



23 June 2006

Dr John Tamblyn  
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Australian Energy Market Commission  
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By email to: [submissions@aemc.gov.au](mailto:submissions@aemc.gov.au)

Dear Dr Tamblyn

## **National Electricity Amendment (Technical Standards for Wind Generation) Rule**

The Renewable Energy Generators of Australia (REGA) represents Australia's leading renewable energy generators, project developers and equipment and service providers. REGA's members are responsible for more than 95% of the electricity generated from renewable sources in Australia each year and have around \$8b invested in existing generation infrastructure. REGA has members with major generating plant in all regions of the NEM.

REGA was represented on the NEMMCO convened Technical Standards Reference Group (TSRG) which assisted NEMMCO in the preparation of the current Rule change proposals, but REGA considers that the proposals go well beyond those required to assist in the further integration of wind generation into the NEM. As outlined in REGA's response to the recent Issues Paper on "Enforcement and Compliance with Technical Standards under the National Electricity Rules", REGA believes that there are many problems with the existing performance standards and that a major review of the technical standards is required both to more clearly define the requirements of plant connected to the system and to allow for the entry of emerging renewable technologies. This review should start by looking at the outcomes required from the standards and only when these are identified should they look at how this is achieved. It should consider if it is appropriate for the same standards to be applied to all sizes of generators, or if special consideration should be given to small distribution connected generators, in particular to determine if the minimum standard has been appropriately defined. In all cases the standards should be judged against the NEM objective. REGA does not believe that the work of the TSRG met these requirements.

As is recognised in the AEMC's Draft Report on the Review of enforcement and compliance with technical standards, the current Rules and processes for registering the performance standards plant existing at the performance standards commencement date have proved to be arduous and many generators have had great difficulty in reaching a negotiated set of standards. That Draft Report recommends a work plan that would, amongst other things; provide a way to resolve those issues; allow for existing plant to agree Performance Standards with NEMMCO; and establish a process for a further review of the Performance Standards. While REGA will be submitting a formal response to the Draft Report that will make specific comments on this process and on the remaining

recommendations concerning compliance and enforcement, it does support the first stages of the proposed work plan to:

- put in place a process to settle the content of deemed performance standards for existing generator plant and specifically documents the performance standards for each generator;
- assess the wind generation technical standards Rule change;
- have the AEMC undertake a review of the process for revising the technical standards; and
- in parallel with the AEMC review, have the Reliability Panel undertake a review of technical standards.

REGA understands the importance of technical standards in ensuring that NEMMCO is able to operate the power system in a secure and reliable manner. The large scale integration of wind and other non-traditional forms of generation into the network was not contemplated when the current technical standards were drafted and amendments are required to better these and ensure; that NEMMCO has the information it requires; that plant connected to the network performs in a predictable manner with minimal impact on other participants; and that generators and manufacturers can confidently supply plant to connect to the Australian grid. This issue is not unique to Australia and manufacturers of emerging technologies worldwide are pursuing improved levels of performance and we are now seeing significant improvement in the performance and control of these generators.

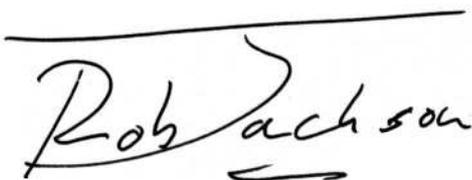
REGA supports the changes to the Rules which will specifically allow the planning and project development of wind energy generation to continue and believes there are many positive outcomes for the wind industry in these changes. REGA's detailed response to the Rule changes is detailed in the attachment.

It is critical to REGA members that the those items in the wind generation technical standards Rule changes required to enable the increased integration of wind generation into the NEM are not held up in this process and the changes are made as a matter of urgency.

In preparing this response REGA has worked closely with Auswind and has also consulted with the NGF.

If you have any questions or need any clarification on this please contact me on (03) 8628 9741 or email [rob.jackson@rega.com.au](mailto:rob.jackson@rega.com.au).

