Australian Energy Market Commission

RULE CHANGE

CONSULTATION PAPER

National Electricity Amendment (Extension of the Reliability and Emergency Reserve Trader) Rule 2016

Rule Proponent
COAG Energy Council

14 January 2016

Inquiries

Australian Energy Market Commission
PO Box A2449
Sydney South NSW 1235

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

Reference: ERC0198

Citation

AEMC 2016, Extension of the Reliability and Emergency Reserve Trader, Consultation Paper, 14 January 2016, 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.

Contents

1 Introduction

On 10 December 2015, the Council of Australian Governments' Energy Council (COAG Energy Council) submitted a rule change request to the Australian Energy Market Commission (AEMC or Commission). The rule change request seeks to extend the operation of the Reliability and Emergency Reserve Trader (RERT) from its current expiry of 30 June 2016 to 30 June 2019.

The RERT is a mechanism that allows the Australian Energy Market Operator (AEMO) to contract for reserves up to nine months ahead of a period where AEMO projects there to be inadequate electricity generation capacity, such as during periods of high demand. AEMO is also able to, where practicable, dispatch these additional reserves should an actual shortfall occur. The RERT acts as a safety net, typically used in rare events where ordinary market mechanisms are unlikely to deliver adequate electricity supply to meet market demand.

This Consultation Paper has been prepared to facilitate public consultation on the rule change proposal, and to seek stakeholder submissions on the rule change request.

This paper:

- summarises the COAG Energy Council's rule change request;
- identifies a number of questions and issues to facilitate consultation on the rule change request;
- outlines the AEMC's intended process for assessing the COAG Energy Council's rule change request; and
- outlines the process for making submissions.

Submissions on the rule change request are to be received by 11 February 2016. Details on how to lodge a submission are contained in Chapter 6 of this Consultation Paper.

2 Background

This section briefly describes the arrangements for the RERT, amendments that have occurred to its scope and operation, and its interaction with other policy settings such as the reliability standard.

2.1 The Reliability and Emergency Reserve Trader (RERT)

Since the commencement of the National Electricity Market (NEM) in December 1998, the market operator has had the power to contract for reserves. Over time, various reviews of the reserve trader provisions have led to a range of amendments including postponing its expiry date, as well as changes to its scope and operation (see Appendix A). The RERT was developed as part of the Reliability Panel (the Panel)'s 2007 review[1] of the reliability standard and reliability settings, and was incorporated into the Rules in June 2008. The RERT replaced the original reserve trader provisions.

The RERT is a mechanism under the National Electricity Rules (NER or Rules) which allows the Australian Energy Market Operator (AEMO) to contract for additional reserves up to nine months ahead of a period where reserves are projected to be insufficient to meet the reliability standard. AEMO is also able to, where practicable, dispatch these additional reserves, should an actual shortfall occur, to maintain power system reliability and security.

Rule 3.20 of the NER outlines AEMO's obligations in relation to the RERT. Clause 3.20.8 of the NER requires the Reliability Panel (the Panel) to develop guidelines (the RERT guidelines)[2] with respect to the scope and principles to be employed by AEMO when procuring reserve capacity. Clause 3.20.7 requires AEMO to develop procedures[3] for exercising the RERT, including the process for selecting participants for the RERT panel. In developing its procedures for exercising the RERT, AEMO must take account of the RERT guidelines and the RERT principles (in clause 3.20.2(b)) into account.

The RERT guidelines provide direction for AEMO's operation of the RERT, which is divided into two stages:

1. Stage 1: when AEMO is determining whether to enter into reserve contracts, under NER clause 3.20.3.
2. Stage 2: when AEMO is considering whether to dispatch scheduled reserves or activate unscheduled reserves, under clause 3.20.7.[4]

---

1 AEMC, Comprehensive Reliability Review, Final Report, 21 December 2007.

2 AEMC Reliability Panel, Reliability and Emergency Reserve Trader (RERT) Guidelines, 16 June 2010.

3 AEMO, Procedure for the Exercise of Reliability and Emergency Reserve Trader (RERT), 17 October 2014.

4 As per the Rules, scheduled reserves are the amount of unused capacity of either: scheduled generating units; scheduled network services; or the reduction in demand of scheduled loads. Unscheduled reserves are the amount of unused capacity of either: generating units that are not scheduled; or the demand reduction of loads that are not scheduled.

The RERT guidelines also specify the types of information AEMO must take into account in each of these stages. The types of information depend on how much time AEMO has prior to its projected reserve shortfall. The RERT guidelines specify three such timeframes:

- at least ten weeks' (up to nine months) notice of a projected reserve shortfall (a long-notice situation);
- between ten and one week's notice of a projected reserve shortfall (a medium-notice situation); and
- between seven days and three hours' notice of a projected reserve shortfall (a short-notice situation).

Under the RERT guidelines, AEMO may establish a RERT panel of entities that can tender for, and enter into, reserve contracts for the medium-notice situation and short-notice situation. The RERT guidelines specify that AEMO should not rely on the RERT Panel when contracting for a long-notice situation. Under AEMO's RERT procedures, it procures additional capacity that may not otherwise be available to the market according to the following processes:

- parties who have non-market generation capacity make themselves known to AEMO and declare what price those parties wish to be paid to use that capacity; and
- individuals or groups of consumers declare what remuneration they would seek to reduce their demand in excess of the saving in energy cost.

Consequently, AEMO can enter into reserve contracts with both demand side and supply side participants.

The Rules require AEMO to consult on costs and cost-sharing arrangements with affected participating jurisdictions that stand to benefit from additional reserves before entering into a reserve contract, or prior to exercising the short-notice RERT.[5] The NER allow AEMO to recover the costs of reserve contracts from market customers, such as retailers.[6]

Since the commencement of the NEM, the market operator has entered into reserve contracts the following three times[7] (all for the Victoria and South Australia NEM regions):

1. 15 January 2014 to 17 January 2014, with 650MW of reserve capacity contracted on each of these three days.

5 See clause 3.20.3(c) of the NER.

6 See clause 3.15.9(e) of the NER.

7 The information for 2005 and 2006 is from, respectively, National Electricity Market Management Company (NEMMCO), Communication No. 1937, Reserve Trading Financial Year 2004-05; and NEMMCO, Communication No. 2203, Reliability Safety Net Financial Year 2005-06. Information for 2014 is available from http://www.aemo.com.au/Electricity/Market-Operations/Reserve-Management/Publication-of-RERT-contracts-procured-by-AEMO-for-15-16-and-17-January-2014 (accessed 16 December 2015).

2. 16 January 2006 to 10 March 2006 (54 days), where a total of 375MW of reserve capacity was contracted (based on a forecast shortfall of 530MW). The forecast shortfall reflected the impact of delays in the commissioning of Basslink and Laverton North power station

3. 31 January 2005 to 4 March 2005 (33 days), where a total of 84MW of reserve capacity was contracted (based on a forecast shortfall of 195MW).

