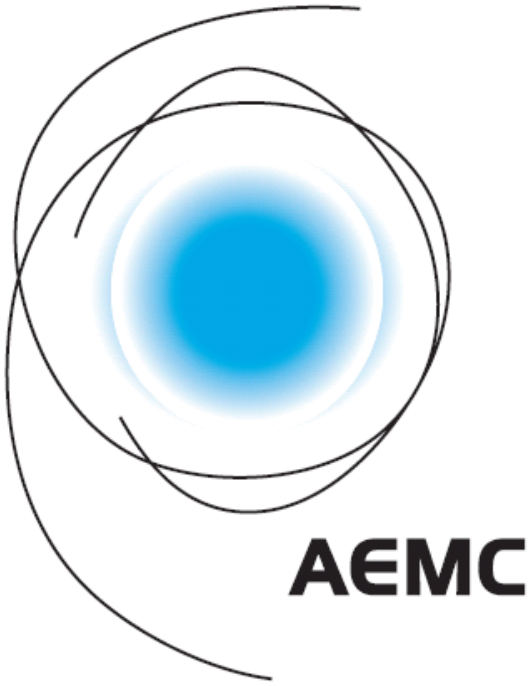

Australian Energy Market Commission

Reliability Panel

Review of VoLL 2006

Draft determination

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1. Introduction

This paper presents the draft determination by the Reliability Panel (the Panel) of the 2006 review of the Value of Lost Load (VoLL), market floor price and Cumulative Price Threshold (CPT). Under clauses 3.9.4(c) and 3.9.6(c) of the National Electricity Rules (Rules), the Panel is required to conduct such a review by 30 April each year with any changes to take effect from July two years after the determination is made[1]. The review must follow the consultation procedures set out in clause 8.9 of the Rules.

This 2006 review is the first by the Panel under the auspices of the Australian Energy Market Commission (AEMC) following overhaul of the governance of the National Electricity Market (NEM) and is occurring in parallel with a major initiative to review arrangements in relation to reliability within the NEM.

Consequently this 2006 review is being treated as an information-based review that will be used to inform the Panel's full consideration of these and related matters in its comprehensive reliability review.

The Panel received one initial submission on this 2006 review which supported leaving detailed comment on the issues to the comprehensive review. The Panel invites further comment from stakeholders on this draft determination by 24 March 2006.

2. Forthcoming comprehensive reliability review

The AEMC has requested the Panel to undertake, in a comprehensive and integrated process, several reviews relating to a number of key NEM reliability standards and parameters, including VoLL, the market floor price and the CPT.[2] This is expected to take 15 months to complete, with a final report expected by 31 March 2007, and will include the period covered by two prescribed annual reviews of VoLL: one by 30 April 2006 (the current VoLL 2006 review referred to in this paper) and one by 30 April 2007 (the VoLL 2007 review).

1 In certain circumstances, the Panel may change the level of VoLL to take effect one year after its determination - Rules 3.9.4(d). The Panel does not propose to do so here.

2 The terms of reference and statement of process in relation to the comprehensive reliability review appears on the AEMC's website at www.aemc.gov.au.

A key objective of the comprehensive review is to provide stakeholders with transparency and certainty in relation to those NEM standards and parameters for the medium-term. The Panel is aware that any material change to VoLL, in particular, is likely to cause disruption in the market. The imminent comprehensive review therefore will provide an opportunity to examine not only the level of VoLL, market floor price and the CPT, but also the fundamental design of the key standards for reliability and their interaction with the price parameters.

3. Requirements under the Rules

The Panel is required under clause 3.9.4(c) and 3.9.6(c) of the Rules to review VoLL and the market floor price by 30 April each year.

Clause 3.9.4(c) states that:

> (c) By 30 April each year the *Reliability Panel* must conduct a review in accordance with the *Rules consultation procedures* and publish a report on the value of *VoLL* that it recommends should apply from 1 July in the year commencing 2 years after the year in which the review is conducted. In conducting a review in accordance with this clause 3.9.4(c) the *Reliability Panel* must have regard, in addition to any other *Rules* obligations, to the potential impact of any proposed increase in *VoLL* on:
>
> (1) *spot prices*;
>
> (2) investment in the national electricity market; and
>
> (3) the reliability of the *power system*.

