEMO to direct on. During such an event, prices would be forecast to be at the market price cap, which means that there would be strong incentives on plants to bid themselves available. In practice, there could be instances where this does not occur, e.g. due to the complex nature of the commitment decision making process. For example, it may only be economic to enter into a fuel contract to supply during an event for a number of hours that is longer than the projected reliability event.

¹⁵² In particular, the cost of involuntary load shedding is represented by an individual's value of customer reliability.

In relation to the dispatch trigger, the practical implications are not as significant since directions and the RERT are typically operationalised in the same manner, i.e. they have the same dispatch trigger.

Question 8 Linking the procurement trigger to a reliable operating state

(a) What are stakeholders' views on whether the procurement trigger for the RERT should be linked to a reliable operating state?

(b) What are stakeholders' views on whether having linking the procurement trigger for the RERT to the reliability standard creates potential inefficiencies?

5.3 Procurement volume

AEMO, in its rule change request, notes that it wishes both the procurement trigger and volume to take into account a broader risk assessment framework.¹⁵³ This implies that the procurement trigger and volume should be linked. At present, as discussed in chapter 2, the NER do not prescribe the amount that should be procured but rather implies that AEMO can only procure so much as would be reasonably necessary to ensure that the reliability standard is met (and where practicable, to maintain power system security). The link is not explicit or prescriptive. In addition, when deciding how much to procure, AEMO must consult with jurisdictions in terms of costs, in accordance with the RERT guidelines.

In its high-level design proposal, AEMO notes that it will assess the reliability of the NEM in its Electricity Statement of Opportunities (ESOO) modelling, and in particular, its Monte Carlo market simulations across a range of demand, renewable generation and generator outage scenarios. Based on these simulations, AEMO will undertake a risk assessment of the potential for load shedding over the next one to three years. This will be compared to the reliability standard to determine the volume of reserves required.¹⁵⁴

In submissions to the *Reinstatement of 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 clear framework for setting a "capacity target for reserves, informed by an assessment of the reserves requirement over each hour of the peak demand event".¹⁵⁵ The Victorian Government also suggested that this target should be published before AEMO seeks contracts.¹⁵⁶

¹⁵³ AEMO, *Enhancement to the RERT*, rule change request, p.7

¹⁵⁴ AEMO, *Enhanced RERT - high level design proposal*, Enhancement to the RERT rule change request, p. 12

¹⁵⁵ Victorian Government, submission to *Reinstatement of long notice RERT* - consultation paper, p. 2

¹⁵⁶ *Ibid.* p.2

Question 9 Procurement volume

(a) Should the NER be more prescriptive with respect to procurement volume?

(b) Do stakeholders consider that the current procurement volume is sufficiently transparent? If not, how could transparency be achieved?

(c) What is the most appropriate link between the procurement trigger and procurement volume?

Assuming that the procurement trigger was linked to a reliable operating state, and reserves were procured regularly (say, on an annual basis), there would need to be a methodology for determination how much reserves to procure. In this particular circumstance, there are a number of ways in which the amount of reserves to be procured would be determined. These are outlined in Box 5.1.

Box 5.1 Options for determining procurement volume

This box outlines three potential methodologies for determining the volume of reserves.

To undertake an assessment of how much reserve to procure, there would need to be consideration of the costs and benefits of reserves. The below options consider:

- the costs of using reserves (i.e. availability and other types of payments to reserve providers) and
- the costs of unserved energy (valued at the value of customer reliability). Reducing the costs of unserved energy can be considered to be a benefit.

The below options present different methodologies for how these costs could be used to inform the amount of reserves to be procured.

Cost minimisation

An expectation of costs/benefits could be calculated by probability weighting the costs of using reserves and unserved energy across multiple scenarios, with the scenarios based on historical experience (e.g., 40 per cent for high demand and 60 per cent for low demand) for a range of reserve levels. The level of reserves that is shown to minimise the expected total costs would be the volume of reserves that is procured.

Regret minimisation

Regret cost can be considered to be the difference between the cost of the decision made and the cost of the 'optimal' decision) given the realisation of a scenario. For example, by passing on an opportunity to procure reserves it means that they are unable to be used later – if unserved energy did result then there may be

“regrets” for this decision. This translates to the opportunity loss associated with a specific level of reserves – the difference between total cost and the lowest total cost achievable under each scenario. Under this approach, “regret costs” would be calculated,¹⁵⁷ and the reserve level that minimises the regret cost is the volume chosen.