Yours sincerely

A handwritten signature in black ink that reads "Rob Jackson". The signature is written in a cursive style with a horizontal line above it.

Rob Jackson  
Technical Director

**ATTACHMENT C – PROPOSED RULE CHANGES IN MARK-UP – REGA DETAILED RESPONSE.**

Affected clause	Clause with proposed amendments	Reason	REGA Comments
2.2.1(e)	<p>(e) To be eligible for registration as a <i>Generator</i>, a person must:</p> <p>(1) having obtained <i>NEMMCO</i>'s approval to do so, classify each of the <i>generating units</i> <del>which that</del> form part of the <i>generating system</i> it owns, operates or controls, or from which it otherwise sources electricity, as either a <i>scheduled generating unit</i> or a <i>non-scheduled generating unit</i>; <del>and</del></p> <p>(2) satisfy <i>NEMMCO</i> that <del>those generating units and the connection points for those generating units</del> <u>comply with the relevant technical requirements set out in Chapter 5 clauses 5.3 or clauses 5.10 and 5.11(if applicable) have been complied with; and</u></p> <p>(3) <u>satisfy <i>NEMMCO</i> that each <i>generating system</i> will be capable of meeting or exceeding its <i>performance standards</i>.</u></p>	<p>The proposed new clause 5.3.7B provides for acceptance of performance standards by <i>NEMMCO</i>. It is intended that <i>Generators</i> should not be registered until performance standards are accepted by <i>NEMMCO</i> for that <i>Generator</i>'s plant, and that <i>NEMMCO</i> is satisfied that the <i>Generator</i> will be able to comply with the performance standards.</p>	Agree
2.9.2(a)	<p>(a) <u>Subject to clause 2.9.2(d), <i>NEMMCO</i> must, within 15 <i>business days</i> after receiving the <u>application, or after receiving the</u> further information or clarification under clause 2.9.1(b), <u>or within 15 <i>business days</i> after receiving the information requested under clauses 5.3.7A(b), S5.2.4(b) and 5.11.2,</u> whichever is the later, give notice to the applicant that the applicant is to be admitted in the category of <i>Registered Participant</i> applied for if <i>NEMMCO</i> is reasonably satisfied that:</u></p> <p>(1) an applicant meets <del>any</del> <u>the</u> eligibility requirements specified for the category of <i>Registered Participant</i> to which the application relates;</p> <p>(2) if the application relates to registration in one of the categories of <i>Market Participant</i>, the applicant is and will be able to fulfil its financial</p>	<p>Clauses 5.3.7A(b), S5.2.4(b) and 5.11.2 gives <i>NEMMCO</i> the power to access information necessary to enable it to properly assess proposed performance standards. The performance standards for new connection applications are to be assessed prior to the connection agreement being entered into. Although this may be well before registration, it could technically be done just prior to the registration application. It is therefore appropriate that the time periods in clause 2.9.2(a) only run once requested information is provided.</p> <p>It is also appropriate that a person seeking registration establish that that person has</p>	Agree

