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12 October 2011

Mr Neville Henderson
Chairman
Reliability Panel
Australian Energy Market Commission
Level 5, 201 Elizabeth Street
Sydney NSW 2000

Neville,
Dear Mr Henderson,

Reliability Panel determination of system restart standard

I refer to your letter dated 27 September 2011 requesting AEMO's advice on the determination of a system restart standard. Responses to the questions put forward by the Reliability Panel are as follows:

1. *AEMO's views on, and details of, the application of the interim system restart standard to date including how it meets the SRAS objectives as defined under clause 3.11.4A(a) of the Rules.*

The interim system restart standard (developed 03/11/2006 and ratified by the Reliability Panel) was successfully applied by AEMO in their system restart ancillary services (SRAS) procurement process conducted in 2007/2008. The interim system restart standard in conjunction with the SRAS quantity guidelines and the boundaries of the electrical sub-networks was used by AEMO in deciding whether there was sufficient system restart ancillary service tenders to meet the interim system restart standard.

The interim system restart standard is available from AEMO's website at <http://www.aemo.com.au/electricityops/160-0279.html>.

In meeting the SRAS objectives, AEMO considered the following elements:

- Equality of application of the interim system restart standard across the NEM.
- Restoration of supply to a specified level, including timeframes for delivery of system restart ancillary services and power system restoration.
- Appropriate targets for the reliability of system restart ancillary services.
- The establishment of boundaries of electrical sub-networks.
- Diversity and strategic locations of system restart ancillary services.

AEMO has the view that an appropriate form for a system restart standard is one based on outcomes rather than inputs, and the interim system restart standard was formulated based on this principle. The outputs are measured in physical rather than economic terms due to the difficulty in linking individual actions to probable energy savings.

Further information in relation to demonstrating compliance with clause 3.11.4A(a) of the National Electricity Rules (Rule) is available in section 4 of the interim system restart standard.

2. AEMO's views of market participants put to AEMO in consultation, or other processes, relevant to the setting or operation of the interim system restart standard.

During informal discussions with stakeholders including SRAS providers, other generators, and the System Restart Working Group (SRWG), they indicated general acceptance of the interim system restart standard as appropriate and expressed neutral views – neither for nor against. Several generators commented that the indicative timeframes for restarting large thermal generating units were too optimistic. When AEMO explained that the purpose of the interim system restart standard is to guide the acquisition of system restart ancillary services the stakeholders thought that in this context the timeframes were reasonable. If the timeframes relating to the restoration of supply capability were extended, a potential outcome may be that fewer system restart ancillary service tenders need to be selected in the procurement process to meet the 'relaxed' standard and actually extending the restoration times achieved following a major supply disruption. However, some jurisdictions have indicated that the indicative timeframes are too long due to potentially faster response times of generating plant in their respective regions.

3. Does AEMO have any qualitative analysis available to support whether the interim system restart standard represents an efficient level of SRAS?

In an ideal world, the efficient volume and price of system restart services to be procured would be established in a competitive market via an assessment of the dollar value of possible combinations of available restart services.

At present the annual costs of SRAS is of the order of \$36.7 million for the whole of the NEM. This cost represents about 0.5% of the annual turnover of the NEM wholesale market.

Viewing this from a different perspective, if we assume that cost of unserved energy to be of the order of \$50,000 per MWhr, then this annual cost would be justified if the presence of these services reduced the level of unserved energy by about 15,000 MWhrs for a 1 in 20 year event (by, say, achieving an overall reduction in restoration time by 1 hour for a total interrupted load of 15 GW).

A basic principle of the NEM is that it be operated in an efficient manner – reasonable measures should be taken to reduce risks, but there is no expectation that unlimited expenditure be incurred to totally eliminate risk. While we cannot directly quantify the probability of the risks being mitigated by the SRAS service, we consider that the level and cost of the services is not unreasonable viewed in the light of the severity of the risk.