In all of these cases, the market operator was not required to dispatch or activate[8] these reserves.

2.2 Power system reliability and security

In understanding the role of the RERT in the NEM, it is important to distinguish between power system reliability and security. A reliable power system is one that has a high likelihood of fully servicing the electricity needs of customers. A reliable power system requires:

- sufficient generation capacity;
- a secure power system;
- a reliable transmission network; and
- a reliable distribution network.

A secure power system is one which is in a secure operating state. A secure operating state is when the power system is in, or can be returned within 30 minutes, to a satisfactory operating state.[9] The power system is in a satisfactory operating state when all vital technical parameters (such as voltage, frequency, and equipment loads) are within their design limits and ratings.

As noted above, reliability requires security: a reliable power system is also a secure system. However, the converse is not necessarily true: a power system can be secure even when it is not reliable. The Rules permit AEMO to undertake involuntary load shedding, potentially compromising reliability, if that is needed to return the power system to a secure operating state.

The RERT is principally to improve AEMO's management of power system reliability. The RERT's ability to manage power system security is largely incidental, in that a reliable power system is also a secure power system. The reference to power system security in the Rules was made to give AEMO additional flexibility in responding to a forecast shortfall; the prior reserve trader provisions referred only to power system reliability.

8 The NER defines the activation of an unscheduled reserve as either: an increase in the loading level of a generating unit which is not a scheduled generating unit; or a decrease in the demand of a load which is not a scheduled load; in response to a request by AEMO in accordance with an unscheduled reserve contract.

9 As per NER clause 4.2.4. A. satisfactory operating state is defined in NER clause 4.2.2.

2.3 The reliability standard and reliability settings

Power system reliability has two aspects: the reliability settings, and the reliability standard. The reliability settings are the key mechanisms for balancing supply and demand in the NEM over time. The four elements of the reliability settings in the NEM are the:

1. market price cap (MPC);
2. cumulative price threshold (CPT);
3. market floor price; and
4. administered price cap.

The reliability settings are set at a level intended to deliver capacity to meet the reliability standard in the NEM, by incentivising a sufficient amount of generation capacity and demand side participation.

Clause 3.9.3C of the NER defines the reliability standard for generation and inter-regional transmission elements in the NEM as a maximum expected unserved energy (USE) in each NEM region of 0.002 per cent of the total energy demanded in that region for a given financial year. The reliability standard is an expression of the maximum allowable level of electricity at risk of not being supplied to consumers in any NEM region. It is also consumer-focused; the level of USE is based on comparing the benefits of a more reliable power system to customers against the costs incurred by customers in providing that level of reliability.

The level of the MPC, set at $13,800 per MWh for the 2015-16 financial year, is important in providing price signals for supply and demand side investment and usage. For example, if the MPC is set too high, NEM participants (retailers, other customers, and generators) can be exposed to very large financial risks. However, if the MPC is set too low, there may be insufficient incentives to invest in new generation capacity and demand side participation to meet the reliability standard.

The CPT is an explicit risk management mechanism designed to limit NEM participants' exposure to protracted stress in the wholesale spot market.[10] Under clause 3.14.2 of the NER, if the sum of the spot prices ($/MWh) in the previous 336 trading intervals[11] exceeds the CPT, or if the sum of ancillary services prices ($/MWh) in the previous 2,016 dispatch intervals[12] exceeds six times the CPT, then an Administered Price Period (APP) is declared. During an APP, if the spot price calculated normally exceeds the Administered Price Cap (APC),[13] the price is set at the

10 The CPT is calculated as per the formula defined in clause 3.14.1(e) and 3.14.1(f) of the NER. It is reviewed annually and applies from 1 July each year. For the 2015-16 financial year, the CPT is $207,000.

11 This is equivalent to a consecutive seven day period.

12 This is also equivalent to a consecutive seven day period.

13 As per clause 3.14.1(a) of the NER, the APC for each NEM region is $300/MWh.

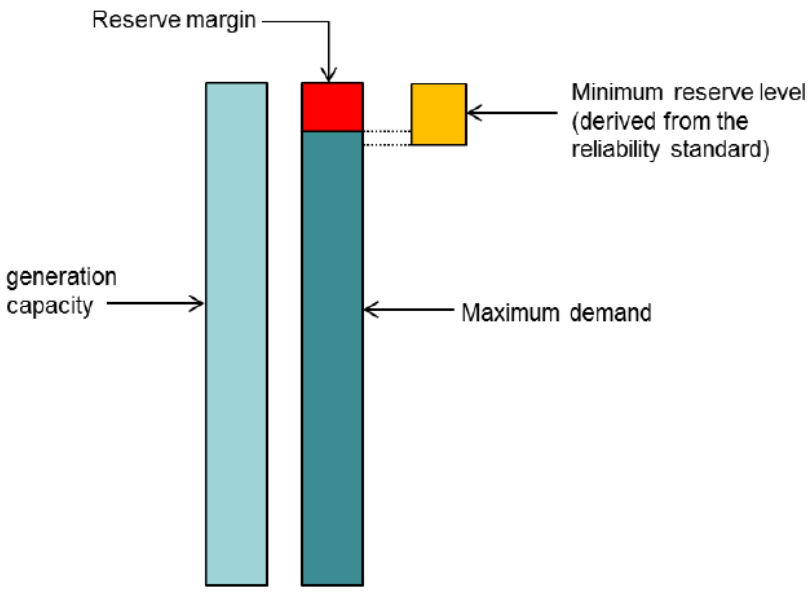
APC. Similarly, if, during the APP, the spot price is less than the Administered Floor Price (AFP),[14] the price is set to the AFP.[15]

The interaction between the reliability standard and reserve capacity is illustrated in Figure 2.1. The figure includes three components:

1. Reserve margin - this is the level of generation capacity available less the maximum demand, in each and every NEM region.
2. Maximum demand - this is the level of demand for which future actual demand has only a 10% probability of exceeding.
3. Minimum reserve level (MRL) - this is an amount of reserve margin required to meet the reliability standard. MRLs form the basis of AEMO's operational and long-term planning assessments of system reliability, and are essentially a translation of the reserve margin.

As the reserve margin falls relative to the MRL, the likelihood that the reliability standard may be breached increases. When the reserve margin falls below the MRL, as is the case in Figure 2.1, there is a 'reserve shortfall' forecast for that NEM region. Reserve margins shrink when conditions of supply-demand balance tighten. Factors that may cause the supply-demand balance to tighten include insufficient investment in generation capacity, extreme weather conditions such as drought, and unplanned outages.

