Reliability Panel
AEMC

REVIEW

Reliability Panel AEMC

ISSUES PAPER

Reliability Standard and Settings Review

26 June 2009

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About the AEMC

The Council of Australian Governments, through its Ministerial Council on Energy, established the Australian Energy Market Commission (AEMC) in July 2005 to be the Rule maker for national energy markets. The AEMC is currently responsible for Rules and policy advice covering the National Electricity Market and, from 1 July 2008, concerning access to natural gas pipeline services and elements of the broader national gas markets. It is a statutory authority. The AEMC's key responsibilities are to consider Rule change proposals, conduct energy market reviews and provide policy advice to the Ministerial Council on Energy as requested, or on AEMC initiative.

About the AEMC Reliability Panel

The Panel is a specialist body within the AEMC and comprises industry and consumer representatives. It is responsible for monitoring, reviewing and reporting on the safety, security and reliability of the national electricity system and advising the AEMC in respect of such matters. The Panel's responsibilities are specified in section 38 of the National Electricity Law (NEL).

Disclaimer

The views and recommendations set out in this document are those of the Reliability Panel and are not necessarily those of the Australian Energy Market Commission.

Reliability Panel Members

Chairman

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Other AEMC Reliability Panel Members

Gavin Dufty, Manager Policy and Research, St Vincent de Paul Society, Victoria

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Abbreviations

AEMC	Australian Energy Market Commission
AER	Australian Energy Regulator
APC	Administered price cap
CPRS	Carbon Pollution Reduction Scheme
CPT	Cumulative price threshold
CRR	Comprehensive Reliability Review
GWh	Gigawatt hour
LOLE	Loss of load expectation
LOLP	Loss of load probability
MCE	Ministerial Council on Energy
MPC	Market price cap
MRET	Mandatory Renewable Energy Target
MRL	Minimum reserve levels
MWh	Megawatt hour
NEL	National Electricity Law
NEM	National Electricity Market
NEMMCO	National Electricity Market Management Company
NEO	National electricity objective
NGF	National Generators Forum
NSP	Network service provider
Panel	Reliability Panel
RERT	Reliability and emergency reserve trader
Rules	National Electricity Rules
SAIDI	System Average Interruption Duration Index
SOO	Statement of Opportunities
ToR	Terms of Reference
USE	Unserved energy
VoLL	Value of Lost Load

Summary

In March 2009, the Australian Energy Market Commission (AEMC) provided the Reliability Panel (Panel) with a Terms of Reference for the Reliability Standard and Settings Review. The Reliability Standard and settings includes the Reliability Standard, the market price cap (formerly VoLL), the cumulative price threshold (CPT), and the market floor price. The Panel is also required under clause 3.9.3A of the National Electricity Rules (Rules) to undertake a review and report on the Reliability Standard and settings that should apply from 1 July 2012.

This Issues Paper represents the first stage in the Panel's review of the Reliability Standard and settings.

The objectives of this review are to:

- determine whether the existing Reliability Standard is appropriate for current market arrangements given that the existing annual standard was exceeded as a result of the South Australian/Victorian heatwave in January 2009;
- determine the form and level the Reliability Standard that should apply from 1 July 2012;
- determine, given the Reliability Standard chosen to apply in the National Electricity Market (NEM) from 1 July 2012, the appropriate reliability settings to achieve the Reliability Standard; and
- propose processes for implementing any changes arising from the review.

The Rules provide that the Panel must conduct the review in accordance with the Rules consultation procedures set out in rule 8.9 of the Rules.

The Panel is publishing this Issues Paper for initial comments and in respect of the Reliability Standard, the Panel is seeking views on the following issues:

Is the current form of the Standard appropriate for current and projected market arrangements or should it be replaced by another form such as LOLE or LOLP?

If the current form is considered acceptable is:

- the level considered appropriate?
- the current practice of judging compliance over a long term (10 year) timeframe appropriate?
- the operational practice of planning to achieve expected USE each financial year that is within the Standard appropriate?

Similarly, in respect of the reliability settings, the Panel is seeking stakeholder comments on the following:

> Given the Reliability Standard that stakeholders consider is appropriate, what are the levels of the reliability settings (consisting of the market price cap, market floor price and cumulative price threshold) required to deliver that Reliability Standard?

The Panel will release a Draft Report for consultation on 16 October 2009, which incorporates comments received on the Issues Paper.

The Panel will submit the Final Report to the AEMC on 12 March 2010 for final publication by 30 April 2010.

Interested stakeholders are invited to provide comments on the Issues Paper. Comments should be received by 5 pm on Friday 14 August 2009. Comments must cite the project reference code: "REL0034". Comments may be uploaded on the AEMC website at www.aemc.gov.au, or by mail to:

Australian Energy Market Commission
PO Box A2449
Sydney South NSW 1235

or by Fax: (02) 8296 7899.

