NEMMCO
National Electricity Market Management Company Ltd
ABN 94 072 010 327
Sydney Office

13 February 2009

Mr Ian Woodward
Chairman
AEMC Reliability Panel
Australian Energy Market Commission
PO Box A2449
SYDNEY SOUTH NSW 1235

Dear Ian

NEMMCO Submission to Australian Energy Market Commission Reliability Panel Technical Standards Review

NEMMCO appreciates the opportunity to comment on the Reliability Panel's Draft Report on the Technical Standards Review. The report presents 13 principles to be applied in revising the technical standards in the National Electricity Rules. The consultation seeks feedback on the proposed principles.

NEMMCO has considered the proposed principles and provides detailed comments on each in Attachment 1.

In April 2004 the Ministerial Council on Energy (MCE) Standing Committee of Officials (SCO) established the Wind Energy Policy Working Group (WEPWG) to consider the issues concerning the entry of renewable energy generation (particularly intermittent and non-scheduled generation such as wind) into the National Electricity Market (NEM).

The WEPWG requested NEMMCO form the Wind Energy Technical Advisory Group (WETAG) to assist with the technical and policy aspects of wind penetration in the NEM. The WETAG consisted of NEMMCO and industry participants[1]. The WETAG developed a set of guiding principles that were endorsed by the SCO and subsequently used by NEMMCO to develop the "Technical Standards for Wind Generation and Other Generator Connections" rule changes submitted to the AEMC on 10 February 2006. Appendix B of Attachment A of this submission presents the principles developed by the WETAG, for convenience they are reproduced as Attachment 2.

As the principles in Attachment 2 were developed through extensive industry-wide consultation and have been applied successfully to develop the existing generator technical standards in the National Electricity Rules, NEMMCO believes there would be value in the Panel comparing the WETAG principles with those proposed in the Panel's draft report.

[1] The member of the WETAG are identified in Attachment 3

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

Melbourne Office
PO Box 2008
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

NEMMCO

In particular NEMMCO draws the Panel's attention to WETAG Principle 7, which does not appear to have been included in the Panel's proposed principles. This Principle offers protection against the potential disruption and cost caused by unwarranted changes to generator technical standards by specifying that the technical standards should only be changed if an appropriate industry body can demonstrate an adequate technical requirement for the change.

Should you have questions regarding any of the material contained in this submission please contact Garth Gum Gee (02 8884 5353).

Yours faithfully

Brian Spalding
Chief Executive Officer

NEMMCO

Attachment 1

Comments on proposed principles

The following comments on the proposed principles have been developed on the following basis:

- the AEMC Reliability Panel's stated purpose for the principles is that they should be applied in revising the technical standards;
- NEMMCO has concentrated on the application of the principles in defining generator technical standards based on NEMMCO's experience in developing generator technical standards. We expect that similar comments would apply for developing technical standards for other classes of participation but have not confirmed this; and
- no attempt has been made to determine whether the set of proposed principles is complete.

Principle 1 – *Access standards should be aligned with the system standards wherever appropriate.*

It is not entirely clear what this Principle means. Further guidance to the person setting the technical standards would be required if the intention of this Principle is to be used to set the automatic and minimum access standards.

Within each technical standard, the Rules should set out the principles around which that technical standard is negotiated, taking into account the system standards. It may be that this Principle relates to those principles. This Principle should be expanded to provide some guidance to the person setting the standards in this respect.

Principle 2 – *Access standards should support the efficient operation of the power system.*

While there are significant benefits to the market for maximising network capability from an operational perspective, the setting of unnecessarily high standards could lead to a reduction in efficiency to the market as a whole. This Principle needs to the carefully framed to ensure that those persons setting the standards take a balanced view in terms of market efficiency – i.e. network operational efficiency versus generation development cost.

Principle 3 – *An access standard proposed by a connection applicant should be rejected when it fails to meet the level of the minimum access standard. The minimum access standard denotes the performance level where there is a high degree of certainty that any network user, employing any technology, located at any point on the national grid, would adversely impact system security, the quality of supply to other network users, or where relevant, the operation of the power system in accordance with the system standards.*

This Principle is understood to be setting the minimum access standard.