Figure 2.1 Interaction of reliability standard with reserve capacity



AEMO's forecasts of a reserve shortfall, that is, the reserve margin forecast to be below the MRL, can provide signals to the market about future investment in either generation capacity or demand side participation, in addition to existing and expected future prices. In the event that a market solution is, or is expected to be, insufficient to

14 As per clause 3.14.1(b), the AFP for each NEM region for energy is the negative of the value of the APC; that is, -$300/MWh. The AFP for market ancillary service prices is zero.

15 See clauses 3.14.2 (d)(1) and 3.14.2(d)(2) of the NER.

fully offset the reserve shortfall, AEMO may choose to enter into a reserve contract under the RERT provisions in order to minimise the risk of load shedding events, and thereby maintain the reliability standard.

MRLs are used in both medium and long-term forecasting to assess whether the level of available capacity is sufficient to satisfy the reliability standard.[16] For example, AEMO's medium term Projected Assessment of System Adequacy (MT PASA) applies the MRLs to produce a two-year (daily) outlook, while its Electricity Statement of Opportunities (ESOO) produces 10-year forecasts. AEMO's forecasts are updated regularly (for example, weekly for the MT PASA) and also when significant new information becomes available to AEMO.[17]

2.3.1 AEMO's projections and its exercise of the RERT

The RERT guidelines specify the types of information AEMO must take into account for each of the three notice situations when deciding whether to enter into reserve contracts (Stage 1 of AEMO's exercise of the RERT). AEMO's forecasts are an important aspect of the types of information AEMO must consider.

For example, during Stage 1 of long-notice situations, AEMO may take into account the information provided in its MT PASA and its Energy Adequacy Assessment Projection (EAAP). In contrast, during Stage 1 of short-notice situations, AEMO may take into account the information provided in its short term (ST) PASA and pre-dispatch process (which includes AEMO's pre-dispatch schedule).

During Stage 2, that is, when AEMO is considering whether to dispatch (or, for unscheduled reserves, activate) reserve contracts, the RERT guidelines specify that AEMO may consider its ST PASA, as well as the information used in Stage 1 for the corresponding notice situation.

Appendix B contains more information on AEMO's EAAP, MT PASA, ST PASA and ESOO.

2.4 Context of the rule change request

In accordance with clause 3.20.1 of the Rules, the RERT has a defined expiry date.[18] Over time, the power of AEMO to operate the RERT has been reviewed and its expiry date extended in response to extenuating circumstances. For example, the current RERT expiry date of 30 June 2016 is based on a rule change submitted by the Reliability Panel to the Commission on 1 July 2011. Although the Panel's rule change sought a one year extension of the (then) RERT expiry date of 30 June 2012, the Commission made a

16 MRLs are calculated by AEMO using detailed time sequential Monte Carlo simulations of the NEM to determine the MRLs for each NEM region. For more details, see AEMO, 2012, Assessing Reserve Adequacy in the NEM, 10 September 2012.

17 For AEMO's ESOO, clause 3.13.3(r) of the NER requires AEMO to publish updates as soon as practicable, when significant new information becomes available relating to supply or demand projections, including plant retirements.

18 The RERT provisions are set out in Rule 3.20 of the NER.

final rule determination on 15 March 2012 to postpone the RERT's expiry for a period of four years, to 30 June 2016.[19]

The Commission also determined to remove the requirement placed on the Reliability Panel to review the RERT a year prior to its expiry. The rule as made also provided for the removal of all RERT-related provisions from the Rules as at 1 July 2016.[20]

In its 2012 rule determination, the Commission noted that market uncertainty may potentially delay investment in generation capacity in some regions of the NEM, such that the reliability standard may be breached. The Commission considered several factors contributing to that uncertainty, including:

- the impacts of carbon pricing legislation, including periods of policy uncertainty leading to its implementation; and
- the impact of renewable energy generation on wholesale prices which may dampen investment signals for generation capacity in some NEM regions.

The Commission considered that uncertainty regarding the introduction of a carbon pricing regime may have potentially delayed investment in the NEM, and market participants may have required some time to respond to these new policy settings. There may also have been ongoing market uncertainty relating to the impacts of a carbon pricing regime, such as the transition from a fixed carbon price to an emissions trading scheme. The Commission expected this type of market uncertainty to have abated by 2016.

In addition, the Commission noted several policy initiatives being developed at that time, which may reduce barriers to demand side participation. Reducing barriers to demand side participation may result in attracting additional capacity to the primary market for reserves, and therefore reduce the need for the RERT.

The Commission considered that it would take some time for these policy changes to be implemented, with their full impact unlikely until after the Australian Energy Regulator (AER) had completed its distribution determinations, in 2016, for each NEM jurisdiction.

For these reasons, the Commission determined that the RERT be extended to 30 June 2016.

In making its determination, the Commission also noted that AEMO's 2011 Electricity Statement of Opportunities (ESOO) had forecast reserve shortfalls in some NEM regions in 2013-14 or 2014-15, partly reflecting the impact of the above-mentioned uncertainty on investment in generation capacity.[21]

---

19 For more information, see AEMC, Expiry of the Reliability and Emergency Reserve Trader, Final Determination, 15 March 2012.

20 National Electricity Amendment (Expiry of the Reliability and Emergency Reserve Trader) Rule 2012 No. 1.

21 AEMO's 2011 ESOO forecasted a breach of the reliability standard for Queensland in 2013-14, and for Victoria and South Australia in 2014-15. For more details, see AEMO, 2011 Electricity Statement of Opportunities, 30 August 2011.

3 Details of the COAG Energy Council's rule change request

3.1 The current rule change request

In its rule change request,[22] the COAG Energy Council proposes that the RERT be extended to 30 June 2019, to address uncertainty in the market. The COAG Energy Council considers uncertainty exists for two broad reasons:

1. Demand side policies remain less than fully completed or resolved; and
2. A changing generation mix, in which renewable generation is installed and conventional generators exit, has increased the risk of insufficient generation capacity being available.

3.2 Demand side policies

The COAG Energy Council argues that some demand side policies have not progressed as quickly as was earlier envisaged. The COAG Energy Council identifies three such policies:

1. Demand response mechanism (DRM);
2. Smart metering and associated market protocols; and
3. Demand Management Incentive Scheme.

3.2.1 Demand response mechanism

The COAG Energy Council has submitted a rule change request to the AEMC for the introduction of a DRM.[23] The COAG Energy Council argues that implementation of a DRM may reduce the need for the RERT, and that the time needed to implement this potential policy is likely to extend beyond the RERT's current expiry date.