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1 Background to this review

1.1 Context of the review

In March 2009, the Australian Energy Market Commission (AEMC) provided the Reliability Panel (Panel) with the Terms of Reference (ToR) for a review entitled "Review of the operational arrangements of the reliability settings and Reliability Standard and Settings Review".[1]

In addition, following publication of the AEMC's *National Electricity Amendment (NEM Reliability Settings: VoLL, CPT and Future Reliability Review) Rule 2009 No.13*[2], the Panel is required to undertake a biennial review of the Reliability Standard and settings. Publication of the first biennial review, which pertains to the Reliability Standard and reliability settings to apply from 1 July 2012, must be completed by 30 April 2010.

Those aspects of the ToR pertinent to the Reliability Standard and Settings Review are:

- whether the wording of the standard be changed as published by the Panel in the Comprehensive Reliability Review (CRR) be clarified to give better guidance to NEMMCO as to how to operationalise the standard; and

- test the appropriateness for the future of the Reliability Standard and settings, including the form and level of the Reliability Standard, the Market Price Cap (formerly Value of Lost Load, or VoLL), the CPT, and the market floor price.

In respect of the first dot point above, as part of the Panel's "Review of Operationalisation of the Reliability Standard"[3], the Panel is reviewing the wording of the existing Reliability Standard in consultation with NEMMCO in order to ensure that the policy intent in the CRR has been clearly implemented. Any changes to the Reliability Standard as a result of this review would take effect immediately and should be used by NEMMCO for its current process to recalculate the medium-term Minimum Reserve Levels (MRLs).

1.2 Consultation process

This review will be undertaken in accordance with the Rules consultation procedures outlined in rule 8.9 of the National Electricity Rules (Rules). Given that this review is likely to have important implications for National Electricity Market (NEM) stakeholders, including generators, retailers, market customers, network service

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1 For ease of reference, the Terms of Reference is included in Appendix A of this Issues Paper.

2 AEMC 2009, *National Electricity Amendment (NEM Reliability Settings: VoLL, CPT and Future Reliability Review) Rule 2009 No.13*, Final Rule Determination, (28 May 2009, Sydney), p.32.

3 For more information about this review, see: http://www.aemc.gov.au/Market-Reviews/Open/Review-of-Operationalisation-of-the-Reliability-Standards.html

providers (NSPs), NEMMCO and the Australian Energy Regulator (AER), the Panel plans to involve stakeholders by seeking initial comments and submissions on each of its draft decisions and holding a public forum during this review.

The following key dates outline the intended Rules consultation process leading up to the delivery of the Panel's Final Report to the AEMC.

Date	Milestone
Friday, 26 June 2009	Publication of Issues Paper
Monday, 13 July 2009	Public forum in Sydney for both the Reliability Standard and Settings Review and Review of Operationalisation of the Reliability Standards
Friday, 14 August 2009	Close of submissions on Issues Paper
Between Friday, 11 September 2009 and Friday, 16 October 2009	Hold Public Meeting
Friday, 16 October 2009	Publication of Draft Report
Friday, 29 January 2010	Close of submissions on Draft Report
Friday, 12 March 2010	Submit Final Report to AEMC
By Friday, 30 April 2010	Publication of Final Report

1.3 Comments on the Issues Paper

The Panel invites comments from interested parties in response to the Issues Paper by 5pm (Australian Eastern Standard Time) on Friday, 14 August 2009. Submissions may be uploaded on the AEMC website electronically or sent by mail in accordance with the following requirements.

1.3.1 Lodging a submission electronically

Comments must be lodged online through the AEMC's homepage at www.aemc.gov.au using the link entitled "online lodgement".

The submission must be on letterhead (if an organisation), signed and dated by the proponent, and the submission must be in PDF format.

Upon receipt of the electronic version of the submission, the Panel will issue a confirmation email. If this confirmation email is not received within 3 business days, it is the submitter's responsibility to ensure successful delivery of the submission has occurred.

1.3.2 Lodging a submission by mail

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

The Reliability Panel
Australian Energy Market Commission
PO Box A2449
Sydney South NSW 1235

or by Fax: (02) 8296 7899.

The envelope or fax must be clearly marked with the project reference code: "REL0034".

Except in circumstances where the submission has been submitted electronically, upon receipt of the hardcopy submission the Panel 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.

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2 Reliability Standard and Settings Review

2.1 Why do we need the Reliability Standard and Settings Review?

The Panel is required under clause 3.9.3A of the Rules to review the reliability settings every two years. Regularly reviewing the settings balances the need for certainty for consumers and investors on the one hand; and the need to maintain appropriate and timely consideration to overall NEM reliability performance. The reliability settings together aligns with the National Electricity Objective (NEO), as it promotes the long term interest of consumers and electricity because it ensures that the Reliability Standard is met.

