National Electricity Market Management Company Limited
ABN 94 072 010 327

Melbourne

16 June 2006

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

Dear Dr Tamblyn,

Submission on National Electricity Amendment (Technical Standards for Wind Generation) Rule 2006

Thank you for the opportunity to place a submission on NEMMCO's Rule request in relation to the technical standards for wind generation. Since NEMMCO submitted the initial Rule request a number of additional issues have come to our attention that should be addressed in this package of Rule changes. These issues include:

- inconsistencies between the minimum and automatic access standard for the proposed active power control technical requirement; and
- responsibility and enforceability of response to frequency disturbances.

Further details regarding the above are included in this submission.

NEMMCO would be pleased if you could have these matters considered. For further details, please do not hesitate to contact John Colquhoun on (03) 9648 8784.

Yours sincerely,

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SUBMISSION

1. Introduction

The technical standards refer generally to provisions that specify the quality and nature of electricity that is supplied by the electrical network. They are broadly covered in Chapter 5 of the Rules, and more specifically the procedures for establishing or modifying a connection, inspection and testing requirements, and schedules specifying conditions for connection of new plant.

On 10 February 2006, NEMMCO requested the AEMC (Commission) to make Rules for technical standards for certain non-scheduled generators (in particular wind generating plant) and to clarify and expand the existing framework for negotiating access of generators to the network. Since requesting this Rule change NEMMCO has become aware of a number of additional issues in relation to this Rule change that are included in this submission.

This submission contains:

- NEMMCO's comments concerning the proposed Rule; and
- possible changes to the proposed Rule.

2. Issues concerning the proposed Rules

2.1 Active power control

Clause S5.2.5.14 in the proposed Rule change describes the automatic and minimum standards for active power control. As proposed, the automatic and minimum standards are inconsistent in that the minimum standard is not subject to energy source availability.

Section 3.1 contains NEMMCO's proposed changes to S5.12.5.14.

2.2 Responsibility and enforceability of frequency disturbances

The Australian Energy Regulator (AER) has raised some concerns with NEMMCO about our proposed drafting of S5.2.5.3A regarding the responsibility of the Reliability Panel for setting the frequency operating standards and the enforceability of the clause.

The AER believes that it would be preferable if the fixed times and fixed frequency were replaced with references to the frequency operating standards so that the Reliability Panel can ensure future consistency with the frequency operating standards. NEMMCO proposes drafting to achieve this by introducing four new locally defined terms:

- *stabilisation time*, currently 2 minutes;
- *recovery time*, currently 10 minutes;
- *transient frequency limit*, initially 47.5 Hertz; and
- *transient frequency time* , initially 10 seconds.

In addition NEMMCO foresees some difficulties enforcing a rate of change of 4 Hz per second and 1 Hz per second in the automatic and minimum standards respectively, because they are instantaneous measures of frequency disturbance. Therefore NEMMCO proposes

some additional words so that a change of greater than 4 Hz per second is measured as an average over 0.25 seconds for the automatic standard and a change of greater than 1 Hz per second is measured as an average over 1 second for the minimum standards.

Section 3.2 contains NEMMCO's proposed changes to S5.2.5.3A.

2.3 Correction of errors in the proposal

NEMMCO submitted a number of attachments with its Rule change proposal in relation to the technical standards for wind generation. The attachments included:

- Attachment A – Description of the proposed Rule, Issues with the existing Rule and achievement of NEM objective;
- Attachment B – Clean version of the Rules; and
- Attachment C – Marked-up version of the Rules with explanations.

Since submitting this proposal NEMMCO has found discrepancies between the clean version in Attachment B and the marked-up version in Attachment C.

The following errors are in Attachment B:

- clause 4.9.2(b)(3) should remove the words 'at its terminals or' to be consistent with the general objective of referring to connection points rather than generator terminals;
- in clause S5.2.5.8(a)(2)[1]:
    - S5.2.5.8 (a)(2)(i)(A) change 'six seconds' to 'three seconds';
    - S5.2.5.8(a)(2)(i)(B) add 'within one second'; and
    - S5.2.5.8(a)(2)(ii) change 'if the frequency reaches' to 'within three seconds of the frequency reaching';
- S5.2.5.11(b) (1)(i) change 'and' to 'or';
- S5.2.5.11(b)(2)(ii)(A) remove the word 'frequency' in 'percentage *frequency* difference'; and
- S5.2.5.11(b)(2)(ii)(C) change *'frequency*' to '*system frequency*'.

The following errors are in Attachment C:

- 5.3.7A (e) and (f) have been cut-off in the original proposal; and

- S5.5.4 change "(e)" to "(c)".

In addition, NEMMCO proposes some minor changes to the drafting of clause 5.11.1(b) and S5.2.5.3C in order to remove ambiguity.

In section 3.3, NEMMCO has proposed alternative drafting.