Affected clause	Clause with proposed amendments	Reason	REGA Comments
	<p>obligations under Chapter 3 <del>including the prudential requirements set out in clause 3.3;</del> and</p> <p>(3) the applicant <u>has complied with and will continue to be able to comply with the Rules.</u></p> <p>(b) If NEMMCO is not reasonably satisfied that an applicant satisfies the requirements set out in clause 2.9.2(a), NEMMCO must, within 15 <i>business days</i> after receiving the application <del>or after receiving the further information or clarification required under clause 2.9.1(b);</del>:</p> <p>(1) <u>application;</u></p> <p>(2) <u>further information or clarification required under clause 2.9.1(b); or</u></p> <p>(3) <u>information requested under clauses 5.3.7A(b), S5.2.4(b) or 5.11.2,</u></p> <p>whichever is the later, notify the applicant that it is not qualified to be registered as a <i>Registered Participant</i> in the relevant category and provide reasons for that determination.</p>	<p>complied with the Rules.</p> <p>The reference to the prudential requirements is not necessary.</p> <p>Clauses 5.3.7A(b), S5.2.4(b) and 5.11.2 gives NEMMCO the power to access information necessary to enable it to properly assess proposed performance standards. As outlined above, it is therefore appropriate that the time periods in clause 2.9.2(b) only run once requested information is provided.</p>	
<p><b><u>2.9.2(d)</u></b></p>	<p>(d) <u>Provided those terms and conditions are reasonably related to ensuring power system security, reliability of supply or the quality of network service to other Network Users, or are consistent with the market objective, NEMMCO may impose such terms and conditions on any registration as NEMMCO sees appropriate.</u></p>	<p>In the context of new generation, it is conceivable that NEMMCO might need to register Generators on a conditional basis. This is because NEMMCO's overriding responsibility is to ensure power system security, so it is appropriate that NEMMCO has the power to apply conditions to registration that ensure that that objective can be met. It is also appropriate to give NEMMCO the power to apply conditions to registration that ensure reliability of supply and the quality of network service since these are necessary to ensure that the interests of Network Users are protected.</p>	<p>Delete – The clause gives NEMMCO excessive power to impose any standards on connection. Registration is too late in most circumstances to alter plant design and construction. NEMMCO must inject their requirements prior to registration.</p> <p>The automatic access standards are to highest level of standard which NEMMCO may impose.</p>

Affected clause	Clause with proposed amendments	Reason	REGA Comments
		Rather than include a provision that specifically applies to Generators (thereby creating an implication that NEMMCO cannot impose conditions on the registration of other applicants, it is appropriate that a generic power to impose conditions (albeit a conditional power) be inserted.	
3.11.7(a)	(a) In addition to the requirements under clause <del>4.15</del> 5.12, a <i>Market Participant</i> which has classified a <i>generating unit</i> as an <i>ancillary service generating unit</i> or a <i>market load</i> as an <i>ancillary service load</i> must install and maintain in accordance with the standards referred to in clause 3.11.7(b) monitoring equipment to monitor and record the response of the <i>ancillary service generating unit</i> or <i>ancillary service load</i> to changes in the <i>frequency of the power system</i> .	This change is necessary to ensure that the appropriate cross-reference is made on implementation of these proposed Rule changes.	Agree
3.13.3(k)	(k) <u>Subject to the restrictions and obligations in clause 5.3.8(a) NEMMCO must make the following registered bid and offer data and Network Service Provider data and updates available to a Registered Participants, on request without unreasonable delay, the following information and data if in its possession and control:</u>  (1) <del>details of the shared transmission and distribution network impedance data and other technical data as listed in:</del>  (i) <del>schedule 5.5.1;</del>  (ii) <del>schedule 5.5.2;</del>  (iii) <del>schedule 5.5.3; and</del>  (iv) <del>schedule 5.5.4;</del>  <del>sufficient to carry out power system studies as reasonably required by Registered Participants for planning and/or operational purposes; and registered bid and offer data;</del>  (2) <u>the following information, provided that it is</u>	This clause forms the basis of NEMMCO’s data policy – which allows for snapshots of the power system to be distributed to Registered Participants (including if required generating plant dynamic models).  The original clause was poorly worded, and has been revised to aid clarity.  The different types of data described in the clause have been separated into different sections.  The reference to “Network Service Provider Data” for the modelling data has been removed, as it is not clear that all the data provided under this clause belongs to the NSP. Some of it clearly is NSP data, and this has been maintained through references to 3.13.3(f) and 3.13.3(g).  S5.2.4(b) has been included because this	Agree