2.2 What are the requirements under the Rules for reviewing the Reliability Standard and settings?

By 30 April 2010, the Panel is required under clause 3.9.3A of the Rules to undertake a review and report on the Reliability Standard and settings that should apply from 1 July 2012.[4]

2.3 What are the existing Reliability Standard and the reliability settings?

Reliability Standard

The Reliability Standard is the primary mechanism for encouraging the market to deliver enough capacity to meet consumer demand for electricity. The Reliability Standard is a measure of the maximum amount of energy that can be at risk of not being delivered to consumers due to a lack of available capacity. Currently, the level of unserved energy (USE) permissible under the Standard is set at 0.002% of annual energy consumption per region.

Reliability Settings

The level of the MPC, the market floor price and the CPT are the key price envelopes within which the wholesale spot market seeks to balance supply and demand, and deliver capacity to meet the Reliability Standard, i.e. 0.002% USE in the case of the NEM, with the aim of avoiding unmanageable risks for market participants.[5] The level of the MPC and the market floor price are crucial because they provide key signals for supply and demand-side investment and usage. For example, if the MPC is set too high, Market Customers (retailers or consumers that are directly exposed to the spot price) and generators can be exposed to very large financial risks. However,

4 An excerpt of the Panel's obligations under the Rules is provided in Appendix B of this Issues Paper.

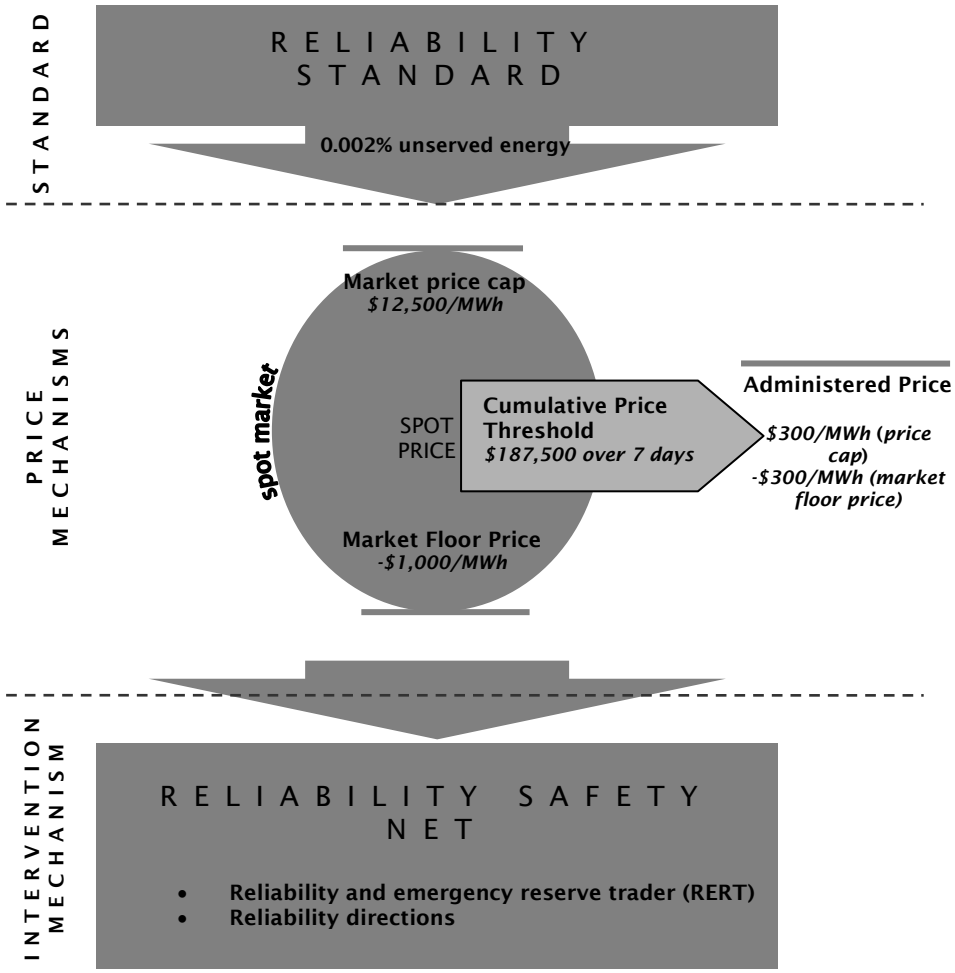
5 AEMC Reliability Panel, *NEM Reliability Settings: VoLL, CPT and Future Reliability Review Rule Change Proposal* (December 2008, Sydney), p.1.

if set too low, there may be insufficient incentives to invest in new generation capacity and demand-side response to meet the Reliability Standard.