3.2.2 Smart metering and associated market protocols

The COAG Energy Council submitted a rule change request to the AEMC in October 2013 to allow expansion in competition in metering and related services to all customers.[24] The Commission's final rule determination was made in November 2015,[25] with the new metering rules to commence on 1 December 2017. The COAG Energy Council argues that potential benefits from the use of smart meters, such as the reduced risk of reserve shortfalls, are likely to be realised after 2016.

---

22 COAG Energy Council, Extension of the Reliability and Emergency Reserve Trader, Rule Change Request, December 2015.

23 COAG Energy Council, Demand Response Mechanism, Rule Change Request, 30 March 2015.

24 SCER, Introducing a new framework in the National Electricity Rules that provides for increased competition in metering and related services, Rule change request, October 2013, Canberra.

25 AEMC, Expanding Competition in Metering and Related Services, Rule Determination, 26 November 2015.

3.2.3 Demand Management Incentive Scheme

On 20 August 2015, the Commission made a final rule determination[26] that amends and strengthens the existing Demand Management and Embedded Generation Connection Incentive Scheme arrangements. The COAG Energy Council states that these arrangements can incentivise the uptake of demand management and lessen the need for the RERT. The COAG Energy Council argues that any impact the Rule may have is unlikely to be felt until after 2016, as the revised scheme and allowance mechanism will not be in place until 1 December 2016.

3.3 Changing generation mix

The COAG Energy Council notes that certain conventional generation is beginning to exit the NEM as downward pressure on wholesale electricity prices has made operations increasingly uneconomic.[27] On 7 October 2015, Alinta Energy announced that two of its conventional generators, Northern and Playford B, in South Australia will cease generation by 31 March 2016.[28] The COAG Energy Council notes that, at the same time, South Australia's reliance on renewable generation has increased.

The COAG Energy Council argues that a changing generation mix may present challenges for the management of power system reliability. In particular, the COAG Energy Council considers that in the absence of the RERT there is a "risk that current system standards and mechanisms may not be adequate to respond to power system events such as contingencies and changes in demand."[29]

The COAG Energy Council cites the 15-17 January 2014 period, when AEMO contracted for reserves of 650MW, on each day, due to a forecast reserve shortfall in Victoria and South Australia. The forecast shortfall was a result of record high temperatures and near-record maximum demand in those States. The COAG Energy Council argues that, although AEMO did not engage in load shedding during this period, there were periods with low reserves where the failure of any single major generator or transmission asset could have potentially resulted in load shedding. The low reserve levels reflected a combination of high demand, as well as generator and transmission outages.[30]

---

26 AEMC, Demand Management Incentive Scheme, Rule Determination, 20 August 2015.

27 COAG Energy Council, Extension of the Reliability and Emergency Reserve Trader, Rule Change Request, December 2015, p.3.

28 Alinta Energy's announcement included a statement that its Playford B power station would cease generation by 31 March 2016. This closure was already modelled as withdrawn in AEMO's original 2015 ESOO. See also COAG Energy Council, Extension of the Reliability and Emergency Reserve Trader, Rule Change Request, December 2015, p.3; AEMO, Electricity Statement of Opportunities – Update, October 2015, p. 2.

29 COAG Energy Council, Extension of the Reliability and Emergency Reserve Trader, Rule Change Request, December 2015, p.3 & 7.

30 COAG Energy Council, Extension of the Reliability and Emergency Reserve Trader, Rule Change Request, December 2015, p. 3.

3.4 Summary

The COAG Energy Council's arguments for extending the RERT can be summarised as follows:

- two broad sources of market uncertainty currently exist, which creates the potential to breach the reliability standard;
- maintaining the RERT during this period of market uncertainty may reduce the risk that the reliability standard is breached; and
- by maintaining the reliability standard, extending the RERT is consistent with the National Electricity Objective (NEO).

4 Assessment framework

The Commission's assessment of this rule change request must consider whether the proposed Rule will, or is likely to, contribute to the National Electricity Objective (NEO) as set out under section 7 of the National Electricity Law (NEL).

The NEO is:[31]

> "The objective of this Law is to promote efficient investment in, and efficient operation and use of, electricity services for the long term interests of consumers of electricity with respect to - (a) price, quality, safety, reliability, and security of supply of electricity; and (b) the reliability, safety and security of the national electricity system."

The relevant aspects of the NEO to this rule change are "efficient operation" and "efficient use" of electricity services to promote the reliability, safety and security of the national electricity system for the long terms interests of consumers of electricity.

The factors discussed below expand and explain these aspects as they are relevant to this rule change request. It is proposed that consideration will be given to whether or not the proposed rule:

- could improve the reliability of the electricity system; and
- provides any incremental efficiency gains as a safety net, compared to the potential impact on the market and costs associated with the RERT.

4.1 Impact of the RERT on power system reliability

It is proposed that the assessment of the RERT will consider power system reliability and the RERT's role in managing reliability in a cost-effective manner. Amongst other aspects of the assessment, the Commission proposes to consider the implications of recently announced withdrawals of conventional generation from the market, coupled with the increasing reliance on renewable generation, on the reliability standard.

It is also proposed that consideration will be given to whether, in the absence of the RERT, adequate supply in times of high demand could be provided.

4.2 Potential impact on the market and costs

The extent to which the continuation of the RERT may:

- create a potential secondary market for reserves, not subject to the MPC, by providing incentives for participants to enter into reserve contracts with AEMO, rather than retailers and other intermediaries in the primary market;
- raise costs for market customers, including retailers, to the extent that the cost of contracting capacity under the RERT exceeds the MPC; and
- represent a barrier to the establishment of more effective arrangements that meet consumers' desire to avoid excessive unserved energy.

31 As set out under section 7 of the NEL.

4.3 A reliability safety-net and other benefits

When the Commission considered the RERT in 2012, it concluded that the RERT acts as a safety net for consumers, providing for the reliability and security of supply in the event that market solutions to address projected reserve shortfalls are insufficient.[32] Whether this safety net is required in the future, in the context of the other mechanisms available to maintain reliability of supply in the NEM, is also proposed to be considered.

32 AEMC, National Electricity Amendment (Expiry of the Reliability and Emergency Reserve Trader) Rule, 15 March 2012, p. 9.

5 Issues for consultation

Taking into consideration the assessment framework and the potential requirements to implement the proposed rule change, a number of issues for stakeholder consultation have been identified:

- a changing generation mix;
- market impacts and costs associated with the RERT;
- the safety net and other benefits of the RERT;
- AEMO's management of power system reliability in the absence of the RERT;
- other options for improving reliability through demand management; and
- alternative options for extending the RERT.

These issues are discussed further below. Stakeholders are encouraged to comment on these issues as well as any other aspect of the rule change request or this paper.