Clauses 3.9.4(c1) and (c2) outline what the Panel must consider in undertaking the Review:

> (c1) The value of *VoLL* recommended by the *Reliability Panel* must be a level which the *Reliability Panel* considers will:
>
> (1) allow the standard for reliability established by the *Reliability Panel* as part of the *power system security and reliability standards* to be satisfied without use of *NEMMCO's* powers to intervene under clauses 4.8.6(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) The *Reliability Panel's* report must set out the conclusions of its review and the recommendation in relation to the level of *VoLL* 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 *VoLL* together with the operation of the *cumulative price threshold* has achieved the objectives set out in clauses 3.9.4(c1)(1) and (2).

Clause 3.9.6 (c) states that:

> (c) By 30 April each year the *Reliability Panel* must, as part of its review of *VoLL* under clause 3.9.4(c), conduct a review in accordance with the *Rules consultation procedures* and publish a

report on the value of the *market floor price* that it recommends should apply from 1 July in the year commencing after the year in which the review is conducted.

Further, clauses 3.9.6 (d) and (e) outline what the Panel must consider in reaching a conclusion:

(d) The value of the *market floor price* recommended by the *Reliability Panel* 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) The *Reliability Panel's* report must set out the conclusions of its review and the recommendation in relation to the level of the *market floor price*, including details of all relevant *market* conditions and circumstances on which the recommendation is based.

4. Performance of the NEM

VoLL is currently set at $10,000/MWh and the market floor price at -$1,000/MWh[3].

This section presents a summary of the performance of the NEM in terms of the criteria the Panel is required to take into account in reviewing whether the levels of those parameters should change. It includes:

- a summary of incidence and duration of VoLL and other high and low price events in 2005;
- reliability outcomes and CPT rolling averages for the period since the VoLL 2005 review; and,
- an analysis of interventions in the market since the 2005 review.

Each of these is discussed below.

4.1. Incidence and duration of high and low prices

Under the Rules, the spot price for a market region is the price determined for each 30 minute Trading Interval within each region. VoLL was not reached for a whole trading interval in 2005 in any region. The highest price for a trading interval was $9,167/MWh, set in NSW.

3 Rules clause 3.9.4(b) and 3.9.6(b) respectively.

The following table outlines key statistics, including the number of trading intervals where the price exceeded $5,000/MWh in each region and also the number of negative price intervals.

Table 1: Trading Interval Statistics, 2005

Total number of trading intervals for each jurisdiction was 17,520 except Tasmania where number of trading intervals was 1584[4].

	NSW1	QLD1	SA1	SNOWY1	VIC1	TAS1
Maximum ($)	9,167	7,867	6,504	7,440	3,859	7,386
Minimum ($)	7	-153	1	0	-142	27
Cumulative number of trading intervals greater than						
$5,000/MWh	16	4	1	3	0	4
$6,000/MWh	12	4	1	3	0	3
$7,000/MWh	8	4	0	1	0	1
$8,000/MWh	6	0	0	0	0	0
$9,000/MWh	2	0	0	0	0	0
Cumulative number of trading intervals less than						
$0/MWh	0	3	0	0	1	0
-$100/MWh	0	2	0	0	1	0

(Source – compiled for the Panel from NEMMCO published data)

The results for NSW show a greater number of trading intervals at higher prices than the other regions, although the spot price was above $5,000/MWh for less than 0.1% of the total number of trading intervals for the year. NSW prices were affected by relatively higher number of days with generator breakdowns, network outages and high temperatures than other regions. NSW was similarly affected in 2004. These events have helped push the annual average price in NSW above the averages in adjacent regions of the market by between $5/MWh and $10/MWh.

[4] Seven months data from 29 May 2005.

The data for Tasmania shows a significant number of high-priced events. However, all but 4 of these trading intervals greater than $5,000/MWh occurred in May 2005 and, in the main, reflect commissioning difficulties with the interface to NEM market facilities rather than a tight supply/demand balance. Another two of these intervals were caused by metering failures. Given this situation, and the fact that Basslink is only now being commissioned, there is currently insufficient history of Tasmania's operation in the NEM to draw any conclusions regarding the implications for reliability of the settings for VoLL, the market floor price or the CPT in this region.

In practice VoLL is the maximum price that participants may use in forming bids and offers for dispatch to the energy market. VoLL therefore caps the 5-minute dispatch price and, as the average of the six dispatch prices within a half hour forms the 30-minute trading prices, caps the trading interval price. In 2005 the dispatch price reached VoLL on a number of occasions, but not for all six dispatch periods within any half hour and hence a price of VoLL was not recorded for any 30-minute period. Table 2 provides data on the distribution of 5-minute dispatch prices for 2005. The NSW region experienced the greatest number of high 5-minute prices consistent with the higher trading interval price.