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	<p><u>reasonably required by the <i>Registered Participant</i> to carry out <i>power system</i> studies (including, without limitation, load flow and dynamic simulations) for planning and operational purposes:</u></p> <p>(i) <u>historical information relating to the operating conditions of the <i>power system</i>;</u></p> <p>(ii) <u>information and data provided to <i>NEMMCO</i> under clauses 3.13.3(f), 3.13.3(g) and S5.2.4(b)(4);</u></p> <p>(iii) <u>information and data described in the <i>Generating System Model Guidelines</i>, <i>Generating System Design Data Sheet</i>, and <i>Generating System Setting Data Sheet</i>;</u></p> <p>(iv) <u>information and data described in schedules 5.5.3 and 5.5.4; and</u></p> <p>(3) operating procedures and practices for <i>transmission network</i> or <i>distribution network</i> operation and maintenance that have been developed for the application of schedule 5.1 sufficient to enable <i>power system</i> modelling under normal, <i>outage</i> and emergency conditions.</p>	<p>is currently the clause used to obtain wind farm models.</p> <p>The reference to “historical information relating to the operating conditions of the power system” has been added to make it clear that information is to be given sufficient to generate a load flow file.</p>	
<b><u>3.13.3(k1)</u></b>	(k1) <u><i>NEMMCO</i> may, in its absolute discretion, provide information of the type described in clause 3.13.3(k) to persons who request it for the purpose of undertaking research or providing advice to <i>Registered Participants</i> or potential investors in the <i>power system</i>.</u>	This clause has been added to enable NEMMCO to pass on standard system snapshots to power system consultants who have a need for the data.	Agree
<b><u>3.13.3(k2)</u></b>	(k2) <u>Information provided under clause 3.13.3(k)(2) is <i>confidential information</i>.</u>	Current NEMMCO policy is to give out snapshots to Participants under cover of a letter saying that this is confidential information. This clause formalises that this information is to be treated as confidential. Registered Participants are bound by the Rules to treat confidential information as described in 8.6.1. Non	Agree

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		participants (under 3.13.3(k1)) would need to sign a confidentiality agreement.	
<b>3.13.3(k3)</b>	<u>(k3) NEMMCO may recover from Registered Participants and other persons to whom information and data is provided or to be provided under clauses 3.13.3(k) and 3.13.3(k1), respectively, NEMMCO’s estimate of the reasonable costs incurred by NEMMCO, or to be incurred by NEMMCO, in complying with a request under either of those clauses. NEMMCO may withhold the information and data until its estimate of reasonable costs is paid.</u>	This is required to ensure that the user of the service, as opposed to the market as a whole, pays the cost of providing this service.	Agree
<b>4.2.5(d)</b>	(d) NEMMCO must, when determining the secure operating limits of the power system, assume that the applicable performance standards are being met, subject to:  (1) a Registered Participant notifying NEMMCO, in accordance with clause 4.15(f)5.12 (f), that a performance standard is not being met; or  (2) NEMMCO otherwise becoming aware that a performance standard is not being met.	This change is necessary to ensure that the appropriate cross-reference is made on implementation of these proposed Rule changes.	Agree
<b>4.9.2(b) &amp; (b1)</b>	(b) Subject to <del>paragraph</del> clause 4.9.2(b1), NEMMCO may at any time give an instruction to a <del>Scheduled</del> Generator in relation to any of its <del>scheduled</del> generating units <u>with a nameplate rating of 30MW or more, or its generating systems of combined nameplate rating of 30 MW or more,</u> nominating that:  (1) the <u>generating unit or generating system transformer is to</u> be set to a nominated tap position (if it has on-load tap changing capability);  (2) the <u>generating unit’s or generating system’s voltage excitation control system set-point is to</u> be set to give a nominated voltage <del>at its terminals</del> ; or  (3) the <u>generating unit or generating system is to</u> be operated to supply or absorb a nominated level of reactive power at its terminals <u>or at its connection</u>	NEMMCO currently requires Non-Scheduled Generators to be subject to dispatch for reactive power as a condition of registration under clause 2.2.3(c) for generating systems of 30 MW or more, but NEMMCO considers that the power to dispatch reactive power from non-scheduled generating systems of 30 MW or more should be a normal part of power system security dispatch without resort to registration powers.  The changes to include “generating system” and to allow that the plant might not have a conventional excitation control system and the measurement point for reactive power might be the connection point, are necessary to be consistent with the proposed	Wording Issue: Distribution connected wind farms often have a requirement imposed by the NSP in the connection agreement to remain within a designated voltage range to avoid affecting customer voltages. The text should be changed to reflect operation within the restrictions imposed by the connection agreement and NSP operating requirements.