An access standard proposed by a connection applicant must be rejected when it fails to meet the level of the minimum access standard – this is a Rule requirement and does not appear to need to be stated.

It is unclear what “high degree of certainty” means – it appears the word “certainty” is being misused in this context.

The definition of the minimum access standard appears to include the worst combination of circumstances which would be unacceptable. Under these circumstances, any other combination of technology and location would exceed the minimum access standard. If this is the case, then there would be little value in having a minimum access standard. We do not believe that this is the Reliability Panel’s intention.

Principle 4 – *An access standard proposed by a connection applicant should be accepted when it meets the level of the automatic access standard. The automatic access standard denotes the performance level where there is a high degree of certainty that any network user, employing any technology, located at any point on the national grid, could connect to the power system and not adversely impact system security, the quality of supply to other network users, or where relevant, the operation of the power system in accordance with the system standards.*

This Principle is understood to be setting the automatic access standard.

Similar comments to those for Principle 3 apply regarding:

- the first sentence;
- the use of the word “certainty”; and
- the definition of automatic standard.

Given the proposed definitions of automatic and minimum access standards, all standards would need to be negotiated.

Principle 5 - *A connection applicant may negotiate an access standard below the level of the automatic access standard, but above the level of the minimum access standard, where this does not adversely impact system security, the quality of supply to other network users, or where relevant, the operation of the power system in accordance with the system standards. A negotiated access standard must reflect the technical capability of the equipment to be connected, and connection applicants must prove why their plant cannot meet an automatic access standard.*

The first sentence describes the general framework for negotiation, although it is simplified. Some Rules (S5.2.5.3, S5.2.5.4, S5.2.5.5 and S5.2.5.12, for example) include further requirements that the NSP and NEMMCO must take into account in deciding the negotiated standard. We suggest the sentence is not required, as it may appear to contradict the second sentence, which we believe to contain the intended principle.

In relation to the second sentence, it is unclear as to how this is a principle to be applied in the setting of the technical standards. It appears to be a stand-alone Rule requirement rather than a principle. Some Rules (S5.2.5.3, S5.2.5.4 and S5.2.5.13, for example) already specify similar requirements to those in this Principle, although it may not be possible or reasonable to apply this Principle in all cases. It may be beneficial if this Principle were to be reviewed to provide guidance on when or how this Principle is to be adopted in the setting of technical standards.

Also, while the general sentiment is agreed with, the word “prove” may be too strong and vague. Perhaps it would be clearer if the words “provide suitable technical evidence” were used.

Principle 6 – *A lower performance standard should be permitted at the time of connection on the condition that equipment is upgraded in the future if a higher performance standard is deemed necessary.*

This Principle would appear to require careful consideration. Who does the deeming described in the proposed Principle and on what basis?

We agree with this Principle to the extent that a lower performance standard could be accepted initially, with a requirement for upgrade at a later date, provided the NSP can establish a bona fide need at the time of the connection agreement. That need ought to be based on analytical studies, rather than a perceived or open-ended need based on an uncertainty about the future.

In relation to several Rules (S5.2.5.5 and S5.2.5.12, for example), the NSP is required to take into account *considered projects* (see Rule definition for this term) and “other relevant projects”. Each year, the NSP is also required to prepare and publish an annual planning report which has a 10 year outlook. It would be reasonable, therefore, for the NSP to be able to establish the need for a performance standard, based on analytical studies that contain those considered projects and other relevant projects within that outlook period.

Having agreed to a standard, Generators should not be subject to open-ended conditions to upgrade equipment at their own cost in the future if a higher performance standard is subsequently deemed necessary.

Also, this Principle appears to be written as a stand-alone Rule requirement rather than a principle to be adopted in the setting of standards and further guidance is required on when or how to use this Principle in the setting of particular technical standards.