Table 2. Dispatch Interval Statistics, 2005

Total number of trading intervals for each jurisdiction was 105,120 except Tasmania where number of trading intervals was 9504.

	NSW1	QLD1	SA1	SNOWY1	VIC1	TAS1
Maximum ($)	10,000	9,984	10,000	7,495	7,466	10,000
Minimum ($)	0	-1,000	-989	0	-1,000	27
Cumulative number of dispatch intervals greater than						
$5,000/MWh	120	42	32	38	8	33
$6,000/MWh	108	42	13	38	8	31
$7,000/MWh	96	30	13	30	5	31
$8,000/MWh	75	12	11	0	0	30
$9,000/MWh	13	5	11	0	0	17
Cumulative number of dispatch intervals less than						
$0/MWh	0	15	2	29	1	0
-$100/MWh	0	2	2	0	1	0

(Source – compiled for the Panel from NEMMCO published data)

4.2. Reliability outcomes

Information on performance of the NEM against the Panel's reliability standard is presented in the Panel's annual reports. That standard is for a maximum level of interruption to customers, or unserved energy, of 0.002 percent of demand per annum over the long term.

In its latest report covering 2004/05[5], the Panel found that the reliability standard was not breached generally or in any individual hour during the 2004/05 year and that each region met the reliability standard during that year.

This was achieved against the background of the acquisition by NEMMCO of 84 MW of additional reserves for the South Australian and Victorian regions for February 2005 through the use of the reserve trader arrangements. The decision to obtain these additional reserves was based on forecasts in mid-late 2004 of a shortfall of 195 MW of adequate reserves for extreme conditions. In practice, conditions turned out more favourably than they might have given the range of outcomes that were deemed possible. The reserves were therefore not dispatched, though this does not imply that they would not have been needed to meet the standard had more extreme outcomes eventuated. 412 MW of additional generating capacity was commissioned during the year.

0.0005 percent of demand in the NSW region was interrupted on 1 December 2004 due to inadequate available capacity at a time of high demand coinciding with the breakdown of a large generator. A maximum of 200MW out of 12,800MW of demand from the region was interrupted for up to 10 minutes and a further 300MW was interrupted voluntarily by market participants. The NSW region price peaked at $9,909/MWh and was above $9,000/MWh for 2 hours.

On a further two occasions in 2004/05, customer load was interrupted due to incidents on the main power system.

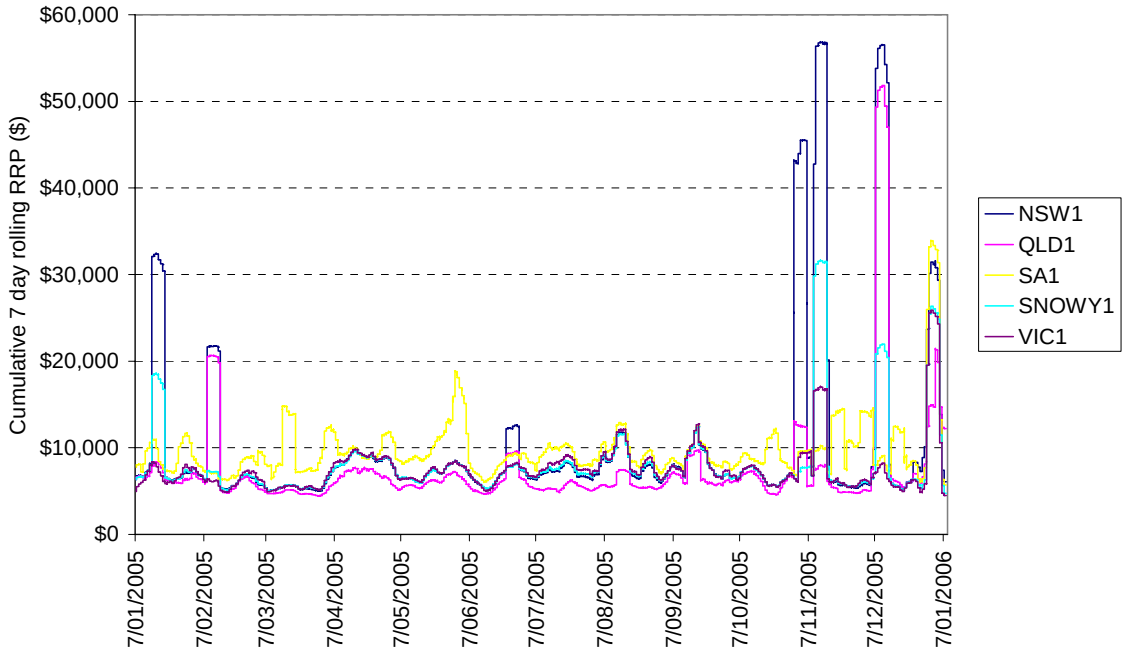
In consultation with relevant jurisdictions, NEMMCO has acquired an additional 375 MW of reserve for South Australia and Victoria through the reserve trader for the summer of 2005/06. Delays in the commissioning of Basslink and a Laverton North power station have contributed to the forecast of a shortfall in reserve under extreme conditions. Intervention by NEMMCO is discussed in more detail in section 4.4 below