The CPT is an explicit risk management mechanism designed to limit participants' exposure to protracted levels of high prices in the wholesale spot market. If the sum of the half-hourly wholesale market spot prices over a rolling seven-day period exceeds this threshold, NEMMCO must impose an administered price cap (APC). The APC is specified in a schedule that is developed, authorised, published and varied by the AEMC. The APC is currently ±$300/MWh for all regions of the NEM, for all time periods.[6]

The NEM reliability settings as they apply from 1 July 2010 are depicted graphically in Figure 2.1 below.

Figure 2.1 NEM reliability settings that apply from 1 July 2010



6 AEMC 2009, *National Electricity Amendment (NEM Reliability Settings: VoLL, CPT and Future Reliability Review) Rule 2009 No.13*, Final Rule Determination, 2009, Sydney, p.1.

The reliability safety net, which includes the reliability and emergency reserve trader (RERT) and reliability directions are also important interventions utilised by NEMMCO to reduce USE that accrues. Clause 4.8.9 of the Rules explicitly outlines NEMMCO's obligations in respect of reliability directions and is not subject to a sunset clause. Reliability directions are not included in the Panel's assessment of the reliability settings for this review. The RERT on the other hand, under clause 3.20.1(a) of the Rules, is subject to a sunset date of 30 June 2012. Furthermore, under clause 3.20.9(a) the Panel is required to complete a review of the RERT by 30 June 2011. Given that the Panel must conduct its review of the RERT prior to the commencement date of the outcomes from this review, the RERT is not included in the Panel's assessment of the reliability settings.

Within the existing energy market design framework, the mechanisms that can be adjusted to provide investment signals are limited to the MPC, the CPT and the market floor price.[7] Other mechanisms that deliver investment signals were considered and consulted on as part of the CRR, but were deemed inappropriate by the Panel.[8] The Panel notes that new mechanisms may be considered during the AEMC's Review of the Effectiveness of Energy Market Frameworks in light of Climate Change, or as a result of some other Ministerial Council on Energy (MCE) initiative.[9] The Panel recognises that if new mechanisms arise, the levels of the MPC, the CPT and the market floor price may need to be re-examined at a later stage.[10]

2.4 What were the reasons for changing the reliability settings to apply from 1 July 2010?

Since the publication of the CRR, the Commonwealth Government has announced plans for a Carbon Pollution Reduction Scheme (CPRS), and an expansion of the existing Mandatory Renewable Energy Target. At the request of the MCE, the AEMC has commenced a review of the implications of the introduction of the CPRS and expanded renewable energy target on the energy market frameworks and Rules.

In its Rule change proposal[11] to the AEMC, the Panel highlighted the prior intention for the CPRS to be introduced on 1 July 2010.[12] In light of this, the Panel noted that it had sought views from stakeholders on the appropriateness of 1 July 2010 as the date for the increases in the MPC and the CPT to become effective, and that responses on this issue had been mixed. Nevertheless, the Panel decided that, taking into account all relevant factors, it was appropriate to propose to raise the MPC and maintain the CPT level relative to the MPC with effect from the proposed start date of the CPRS

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7 AEMC Reliability Panel, *NEM Reliability Settings: VoLL, CPT and Future Reliability Review Rule Change Proposal*, (December 2008, Sydney), p.2.

8 Ibid.

9 Ibid.

10 Ibid.

11 AEMC Reliability Panel, *NEM Reliability Settings: VoLL, CPT and Future Reliability Review Rule Change Proposal*, (December 2008, Sydney), p.14.

12 AEMC 2009, *National Electricity Amendment (NEM Reliability Settings: VoLL, CPT and Future Reliability Review) Rule 2009*, Final Rule Determination, (28 May 2009, Sydney), p.4.

on 1 July 2010[13].[14] The AEMC concluded in its final Rule determination that the MPC and the CPT be raised at the same date, namely 1 July 2010.[15]

The AEMC's reasoning for changing the MPC was that although other factors may influence the levels of contracting and contract prices, within the existing energy market design framework the mechanisms that can be adjusted to provide investment signals are limited to the MPC, the CPT and the market floor price. The AEMC therefore considered that a given level of NEM reliability – 0.002% USE in the case of the NEM – can best be targeted by raising the MPC, as this would expose retailers to additional risk and create incentives for greater levels of contracting.[16] In respect of the CPT, the AEMC considered that, given its determination to increase the level of the MPC to $12,500/MWh, failure to increase the absolute level of the CPT would result in an increase in the number of CPT breaches, thereby frustrating the aim of the increase in the MPC. The AEMC considered that the CPT should be set at such a level to protect market participants by limiting their exposure to extreme price events and that it should not act to inhibit or blunt the investment signals given by the MPC.[17] However, the AEMC determined to set the CPT at an absolute level of $187,500, rather than "hard wire" a ratio of 15 times VoLL, as proposed by the Panel.[18]