5.1 Changing generation mix

The COAG Energy Council considers that recent changes in the generation mix are likely to present challenges for the management of power system reliability.[33]

In its updated ESOO,[34] released following Alinta's announcement that Northern Power Station will be withdrawn by 31 March 2016, AEMO did not change its earlier forecast that South Australia is unlikely to experience reserve shortfalls until at least 2019-20.[35] AEMO's ESOO forecasts for the other NEM regions were also unchanged. In contrast, AEMO's medium term PASA (MT PASA) shows low reserve conditions in South Australia for most weekdays in the 2016-17 summer period, as well as some days in the start of the 2017-18 summer. This has occurred in every MT PASA since 13 October 2015, following Alinta's 7 October 2015 announcement.

The COAG Energy Council highlights the surplus of generation in the market as a key driver for the changes in the generation mix, particularly as the surplus of generation is placing downward pressure on wholesale prices. According to the COAG Energy Council, the recent low wholesale electricity prices are making conventional generation operation increasingly uneconomic and it argues that some conventional generation is beginning to exit the market due to low wholesale prices.[36,37]

---

33 COAG Energy Council, Extension of the Reliability and Emergency Reserve Trader Rule Change Request, 9 December 2015, p. 3.

34 AEMO, 2015 Electricity Statement of Opportunities - Update, October 2015.

35 AEMO's 2015 ESOO was released on 14 August 2015, and forecast reserve shortfalls, under a medium demand outlook, for South Australia in 2019-20, New South Wales in 2022-23 and Victoria in 2024-25. This projection was not changed in the updated ESOO; see AEMO, 2015 Electricity Statement of Opportunities – Update, 26 October 2015

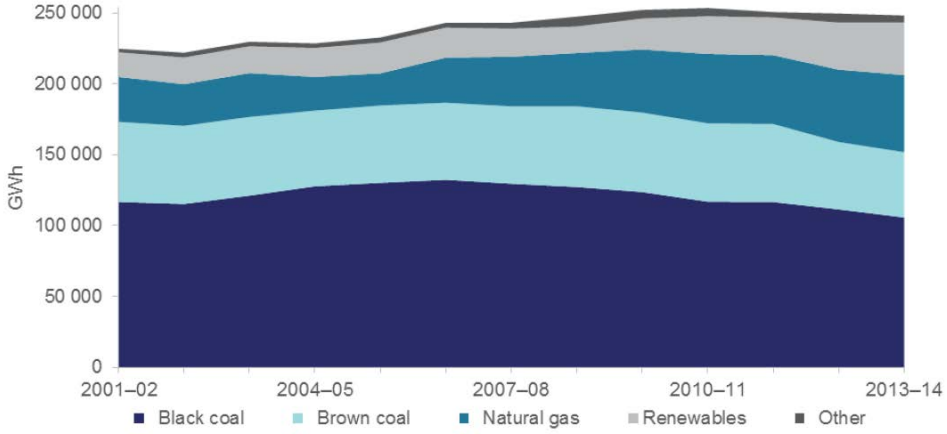
36 COAG Energy Council, Extension of the Reliability and Emergency Reserve Trader Rule Change Request, 9 December 2015, p. 3.

37 This exit of generators is then likely to place upward pressure on wholesale prices. Modelling prepared by Frontier for the AEMC's 2015 Residential Electricity Price Trends report, shows under

The COAG Energy Council considers the surplus of generation is primarily the result of the increasing levels of renewable energy generation in the NEM. In particular, the COAG Energy Council notes the significant increases in rooftop solar photovoltaics and wind resources, supported by the Renewable Energy Target (RET) and jurisdictional specific renewable energy programs.

Figure 5.2[38] demonstrates the changes in the generation mix over the past 15 years. Between 2012 and 2014, renewable energy generation in Australia increased from 11% to 15%, and there was a decline in coal fired generation from 68% to 61% of total generation over the same period.

Figure 5.2 Changing generation mix



Renewable generation is expected to continue to play a significant role in the generation mix in the future. This is particularly the case in South Australia where wind generation is forecast to meet 60% of the state's demand in 2017-18, compared to approximately 33% in 2013-14[39] (Figure 5.3).[40]

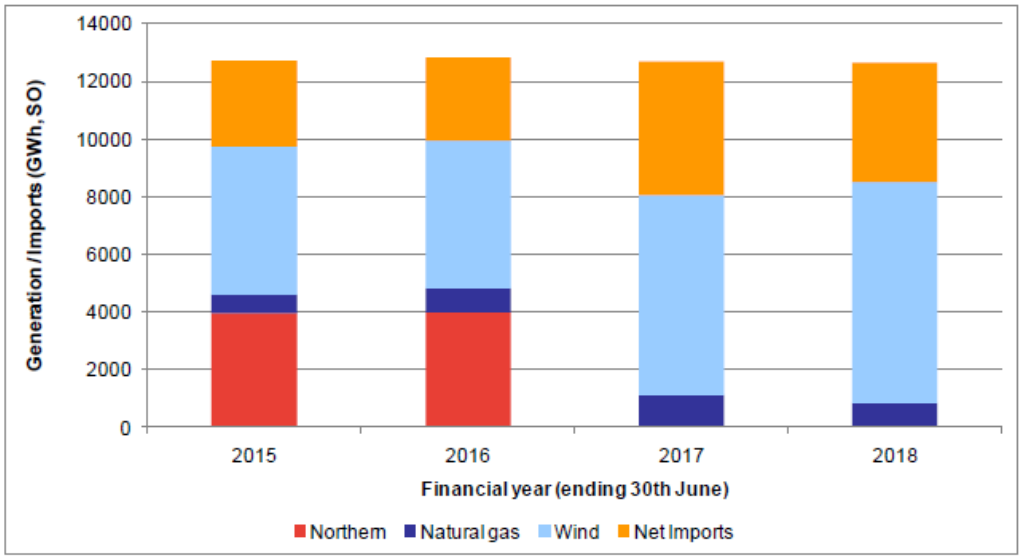
a base case that wholesale prices are expected to increase over the next few years (AEMC Frontier, 2015 Residential Electricity Price Trends Report, a report for the AEMC, November 2015, pp. 48-49).

38 Department of Industry and Science (Commonwealth), Australian Energy Update 2015, p. 20.

39 AEMO, South Australian Fuel and Technology Report, January 2015, p. 6.

40 Figure 5.3 is sourced from Frontier, 2015 Residential Electricity Price Trends Report, a report for the AEMC, November 2015, pp. 52.

Figure 5.3 Projected generation in South Australia



Question 1 Adequacy of electricity supply

Are there other potential changes in the generation mix, and the supply of electricity more generally, that may be contributing to market uncertainty and have not been identified in this paper?