5 Annual electricity market performance review: reliability and security 2005 report located at http://www.aemc.gov.au/electricity.php?cat=rp

4.3. CPT rolling averages

The CPT is a mechanism to cap the potential financial risk in the NEM overall. If the cumulative price over the 336 trading intervals in a rolling 7-day period exceeds the threshold, the maximum spot price is reduced from VoLL to an Administered Cap (set by the AEMC)[6]. The maximum price remains at the Administered Cap until the conditions that caused the trading interval prices to rise have passed. The current CPT is $150,000 and the Administered Cap is $100/MWh in peak times and $50/MWh in off peak times. Figure 1 outlines the rolling cumulative prices (336 trading periods) for 2005 for each of the mainland regions. The CPT was not reached at any point in 2005 in these regions.

Figure 1: Cumulative prices, 2005

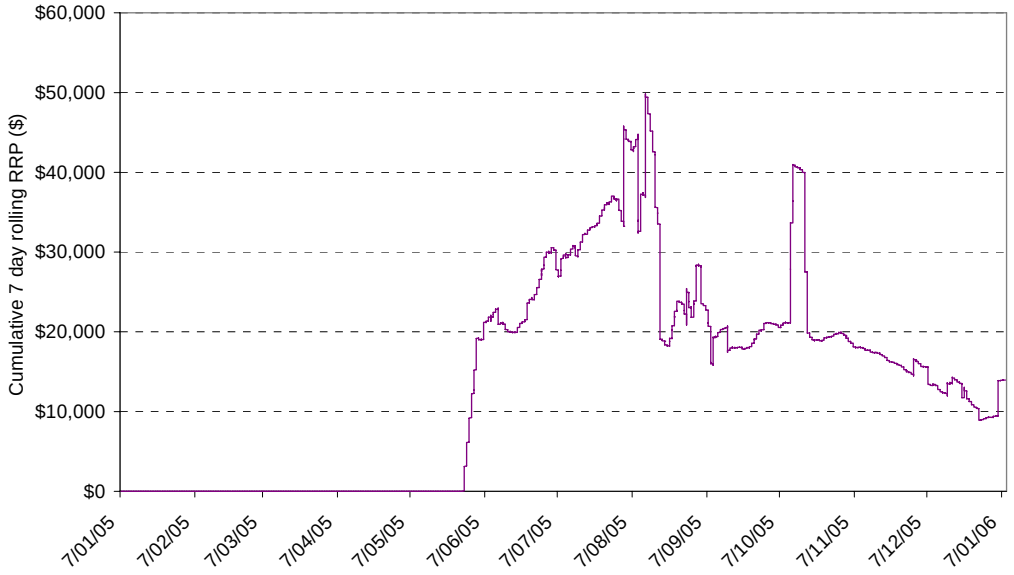


(Source – compiled for the Panel from NEMMCO published data)

Figure 2 shows the same analysis for Tasmania in the period from May 2005. There was no interconnection to other regions of the NEM until commissioning tests on Basslink commenced in December 2005. As noted above, prices in Tasmania were volatile and affected by a number of early equipment and metering problems and, as a result, are not considered to be indicative of market performance.

6 In accordance with Rule 3.14.

Figure 2: Cumulative Prices for Tasmania, from entry (29 May 2005) to end 2005



(Source – compiled for the Panel from NEMMCO published data)

4.4. Analysis of interventions

A key criterion for setting the level of VoLL is the ability of the market to meet the reliability standard without the use of NEMMCO's powers of intervention.

NEMMCO may intervene in the market to ensure standards for both reliability (adequacy of capacity to supply to meet demand) and security (that is, safe technical operation) are maintained. Breaches of security standards may result in widespread interruptions but are generally not associated with the level of investment in generating or network plant. Circumstances requiring intervention to ensure security standards are met typically only arise close to the time of dispatch and are generally less predictable – they may arise, for example, due to the breakdown of key control equipment or inadequate operating practices. The following section briefly summarises the interventions that have occurred, and highlights the two occasions when the intervention was to ensure reliability.

