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Writers direct contact : 03 9615 6442

Email : [ksummers@pacifichydro.com.au](mailto:ksummers@pacifichydro.com.au)

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

Dear Dr Tamblyn,

I refer to two Second Submissions made to the Australian Energy Market Commission (AEMC) regarding the proposed Draft National Electricity Amendment (Technical Standards for Wind and other Generator Connections) Rule 2006 ("the Rules"), being:

- the joint submission by AusWind and REGA dated 26 November 2006; and
- the submission by NEMMCO dated 24 November 2006.

Pacific Hydro Pty Ltd contributed to the submission made by AusWind and REGA but did not provide a separate Second Submission in respect of the Rules. The purpose of this letter is to provide further background information and comment on the submissions made in respect of the transitional provisions set out in proposed Clause 11.5.3 of the Rules, the proposed definitions of "normal voltage" and "nominal voltage" and Clause 5.2.5.7.

#### Transitional arrangements under Clause 11.5.3

The proposed wording for Clause 11.5.3 of the Rules is:

##### 11.5.3 Access standards made under the old Chapter 5

(a) Any automatic access standard or negotiated access standard that applied to a generating unit or generating system under the old Chapter 5 continues to apply to that system or unit as if the Amending Rule had not been made.

(b) Unless a Generator and a Network Service Provider otherwise agree, a negotiated access standard that is the subject of a negotiating process as at the commencement date, is to be negotiated in accordance with the old Chapter 5, as if the Amending Rules had not been made.

AusWind's and REGA's submission did not propose any change to Clause 11.5.3 and noted it as "accepted" because it agreed with the logic of Clause 11.5.3. NEMMCO's submission, however, objects to Clause 11.5.3 on the grounds "that the proposed rule may significantly delay the implementation of the new technical requirements" (p. 5). Given that NEMMCO has raised an objection to Clause 11.5.3, it now seems necessary to articulate the reasons for AusWind's and REGA's acceptance of Clause 11.5.3.



In our experience, the process of negotiating a connection agreement and the associated access standards is very time-consuming and requires a great commitment of resources by both the generator and the network service provider. Typically, negotiations for a connection agreement can take between 18 months and 3 years. Costs involved in preparing a connection agreement can be in the order of \$250,000 to \$500,000. Any rule change enacted during a period when two parties are the midst of negotiating a connection agreement could result in the negotiation (and the time and money invested so far) needing to be abandoned and the parties starting again. This would result in significant costs and delays to projects under development.

In addition to the time and cost burden imposed on connection agreements currently under negotiation, failing to allow transitional arrangements in accordance with Clause 11.5.3 could result in Rules that are inconsistent with the NEM objective. Unless all parties investing in the electricity market can be confident that the regulatory environment will remain stable and predictable during the period that new investment projects are under development, the National Electricity Market objective of "promoting efficient investment in electricity services for the long-term interests of consumers" will not be met.

There is an assumption in NEMMCO's submission that project proponents have not purchased or entered into supply contracts prior to the connection agreement being signed. This assumption is clear from the following extract from the NEMMCO submission:

"NEMMCO proposes that the appropriate criterion for the application of the 'old' technical standards is having a signed connection agreement at the commencement date of the new provisions, or at least an offer to connect. Once a connection agreement has been signed the prospective Generator will have established the required performance of the plant and be in the process of establishing contracts with suppliers and undertaking detailed design. **Until the connection agreement has been signed the performance requirements for the plant are not locked-down, and can be changed.**" (emphasis added)

NEMMCO's submission fails to recognise the parallel paths that occur in all projects. The major items associated with a connection must be purchased and in the supply path in order for all the detail to be available to assess a technical / access standard. Supply of long lead items and turbines are generally agreed and the cost locked in prior to negotiating the technical standards, otherwise a proponent would not know whether the project is financially viable and they would not be pursuing a connection agreement. This means that purchasing arrangements and negotiations of an access standard often proceed together.