5.2 Market impacts and costs

The potential impacts of the RERT include:

1. The RERT may operate as a secondary market removing capacity from the NEM. The expiration of the RERT may promote the efficient use of electricity services by allowing the primary market to allocate all available capacity as required.
2. Under the RERT, the cost of contracting capacity may be greater than the market price cap (due to availability and utilisation payments), which is difficult for retailers to hedge. The removal of the RERT may, in turn, result in greater transparency as the market sets the price for the supply of electricity.
3. The RERT may represent a barrier to the establishment of potentially more effective, market-based, arrangements, including demand side participation, to manage reserve shortfalls.

Payments made to reserve contract providers ('availability payments') are an example of these costs. The Commission understands that the availability payments in each of the three instances where reserve contracts were entered into (see section 2.1) were:

- zero for the 15-17 January 2014 period;
- $4.352m ($11,605 per MW) for the 16 January 2006 to 10 March 2006 period; and
- $1.035m ($12,321 per MW) for the 31 January 2005 – 31 March 2005 period.

Relative to the size of the NEM, these availability payments, which total $5.4 million, are minor, reflecting approximately 0.05% of the $10 billion in annual turnover in the NEM.[41]

Question 2 Costs of the RERT

(a) What is the impact of the RERT, and what evidence is there in support of that impact?

(b) Does the RERT limit market-based arrangements to managing reserve shortfalls? If so, what market arrangements are impacted, and to what extent? What supporting evidence can stakeholders provide?

(c) What are the other potential costs associated with retaining the RERT, and what evidence is there in support of that position?

5.3 Safety net and other benefits of the RERT

The RERT, and the prior reserve trader provisions, can be considered a safety-net mechanism that can be used by AEMO in managing reliability, and to a limited extent security, in the event that market solutions to address projected reserve shortfalls are insufficient. The RERT may also be important in addressing potential breaches of the reliability standard, which may be due to the combination of increasing intermittent generation and a decline in conventional baseload generation.

There may also be other benefits associated with the RERT, such as encouraging demand side participation that would not otherwise exist (for example, loads that, in the absence of the RERT, may not enter into voluntary load-shedding arrangements).

Question 3 Benefits of the RERT

(a) In what ways does the RERT provide a safety-net benefit, and to what extent? What evidence is there in support of that position?

(b) Are there any other benefits of retaining the RERT, and if so what are they? What evidence do stakeholders have to support their position?

5.4 Management of reliability in the absence of the RERT

An important consideration in making a decision on this rule change request is the counterfactual; the management of reliability in the absence of the RERT. As discussed in Chapter 2, AEMO has contracted for reserves under the RERT on three occasions, but the dispatch of those reserves has not been required.

41 NEM turnover during the 2013-14 financial year was $10.8 billion, having declined over time (for example, turnover was $13 billion in in 2006-07). The 2013-14 value is from AER, State of the Energy Market 2014, 19 December 2014, and the 2006-07 value is from AER, State of the Energy Market 2007, 26 July 2007.

AEMO has previously set out the options available to it to manage reliability in the event of a reserve shortfall, in the absence of the RERT.[42] These options include:

- using network ancillary services, to the extent that the reserve shortfall is due to a network limitation;
- issuing a direction (NER clause 4.8.9(a1)(1)) to scheduled plants or market generating units; or
- issuing a clause 4.8.9 instruction (NER clause 4.8.9(a1)(2)) to other Registered Participants regarding any other action, including involuntary load shedding.

Issuing Directions or Instructions to Registered Participants

In some cases, forecast shortfalls may arise due to plant maintenance being scheduled across a number of assets in a region. This information is provided to the market through the medium and short term PASAs and the projected shortfalls are often resolved through market responses.

If the market fails to resolve the shortfall, AEMO may initiate informal negotiations with plant owners to shift the scheduled plant maintenance.

If these informal negotiations do not resolve the shortfall, a direction or clause 4.8.9 instruction can be issued, which will specify the physical deliverable requirement to restore the NEM to a secure, reliable or satisfactory operating state, but will not necessarily specify how the requirement is to be met.[43] The direction or clause 4.8.9 instruction will be subject to the Registered Participant's best endeavours to comply with it, unless compliance would be a hazard to public safety, or materially risk damaging equipment, or contravene any other law.

If AEMO considers it necessary to issue a clause 4.8.9 instruction to shed load, it will instruct a Transmission Network Service Provider (TNSP) to shed and restore load according to the Sensitive Loads and Priority Load Shedding Schedule procedure for the applicable region.[44]

In the event that none of the steps outlined above resolve the shortfall, AEMO can dispatch (or, for unscheduled reserves, activate) its reserve contracts. Hitherto, as noted above, reserve contracts have not been dispatched.

Box 2 provides a discussion of the projected shortfall event of 13-17 January 2014, where reserve contracts were entered into by AEMO.

---

42 AEMO, Expiry of the Reliability and Emergency Reserve Trader submission to draft determination, 3 January 2015, p. 4-5.

43 That is, an instruction or direction may not specify whether a change in energy generation or consumption, or some other action, is required to meet the physical deliverable requirement.

44 In accordance with NER clause 4.3.2(f), the Jurisdictional System Security Coordinator for each participating jurisdiction must provide AEMO with a schedule setting out the order in which loads in the participating jurisdiction, other than sensitive loads, may be shed by AEMO for the system security requirements given in NER clause 4.8.

Box 5.2 Extreme heatwave event: 13-17 January 2014

Between 13 and 17 January 2014, Victoria and South Australia experienced record temperatures and near-record demands on the power system. At the same time, there were a number of generator outages across the region, as well as Basslink.

On the morning of 15 January 2015, AEMO forecast a Lack of Reserve Level 3 (LOR3) condition for that afternoon, where the shortfall was expected to be 549MW. AEMO immediately sought to enter reserve contracts to cover the shortfall.

In the end, AEMO was not required to issue directions or clause 4.8.9 instructions to participants, or utilise its reserve contracts, as Basslink was restored before the critical afternoon period.

Nevertheless, during this time there were periods when reserves were such that the failure of any single asset in the region (major generator, interconnector or transmission asset) could have potentially resulted in load shedding.

Question 4 Management of reliability in the absence of the RERT

Would AEMO's options for managing reserve shortfalls in the absence of the RERT be sufficient in maintaining the reliability standard?

5.5 Managing reserve shortfalls through demand side participation

5.5.1 Extent of demand side participation

Demand side participation (DSP) may result in additional opportunities to manage reserve shortfalls, especially during periods of high demand, by providing incentives to:

- distributed generation to provide additional generation; and
- consumers to reduce demand.

In its rule change request, the COAG Energy Council argues that uncertainty about the uptake of DSP may impact on the ability of market mechanisms to address forecast reserve shortfalls.

Question 5 Uncertainty about the uptake, and extent, of DSP

(a) Is the uncertainty associated with DSP sufficient to warrant retaining the RERT? If so, why? If not, why not?

