Our Ref: M2006/158
Your Ref:
Contact Officer: Mark Wilson
Contact Phone: 08 8213-3419

28 June 2006

Dr John Tamblyn
Chairman
Australian Energy Market Commission
PO Box H166
Australia Square NSW 1215

Dear Dr Tamblyn,

AEMC Review of Technical Standards for Wind Generation

Thank you for the opportunity to make a submission on this proposal.

As the body responsible for enforcement of the National Electricity Rules the AER has a number of concerns with enforcement issues that may arise if this proposal is adopted in its current form. Our concerns are detailed in the attached submission.

In view of those concerns we suggest that the implementation of aspects of this proposal which have impact beyond wind energy should be deferred pending the resolution of the known deficiencies in the current performance standards framework.

We remain committed to working with the AEMC and the industry to resolve those issues and arrive at a robust performance standards framework.

Yours sincerely

Michelle Groves
Chief Executive

Wind Energy and Alternative Technology Rule Change Proposal

Overview

This submission comments on the National Energy Market Management Company's (NEMMCO's) proposed rule change: "technical standards for wind energy".

NEMMCO's proposals address technical standard requirements for wind energy. However, some of the changes have broader implications and will have an impact on other generators. The Australian Energy Regulator (AER) is concerned that the broader issues addressed in this proposal may pre-empt outcomes of other AEMC reviews relating to technical standards including: the AEMC's review of enforcement and compliance; the resolution of performance standards for incumbent generators; and the AEMC's proposed review of technical standards due for completion in 2008.

Where possible, the AER recommends that the priority issues specifically related to wind generation be addressed separately. The AER suggests capturing these requirements in separate obligations for wind plant. The remaining issues could then be addressed in the context of the AEMC's other reviews.

The AER has discussed the rule change proposals with NEMMCO. NEMMCO addressed a number of the drafting and enforcement issues identified by the AER in its 16 June submission to the AEMC. However, there are still some outstanding issues.

The AER's primary concern is with the proposed new definition of the term *"continuous uninterrupted operation."* While the AER supports NEMMCO's attempt to clarify the requirements of generators with respect to the ride-through obligations of schedule 5.2.5.3, the proposed definition will make enforcement difficult.

Continuous uninterrupted operation is a key requirement for system security. Its intention is to ensure that generators ride through disturbances such as sudden frequency and voltage changes in a manner to avoid cascading failures within the power system. The consequences of generators failing to meet *continuous uninterrupted operation* requirements are substantial as this can potentially cause cascading failures and widespread blackouts. Recent experience in South Australia, New South Wales, the US and Italy highlights the potential implications to system security of inadequate safeguards in this area.

The AER has sought legal advice on the NEMMCO proposed definition of *continuous uninterrupted operation.* The advice suggests that uncertainty exists as to the correct interpretation of the proposed definition which will in turn result in enforcement outcomes being uncertain. The advice also suggests that successful enforcement actions undertaken in the past by NECA may not have been successful had the proposed definition been in place at the time.

The AER recommends retaining the status quo for technologies other than wind generation, until the review of technical standards is completed. The AER, however, is developing an alternative definition of *"continuous uninterrupted operation"* to submit to the AEMC as part of the current rule proposal if required..

The AER has comments on four other issues:

1. Recently the AEMC, AER, NEMMCO and industry agreed to a process to address known inadequacies in the registration of performance standards for existing plant. However, NEMMCO's proposals also include a mechanism to revisit registered performance standards (clause 5.10). This overlaps with the process recently agreed to. The AER recommends amending the clause to give priority to the process already underway.

2. The proposals introduce new frequency operating standards without reference to the Reliability Panel. Currently frequency standards are set by the Reliability Panel. This seems an appropriate model as the Reliability Panel has the necessary expertise as well as representation from all parts of the industry. The AER suggests retaining the status quo instead of bypassing the Reliability Panel in the way proposed.
3. NEMMCO has included a requirement for generators to supply data to NEMMCO and the TNSPs modelling their plants' technical capability. This data is used by NEMMCO and the TNSPs to calculate transmission network limits. The AER supports NEMMCO's proposals, but considers that they should be strengthened by placing clear obligations on the generators to provide accurate data within an appropriate timeframe.