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	<p><i>point.</i></p> <p>(b1) Unless otherwise provided under an <i>ancillary services agreement</i> or a <i>connection agreement</i>, NEMMCO must not give an instruction under <del>paragraph</del> <u>clause 4.9.2(b)</u> that requires a <i>generating unit</i> <u>or <i>generating system</i></u> to supply or absorb <i>reactive power</i> <del>at its terminals</del> at a level <del>which is outside the mandatory capability for that <i>generating unit</i> determined in accordance with clause S5.2.5.1 of schedule 5.2</del> <u><i>plant's relevant performance standard</i></u>.</p>	<p>amendments to clauses S5.2.5.1 and S5.2.5.13.</p> <p>The change to the reference to “mandatory capability” is to remove an inconsistency that arose with the introduction of the performance standards regime, which replaced the concept of a “mandatory capability” with agreed performance standards. NEMMCO should be able to dispatch reactive power within the capabilities defined by the relevant performance standard.</p>	<p>Add “and the connection agreement with the NSP.</p>
4.13(a) &(b)	Delete	These are being moved to clause 5.10.1(a) and (b), respectively after some amendments	Agree to deletion
4.14	Delete	<p>Clauses 4.14(a) to (i) and 4.14(l) to (o) are being moved to clause 5.11.1 after some amendments.</p> <p>Clauses 4.14(j) and (k) are being moved to clause 5.11.2(a) and (b), respectively, after some amendments.</p>	Agree to deletion
4.15	Delete	Clause 4.15 is being moved to clause 5.12 after some amendments.	Agree to deletion
5.1.2(a)	<p><b>5.1.2 Purpose</b></p> <p>(a) This Chapter:</p> <p>(1) provides the framework for <i>connection</i> to a <i>transmission network</i> or a <i>distribution network</i> and access to <del>the networks forming part of the national grid</del>; and</p> <p>(2) has the following <del>purposes</del> aims:</p> <p>(i) to detail the principles and guidelines</p>	<p>This change is required to clarify that Chapter 5 also deals with alterations to generating plant. The term <i>connection</i> can be ambiguous in that changes to <i>connections</i> can be interpreted as only those that change the physical link to the transmission or distribution network, whereas 5.2.5 clearly includes alterations to generating plant.</p>	Agree

Affected clause	Clause with proposed amendments	Reason	REGA Comments
	<p>governing <i>connection</i> and access to a <i>network</i>;</p> <p>(ii) to establish the process to be followed by a <i>Registered Participant</i> <u>or a person intending to become a Registered Participant</u> to establish or modify a <i>connection</i> to a <i>network</i> <u>or to alter generating plant connected to a network</u>;</p> <p>(iii) to address a <i>Connection Applicant's</i> reasonable expectations of the level and standard of <i>power transfer capability</i> that the relevant <i>network</i> should provide; and</p> <p>(iv) to establish processes to ensure ongoing compliance with the technical requirements of this Chapter to facilitate management of the <i>national grid</i>.</p>		
5.1.3(b2)	<p>(b2) A <i>Registered Participant</i> <u>or person intending to become a Registered Participant</u> may request <i>connection</i> of a <i>facility</i>, <i>modification</i> of a <i>connection</i>, or <i>alteration</i> of <i>connected plant</i> at a standard below an <i>automatic access standard</i> if the <i>connection</i>, <i>modification</i> to the <i>connection</i>, or <i>alteration</i> of <i>connected plant</i> does not adversely affect <del>other</del> <i>Registered Participants</i>:</p> <p>(1) <i>power system security</i>;</p> <p>(2) as regards <i>connection</i> of a <i>generating system</i>, <i>reliability</i> of <i>supply</i>; or</p> <p>(3) the quality of <i>supply</i> to other <i>Network Users</i>.</p>	<p>These changes are required to clarify that the provisions apply to modification of connections and alterations of connected plant. Further, previously the clause referred to any adverse effect on other Registered Participants. This is too broad a test and it is appropriate to restrict the clause to the specific instances in (1), (2) and (3).</p>	Agree
5.2.2(b)	<p>(b) The <i>Rules</i> apply to <u>all</u>:</p> <p>(1) <del>all</del> <i>connection agreements</i> made after 13</p>	<p>There is no need to refer to modifications of connection in (3) as there will already be in place a connection agreement that is referred to</p>	Agree

