Government of South Australia
Department for Transport,
Energy and Infrastructure

In reply please quote *ED05/0023 1768505*

Mr I Woodward
Chairman, Reliability Panel
Australian Energy Market Commission
PO Box H166
AUSTRALIA SQUARE NSW 1215

ENERGY DIVISION
Level 19,
30 Wakefield Street
Adelaide SA 5000

Po Box 1
Walkerville SA 5081

Telephone: 08 8226 5500
Facsimile: 08 8226 5523

ABN 92 366 288 135

Dear Mr Woodward

Comprehensive Reliability Review

Following discussions between NEMMCO officials, the Energy Division and the Electricity Supply Industry Planning Council (ESIPC) on 20 December 2006, it was agreed to forward to you the attached correspondence regarding minimum reserve levels, dated 25 October 2006 and 11 December 2006, for your information.

The issues raised in the attached correspondence are directly relevant to the Comprehensive Reliability Review currently being conducted and you should note that this letter complements the South Australian Government's submission (dated 2 September 2006) to that Review.

All three parties agree that it is important that a holistic assessment of reliability is undertaken, and that greater clarity is provided to guide the interpretation and operational implementation of unserved energy (USE).

Difficulties inherent in operationalising the current standard were highlighted in NEMMCO's recent decision on regional reserve margin. Our discussions with NEMMCO have, amongst other issues, focused on the significant change in approach adopted by NEMMCO in determining reserve margins to achieve the 0.002 percent of USE, by simultaneously targeting this level of USE in each region across the National Electricity Market (NEM). This change to the operational reserve levels was implemented on the basis of NEMMCO's legal advice in September 2006, and prior to completion of the Comprehensive Reliability Review.

Based on preliminary information provided by NEMMCO, their new methodology towards reserve margins would require that the combined SA-Victoria region have an installed generation capacity that is 370 MW greater than maximum forecast peak demand, with zero reserve capacity located in Victoria.

Achieving this capacity is potentially very expensive, and it is unlikely under the current market settings that South Australia could achieve this level of reserve installed in the State, as the level of the Value of Lost Load is the primary driver of investment in generation capacity. Accordingly, Reserve Trader would be activated and South Australian customers would pay for the total amount of any reserve purchased, should any be available.

Under the previous arrangements, the costs of purchasing reserves would have been equitably shared between South Australia and Victoria.

Recognising some of these difficulties, NEMMCO pragmatically established a region specific Minimum Reserve Level (MRL) in 2006/07, of 50 MW below forecast demand in South Australia and the combined SA-Victoria region requirement was 615 MW.

Energy Division is extremely concerned with the potential for operational procedures to be adopted that are inconsistent with the basic market settings, such as the South Australian MRL, as this would lead to neither the lowest cost generation, nor the most efficient cost recovery for a shared service across the NEM. In fact, this may lead to an unsatisfactory outcome of 'gaming' by some participants in the event of activation of Reserve Trader.

Accordingly, these matters are drawn to your attention as they should be of concern to the Reliability Panel in its assessment of the operational implementation of the reliability standard as part of the Comprehensive Reliability Review. If you would like to discuss this further, please contact Mr. Vince Duffy, Director, Markets & Sustainability on (08) 8204 1724.

Yours sincerely,

Garry Goddard
EXECUTIVE DIRECTOR
ENERGY DIVISION

24 January 2007

COPY

NEMMCO
National Electricity Market
Management Company Ltd

ABN 94 072 010 327

Melbourne Office

11 December 2006

Mr Garry Goddard
Executive Director Energy Division
Department of Transport, Energy and Infrastructure
PO Box 1
WALKERVILLE SA 5081

Your ref ED05/0023 1605387

Dear Garry

RE: MINIMUM RESERVE LEVELS

NEMMCO has considered the issues raised in your letter dated 25 October 2006, regarding the new minimum reserve levels for South Australia. We agree that many of the issues raised are directly relevant to the comprehensive reliability review being conducted by the reliability panel and support referring those matters to the reliability panel for consideration.

There are however a few statements made which relate directly to the calculations NEMMCO used to determine revised minimum reserve levels for South Australia and the other mainland regions of the NEM. We are concerned that these statements may not accurately represent the calculations performed. This letter summarises those areas where your comments did not appear to represent the current approach.

NEMMCO would appreciate the opportunity to meet with you to elaborate on these issues.