4. Schedule 5.2.5.1(d) allows a network service provider (NSP) to direct a generator to rectify a deficiency in reactive power support. The schedule also allows the NSP to determine the manner in which the generator rectifies the identified deficiency by selecting a solution from a number of listed options. The AER supports giving NSPs the capacity to direct generators to rectify deficiencies, but recommends redrafting the provision to allow generators to select the lowest cost option listed in the schedule to address this deficiency.

This rest of this submission discusses each of these issues in more detail.

Specific Issues:

1. *Continuous uninterrupted operation*

The requirement for *continuous uninterrupted operation* addresses the risk that generators will inappropriately trip (or otherwise vary their power output) as a result of power system disturbances such as sudden voltage or frequency changes arising from sudden changes in load or generation, or transmission failures (due for example to a short circuit event). The risk is cascading failures leading to widespread blackouts.

Until now the term *continuous uninterrupted operation* has existed in the Rules without being defined in the Rules.

NEMMCO proposes to introduce a definition of c*ontinuous uninterrupted operation* into the Rules. The definition is as follows:

> In respect of a *generating unit* operating during a *power system* disturbance, not disconnecting from the *power system* and, after clearance of any associated electrical fault, delivering *active power* and *reactive power* in accordance with its *performance*

standards, with all essential auxiliary and reactive *plant* remaining in service, so as to not exacerbate or prolong the disturbance for other *connected plant.*

The National Electricity Tribunal considered the interpretation of the term c*ontinuous uninterrupted operation* in its decision No. 1 of 2005. The AER notes that the proposed definition differs from the interpretation adopted by the Tribunal in that decision.

The AER has sought legal advice to better understand the interpretation and application of the definition. The advice suggests that there are a number of problems with the definition:

- The correct interpretation of the definition is uncertain;
- The difficulty in interpreting the definition will make it difficult for the AER to determine whether or not there has been a breach of the rules;
- Successful enforcement actions undertaken in the past by NECA might not be successful under the new definition;
- The difficulty in interpreting the definition creates uncertainty for industry participants about likely enforcement action or outcomes; and
- The definition may make it difficult for the AER to exercise its enforcement powers against market participants that have failed to comply with the necessary standards.

There are four main reasons for the AER's concerns.

First, the definition refers to 'delivering *active power* and *reactive power* in accordance with its *performance standards'*. However, the performance standards registered by generators do not specify the manner in which the generator is required to deliver active and reactive power. Whilst there is a proposed performance standard for "active power control" and a separate requirement for "reactive power capability" neither of these standards relate directly to the obligation under this definition.

Second, establishing a requirement "in accordance with *performance standards*" is likely to be circular since performance standards typically include a reference to the term c*ontinuous uninterrupted operation.*

Third, the proposal seems to pre-empt the broader debate about 'strict liability'. The emphasis in the proposal is on compliance with performance standards rather than on failure to ride through disturbances. This potentially has the effect of diminishing liability for failing to ride through in the way currently required by the Rules.

The AER notes that the AEMC has reserved its position on 'strict liability' and committed to reviewing it as part of its review of technical standards. The AER supports the AEMC's approach. This is a significant issue that is not specific to wind generation so should be addressed as part of the broader review. Given most generators do not have registered performance standards at the moment, as a minimum the proposed definition should not take effect until the performance standards are in place (as per the agreed process).

The AER's fourth concern is uncertainty surrounding the term 'any associated electrical fault' which is not defined, but is potentially a key factor in determining what c*ontinuous*

uninterrupted operation means. Specifically, the AER notes that there could be a large number of 'electrical faults' arising from a credible contingency event. The AER considers that in real life circumstances, it may not be clear at what point the generator is required to resume 'delivering *active power* and *reactive power* in accordance with its *performance standards'*.

The AER recommends retaining the status quo until the review of technical standards is completed. The AER will also provide a further submission with an alternative definition of *continuous uninterrupted operation* in the event that the AEMC wishes to consider the issue as part of this review.

2. Performance standards – transitional arrangements (clause 5.10)

The AER notes that a priority issue currently being jointly addressed by the AEMC, AER, NEMMCO and industry is the known inadequacies in the registration of performance standards for existing plant. All parties have agreed that rule changes need to be developed as a matter of urgency to provide a comprehensive basis for rectifying defects in the registration of performance standards.

NEMMCO's proposal includes a mechanism to revisit registered performance standards. Given the overlap in the two work-streams, it is important for the AEMC to ensure that there is a single resolution of this issue based on the priority process already agreed to. The AER recommends that these provisions be amended to accord with the outcome of that priority process.