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	<p>December 1998;</p> <p>(2) <del>all</del> deemed <i>connection agreements</i> <del>created pursuant to</del> under clause 5.2.2(a); and</p> <p>(3) <del>all</del> requests to establish <i>connection</i> <del>or modify an existing connection</del> after 13 December 1998.</p>	in (1) or (2).	
5.2.2(c) & (d)	Delete	<p>There is no need for clause 5.2.2(c). Its effect is unclear and it is confusing. Chapter 5 no longer contains mandatory technical requirements that could conflict with the connection agreement.</p> <p>There is no need for clause 5.2.2(d). Its operation is unclear given the obligations set out in clauses 5.2.3 (Obligations of Network Service Providers), 5.2.4 (Obligations of Customers) and 5.2.5 (Obligations of Generators).</p>	Agree to deletion
5.2.5(a)	<p>(a) <del>Each</del> <u>A Generator</u> must plan and design its <i>facilities</i> and ensure that <del>its facilities</del> <u>they</u> are operated to comply with:</p> <p>(1) <del>its connection agreement with a Network Service Provider</del> <u>the performance standards applicable to those facilities;</u></p> <p>(2) subject to clause 5.2.5(a)(1), <del>all applicable performance standards</del> <u>its connection agreement with a Network Service Provider;</u> and</p> <p>(3) subject to clause 5.2.5(a)(2), the <i>system standards</i>.</p>	<p>It is important that the performance standards take precedence over the connection agreement because:</p> <ul style="list-style-type: none"> <li>performance standards are assessed by NEMMCO in the context of system security, reliability of supply and quality of supply;</li> <li>application of the existing procedures has resulted in differences between connection agreements and performance standards, which must not be allowed to undermine that process;</li> <li>performance standards are only amended with the agreement of the parties, and any subsequent agreement should take precedence over an earlier agreement; and</li> </ul>	Agree

Affected clause	Clause with proposed amendments	Reason	REGA Comments
		<ul style="list-style-type: none"> <li>the connection agreement is a private arrangement between third parties and the Rules should override those agreements where the Rules cover the field, ie system security, reliability of supply and quality of supply in the NEM.</li> </ul> <p>When the technical requirements in schedule S5.2 were mandatory, it was necessary for any variations agreed in a connection agreement to take precedence over schedule S5.2, but now that the mandatory requirements have been converted into automatic and minimum access standards that is no longer required and undermines the concept of performance standards.</p> <p>For new connections, there should be no inconsistencies as the performance standards will be recorded in the connection agreement. NEMMCO will have input into the drafting of the the performance standards and they will be accepted by NEMMCO subject to the connection agreement being executed.</p>	
5.2.5(b)(1) & (2)	<p>(b) A <i>Generator</i> must:</p> <p>(1) submit an <i>application to connect</i> in respect of new <del>or altered equipment</del> <i>generating plant</i> owned, operated or controlled by the <i>Generator</i>, <del>or to be owned, operated or controlled by the <i>Generator</i></del>, and enter into a <i>connection agreement</i> with a <i>Network Service Provider</i> in accordance with clause 5.3 prior to that <del>equipment</del> <i>generating plant</i> being <i>connected</i> to the <i>network</i> of that <i>Network Service Provider</i> <del>or altered (as the case may be)</del>;</p> <p>(2) comply with the reasonable requirements of the</p>	<p>The previous reference to altered equipment is now dealt with in clause 5.3.9.</p>	<p>Agree</p>