The AEMC considered that the Panel's Rule change proposal was likely to advance the NEO. The AEMC anticipated that:

- increasing the MPC to $12,500/MWh will promote efficient investment and that this will further the long term interests of consumers of electricity in terms of representing an efficient balance between the price and reliability of supply of electricity;[19]

- increasing the level of the CPT to an absolute value of $187,500 would allow for an efficient level of investment in electricity services. This would be in the long term interest of consumers with respect to reliability, while providing an appropriate level of protection to such consumers with respect to the price of electricity through the prevention of extended periods of very high prices that might result in certain extreme circumstances;[20] and

- reviewing the Reliability Standard and all the reliability settings (i.e. the MPC, CPT, and the market floor price) together would promote the long term interest

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13 Note that introduction of the CPRS has been delayed for a least one year, and is expected to start at or after the 1 July 2011.

14 AEMC 2009, *National Electricity Amendment (NEM Reliability Settings: VoLL, CPT and Future Reliability Review) Rule 2009*, Final Rule Determination, (28 May 2009, Sydney), p.4.

15 Ibid.

16 Ibid, p.17.

17 Ibid, p.24.

18 Ibid.

19 Ibid, p.18.

20 Ibid, p.24-25.

of consumers as it improved the ability of the NEM to meet the Reliability Standard.[21]

[21] Ibid, p.30 and p.32.

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3 Questions for the review

It should be noted that the following review of the NEM Reliability Standard and settings will be completed by 30 April 2010 to enable those new settings to be applied in the NEM from 1 July 2012. The next review of the Reliability Standard and settings will be completed by 30 April 2012 to commence on 1 July 2014.

The Panel has formulated the questions in this section in order to facilitate discussion in respect of the Reliability Standard and settings. Stakeholders are encouraged to consider these questions when preparing their submissions. In addition, the Panel seeks comments from stakeholders on any other related aspects of the Reliability Standard and settings subject to this review.

3.1 NEM Reliability Standard

The Reliability Standard was set at 0.002 % unserved energy (USE) by the Panel at market start in 1998. The Standard describes the minimum acceptable level of bulk electricity supply delivered to consumers in a region measured against the total demand of consumers in that region. The practice to date has been to measure the Standard over the long term. Thus, if consumer energy demand was 100,000 MWh over the long term, the Standard would require the supply of no less than 99,998 MWh. Currently, in order to operationalise the Reliability Standard, NEMMCO calculates MRLs for each region. It then compares forecast and actual reserve levels with the MRLs to manage against the risk that the Standard will not be met at the time of dispatch.

Historically, the NEM has performed well against the Reliability Standard.

[22] Prior to publication of the CRR, industrial action was included in calculations of USE, which resulted in South Australia and Victoria falling outside the Reliability Standard in 2000.[23] The South Australian and Victorian USE for the January 2009 reliability events on an annual energy basis were estimated at 0.0032% and 0.004%[24] respectively.[25] With the inclusion of USE from industrial action, averages for USE due to capacity adequacy shortfalls for the past ten financial years show that New South Wales and Queensland remain within the Reliability Standard. However, over

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22 AEMC Reliability Panel 2008, *Comprehensive Reliability Review – Final Report*, December 2007, p.xi; AEMC Reliability Panel 2008 , *Annual Market Performance Review – Final Report*, December 2008, p.9.

23 The failure of South Australia and Victoria to meet the Reliability Standard in 2000 is attributable to a coincidence of industrial action, high demand and temporary unavailability of generating units in Victoria. Due to this single event, Victoria's long term averages remain outside the Standard: AEMC Reliability Panel 2008, *Annual Market Performance Review – Final Report*, December 2008, p.9.

24 Note that the security event in Victoria on 30 January 2009 due to the unplanned outages of the South Morang to Keilor and South Morang to Sydenham 500 kV lines is not included in the total USE for Victoria, but has been estimated at 0.006% on an annual energy basis.

25 NEMMCO, *Power System Incident Report – Actual Lack of Reserve (LOR3) in Victoria and South Australia Regions on 29-30 January 2009*, May 2009, p.4.

the same period South Australia (0.0021%) and Victoria (0.0075%) fell outside the Reliability Standard.

Following publication of the CRR, the scope of the Reliability Standard was amended to exclude USE associated with "power system incidents that results from industrial actions or 'acts of God' at existing or inter-regional transmission facilities".[26] When the USE resulting from the industrial action in South Australia and Victoria in the 1999/2000 and 2000/2001 financial years is excluded, the recalculated USE values for the past ten financial years for South Australia (0.00051%) and Victoria (0.00044%) remain within the Reliability Standard.[27] New South Wales and Queensland also remain within the Standard and since Tasmania joined the NEM in May 2005, it has not experienced a breach of the Reliability Standard.