3. Proposed changes to the Rule

3.1 Active power control

Change clause S5.2.5.14 (b)(2)(iii) to read:

[1] Clause S5.2.5.8 protects the power system against abnormally high frequency and allows generators to either reduce output rapidly or disconnect from the power system. The FCAS 6-second service provides sufficient response time for credible contingencies but not for abnormal conditions. NEMMCO intended that generators be able to respond within three seconds or to disconnect within 1 second.

iii. subject to energy source availability, ensuring that the change of active power output in a five minute period does not exceed a value specified in a verbal instruction issued by the *control centre*; and

3.2 Responsibility and enforceability of response to frequency disturbances

"S5.2.5.3A Generating unit response to frequency disturbances

(a) For the purposes of clause S5.2.5.3A:

(1) a reference to "*normal operating frequency band*", "*operational frequency tolerance band*" or "*extreme frequency excursion tolerance limits*" is a reference to the widest range specified for that term for any condition (including an "island" condition) in the *frequency operating standards* that apply to the *region* in which the *generating unit* is located;

(2) "*stabilisation time*" and "*recovery time*" mean the longest times allowable for *system frequency* to remain outside the *operational frequency tolerance band* and the *normal operating frequency band*, respectively, for any condition (including and "island" condition) in the *frequency operating standards* that apply to the *region* in which the *generating unit* is located; and

(3) "*transient frequency limit*" and "*transient frequency time*" mean the values of 47.5 Hz and 10 seconds, respectively, or such other values determined by the *Reliability Panel*.

(b) A*utomatic access standard*: Each *generating unit* must be capable of *continuous uninterrupted operation* for frequencies in the following ranges unless, the rate of change of *frequency* exceeds 4 Hz per second for more than 0.25 seconds:

(1) the lower bound of the *extreme frequency excursion tolerance limits* to the lower bound of the *operational frequency tolerance band* for at least the *stabilisation time*;

(2) the lower bound of the *operational frequency tolerance band* to the lower bound of the *normal operating frequency band*, for at least the *recovery time* including any time spent in the range under clause S5.2.5.3A(b)(1);

(3) the *normal operating frequency band* for an indefinite period;

(4) the upper bound of the *normal operating frequency band* to the upper bound of the *operational frequency tolerance band*, for at least the *recovery time* including any time spent in the range under clause S5.2.5.3A(b)(5); and

(5) the upper bound of the *operational frequency tolerance band* to the upper bound of the *extreme frequency excursion tolerance limits* for at least the *stabilisation time*.

(d) *Minimum access standard:* Each *generating unit* must be capable of *continuous uninterrupted operation* for frequencies in the following ranges, unless the rate of change of *frequency* exceeds 1 Hz per second for more than 1 second:

(1) the lower bound of the *extreme frequency excursion tolerance limits* to the *transient frequency limit* for at least the *transient frequency time*;

(2) the *transient frequency limit* to the lower bound of the *operational frequency tolerance band* for at least the *stabilisation time*;

(3) the lower bound of the *operational frequency tolerance band* to the lower bound of the *normal operating frequency band* for at least the *recovery time* including any time spent in the ranges under clauses S5.2.5.3A(d)(1) and (2);

(4) the *normal operating frequency band* for an indefinite period;

(5) the upper bound of the *normal operating frequency band* to the upper bound of the *operational frequency tolerance band* for at least the *recovery time* including any time spent in the ranges under clause S5.2.5.3A(d)(6); and

(6) in respect of a *generating unit* that:

(i) is part of a *generating system* comprised of *generating units* with a combined *nameplate rating* of 30 MW or more; and

(ii) does not have a *protection system* to trip the *generating unit* if the *frequency* exceeds a level agreed with *NEMMCO*,

the upper bound of the *operational frequency tolerance band* to the upper bound of the *extreme frequency excursion tolerance limits* (including islanded conditions) for at least the *transient frequency time*.

3.3 Minor errors in the proposed Rules

"5.11.1 Acceptance of Performance Standards lodged at or about the Performance Standards Commencement Date or in response to a change in the Technical Requirements

b) In respect of a submission under clause 5.10.1(a), 5.10.1(c), 5.10.1(d), 5.10.2, clauses ~~or~~ 5.11.1(b) to 5.11.1(l) shall apply to *NEMMCO* and the person making the submission except that the references to the *"performance standards commencement date"* shall be read as referring to the date that the changes to the technical requirements, being the changes referred to in clause 5.10.2, take effect in each relevant circumstance.

"S5.2.5.3C Generating unit response to disturbances following contingency events

(b) The *automatic access standard* is*:*

(1) Each *generating unit* must remain in *continuous uninterrupted operation* for the disturbance caused by ~~any~~ each of the events described below, provided that the event is not one that would disconnect the *generating unit* from the *power system* by removing *network elements* from service:

(i) a *credible contingency event;*