Affected clause	Clause with proposed amendments	Reason	REGA Comments
	<p>relevant <i>Network Service Provider</i> in respect of design requirements of <del>equipment</del> <u>generating plant</u> proposed to be <i>connected</i> to the <i>network</i> of that <i>Network Service Provider</i> in accordance with clause 5.4 and schedule 5.2;</p>		
5.3.1	<p>(a) <del>The process and procedures in this</del> Clause 5.3 must be followed by a <i>Registered Participant</i> <u>or person intending to become a Registered Participant</u> wishing to establish <del>or modify</del> a <i>connection</i> to a <i>network</i>.</p> <p>(b) <del>For the purposes of clause 5.3, the expression “establish a connection”</del> Establishing a <i>connection</i> in this clause includes modifying an existing <i>connection</i> to the <del>national grid</del> <i>or altering plant</i> but does not include alterations to <i>generating plant</i> in the circumstances set out in clause 5.3.9.</p> <p>(c) <del>A Generator</del> wishing to alter <i>connected generating plant</i> must comply with clause 5.3.9.</p>	<p>Modifications to plant can occur without modifications to the connection. There is generally no need to go through a full connection enquiry process for a Generator who is modifying plant, and a simplified process is more efficient.</p>	Agree
5.3.2(a)	<p>(a) <del>An existing or intending Registered Participant, or a person who is eligible to become a Registered Participant, who wishes</del> A person wishing to lodge or <del>consider</del> is considering lodging an <i>application to connect</i> to a <i>network</i> must first make a <i>connection</i> enquiry by advising the <i>Local Network Service Provider</i> of the type, magnitude and timing of the proposed <i>connection</i> to the <i>network</i> of that <i>Local Network Service Provider</i>.</p>	<p>There is no need to refer to existing or intending Registered Participants. Anyone can make a connection inquiry.</p>	Agree
5.3.2(e)	<p>(e) <del>For the purposes of clause 5.3.2(d), where the performance or operation of plant that is the subject of an application to connect could be materially affected by another project, the Network Service Provider must provide to the Connection Applicant the following information about the other project sufficient to identify the extent of the impact:</del></p> <p>(1) <del>if an application to connect has been received in respect of the other project, information of the types specified in clause S5.4 but not clauses</del></p>	<p>Clause 5.3.2(e) has been added to allow for the situation where one project has an adverse impact on another project. Until now, clause 5.3.8 has prevented the NSP disclosing such information to the connection applicant, even though the information may be of critical importance to the viability of the second project and the NSP is required to negotiate in good faith. This modification attempts to address this problem by allowing the</p>	Agree – Provided this is managed by the NSPs appropriately

Affected clause	Clause with proposed amendments	Reason	REGA Comments
	<p><u>S5.4(d) or S5.4(i), consistent with the application to connect of the other project; and</u></p> <p>(2) <u>if an offer to connect has been made in respect of the other project, information of the types specified in clauses S5.2.4(b), and S5.5, consistent with the offer to connect of the other project.</u></p>	<p>release of basic information of competing projects for which an application to connect has been received and more detailed information of competing projects for which an offer to connect has been made.</p>	
5.3.3(b)(1)(i)	<p>(i) will need to be involved in planning to make the connection <u>or will be involved under clause 5.3.5(f); and</u></p>	<p>This change is needed to ensure that the inquirer is told that the TNSP will be involved in the planning carried out in respect of a generating system connected to a distribution network where that generating system is more than 10 MW.</p>	<p>Agree</p>
5.3.4A(a)	<p>(a) A negotiated access standard must:</p> <p>(1) be no less onerous than the corresponding <i>minimum access standard</i> specified by the <i>Network Service Provider</i> in accordance with clause 5.3.3(b1)(2);</p> <p>(2) be set at a level that will not adversely affect <i>power system security</i>; <del>and</del></p> <p>(3) be set at a level that will not adversely affect the quality of <i>supply</i> for other <i>Network Users</i>;</p> <p>(4) <u>in respect of generating plant, be set at a level that will not adversely affect reliability of supply; and</u></p> <p>(5) <u>in respect of generating plant, meet the requirements applicable to a negotiated access standard in clauses S5.2.5, S5.2.6, S5.2.8 and S5.2.9.</u></p>	<p>Clause 5.3.4A must reference reliability of supply as this concept is also central to the proper operation of the market. Some of the technical requirements impact reliability of supply as well as power system security (notably S5.2.5.9 and S5.2.5.12): a change to the technical envelope is treated as an impact on security in the planning framework, but in operational timeframes may be managed by actions that impact reliability to maintain security.</p> <p>Bases for negotiation have been added to the technical requirements in S5.2.5. These do not form part of the automatic or minimum standards but explain how they are to be applied. The additional wording in 5.3.4A(a)(5) is required to ensure that these bases for negotiation are applied.</p>	<p>Agree – provided that only minimum standards that are achievable are written into the rules.</p>
5.3.4A(b)	<p>(b) A <i>Network Service Provider</i> must, following the receipt of a proposed <i>negotiated access standard</i> <del>in accordance</del></p>	<p>The change is required to clarify the obligation to consult and where that</p>	<p>Agree</p>