Value of insurance

This option could be undertaken in addition to the regret minimisation method. Here, reserves could be considered as a form of “insurance”. This would consider the level of “insurance” provided by different levels of reserves in order to assess the case for additional reserves above the regret minimising levels. For a range of reserves levels, the cost of procuring that amount of reserves would be calculated, it would also calculate how much this would reduce the “exposure” or level of risk associated with having unserved energy. This would allow the procurement volume to be determined based on the trade-offs between the level of risk coverage and the costs. For example, spending a small amount of reserves would imply that there is a high risk of unserved energy, but the costs would be lower. This could be traded-off against spending more reserves, but reducing the risk or exposure to unserved energy, with this involving a higher cost.

Question 10 Options for determining procurement volume

Do stakeholders have any views on the outlined options?

5.4 Standardisation of products

As stated by AEMO in its rule change request, AEMO may choose to standardise products without requiring a rule change.¹⁵⁸ Based on the lessons to date from the ARENA-AEMO trial and other consultation, AEMO has 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.

At present, 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.

The pros and cons of each standardised, semi-standardised and bespoke products are summarised in Table 5.1.

¹⁵⁷ For example, it could compute this by taking a maximum regret approach, which would be the worst case level of regret out of the two demand scenarios for each level of reserves.

¹⁵⁸ AEMO, *Enhancement to the RERT*, rule change request, p.8

Table 5.1 Spectrum of product standardisation

	Standardised products	Semi-standardised products	Bespoke products
Example	ARENA-AEMO trial	AEMO's enhanced RERT proposal (based on the high-level design document)	Current RERT
Advantage	<ul style="list-style-type: none"> • Procurement process easier, simpler, cheaper and more transparent – AEMO would be able to compare like for like. • More transparent at dispatch time as the market would know exactly what is likely to be dispatched. • Can be designed to be limited to what the system needs – e.g. peak demand or weather-sensitive products. 	Allow a greater range of providers to participate (with negotiation permitted for certain items).	As it is an open tender process, the types of products on offer will reflect what the market wants to offer more accurately and provides flexibility to providers.
Disadvantage	<ul style="list-style-type: none"> • May exclude potential providers/limit number of providers. • There may be undesirable outcomes if the products are poorly designed. • May limit innovation. • May not reflect what the market may want to offer. 	<ul style="list-style-type: none"> • Would simplify the process from the status quo, it would still involve some complexity. • Less transparent than completely standardised products. 	<ul style="list-style-type: none"> • The procurement process tends to be lengthy and complicated due to the potential for a wide range of offers, making the process less transparent. • It is more difficult for AEMO to assess and compare all the offers.

While the Commission agrees that AEMO may develop standardised products without a rule change, the Commission is interested in stakeholder views on whether or not

there should be a high-level framework in the NER, beyond what is already there (e.g. the RERT principles) to underpin the design of standardised products.

The key design specifications identified by AEMO in its high-level design are:

- time periods: this refers to the time periods during which AEMO will seek to procure reserves, e.g. in summer from 12pm to 4pm on business days
- notification periods: this identifies the lead time required before activation e.g. a 10-minute product would mean that reserves would need to be ready to respond in 10 minutes
- length of contracts: this refers to the contract duration, as discussed in section 5.1.1
- eligible technologies: this would identify the technologies that may offer reserves
- additionality requirements (i.e. 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
- 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

Question 11 Standardisation of products

**Should there be a high-level framework in the NER for standardised products?
If so, what should this framework look like?**

The Commission is also interested in stakeholders' views on the individual aspects of the product specification. This is discussed in more detail in chapter 6.

5.5 Governance and transparency of the RERT

While AEMO did not raise governance and transparency specifically in its rule change request, the Commission has received a number of submissions to the *Reinstatement of long notice RERT* which raise concerns around the governance and transparency of the RERT framework.

For example, Energy Networks Australia considered that there would be benefit in improving the transparency and governance arrangements of the contracting process.¹⁵⁹

At present, the NER provide high-level guidance to AEMO on the procurement triggers but are not prescriptive in that regard. The reliability standard itself is embedded in the NER, while the Reliability Panel has the task of reviewing the reliability standard when required. If the Panel recommends that the reliability standard be changed, then it needs to submit a rule change request to the Commission. The Commission would then assess the rule change request and make its decision as part of the rule change process. Any other party may also submit a rule change request with respect to the reliability standard.

In addition, 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 when the reliability standard is not met. AEMO operationalises the reliability standard through its *Reliability Standard Implementation Guidelines*, which it updates when required through consultation with industry.