Principle 7 – *The performance standards under a connection agreement are protected for the duration of those agreements, and a performance standard may only be changed when agreed to by the relevant network user, the relevant NSP, and NEMMCO.*

This appears sound as a general principle, however we question whether it can be applied to existing generators whose registered performance standards were not developed through the process described in Chapter 5 of the Rules. The Principle may also be inconsistent with the Rule change “Performance Standard Compliance of Generators” which allows registered performance standards to be adjusted where all parties (ie NEMMCO, the relevant participant and the relevant NSP) agree – but places no obligation on parties to amend the connection agreement to reflect the change in the performance standard.

We have similar concerns to those for Principle 5:

- it appears to be a stand-alone Rule requirement rather than a Principle; and

- some further guidance is required on when or how to use this principle in the setting of technical standards.

Principle 8 – *Technical standards should be technology, size and location neutral.*

This does not appear to be an appropriate Principle as there may be times where there is a benefit in being technology-specific. Similarly, there may be little benefit in making smaller generation developments meet the same technical standards as the larger generating systems in every case. In relation to this Principle, it is unclear what "location" means in this context. For example, the system standards recognise differences in voltage levels, hence there may be some similar benefits in allowing for standards to be voltage-level specific. Similarly, the Rules recognise differences between distribution and transmission systems.

While we agree that, where there is scope to do so and where the minimum standard is low (or there is no minimum standard), this approach could be adopted, this Principle does not recognise that there are benefits, at times, in allowing for technology or size. For example, setting standards in a manner that is technology-neutral can make the requirement difficult for manufacturers and developers to understand, and can lead to misinterpretation between developers, network service providers and NEMMCO. For well known technologies there are, at times, greater benefits in being technology-specific, provided that similar requirements can be developed and applied to other technologies – the current version of S5.2.5.13 adopts this approach. This provides some relative clarity for common technologies and need not result in some technologies having "less onerous access standards than others at the same connection point" (section 3.4.2, page 24 of the Draft Determination).

Principle 9 - *Technical standards should apply to NEMMCO, NSPs, Market Network Service Providers, and Generators and Customers whose equipment is registered with NEMMCO.*

It is unclear what this means. Is this intended to relate to the Draft Determination's comment that "Non-registered generators should not be required to comply with technical standards in the Rules" (section 3.5.3, page 28, of the Draft determination)?

How do technical standards apply to NEMMCO?

Principle 10 – *Where market arrangements can replace a technical standard, then this should be considered.*

This Principle is open-ended - for example, what does "considered" mean? Considerable further guidance is required, particularly in relation to the overall efficiency of the national market. The need for a new market must be established by meeting the Market Objective, taking into account, for example, whether the cost of setting up and administering the market compared to the cost of the technical standard applied to the generators, or whether there is sufficient competition to support a market.

In previous technical standards reviews, some of the new market proposals were discarded, as the incremental cost to a generation development was negligible compared to the cost of setting up, trading and administering the market.

NEMMCO agrees with the Reliability Panel's assessment that, in principle, a more efficient outcome could be achieved through market arrangements in some circumstances.

The Panel uses Reactive Power as an example of a technical requirement that could be more efficiently delivered through market arrangements. NEMMCO has been conducting a review into Network Support and Control Services (NSCS) and specifically how a more efficient procurement arrangement could be achieved. While the conclusions in the Draft Determination of the NSCS Review recommend a full transfer of the procurement obligation to TNSP's, NEMMCO notes that the most appropriate market arrangements for respective technical requirements will vary, and a “one size fits all” approach should be avoided.

NEMMCO is now finalising its NSCS Review, which in the Draft Determination Report has made the following relevant recommendations:

1. The creation by NEMMCO of a centrally-cleared spot market for reactive power (something akin to the frequency control ancillary services market, as opposed to the current bilateral contract arrangements) was considered to be very unlikely to be justifiable and so this was rejected;

2. NEMMCO's role in procuring from Generators reactive power capability above performance standard under a non-market ancillary service agreement interferes with the TNSP's broader network planning role, and potentially resulting in under- or over-planning at that network location. The transmission network would likely be planned in a more efficient way if responsibility for planning and procurement of all reactive power capability, from both installed network infrastructure and from Generators, were transferred to the relevant TNSP. Subject to the outcome of the second round of consultation, Rule changes will be proposed to transition to this arrangement.