(b) Are there other demand-related sources of uncertainty which justify retaining the RERT? What evidence do stakeholders have in support of their position?

5.5.2 Incorporating more DSP information into AEMO's forecasts

As discussed in section 2.3.1, the RERT guidelines specify that AEMO must take into account information provided in its forecasts when choosing to enter into reserve contracts. On the three occasions where reserve contracts were entered into, these were based on projected reserve shortfalls. The forecast shortfalls were not realised on these occasions, as the contracted reserves were not subsequently dispatched.

This suggests that improving the accuracy of forecasts could increase the chance that reserve contracts, when entered into, are dispatched. It may also reduce the likelihood of the RERT being exercised, potentially reducing the need for the RERT. In terms of demand forecasts, one way of improving the accuracy of forecasts could be through incorporating more information about DSP.

A market participant could, as an alternative to entering into a reserve contract with AEMO, engage in DSP by contracting with their retailer or some other market intermediary. For AEMO to account for DSP in its reserve forecasts, it needs to be informed of such contractual arrangements.

Under the Rules, AEMO is able to obtain DSP information from Registered Participants in the NEM.[45] In addition, AEMO is able to compel distributors and retailers to provide connection point data to better inform AEMO's demand forecasts for the National Transmission Network Development Plan.[46]

This may allow AEMO a better understanding of the nature and extent of any demand response, which may improve the precision of its demand forecasts and, in turn, potentially reduce the size and/or likelihood of projected reserve shortfalls.

Question 6 Information on DSP

To what extent is there sufficient information on DSP that can be used in managing potential reserve shortfalls?

5.6 Expiry date of the RERT

If the RERT is to be retained beyond 2016, there is a question of the duration of any potential RERT extension. In its rule change request, the COAG Energy Council argues for a revised expiry date for the RERT of 30 June 2019, though does not state why this particular date is preferred.[47]

45 AEMC, National Electricity Amendment (Improving demand side participation information provided to AEMO by registered participants) Rule 2015, Final Determination, 26 March 2015.

46 AEMC, National Electricity Amendment (AEMO access to demand forecasting information) Rule 2015, Final Determination, 22 October 2015.

47 COAG Energy Council, Extension of the Reliability and Emergency Reserve Trader, Rule Change Request, December 2015.

If the RERT is to be retained beyond 2016, there are two broad options available:

- retaining the RERT for a temporary period (for example, 3 years, as proposed by the COAG Energy Council), with or without periodic reviews; or
- retaining the RERT on a permanent basis.

5.6.1 Temporary retention

In the rule change request, the COAG Energy Council has sought an extension to the RERT to 30 June 2019, on the basis that this should allow sufficient time to better understand and manage the uncertainty and challenges associated with the changing generation mix and the implementation of demand side policies. These are essentially the same arguments put forward for the extension of the RERT in 2012.

In 2012, the Commission determined to remove the requirement for the Panel to conduct a review of the RERT in the year before its scheduled expiry date. If the RERT is to be retained, either temporarily or permanently, an option for consideration is to re-introduce a requirement into the Rules for the Panel to conduct periodic reviews of the RERT.

5.6.2 Permanent retention

To the extent that the RERT should be retained, recurrent extensions of a temporary nature may result in greater uncertainty about the RERT's future existence than a permanent retention. A possible reason for a permanent retention could be that, to the extent that the RERT assists in meeting the reliability standard during periods of uncertainty, it could be appropriate to permanently retain the RERT as a degree of market uncertainty is likely to always exist.

Question 7 Expiry date of the RERT

(a) If it is necessary to retain the RERT, should it be retained permanently, or for a temporary period? If the RERT should be retained temporarily, why? If it should be retained permanently, why?

(b) If the RERT should be retained temporarily, should its expiry date be 30 June 2019? If so, why? If not, why not, and what alternative dates do stakeholders propose?

6 Lodging a Submission

The Commission invites written submission on this rule change proposal[48] by 11 February 2016. Submissions are to be lodged online or by mail 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 proposals.[49] The Commission publishes all submissions on its website subject to a claim of confidentiality.

All enquiries on this project should be addressed to Leah Ross on (02) 8296 7800.

6.1 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 "ERC0198". The submission must be on letterhead (if submitted on behalf of an organisation), signed and dated.

Upon receipt of the electronic submission, the Commission will issue a confirmation email. If this confirmation email is not received within 3 business days, it is the submitter's responsibility to ensure the submission has been delivered successfully.

6.2 Lodging a submission by mail or fax

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: ERC0198.

Alternatively, the submission may be sent by fax to (02) 8296 7899.

Except in circumstances where the submission has been received electronically, upon receipt of the hardcopy submission the Commission will issue a confirmation letter.

If this confirmation letter is not received within 3 business days, it is the submitter's responsibility to ensure successful delivery of the submission has occurred.

48 The Commission published a notice under section 95 of the NEL to commence and assess this rule change request.

49 This guideline is available on the Commission's website.

Abbreviations

APC	Administered Price Cap
APP	Administered Pricing Period
AEMC	Australian Energy Market Commission
AEMO	Australian Energy Market Operator
AER	Australian Energy Regulator
AFP	Administered Floor Price
COAG Energy Council	Council of Australian Governments' Energy Council
Commission	See AEMC
CPT	Cumulative Price Threshold
DRM	Demand Response Mechansim
DSP	Demand Side Participation
ESOO	Electricity Statement of Opportunities
MPC	Market Price Cap
MRL	Minimum Reserve Level
MT PASA	Medium-term PASA
NECF	National Energy Customer Framework
NEL	National Electricity Law
NEM	National Electricity Market
NEO	National Electricity Objective
NER	National Electricity Rules
NERL	National Energy Retail Law
NERR	National Energy Retail Rules
PASA	Projected Assessment of System Adequacy
RERT	Reliability and Emergency Reserve Trader
Rules	See NER
ST PASA	Short-term PASA
the Panel	Reliability Panel
TNSP	Transmission Network Service Provider
USE	Unserved energy

A Amendments to the reserve trader provisions

Since the commencement of the NEM, there have been various amendments to the reserve trader provisions, as outlined in Figure A.1.