In terms of transparency, the AEMC has summarised stakeholders' concerns on transparency, as being with respect to:¹⁶⁰

- the costs of procuring and dispatching the RERT, including indicative costs
- details around the payment structure e.g. details of availability (capacity) and dispatch (energy) payments
- the methodology used by AEMO to assess reserve requirements
- the procurement volume more generally
- reporting on past events, including on the accuracy of forecasts in relation to RERT activations.

Product standardisation, as proposed by AEMO, may go some way in addressing some of stakeholders' concerns when it comes to lack of or poor visibility of AEMO's processes with respect to reserves. However, the Commission is interested in stakeholders' views on ways to improve transparency of the RERT process more broadly.

The Commission is also interested in stakeholders' views on the broader governance of the RERT, given stakeholder feedback received to date by the Commission and in light of the increasing use of the RERT. For example, there is no independent oversight of procurement triggers - it is up to AEMO to identify, through the governance structure

¹⁵⁹ Energy Networks Australia, submission to *Reinstatement of long notice RERT* - consultation paper, pp. 1-2

¹⁶⁰ Please see Appendix A of the *Reinstatement of long notice RERT* final determination for a summary of the issues raised by stakeholders in relation to transparency.

discussed above, shortfalls and trigger the procurement of the RERT. However, it is required to consult with jurisdictions on the costs of the RERT, in accordance with the RERT guidelines. It is worth noting in this context that the detailed design of the Guarantee proposes that there would be an independent trigger for the Procurer of Last Resort (i.e. the RERT).

Question 12 Governance and transparency of the RERT

(a) Is the current governance framework appropriate? Is there a need for independent oversight of the procurement trigger for the RERT?

(b) Do stakeholders agree that there should be more transparency around the identified aspects of the RERT framework?

6 AEMO's high-level enhanced RERT design

AEMO attached a high-level design proposal for an enhanced RERT as part of the rule change request, which it states outlines a pathway to addressing the issues raised in the rule change request.¹⁶¹ This chapter summarises AEMO's high-level enhanced RERT design and seeks stakeholder feedback on identified issues. The Commission also welcomes stakeholder feedback on any other aspects of the high-level design which stakeholders think should be examined through this rule change process.

6.1 Product specification

This section of the high-level design sets out AEMO's proposed product standardisation with respect to a number of identified specifications. The Commission has focussed its analysis on three specifications.

6.1.1 Notification periods

Notification periods refer to the maximum time by which reserves must respond if they are needed. For example, a 10-minute notification period means that reserves must be ready to be dispatched in 10 minutes. The shorter the notification period or notification lead time, the more time the market has to respond to a shortfall. A shorter notification period also means that AEMO may use such reserves for unexpected or sudden shortfalls that were not previously forecast.

On the other hand, some reserve products require a long notification period, including potentially some industrial loads or behavioural-based demand response,¹⁶² in order to be able to offer their products into the RERT.¹⁶³

AEMO is proposing three notification periods, namely, 10-minute, 60-minute and 24-hour.¹⁶⁴ The ARENA program is currently trialling a 10-minute and a 60-minute product. Outside of the trial, products are bespoke and subject to contractual agreements. 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 of more than 20+ hours.¹⁶⁵

¹⁶¹ AEMO, *Enhancement to the RERT*, rule change request, p.7

¹⁶² 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.

¹⁶³ AEMO, *Enhanced RERT - high level design proposal*, Enhancement to the RERT rule change request, p.6

¹⁶⁴ Ibid.p.5

¹⁶⁵ See <http://aemo.com.au/Electricity/National-Electricity-Market-NEM/Security-and-reliability/Summer-operations-report>

Question 13 Notification periods

(a) What are stakeholders' views on the three notification periods proposed by AEMO?

(b) Do stakeholders have any views as to whether notification periods should be specified in the NER?

6.1.2 Eligible technologies

AEMO is proposing to specify examples of technologies that would be eligible to participate in the RERT, but other technologies may be eligible with approval from AEMO.¹⁶⁶ These technologies are: demand response (industrial, commercial, aggregated), distributed energy resources, energy storage (e.g. batteries), mothballed generation (provided they could not be made available to the market) and network response.¹⁶⁷

At present, the RERT is technologically neutral. The Commission understands that, to date, RERT contracts have primarily included demand response, diesel generators and network response. The Commission is seeking stakeholder views on whether or not 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 is interested in stakeholder views on whether it is appropriate that networks can provide voltage reduction services as demand response into the RERT.