   Note that the proposed Rule changes do not include replacing "NEMMCO" with "TNSP" in Clause 3.11.3(i).

Principle 11 – *Technical standards should be specific, clearly defined, unambiguous and consistent.*

This is an appropriate principle.

Principle 12 – *Technical standards should be measurable and assessable, in a form that allows effective compliance programs to be developed and maintained, and be enforceable.*

This Principle requires careful consideration and clarification. Some of the current technical standards are assessed only by analysis using mathematical models of the power system and plant, or by review of design information, as the testing of them would put the power system or the plant at risk. It is not clear whether “measureable and assessable” is intended to include these particular standards or their current means of assessment, but it may be difficult to include them in compliance programs (assuming the compliance program would not include regular re-analysis, and review of design information).

This does not mean to say that those technical standards are not important. For example, some of them include the requirement for generating systems to ride-through disturbances – such technical standards are fundamental to secure operation of the power system, but it would be problematic to include them in a typical compliance program.

Principle 13 – *The technical standards should place obligations on the party that is most capable of responding to that obligation in a manner that advances the National Electricity Objective (NEO).*

This is an appropriate principle.

NEMMCO

Attachment 2

Principles adopted for Technical Standards Rules Changes

(Reference: Appendix B, page 17, of Attachment A of NEMMCO's proposal document for the AEMC's Rule change consultation on "Technical Standards for Wind Generation and Other Generator Connections")

Following is a list of draft Technical Standards Principles, reprinted from the WETAG report, that are intended to guide the development of any changes to technical standards provisions. The headings are provided only for indication, and should be read only in conjunction with associated descriptions.

Principle 1:

The technical standard must provide for adequate security, quality of supply and reliability.

The technical standards are intended to specify performance of plant such that:

- Power system security;
- Quality of supply; and
- Reliability of supply[2]

are maintained at satisfactory levels into the future.

The Rules specifically requires that NEMMCO and the NSP to take into account security and quality of supply in their negotiations. Consideration of impacts on reliability of supply should extend only to generating units or systems, and not impacts from customers.

Principle 2:

Minimum, automatic and mandatory standards should be defined so that performance requirements are consistent with the potential impact of generating plant on the power system.

This principle provides for the negotiated standard to be no more onerous on the generator seeking connection than is necessary.

The technical standards cover two sets of standards – "system standards" and "access standards". System standards are defined to set a target performance level for the power system overall[3].

[2] Chapter 5 refers specifically to security and quality of supply, but at least one technical standard addresses reliability of supply (see clause S5.2.5.12).

Consistent with achieving the required system standards, the Rules allows for developers, NSPs and NEMMCO to negotiate a suitable level of technical performance for new connecting plant. In NECA's Review of Technical Standards (Dec 2001), NECA stated:

> "The range for those parts of the standards that can be negotiated should be defined between the automatic access standards and the lowest capability that is acceptable, called the minimum access standard. The lowest acceptable standard should normally be related to the level at which a risk to system security or of harm to other connected parties may arise."

In a few instances, mandatory requirements have been placed on connecting parties, without scope for negotiation

As a principle, the technical standards should be formulated in terms that provide for an automatic access standard and a minimum access standard. A review of the technical standards should determine whether:

- the minimum access standards are reasonable minima, considering the location and potential impact of the generating system within the network; and
- the mandatory requirements can be re-cast in terms of minimum and automatic standards;
- automatic access standards are set at appropriate levels.

Principle 3:

Terminology used in the technical standards should support their appropriate application. Where technically appropriate, performance of generating plant should be measured at the connection point.

Most of the technical standards are applied to generating units, but for distributed generating systems, such as wind farms, which are comprised of numerous small units, it is appropriate to consider performance requirements in terms of "generating systems", or the performance of the plant on the power system as measured at its connection point.

Depending on the way the plant is controlled and the configuration of its connection, performance can be considered in some cases a function of the generating system[4], and in others a characteristic of the generating unit. The terminology used in the technical standards should therefore be specific, and appropriately support the standard's application, allowing flexibility to define combined performance in terms of generating systems, and take effect at the connection point where appropriate.