We note that paragraph (b) of Clause 11.5.3 permits the generator and network service provider to agree to negotiate the access standard in accordance with the new Rule. This provision allows parties who are at an early stage of negotiating an access standard to weigh up the costs and benefits of adopting the new Rule and allows them flexibility to adopt the most efficient course of action.

#### Definitions of “normal” and “nominal” voltage, S. 5.1a.4

As noted in AusWind’s submission, NEMMCO appears to be using anomalies in the power system as justification for adopting control of the nomination of voltage for particular areas of the power system. The wording of this clause as described in the Auswind submission has inadvertently created a requirement for all equipment be continuously rated for 120% nominal voltage. This is not how equipment is manufactured.

In our experience, the use of the word “normal” is being confused with the normal operating range by TNSPs despite the relatively clear requirement in S5.1a.4 for there to be a written agreement with NEMMCO concerning a change from nominal. As operating procedures constitute something that is agreed in writing (therefore defining a normal operating range – or target voltage range), TNSPs can delay and sometimes refuse to acknowledge that the voltage that applies is the nominal voltage. In fact the operating range of voltages has been quoted back at us. Under circumstances where the TNSP cannot or will not define the normal voltage as the nominal voltage, the proponent is caught with being unable to identify what the rating of the plant is that should be specified for connection and the over voltage standard for voltage disturbances cannot be correctly identified. The proposed figure S5.1a.1 is flawed as the variations implicitly raise the cost of plant required for connection. The continuous rating of all equipment should be that of the IEC and Australian standards for manufactured plant. We request that the use of the word ‘normal’ for describing voltage be dropped and the word nominal be reinstated.

#### Reinstatement of Partial Load Rejection Clause 5.2.5.7

Further to our reading of NEMMCO’s submission we note that they have suggested changes to the reinstated clause S5.2.5.7. We wish to clarify the performance of the asynchronous generators.

Under the scenario of a large load loss in the power system asynchronous generators will continue to operate at their pre-contingent levels provided that the frequency and voltage remain within the protection settings on the machines. NEMMCO acknowledge this by saying that asynchronous machines do not respond to such changes in the power system. Synchronous machines must respond to avoid over speeding – this is our interpretation of what Vencorp is concerned about

Wind turbines can be compliant with either a reduction of power for high system frequencies or have a rate of change of frequency protection setting. Both of these protection settings can be measured, tested and proven. There are no generators that can inject a load rejection at their terminals as required for proving or testing compliance with S5.2.5.7.

Wind turbines could be required to respond to high system frequency by reducing their power output. Most wind turbines have control systems that can be enabled to reduce power output for high frequency events. The catch is that these controls are generally not enabled as NEMMCO consider the ability to lower output in response to frequency to be a service that is provided solely through the ancillary service market and although they are required to co-ordinate over frequency settings, they do not request this control function to be enabled at the time of assessing the technical standards. Hence, the turbines are required to provide the protection settings that meet the frequency standards (52 Hz) without enabling the function that would reduce their power output. Pacific Hydro find that this discriminates against wind power as it now leaves the generating system exposed to FCAS causer pays factors.



Large synchronous machines must respond to load rejection events to remain in stable operation and avoid over speeding, but wind turbines will keep going and not reduce their output unless controlled to do so.

We recommend that Partial Load Rejection be applied (appropriately) to synchronous machines and the equivalent response required from an asynchronous generating system be a reduction of power output for high system frequency (including a rate of change of frequency setting).

This would serve a dual purpose, it would provide a lower service and allow the wind turbine to activate a control function which reduces the exposure to FCAS causer pays factors. The high frequency settings of all machines are currently forced out to 52 Hz, and the high frequency response functions are generally not considered during the assessment of the access standards.

Perhaps consideration needs to be given to this suggestion in light of the cost efficiency such control systems provide.

We trust that this information is useful in your consideration of the Rule changes. If you have any questions or need any clarification please contact Kate Summers on (03) 9615 6442 or by email at [ksummers@pacifichydro.com.au](mailto:ksummers@pacifichydro.com.au).

Yours sincerely

Kate Summers  
Regulatory Compliance Manager