Several assumptions were made in developing the interim system restart standard. These assumptions relate to the extent of disruption to the power system and the condition of the power system following shutdown. Since it would be uneconomical to mitigate against all events, AEMO believes that this assumed extent of infrastructure damage results in the

procurement of SRAS services with the appropriate level of conservatism. However it may be timely to review and confirm these assumptions.

In the interim standard two scenarios are considered:

1. Total shutdown of the power system in all electrical sub-networks without any infrastructure damage
2. As per 1 above and in addition, damage to either one SRAS plant or a significant transmission facility within the particular electrical sub-network being assessed.

Other scenarios may be considered, including the potential for islands to be established.

Further information relating to AEMO's view of the efficiency of the process is available from AEMO's report of the system restart ancillary service review conducted by NEMMCO in 2004. Please advise if you require a copy of this report.

4. *AEMO's consideration of any aspects of the interim system restart standard that should be updated or amended in the system restart standard*

The content of the interim system restart standard includes commentary and other material intended to demonstrate compliance with the NER and to inform any subsequent reviews. There may be scope to rationalise this material.

5. *AEMO's consideration of any new areas that should be added to the system restart standard that was excluded from the interim system restart standard*

One area that might be considered is the possibility of different standards for particular sub-networks where this might be considered appropriate by stakeholders and would meet the requirements of NER Clause 8.8.3(aa)(2). However this might then require changes to the methodology for the recovery of the costs of provision of SRAS.

6. *AEMO's advice on any other relevant matters including transitional and implementation issues in moving from the interim system restart standard to the final standard.*

There are dependencies between the system restart standard and the system restart documentation, in particular the boundaries of electrical sub-networks and the SRAS quantity guidelines. Following the final determination of the system restart standard, AEMO would review the boundaries of electrical sub-networks and the SRAS quantity guidelines and amend as required, by consultation. Further, the required reliabilities of system restart ancillary services are specified in the interim restart standard and reflected in the SRAS agreements.

AEMO is currently conducting consultations to amend system restart ancillary service documentation prior to commencing a process to procure system restart ancillary services. AEMO's current procurement process applies methodologies developed on the basis of the interim system restart standard. AEMO aims to execute SRAS agreements by the end of June 2012. AEMO notes the Reliability Panel's timetable to publish a final determination in May 2012. To avoid expectations by stakeholders that the final system restart standard

would apply to AEMO's current procurement process, it is AEMO's preference that the effective date of the final system restart standard be after the completion of AEMO's SRAS procurement process and be effective from say August 2012. Should the development of the new standard results in an increased requirement for SRAS procurement, then a possibility exists for consultations to be held to revise affected SRAS documents followed by a further round of tendering to acquire any shortfalls. In this case, it is anticipated that suitable transitional arrangements be provided in the standard.

AEMO's approach has been to develop an outcome based interim standard that is designed to enable the assessment of prospectively procured SRAS. There should be no expectation that this procurement orientated interim standard would necessarily be useful in assessing the performance of contracted services in restoring the system after a *system shutdown*. The objective of the interim standard is to provide a framework for modelling and assessment of restart service contracting options. In order to contract the 'right' amount of *restart services*, the standard necessarily makes assumptions about the condition of the system following shutdown for the purposes of modelling – there is only a limited likelihood that system conditions at the time of the shutdown event would match those exact circumstances.

Each party in the restart process has responsibilities for which there are held accountable and take measures to ensure that they can fulfil these responsibilities through annual testing, training and simulation exercises. However, even if each individual party adequately discharges its responsibilities during the event, the time to restore load may be longer than expected due to the nature of the particular event.

AEMO thus believes that it would be impractical for the standard to be used to set a time frame within which the power system must be restored.

AEMO's contact person is Chris Stewart, telephone 03 9648 8719, chris.stewart@aemo.com.au.

Yours sincerely



Matt Zema
Managing Director and Chief Executive Officer