The Reliability Standard does not reflect the reliability performance of the distribution network. Distribution networks are subject to performance standards that are set and monitored by jurisdictional bodies.

The current definition of the Reliability Standard, its form, level and compliance are outlined below and are part of the Panel's *power system security and reliability standards*.

3.1.1 Form of the Reliability Standard

The NEM Reliability Standard is an output-based measure expressed in terms of the maximum permissible USE, or the maximum allowable level of electricity at risk of not being supplied to consumers, per financial year. The USE is measured in GWh and should be expressed as a percentage of the annual energy consumption for the associated region or regions.

In the CRR, a number of alternative definitions of reliability were raised, which included the following:[28]

- how frequently supply is interrupted – for example, the number of days per year in which an interruption occurs;
- the cumulative duration of interruptions – for example, the total number of hours per year that interruption to any (not necessarily the same) consumer occurs; and
- the amount of energy that is not supplied in a period – for example, the NEM's Reliability Standard, or the System Average Interruption Duration Index (SAIDI) for distribution.

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[26] The Reliability Standard as published in the AEMC Reliability Panel's power system security and reliability standards is reproduced in Appendix C.

[27] This assumes USE in South Australia and Victoria for the 2008/2009 financial year of 0.0032% and 0.004% respectively, with no further USE observed through to 30 June 2009.

[28] AEMC Reliability Panel 2007, *Comprehensive Reliability Review*, Final Report, December 2007, Sydney, section 4.2, p. 22-26.

Many jurisdictions comparable to the NEM use the first of the above three measures. This is known either as loss of load expectation (LOLE) or loss of load probability (LOLP):[29]

- LOLE is the expected number of days per year in which available generating capcity is insufficient to serve demand, or the half-hours per year in which capacity is insufficient to serve half-hourly load.

- LOLP is the proportion in percentage (probability) of days per year, half-hours per year, or events per season, in which available generating capacity is insufficient to serve demand.

3.1.2 Level of the Reliability Standard

The maximum permissible USE is 0.002% of the annual energy consumption for the associated region or regions per financial year.

3.1.3 Compliance with the Reliability Standard

Compliance with the Reliability Standard should be measured over the long-term using a moving average of the actual observed levels of annual USE for the most recent ten financial years.

Operationally, it should be planned to achieve an expected USE that is within the Reliability Standard in each financial year, for each region and for the NEM as a whole.

3.1.4 Questions and Issues for stakeholder consultation

Box 3.1: Reliability Standard

Is the current form of the Standard appropriate for current and projected market arrangements or should it be replaced by another form such as LOLE or LOLP?

If the current form is considered acceptable is:

- the level considered appropriate?

- the current practice of judging compliance over a long term (10 year) timeframe appropriate?

- the operational practice of planning to achieve expected USE each financial year that is within the Standard appropriate?

[29] Ibid.

3.2 NEM reliability settings

3.2.1 Price mechanisms

The level of the MPC, the market floor price and the CPT form the key price envelope within which the wholesale spot market is expected to deliver the capacity to achieve the NEM Reliability Standard. They provide important signals to participants concerning supply and demand-side investment and usage. Briefly, if the caps are set too high, market customers (predominantly retailers) can be financially exposed. If the caps are set too low, there may be insufficient incentive to invest in new generation capacity.

3.2.2 Methodology to determine the reliability settings

The Panel intends to undertake sensitivity analysis of different levels of the Reliability Standard and subsequently determine what the values of the reliability settings should be to achieve the Reliability Standard.

3.2.3 Future levels of MPC, market floor price and CPT

The Panel notes that changes to the market framework are not included in the scope of this review, as these aspects are currently being considered by the AEMC in its review of energy market frameworks in light of climate change policies.[30] The purpose of the Panel's review is to ascertain the levels of the existing NEM reliability settings.

Box 3.2: Reliability Settings

Given the Reliability Standard that stakeholders consider appropriate, what are the levels of the reliability settings (consisting of the market price cap, market floor price and cumulative price threshold) required to deliver that Reliability Standard?

[30] For more information about the AEMC's review see: http://www.aemc.gov.au/Market-Reviews/Open/Review-of-Energy-Market-Frameworks-in-light-of-Climate-Change-Policies.html

A Terms of Reference

[Reproduced below]

Reliability Panel
Review of the operational arrangements of the reliability settings and Reliability standard and settings review
AEMC Terms of Reference (3 March 2009)

Introduction

The Reliability Panel (Panel) made a number of recommendations in relation to the operationalisation of the bulk supply reliability standard in the final report of its Comprehensive Reliability Review (CRR), which was published in December 2007. The Panel also forecast in the CRR a number of other initiatives and reviews it would undertake as a response to issues raised during consultations. The Panel is also required to undertake periodic reviews of reliability matters.