Question 14 Eligible technologies

What are stakeholders' views on which technologies should be eligible to participate in the RERT?

6.1.3 Out-of-market requirements

In discussing eligible technologies above, the NER require that these technologies be out-of-market or in addition to the market. As noted by AEMO, this is so that the procurement of reserves does not undermine the development of wholesale demand response programs by retailers, perversely incentivise the withdrawal of market capacity, or disincentivise new in-market capacity.¹⁶⁸

¹⁶⁶ AEMO, *Enhanced RERT - high level design proposal*, Enhancement to the RERT rule change request, p.8

¹⁶⁷ Networks reducing voltages to reduce local demand.

¹⁶⁸ AEMO, *Enhanced RERT - high level design proposal*, Enhancement to the RERT rule change request, p.8

In its high-level design, AEMO summarises the steps that it takes (and will continue to take) to make sure that reserves contracted under the RERT are out of market, as defined by the current out-of-market provisions in the NER. At present, the out-of-market provisions limit providers from participating in the RERT if they are also bidding into the market for the trading intervals to which the RERT contract relates.¹⁶⁹

However, the Commission has received a number of comments from stakeholders with respect to this in the *Reinstatement of long notice RERT* rule change. For example, the Australian Energy Council has expressed concerns that contracting of the long-notice RERT in 2017 pre-empted market responses, stating that some of the resources provided through the RERT would have operated in the market in the absence of the RERT.¹⁷⁰

Indeed, in its rule change request, AEMO stated that it could manage concerns around market distortions through setting appropriate caps on availability payments and restrictions on resources transitioning between the energy market and the RERT.¹⁷¹

In its submission to the Commission's *Reliability Frameworks Review*'s interim report, the South Australian Government suggested that the Commission considers more rigorous ring-fencing between the RERT 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.¹⁷² In other words, this would increase the out-of-market restriction to one year.

At present, as an example, for the short-notice RERT, the contract may only be triggered up to seven days ahead of a shortfall. In that instance, it is possible, for example, that a contract may only provide for a participant being dispatched for a few hours. For the rest of the time, the provider would be free to participate in the market. This may not provide a large enough disincentive to prevent perverse outcomes such as shifting resources that would otherwise be in the market to being outside of the market. On the other hand, increasing the restriction to one year could make sure that only out-of-market reserves are incentivised to participate in the RERT.

AEMO's experience with the RERT last summer demonstrated that there are demand response resources that do not otherwise respond to wholesale price signals, but that can participate in the RERT. However, the interaction between demand response used in the RERT ('emergency demand response') and wholesale demand response needs to be considered. The Commission is considering ways to facilitate demand response in the wholesale market through the *Reliability Frameworks Review*. It will be important to make sure that demand response that would otherwise be used in the wholesale market is not used in the RERT.

¹⁶⁹ The term 'market' is defined in Chapter 10 of the NER and means any market or exchanges described in the NER, for so long as the market or exchange is conducted by AEMO, e.g. the spot market.

¹⁷⁰ Australian Energy Council, submission to *Reinstatement of long notice RERT* - consultation paper, p.2

¹⁷¹ AEMO, *Enhancement to the RERT*, rule change request, p.3

¹⁷² SA Government, submission to *Reliability Frameworks review* - interim report, p.3.

Question 15 Minimising market distortions

(a) Are the out-of-market provisions in the NER, aimed at minimising market distortions, are appropriate?

(b) Are the existing out-of-market provisions clear and transparent to stakeholders?

(c) What are stakeholders' views on the specific suggestion to increase the out-of-market restriction to a year?

(d) What are stakeholder views on interactions, if any, between a wholesale demand response and emergency demand response?

6.1.4 Other specifications

Table 6.1 summarises AEMO's proposal with respect to these specifications and how they differ from the current arrangements, if any.¹⁷³

Table 6.1 Other product specifications

Product specification	Enhanced RERT proposal	Current arrangements
Time period	This specifies blocks of time during which reserves must be available. AEMO will procure reserves separately for several seasonal and diurnal time blocks in order to reflect both supply side (availability of reserves) and demand side (times of greatest risk of unserved energy).	This is not specified in the NER or RERT guidelines. Currently, this is based on individual contractual agreements.
Contract length	AEMO will seek to procure one year contracts in the first instance. However, AEMO will consider bids requiring a longer contracting period of up to three years.	At present, the NER only allow AEMO to procure up to nine months ahead of a shortfall. Please note that this is covered under section 5.1.1 above.
Location	Procured regionally, but location within the network may be considered.	This is not currently specified in the NER or RERT guidelines, although procurement is generally done regionally.
Duration of response	This specifies the duration of the response during a particular event. Providers must be able to deliver response for up to three hours in	This is not specified in the NER or RERT guidelines. Currently, this is based on individual contractual