Previous verses current approach to determining minimum reserve levels

Your letter states, "Until recently, NEMMCO had adopted reserve margins that would achieve no more than 0.002 percent of unserved energy (USE) across the NEM as a whole."

This statement appears to misrepresent the approach followed by NEMMCO in previously minimum reserve level assessments. Previous assessments have focussed on ensuring that the proposed minimum reserve levels would deliver reliability which met or exceeded the reliability standard in all regions. Hence the minimum reserve levels were chosen to at least satisfy the reliability standard in each region not across the NEM as a whole. Adopting the 0.002% standard for the NEM as a whole would not be consistent with the current drafting of the reliability standard.

It is true that the new minimum reserve levels were calculated using a modified approach to the previous assessment. One of the key differences has been to determine minimum reserve levels that target achieving a reliability level equal to the standard in each region.

Mansfield Office
PO Box 2516
Mansfield QLD 4122
Tel: (07) 3347 3100
Fax: (07) 3347 3200

Melbourne Office
Level 12
15 William Street
Melbourne VIC 3000
Tel: (03) 9648 8777
Fax. (03) 9648 8778

Norwest Office
PO Box 7326
Baulkham Hills BC NSW 2153
Tel: (02) 8884 5000
Fax: (02) 8884 5500

Sydney Office
Level 22, Norwich House
6-10 O'Connell Street
Sydney NSW 2000
Tel: (02) 9239 9199
Fax: (02) 9233 1965

Previously the aim was to confirm that the selected minimum reserve level would deliver reliability levels meeting or exceeding the standard. Since our previous assessment we have developed more sophisticated analysis procedures which allow determination of minimum reserve levels that target just meeting the reliability standard in each region.

ESIPC concerns regarding number of simulations and peaking generator failure rate

ESIPC raised similar concerns regarding the number of simulations necessary to ensure a converged result as part of the previous minimum reserve level assessment. We have therefore been aware of this concern and included steps in the calculation process to test for convergence. Based on these tests we are satisfied that an adequate level of convergence has been obtained.

The concerns regarding peaking plant failure rates were originally raised after the briefing NEMMCO provided to the South Australian jurisdiction and ESIPC in May. NEMMCO, ROAM, ESIPC and the FODWG (The NEMMCO and National Generators Forum Forced Outage Data Working Group) developed an agreed approach to re-calculate Forced Outage Rate (FOR) data to address this concern.

The results of the recalculation were shared with ESIPC. ESIPC expressed a view, through officer level discussion, that the recalculated results exceeded their expectation. NEMMCO and ESIPC have had a number of detailed discussions where NEMMCO has stepped through the details of the re-calculation process. At no stage was ESIPC able to provide firm evidence to support their claim that the re-calculated numbers were too high. We stand ready to consider any firm evidence provided by ESIPC on this matter.

Discounting interconnector contribution

Your letter states, "NEMMCO has elected to discount the contribution of the Heywood and Murraylink interconnectors, while the calculation for NSW and the combined SA-Victoria region relies on the contribution of their interconnectors to adjacent regions."

The calculations to determine minimum reserve levels involve two steps:

- Firstly the minimum amount of generation required to deliver USE just meeting the reliability standard in all regions simultaneously is calculated; then
- Secondly the calculated minimum generation level is translated to a minimum reserve level suitable for implementation in MT PASA.

The first step treats all interconnectors consistently with their capability directly matching that used in the NEMMCO dispatch systems[1]. Hence there is no discounting of Heywood or Murraylink capability and no inconsistent treatment.

The second step translates the minimum installed generation to minimum reserve levels by comparing the generation with a demand condition in which all regions are simultaneously at their 10% POE peak demand. This same demand condition is used to calculate available reserve in MT PASA.

[1] Use system normal constraint derived from pre-dispatch directly in the market simulations.

The translation requires assumptions to be made regarding interconnector flows. Again we use consistent assumptions in the translation process and in calculating reserve in MT PASA:

- 0MW import into SA and QLD;
- flows between Snowy, NSW and Victoria sufficient to fully allocate generation in Snowy to NSW and Victoria; and
- flows between Tasmania and Victoria sufficient to fully allocate spare generation in Tasmania to Victoria.

Different assumed imports could have been assigned for SA and QLD however this simply would have resulted in higher minimum reserve levels with the minimum reserve level determined by:

Minimum reserve level = minimum installed generation + net import - 10% POE demand.