Figure A.1 Amendments to the reserve trader provisions since the commencement of the NEM

Year	Amendment
December 2005	The Panel submitted a rule change proposal to postpone the expiry of the reserve trader provisions until June 2008. The rule was made (in May 2006[50]) with minor amendments, and allowed the reserve trader to continue while the Reliability Panel completed its Comprehensive Reliability Review (CRR). The CRR was completed in December 2007.[51]
June 2008	RERT adopted from 1 July 2008[52], incorporating recommendations from the CRR. The CRR recommended various amendments to the reserve trader provisions, such as: increasing AEMO's flexibility in the way it contracts for reserves; minimising any potential market distortions created by the RERT; and requiring the Panel to review the RERT a year prior to its expiry.
October 2009	The Panel proposed a rule change to allow AEMO to contract for reserves at short notice. The RERT was amended to allow AEMO to contract for reserves under a range of timeframes.[53]
July 2011	The Panel submitted a rule change proposal to postpone the expiry of the RERT until June 2012. The rule as made extended the RERT to June 2016 and removed the obligation on the Reliability Panel to review the RERT a year prior to its expiry.[54]
December 2015	The COAG Energy Council submitted a rule change proposal to postpone the expiry of the RERT until June 2019.[55]

50 AEMC, National Electricity Amendment (Reliability safety net extension) Rule 2006, 11 May 2006.

51 AEMC Reliability Panel, Comprehensive Reliability Review, Final Report, 21 December 2007.

52 AEMC, National Electricity Amendment (NEM Reliability Setting: Information Safety Net and Directions) Rule 2008, 26 June 2008.

53 AEMC, National Electricity Amendment (Improved RERT Flexibility and Short-Notice Reserve Contracts) Rule 2009, 15 October 2009.

54 AEMC, National Electricity Amendment (Expiry of Reliability and Emergency Reserve Trader) Rule 2012, 15 March 2012.

55 COAG Energy Council, Extension of the Reliability and Emergency Reserve Trader Rule Change Request, 9 December 2015.

B AEMO's forecasts

The Energy Adequacy Assessment Projection

The Energy Adequacy Assessment Projection (EAAP) provides an analysis of the potential effects of water availability and other energy constraints on the electricity system under three scenarios over a 24-month period. The most recent EAAP covers the period 1 October 2015 to 30 September 2017, and was released in August 2015.[56] This EAAP determined that the forecast unserved energy falls within the reliability standard for all regions under the three scenarios considered in 2014 and 2015.[57] AEMO is due to release the next EAAP in March 2016.

The timing of future EAAPs is the subject of a rule change request to be considered by the AEMC in 2016.

Projected Assessment of System Adequacy (PASA)

The PASA is an assessment of future adequacy of generating capacity against forecast electricity demand. The PASA is based on information provided by generators and is used by generators to make decisions about when to maintain their plants, while consumers use it to plan electricity consumption.[58]

The short term PASA (ST PASA) is published every 2 hours and provides the supply/demand balance for the six days following the next trading day. As at 11 January 2016, there is no short term shortfall in generation across the NEM regions.[59]

The medium term PASA (MT PASA) is run at least once per week and provides a reserve forecast for the next two years. The MT PASA only considers the availability of generation that can be made available within 24 hours. In the most recent MT PASA, there are no projected medium term shortfalls in Victoria, NSW or Queensland. However, the MT PASA shows low reserve conditions in South Australia in summer 2016-17 and summer 2017-18.[60] This has occurred in every MT PASA run from 13 October 2015, following the Alinta's 7 October 2015 announcement that it will cease operation of Northern and Playford B power stations from 31 March 2016.

Shortfalls may arise due to plant maintenance being scheduled across a number of assets in a region. As such, the projected shortfalls in the PASA may sometimes be resolved through negotiation between AEMO and plant owners to shift the timing of scheduled plant maintenance.

---

56 AEMO, Energy Adequacy Assessment Projection, Update, August 2015.

57 The three scenarios modelled are: Low rainfall (based on rainfall between 2006 and 2007, for all regions); short-term average rainfall (based on the average rainfall over the past decade); and long term average rainfall (based on the average rainfall over the past 50 years) (AEMO, Energy Adequacy Assessment Projection, Update, August 2015, p. 2).

58 AEMO, Overview of the NEM training materials, 2015.

59 Over the past 3 weeks, AEMO has issued and cancelled Lack of Reserve market notices based on ST PASA projections for Tasmania and South Australia. For more information please see: www.aemo.com.au/Electricity/Data/Market-Notices.

60 AEMO, Reserve Notice MT PASA Publication, Market Notice 51295, 12 January 2015.

Electricity Statement of Opportunities (ESOO)

AEMO is also required to publish the ESOO annually.[61] The ESOO provides a picture of the adequacy of existing and committed electricity supply in the NEM to meet maximum demand over the coming 10 year period. The ESOO is used to inform decisions about the need for electricity generation capacity, systems augmentation and demand management capacity.

In its most recent ESOO, released in October 2015[62] following Alinta's announcement, AEMO has forecast a breach of the reliability standard under the medium demand scenario, for each NEM region as follows:[63]

- NSW: the first breach is expected in 2022-23, due to capacity withdrawals in 2014 and 2015 (a shortfall of 4,003MWh).
- South Australia: the first breach is expected in 2019-20, due to capacity reductions within the region and an increasing reliance on imports from Victoria (shortfall of 275MWh). This projection differs from the MT PASA for South Australia, which, as noted above, is projecting an expected breach of the reliability standard in South Australia as early as summer 2016-17.
- Victoria: the first breach is expected in 2024-25, due to increasing exports to South Australia and NSW, and a projected increase in Victorian demand (a shortfall of 1,502 MWh).
- Queensland and Tasmania: the reliability standard is expected to be met over the next 10 years (the duration of the outlook in an ESOO) in each of these regions.

Figure B.1 shows the timing of the first forecast reserve shortfall, if applicable, in each NEM region, under each of the four AEMO forecast models. Also shown in the figure is the date when the forecast was made.

Where reserve shortfalls are projected, the timing of the first shortfall is typically after the RERT expiry date proposed in the rule change request (30 June 2019), with the exception of the MT PASA for South Australia.

61 Under clause 3.13.3(q) AEMO must prepare and publish the ESOO for the subsequent 10 year period.

62 AEMO, 2015 Electricity Statement of Opportunities - Update, October 2015.

63 Clause 3.13.3(r) of the NER requires AEMO to publish updates to its ESOO as soon as practicable, when significant new information becomes available relating to supply or demand projections, including plant retirements.

Figure B.1 Timing of first reserve shortfall forecast by AEMO

Region	EAAP (2-year outlook to 30 September 2017. August 2015 forecast)	ST PASA (7-day outlook. 11 January 2016 forecast)	MT PASA (2-year outlook. 12 January 2016 forecast)	ESOO (10-year outlook, medium demand scenario. October 2015 forecast)
NSW	No shortfall	No shortfall	No shortfall	Shortfall 2022-23
South Australia	No shortfall	No shortfall	Shortfall summer 2016-17	Shortfall 2019-20
Victoria	No shortfall	No shortfall	No shortfall	Shortfall 2024-25
Queensland	No shortfall	No shortfall	No shortfall	Shortfall 2021-22 (high demand scenario only)
Tasmania	No shortfall	No shortfall	No shortfall	No shortfall