The Panel's indicative work program in 2009 and 2010 foreshadowed a number of the issues subject to these terms of reference. Therefore, the terms of reference align a range of related matters.

Scope of the reviews

The Panel is requested to review the operationalisation of the reliability standard including:

- the methodology and process used by NEMMCO for calculating the minimum reserve levels (MRLs), especially where the MRLs apply across more than one jurisdiction;
- the MRLs and associated arrangements and standards to be used in the short-term reserve assessment of reliability;
- the current "Guidelines for management of electricity supply shortfall events" (sometimes referred to as 'share the pain' guidelines) that were issued by the Panel in September 1998;
- the need and possible design of a short-term version of the RERT that could be used in a critical emergency;
- whether the wording of the standard as published by the Panel in the CRR could be clarified to give better guidance to NEMMCO as to how to operationalise the standard; and
- whether the Rules should be amended to clarify the requirement for market participants to inform NEMMCO, via dispatch bids or offers, of their actual capability under the prevailing or forecast temperature conditions.

In addition, the Panel is also requested to commence a 'Reliability standard and settings review' as proposed by the Panel in its Rule change proposal "NEM Reliability Settings: VoLL, CPT and Future Reliability Review". Although a final determination is yet to be made on this Rule change proposal, it is considered

desirable that this review be commenced now to test the appropriateness of the future standard and settings. Furthermore, under the existing Rules, the Panel would have been required to review VoLL by 30 April 2010.

Process

The recent unserved energy events in Victoria and South Australia have highlighted the need for close scrutiny of the way the reliability standard is put into operation in the NEM, and also the appropriateness of the reliability standard and settings.

Therefore, these reviews are likely to have important implications for NEM stakeholders. Consistent with its philosophy of engaging with those parties, the AEMC requests the Panel to plan to involve stakeholders by seeking submissions and holding at least one forum for these reviews.

The Panel is requested to consider the national electricity objective (NEO) contained in section 7 of the National Electricity Law (NEL) when it considers issues raised in these reviews and when making associated recommendations.

Timing

Recognising the extensive work program within the Panel, the Panel should aim to complete its review into the operationalisation of the reliability standard by the end of December 2009 and the reliability standard and settings review by the end of April 2010.

Clearly, these Panel reviews will also assist the AEMC in responding to the MCE directed review into the energy market frameworks in light of the impact on electricity supplies of the extreme heat wave of 29-31 January 2009, which was identified in the MCE's 6 February 2009 Communiqué.

Notwithstanding the end dates for these reviews and given the desirability of implementing any appropriate changes in a timely manner for the summer of 2009/10, the Panel should consider the possibility of making necessary changes to guidelines or proposing Rule changes before the completion of these reviews.

B The Panel's obligations under the National Electricity Rules to review the Reliability Standard and settings

3.9.3A Reliability standard and reliability settings review

(a) By 30 April of each second year (commencing 2010) the *Reliability Panel* must conduct a review in accordance with the *Rules consultation procedures* on the *reliability standard* and *reliability* settings set out in paragraph (b) of this clause and *publish* a report on the *reliability standard* and *reliability* settings that it recommends should apply from 1 July in the year commencing 2 years after the year in which the review is conducted.

(b) In conducting a review in accordance with this clause 3.9.3A the *Reliability Panel* must review the following:

(1) the *reliability standard*;

(2) the *market price cap*;

(3) the *cumulative price threshold*; and

(4) the *market floor price*.

3.9.4 Market price cap

(a) The *market price cap* is a price limit which is to be applied to *dispatch prices*.

(b) The value of the *market price cap* is $10,000/MWh prior to 1 July 2010. Effective from 1 July 2010, the value of the *market price cap* is $12,500/MWh.

(c) In conducting a review of the *market price cap* in accordance with clause 3.9.3A, the *Reliability Panel* must have regard to the potential impact of any proposed increase in the *market price cap* on:

(1) *spot prices*;

(2) investment in the *National Electricity Market*; and

(3) the *reliability* of the *power system*.

(c1) The *market price cap* recommended by the *Reliability Panel* in a review under clause 3.9.3A must be a level which the *Reliability Panel* considers will:

(1) allow the *reliability standard* to be satisfied without use of *NEMMCO's* powers to intervene under clauses 3.20.7(a) and 4.8.9(a);

(2) in conjunction with other provisions of the *Rules*, not create risks which threaten the overall integrity of the *market*; and

(3) take into account any other matters the *Reliability Panel* considers relevant.