I note that your letter appears not to have been sent to the reliability panel yet. I would be happy to forward the letter to the panel but anticipate that you may wish to consider the points raised in this letter first. Please contact either Charlie Macaulay or myself if you wish to discuss the matter raised in this letter.

Yours sincerely

Leslie V Hosking
Managing Director and
Chief Executive Officer

Government of South Australia
Department for Transport,
Energy and Infrastructure

In reply please quote *ED05/0023 1605387*

Mr Leslie V Hosking
Managing Director and
Chief Executive Officer
Level 12, 15 William Street
MELBOURNE VIC 3000

ENERGY DIVISION
Level 19,
33 Wakefield Street,
Adelaide SA 5000

PO Box 1
Walkerville SA 5081

Telephone: 08 8226 5500
Facsimile: 08 8226 5512

ABN 92 366 288 135

Dear Mr Hosking

Minimum Reserve Levels

Thank you for your letter, dated 6 September 2006, regarding changes the NEMMCO Board has approved to the new minimum reserves levels in the National Electricity Market (NEM). I note that this issue is fundamental to the current Comprehensive Reliability Review being undertaken by the Australian Energy Market Commission's (AEMC) Reliability Panel and that unilateral action by NEMMCO ahead of the AEMC process concluding appears to be somewhat precipitive and presumptive.

Following discussions with the South Australian Minister for Energy and the Electricity Supply Industry Planning Council (ESIPC), I would like to raise a number of issues with regard NEMMCO's setting of reserve margins in South Australia.

It would appear that NEMMCO has adopted a significant change in policy with regard to setting reserve margins in the NEM. Until recently, NEMMCO had adopted reserve margins that would achieve no more than 0.002 percent of unserved energy use level (USE) across the NEM as a whole. NEMMCO has now issued new reserve margins for each jurisdiction that seeks to target a level of 0.002 percent of USE in each region in the NEM.

The targeting of 0.002 percent USE in each region biases the location of reserves in a way which is not the necessarily the optimum for which the market would incentivise investment. The allocation to various regions is thereby fixed, as are the obligations to pay for costs of any Reserve Trading. It is highly likely that this is neither the lowest cost way in which to purchase the service nor efficient cost recovery for a shared service. This would also seem to be inconsistent with the operation of the NEM.

Energy Division and ESIPC officers are also concerned that the modelling undertaken by NEMMCO to achieve the new Minimum Reserve Levels has been based on too few simulations to provide a statistically dependable result, particularly as the analysis is now targeting 0.002 percent of USE in each region. In addition, ESIPC

continues to maintain that a forced outage rate for South Australian peaking generators of around 10 percent is more representative than the 16.7 percent used by NEMMCO.

I understand that in establishing the region specific Minimum Reserve Level in 2006/07, of 50MW below forecast maximum demand in South Australia, NEMMCO has elected to discount the contribution of the Heywood and Murraylink interconnectors, while the calculation for the combined NSW and the combined SA-Victoria region relies on the contribution of their interconnectors to adjacent regions.

Put simply, there appears to be a number of inconsistencies in the approach which leaves me with little confidence in the outcome representing either an objective application of the 0.002 percent of USE or an optimal distribution of reserve capacity in any region in the NEM.

While the revised Minimum Reserve Level for South Australia results in a small reserve shortfall for the 2006/07 summer of around 20 MW, current forecasts indicate a reserve shortfall of approximately 90MW for the 2007/08 summer.

This shortfall is likely to result in the activation of the Reserve Trader, with the capacity having to be sourced from entirely within South Australia, and customers in South Australia having to pay the full costs of Reserve Trader. This compares with the previous Reserve Trader arrangements where Victoria and South Australia shared the costs on the basis of demand, so that South Australian customers only paid around 25 percent of the costs.

In any event, previous experience with Reserve Trader suggests that it will be highly unlikely that NEMMCO will be able to economically source this level of reserve from within South Australia at short notice. It is important to note that the new Minimum Reserve Level for South Australia has the potential, given that it is a small regional market, to incentivise some participants to 'game' the Reserve Trader arrangements.

Accordingly, our suggestion is that these matters should be given a more thorough treatment and be considered as part of the Comprehensive Reliability Review in order to implement an integrated approach which reflects the national market objectives.

Yours sincerely,

Garry Goddard
EXECUTIVE DIRECTOR
ENERGY DIVISION

25 October 2006

cc David Swift, CEO, ESIPC