3. Frequency disturbance standards (schedule 5.2.5.3A)

Currently frequency operating standards are determined by the Reliability Panel. These standards determine the frequency tolerance bands within which the power system must be operated for the safe and secure operation of the power system. The standards are subject to periodic review and revision by the Reliability Panel in accordance with chapter 8 of the Rules. This process works well and NEMMCO have provided no justification for altering it.

NEMMCO proposes a series of parameters for frequency ride-through performance. The proposals are largely based on the Reliability Panel's current determination, but include new requirements. NEMMCO has added a rate of change of frequency parameter. The AER is unaware of any justified technical basis for this addition and notes that the current standards approved by the Reliability Panel do not contemplate such a parameter.

The AER has also raised concerns about enforceability of the frequency operating characteristics with NEMMCO. Following discussions NEMMCO proposed amending the clause (as proposed in its 16 June submission). The changes address some but not all of the AER's concerns.

The AER considers that it is more appropriate for the Reliability Panel to determine frequency operating standards as the Reliability Panel has the appropriate expertise for this task and includes representation across the industry.

Further, the AER does not support codifying the frequency characteristics in the way proposed. Codification will make any subsequent variations determined by the Reliability Panel more difficult to implement with no apparent market benefit.

The AER recommends that the current provision expressed in schedule 5.2.5.3 should remain unaltered.

4. Generator modelling data provision (clause 5.7.3(e))

The AER supports NEMMCO's contention that having accurate data modelling generators' technical characteristics is important for maintaining power system security. Disparities between the known performance capabilities of plant and the registered performance data may prevent NEMMCO from developing accurate models of the power system.

Transmission network limits are calculated using computer analytical models and the data supplied by generators. The calculated network limits are used to determine the constraint equations used in NEMMCO's dispatch model, NEMDE. Inadequate data means that secure operation of the power system can only be achieved with higher safety margins to account for uncertainty in modelling. This can have a flow on effect on interconnector limits and efficient operation of the NEM.

AER staff have been advised that NEMMCO's objective is to clarify the connection applicant's/generator's obligation to provide data. In particular NEMMCO notes problems it has had obtaining data for wind farms. NEMMCO also notes issues with the availability of adequate modelling data for prospective generators with concurrent projects.

The AER supports improvements in this area, but is concerned at the lack of a positive obligation on generators to supply accurate data within an appropriate timeframe. The proposed rule changes provide for NEMMCO to be able to direct a participant if it believes the model data is inaccurate. However, it is not clear that the participant has an obligation to provide correct data under a direction. As the data in question may be material to competing proposals at the same location this provision may be the subject of gaming behaviour motivated by commercial factors.

The AER suggests that options for addressing this include:

- putting a positive obligation on generators to supply accurate models and to rectify inadequate models in a reasonable timeframe; and/or
- linking the verification of model parameters to compliance testing programs (because of the relationship between model parameters and plant performance).

One possible implementation of the positive obligation approach would be to include additional provisions in clause 5.7.3 viz:

(e1) If *NEMMCO* believes analytical model data supplied by any person in accordance with clauses 5.7.3(e1), 5.7.6(g) or s5.2.4 is incomplete or inaccurate *NEMMCO* may request that a person who has submitted analytical model data provides additional supporting information including, without limitation, an up-to-date version of the analytical model data.

(e2) A person who receives a request from *NEMMCO* under clause 5.7.3(e1) must comply with the request within 5 *business days* of the request or such further time as agreed by *NEMMCO*.

5. Reactive Power support (schedule 5.2.5.1(d))

Proposed schedule 5.2.5.1(d) allows network service providers (NSPs) to direct generators to rectify an identified deficiency in reactive power support. The proposal also permits NSPs to direct a generator to rectify a deficiency in a manner determined by the NSPs from a number of options listed in the schedule.

The AER supports giving NSPs the power to direct generators to rectify deficiencies, but is concerned that NSPs may not have regard to the cost of the solution selected. In general generators are best placed to determine which option for addressing an identified deficiency is most cost effective. Accordingly the AER recommends amending NEMMCO's proposal to provide that the generator can select the lowest cost option from the options listed in the proposed schedule.

Implementation of this could be achieved by including an additional provision in clause S5.2.5.1 similar to the following:

(d1) In applying clause S5.2.5.1(d) a *network service provider* must permit the *generator* a reasonable opportunity to select the lowest-cost option that satisifies the requirements applicable under this clause S5.2.5.1.