(c2) A report of the *Reliability Panel* under clause 3.9.3A must set out the conclusions of its review and the recommendation in relation to the level of the *market price cap* along with supporting information including:

(1) details of all relevant market conditions and circumstances on which the recommendation is based; and

(2) an assessment of whether the level of the *market price cap* together with the operation of the *cumulative price threshold* has achieved the objectives set out in clauses 3.9.4(c1)(1) and (2).

(d) In its review of the *market price cap* under clause 3.9.3A, the *Reliability Panel* may only recommend a change to the *market price cap* from 1 July in the year commencing 2 years after the year in which the review is being conducted where:

(1) in the *Reliability Panel's* opinion, it is highly probable that the relevant *market* conditions and circumstances on which the recommendation for that year are based as stated in the report of the *Reliability Panel* under clause 3.9.3A will eventuate; and

(2) the *Reliability Panel* has given due consideration to the impact of the change to the *market price cap* on *Market Participants* and, in the event of a recommended decrease in the *market price cap*, any alternative arrangements considered necessary to ensure that the *reliability standard* is maintained.

...

3.9.6 Market floor price

(a) The *market floor price* is a price floor which is to be applied to *dispatch prices*.

(b) The value of the *market floor price* is $-1,000/MWh.

(c) **[Deleted]**

(d) The *market floor price* recommended by the *Reliability Panel* in a review under clause 3.9.3A must be a level which the *Reliability Panel* considers will:

(1) allow the *market* to clear in most circumstances;

(2) not create substantial risks which threaten the overall stability and integrity of the *market*; and

(3) take into account any other matters the *Reliability Panel* considers relevant.

(e) A report of the *Reliability Panel* under clause 3.9.3A must set out the conclusions of its review and the recommendation in relation to the level of the *market floor price* along with supporting information including details of all relevant *market* conditions and circumstances on which the recommendation is based.

...

3.14.1 Cumulative price threshold and administered price cap

(a) In conjunction with each *participating jurisdiction*, and after consulting *Market Participants* in accordance with the *Rules consultation procedures*, the *AEMC* must develop, authorise and *publish* and may vary from time to time a schedule to specify an *administered price cap* for each *region* to apply to *spot prices* and *market ancillary service prices* and to be used as described in this rule 3.14.

(b) The *administered floor price* for each *region* to apply to *spot prices* and to be used as described in clause 3.14.2 will be the negative of the value of the *administered price cap*.

(c) The *cumulative price threshold* is $150,000 prior to 1 July 2010. Effective from 1 July 2010, the *cumulative price threshold* is $187,500.

C NEM Reliability Standard – Generation and Bulk Supply – December 2007

This Reliability Standard for Generation and Bulk Supply[31] was determined by the Reliability Panel (Panel) as part of its Comprehensive Reliability Review (CRR), which it completed on 30 November 2007. This Reliability Standard forms part of the *power system security and reliability standards* and was determined in accordance with clauses 8.8.1(a)(2) and 8.8.3 of the National Electricity Rules (Rules).

Form of the Reliability Standard

The NEM Reliability Standard for Generation and Bulk Supply is an output-based measure expressed in terms of the maximum permissible unserved energy (USE), or the maximum allowable level of electricity at risk of not being supplied to consumers, per financial year. The USE is measured in GWh and should be expressed as a percentage of the annual energy consumption for the associated region or regions.

Level of the Reliability Standard

The maximum permissible unserved energy (USE), or the maximum allowable level of electricity at risk of not being supplied to consumers, is 0.002% of the annual energy consumption for the associated region or regions per financial year.

Compliance with the Reliability Standard

Compliance with this Reliability Standard for Generation and Bulk Transmission should be measured over the long-term using a moving average of the actual observed levels of annual USE for the most recent 10 financial years.

Operationally, this Reliability Standard for Generation and Bulk Transmission should be targeted to be achieved in each financial year, for each region and for the NEM as a whole.

Scope of the Reliability Standard

This Reliability Standard for Generation and Bulk Supply includes unserved energy associated with power system reliability incidents that results from:

- a single credible contingency on a generating unit or an inter-regional transmission element, that may occur concurrently with planned generating unit or inter-regional transmission element outages; or

31 "NEM Reliability Standard – Generation and Bulk Supply – December 2007" is contained in Appendix D of the CRR, December 2007, and is available on the AEMC website.

- delays to the construction or commissioning of new generating units or inter-regional transmission network elements, including delays due to industrial action or 'acts of God'.

This Reliability Standard for Generation and Bulk Supply excludes unserved energy associated with power system security incidents that results from:

- multiple or non-credible contingencies;
- planned outages of intra-regional transmission or distribution network elements; or
- industrial action or 'acts of God' at existing generating or inter-regional transmission facilities.