Interventions can be short term through directions or longer term through the reserve trader.

Directions

NEMMCO issued no directions to ensure reliability in the 18 months to December 2005. A number were issued to maintain security and so are not considered further in this review of VoLL.

Reserve Trader

The reliability safety net provisions of the Rules (clause 3.12.1) allow NEMMCO to contract for reserves to ensure that supply reliability meets the standard established by the Panel.

As noted in Section 4.2, NEMMCO ran a reserve trader process in 2004 to contract for 84MW of reserves following a projected shortfall of 195 MW of reserves for extreme conditions – although, as matters turned out, the extreme conditions did not eventuate and so the reserves were not dispatched. The cost of these services was $1.035M.

In mid 2005, the medium term reserve forecast[7] for Victoria and South Australia indicated that reserve levels in these regions would fall materially below the minimum reserve level of 530 MW during January, February and March of 2006. In consultation with the jurisdictions, NEMMCO contracted for a total of 375MW of reserves. Those contracts were finalised in January 2006. The final cost will depend on the extent to which the reserves are used, but NEMMCO has estimated the cost at between $4.4M and $4.9M.

Under clause 3.9.4 (c1) (1) of the Rules, VoLL is intended to be set by the Reliability Panel at a level which allows the reliability standard to be met without the use of the reserve trader mechanism. NEMMCO's contracting for reserves in 2004 and 2005 could therefore be an indication that the level of VoLL is insufficient to allow this to occur. However, the Panel notes that the shortfall was associated with delays in the expected commissioning of Basslink and the Laverton North power station and could therefore be regarded as having already responded to the existing investment signals in the market.

The Panel will examine the use of the reserve trader and related matters in its comprehensive review, including the boundary between the reliability and security standards, the interface with network reliability measures, the impact of wind generation on reliability measures and the effectiveness of the reliability safety net.

5. Initial consultation

The Panel requested initial submissions to the 2006 review on 12 December 2004.

Only one submission was received. CS Energy submitted that:

- the level set for VoLL and the CPT are important aspects of the NEM and any changes will require a comprehensive review of the risks and merits. [CS Energy] therefore supports the Reliability Panel's recommendation of incorporating the review of VoLL into a comprehensive consolidated review in 2006/07; and

7 The medium term reserve forecast is based on the results of the Medium Term Projected Assessment of System Adequacy (MT PASA) process, which is produced by NEMMCO and updated at least weekly.

- the consolidated review will be the best forum to examine VoLL and the CPT and that any submissions received as part of this (2006) review process should be held over and included in the 2007 review.

6. Conclusion

As noted at the outset of this document, the Panel is strongly of the view that the comprehensive reliability review is timely at this stage of the operation of the NEM, and will afford the opportunity to review the interrelated pricing and intervention safety nets that underpin the mechanism for reliability in the NEM, including appropriate medium-term levels of VoLL, the market price floor and CPT.

The Panel notes that, on the basis of the information set out above, since the Panel's VoLL 2004 review:

- market prices have responded to situations of low reserve;
- neither the existing maximum (VoLL), nor minimum, prices were reached during spot market trading intervals (although they were reached during a number of dispatch intervals);
- the CPT was not reached; and
- the intervention thresholds and mechanisms have been tested and, in the sole case where the full cycle of summer demand has been completed, proven in the circumstances to have delivered sufficient reserve.

The Panel received one response to its call for submissions on the conduct of this review of VoLL in 2006 that called for no change pending the comprehensive reliability review.

Accordingly, the Panel's draft determination is that it does not propose to recommend changes to the current levels of VoLL, market floor price and CPT under clauses 3.9.4 and 3.9.6 of the Rules, in this current 2006 review.

Appendix

As from 1 January 2006, the Panel comprises the following Members:

Ian Woodward	Chairman (AEMC Commissioner)
Jeff Dimery	General Manager Victoria, AGL (market customers)
Mark Grenning	General Manager Energy, Comalco Aluminium
Les Hosking	Managing Director and CEO, NEMMCO
Gordon Jardine	Chief Executive, Powerlink (TNSPs)
George Maltabarow	Managing Director, EnergyAustralia (DNSPs)
Stephen Orr	Commercial Director, International Power Australia (generators)
Jim Wellsmore	Senior Policy Officer, Public Interest Advocacy Centre (end use customers)
Geoff Willis	CEO, HydroTasmania.