¹⁷³ AEMO, *Enhanced RERT - high level design proposal*, Enhancement to the RERT rule change request, pp.4-11

Product specification	Enhanced RERT proposal	Current arrangements
	any single activation.	agreements.
Types of response and baseline calculation	<p>Loads required to “drop by” the nominated MW of demand response, generation to “rise to” a specified MW.</p> <p>A baseline methodology will be applied based on the methodology developed based on the existing methodology. AEMO will seek to incorporate any learnings from implementing the ARENA trial</p>	<p>This is not specified in the NER or RERT guidelines.</p> <p>AEMO is currently using the methodology developed for its proposed 2013 demand response mechanism in the RERT.¹⁷⁴</p>
Recovery period	This specifies the time before a resource can be called again. Up to 24 hours, as specified by provider.	This is not specified in the NER or RERT guidelines. Currently, this is based on individual contractual agreements.
Limits on number of activations	Five activations (excluding tests) per year (variations to this will be considered).	This is not specified in the NER or RERT guidelines. Currently, this is based on individual contractual agreements.
Minimum response to be offered	5 MW, then 1 MW increments.	This is not specified in the NER or RERT guidelines.
Maximum response to be offered	No limit per applicant.	This is not specified in the NER or RERT guidelines.
Testing	AEMO will undertake testing of reserves once per contract period (unless successfully activated prior to the test within the relevant period).	This is not specified in the NER or RERT guidelines. Currently, this is based on individual contractual agreements.
Metering requirements	Providers will be required to specify the National Metering Identifier (NMI) for all resources contributing to an offer, and resources must be metered by a Type 1-4 meter or similar.	This is not specified in the NER or RERT guidelines.

As noted in the table, not every specification is currently in the NER.

Question 16 Other product specifications

(a) Do stakeholders have views on any of the product specifications listed above?

¹⁷⁴ See <https://www.aemo.com.au/Electricity/National-Electricity-Market-NEM/Security-and-reliability/Demand-response-mechanism>

(b) Should any of the product specifications, if not currently in the NER, be in the NER? If so, why?

6.2 Other design features

6.2.1 Structure of offers

The NER currently do not specify a particular payment structure. AEMO's proposal for a payment structure is summarised in Figure 6.1

Figure 6.1 Proposed payment structure

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

Given that stakeholders have raised issues around the costs and transparency of payments associated with the RERT, the Commission is seeking stakeholder views on whether or not payment structures or payment caps should be more prescriptive in the NER or in RERT guidelines or in stakeholders' views on the distortionary effects of the payment structure.

In particular, in submissions to *Reinstatement of long notice RERT*, TransGrid supported consideration of a cap on the availability payments that can be offered to reserves due to its concerns around the cost of the RERT,¹⁷⁵ while Energy Networks Australia considered that there would be benefit in improving the availability of price caps.¹⁷⁶ Energy Efficiency Council stated that AEMO's processes should ensure that the size of payments for RERT are appropriate and the balance of payment for availability and dispatch are correct.¹⁷⁷

The Commission is also interested in stakeholders' views on AEMO's proposed approach to the payment structure, namely, to have low availability payments and relatively high usage costs, with price cap of \$30,000/MWh.¹⁷⁸ Low availability payments minimise the incentives from in-market resources to shift away from the market and into the RERT, thereby limiting market distortions. However, high usage

¹⁷⁵ TransGrid, submission to *Reinstatement of long notice RERT* - consultation paper, p. 2

¹⁷⁶ Energy Networks Australia, submission to *Reinstatement of long notice RERT* - consultation paper, pp. 1-2

¹⁷⁷ Energy Efficiency Council, submission to *Reinstatement of long notice RERT* - consultation paper, p. 2

¹⁷⁸ AEMO, *Enhanced RERT - high level design proposal*, Enhancement to the RERT rule change request, p.3

payments, can add up to large RERT costs, particularly if the RERT is dispatched for long periods of time.

The ARENA RERT trial has demonstrated that availability payments range from \$10,788/MW/year (for a three-year contract) to \$92,071/MW/year.¹⁷⁹ As noted, the costs of the RERT for the 2017/18 summer amount to \$51.3 million in total, including availability, usage and compensation costs.¹⁸⁰

Question 17 Payment structure

(a) Should any parts of the payment structure be prescribed in the NER?