The impact of a generating system on the power system security or quality of supply is generally governed by the laws of physics and not influenced by whether it is scheduled or non-scheduled, except through application of certain market rules (such as dispatch rules).

---

[3] Ref. ACCC final determination on technical standards – February 2003.
[4] The Rules defines a generating system to be "a system comprising one or more generating units".

Inappropriate use of the term “scheduled” in technical standards can have the consequence of excluding significant intermittent generation projects from the requirement to comply with some technical standards. When the technical standards are reviewed inappropriate use of the term “scheduled” should be avoided.

Principle 4:

Where reasonable, the technical standards should be written so that they are applicable to all technologies. Technology-specific terms should be used only where necessary to clarify requirements for particular technologies.

The technical standards must adequately cover all types of generation technologies. To the extent reasonably possible the technical standards should not treat one technology more favourably than another. While the technical standards might recognise the differences between technologies, the standards should aim to achieve an equivalent performance outcome.

As new technologies may emerge over time, technical standards should be written, where possible, in a form that can be applied to all technologies. It is recognised that there may be some exceptions to this principle, for example, where a technology has established methods of specifying technical capability that simplify performance assessment or where the technical parameters for a technology are significantly different from those of other technologies.

Principle 5:

Where possible, the technical standards should provide clear guidance on the basis for negotiating access standards for each requirement.

To provide a fair and consistent basis for negotiation on a particular technical standard requirement, there should be no ambiguity in the intent of the clause or the factors that impact the level of acceptable performance. This can be achieved by the provision of clear guidance.

Greater clarity on the purpose of clauses and the basis for negotiation between automatic and minimum access standards will assist both NSPs and Generators in their negotiations, and will enhance the consistency of negotiated outcomes for technical standards.

Principle 6:

Changes to the technical standards must include appropriate transitional arrangements.

Consideration must be given to how the changes will apply to

(i) Registered generators (as at the date of commencement of the amendments);

(ii) Plant not registered, but with connection agreements pre-dating the commencement date of amendments;

(iii) Plant registered prior to the amendments coming into effect, but modified after this date (including whether the plant must comply with all new requirements or only those related to the modifications made).

(iv) Non-committed projects that are in the process of negotiating connection agreements.

In developing these transitional arrangements consideration must be given to the possible economic impact on all parties affected by the transitional arrangements, and in any case, the requirements of Principle 1 must not be compromised.

Principle 7: Changes to technical standards are to be technically justified

To provide adequate certainty to generators and intending generators the technical standards should only be changed if an appropriate industry body can demonstrate an adequate technical requirement for the change. The justification for this could include the need to correct an error or omission or to incorporate a new technology.

In general, when changes are required to incorporate a new technology into the technical standards, contributions to the technical standards review should be sought from both power system experts and specialists from the new technology.

NEMMCO

Attachment 3 WETAG membership

The following table shows the membership of the WETAG. The working group was convened by NEMMCO at the request of WEPWG and formed by requesting nominees for representation of industry bodies such as the NGF, ERAA, AUSWEA, EUAA and REGA.

Name	Company	Industry sector
John Thompson	ElectraNet SA	TNSP / JPB
Stephen Clark	Transend	
Craig Oakeshott	ESIPC	
David Trethewey	TransGrid	
Colin Hackney	Country Energy	DNSP
Paul Driver	ETSA Utilities	
John Arneaud	Hydro Tasmania	Generators (nominated via NGF)
Mark Frewin	TXU	
David Parris	AGL	Retailers (nominated via ERAA)
Andrew Jones	Origin Energy	
Sami Aoude	Norske Skog	End Users (nominated via EUAA)
Nic Buckley	Tarong Energy	Wind Generation Developers (nominated via AUSWEA)
Kate Summers	Pacific Hydro	
Rob Jackson	Southern Hydro	Renewable energy generators (nominated via REGA)
Sarea Coates	Australian Greenhouse Office	Government
Murray Chapman Bruce Cameron Jennifer Crisp Ian Arnott Paul Ravalli Charlie Macaulay	NEMMCO	NEMMCO