(b) What are stakeholders' views on AEMO's proposal?

6.2.2 Dispatch triggers

AEMO is not proposing any changes to the current framework. It will continue to dispatch reserves:¹⁸¹

- 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 notes that it will develop a methodology for how it will activate reserves.¹⁸² The Commission notes that 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 the RERT (both subject to “any adjustments which may be necessary to implement action under paragraph (c)” and “any plant operating restrictions associated with a relevant AEMO intervention event”), and finally, issue directions and clause 4.8.9 instructions.¹⁸³

The Commission is interested in stakeholders' views on the dispatch triggers, if any.

Question 18 Dispatch triggers

Are the RERT dispatch triggers and process appropriate?

¹⁷⁹ ARENA-AEMO, joint submission to *Reliability Frameworks Review* - directions paper, p. 7

¹⁸⁰ See <http://aemo.com.au/Electricity/National-Electricity-Market-NEM/Security-and-reliability/Summer-operations-report>

¹⁸¹ AEMO, *Enhanced RERT - high level design proposal*, Enhancement to the RERT rule change request, p.15

¹⁸² Ibid. p.15

¹⁸³ Clause 3.8.14 of the NER.

6.2.3 Other aspects

Table 6.2 summarises other aspects of the design features proposed by AEMO.

Table 6.2 Other design features

Design feature	AEMO's enhanced RERT proposal	Current arrangements
Selection of providers	When selecting a portfolio of resources, AEMO will consider the total cost of procuring and activating those reserves under a range of scenarios, and seek to minimise the total cost subject to meeting operational requirements and the "total standard".	RERT guidelines provide some guidance on cost effectiveness and the contracting process; however, they are not prescriptive.
Scheme funding including cost recovery	AEMO proposes that the current funding mechanism for RERT be continued, with costs recovered as per current arrangements.	Cost recovery is in the NER (see section 2.2). The proposal is unchanged from current arrangements.
Intervention pricing	Further analysis is being undertaken on this option (through AEMO's intervention pricing working group), but the preference is for a simpler approach than what-if pricing.	This is in the NER (see section 2.2). AEMO is not proposing any specific changes, stating that further analysis is being undertaken on this aspect.
Consequences of non-delivery of reserves	If delivered response is less than the contracted amount (either during a test or an activation), providers will be required to refund availability payments for the shortfall in capability. Pre-activation payments will only be paid for the actual response delivered. Usage payments will only be paid for the actual response delivered.	This is not specified in the NER or RERT guidelines. Currently, this is based on individual contractual agreements.

Question 19 Other design features

Do stakeholders have any views on the other design features?

7 Lodging a submission

The Commission has published a notice under s. 95 of the NEL for this rule change proposal inviting written submission. Submissions are to be lodged online or by mail by **26 July 2018** in accordance with the following requirements.

Where practicable, submissions should be prepared in accordance with the Commission's Guidelines for making written submissions on rule change requests¹⁸⁴. The Commission publishes all submissions on its website subject to a claim of confidentiality.

All enquiries on this project should be addressed to Sarah-Jane Derby on (02) 8296 7823 or sarah.derby@aemc.gov.au.

7.1 Lodging a submission electronically

Electronic submissions must be lodged online via the Commission's website, www.aemc.gov.au, using the "lodge a submission" function and selecting the project reference code ERC0237. The submission must be on letterhead (if submitted on behalf of an organisation), signed and dated.

7.2 Lodging a submission by mail

The submission must be on letterhead (if submitted on behalf of an organisation), signed and dated. The submission should be sent by mail to:

Australian Energy Market Commission
PO Box A2449
Sydney South NSW 1235

The envelope must be clearly marked with the project reference code ERC0237.

¹⁸⁴ This guideline is available on the Commission's website www.aemc.gov.au

Abbreviations

AEMC	Australian Energy Market Commission
Commission	See AEMC
ESB	Energy Security Board
ESOO	Electricity Statement of Opportunities
FUM	Forecasting uncertainty measure
Guarantee	National Energy Guarantee
LoLP	Loss of Load Probability
LOR	Lack of reserve
LRC	Low reserve condition
NEG	See Guarantee
NEO	National Electricity Objective
PASA	Projected Assessment of System Adequacy
POE	Probability of Exceedance
PoLR	Procurer of Last Resort
RSIG	Reliability Standard Implementation Guidelines
USE	Unserved energy