Affected clause	Clause with proposed amendments	Reason	REGA Comments
	<p><del>with under</del> clause 5.3.4A(e) or 5.3.4A(f);</p> <p>(1) <del>consult NEMMCO on all matters allocated to NEMMCO under clause 5.3.3(b1)(4) and must related to the proposed negotiated access standard for which NEMMCO must be involved in the negotiation; and</del></p> <p>(2) <del>accept NEMMCO's advice in respect of those matters in determining its response to each proposed negotiated access standard and any applicable terms or conditions of acceptance to be applied to each proposed negotiated access standard.</del></p>	<p>obligation is referenced.</p>	
5.3.4A(d)	<p>(d) A Network Service Provider must, within 30 business days following the receipt of a proposed negotiated access standard in accordance with clause 5.3.4(e) or 5.3.4A(f)(3) <u>accept or reject the proposed negotiated access standard. The Network Service Provider must reject the proposed negotiated access standard if connection, or alteration of the generating plant (as the case may be), at the negotiated access standard proposed by the Connection Applicant would:</u></p> <p>(1) <del>accept the proposed negotiated access standard in NEMMCO's reasonable opinion, adversely affect power system security; or</del></p> <p>(2) <del>reject the proposed negotiated access standard if connection at the negotiated access standard proposed by the Connection Applicant would: in respect of the connection of generating plant, in NEMMCO's reasonable opinion adversely affect reliability of supply; or</del></p> <p>(i) <del>in NEMMCO's reasonable opinion, adversely affect power system security;</del> or</p> <p>(ii) <del>in the Network Service Provider's reasonable opinion, adversely affect quality of supply for other Network</del></p>	<p>This clause has been re-written to clarify the basis for rejection of proposed access standards.</p> <p>In paragraph (2), a reference to reliability of supply (limited to generating plant) has been added. Previously, NEMMCO could reject an application on the basis of security and the Network Service Provider on the basis of quality of supply but neither had a specific power to reject it on the basis of impact on reliability. There is a grey area between security and reliability impacts. In the operational sense of security something that affects the operating envelope can often be managed by reductions in transfers on interconnectors or other major transmission network elements, which means that a security impact is translated to a reliability impact. See also comments under clause 5.3.4A(a).</p>	<p>Agree</p>

Affected clause	Clause with proposed amendments	Reason	REGA Comments
	<p style="text-align: center;"><del>Users; or</del></p> <p style="text-align: center;"><del>(iii) — in the opinion of NEMMCO (in respect of a matter allocated to NEMMCO under clause 5.3.3(b1)(4)) or in the opinion of the Network Service Provider (in respect of a matter not allocated to NEMMCO under clause 5.3.3(b1)(4)), not meet the requirements of clause 5.3.4A(a).</del></p> <p>(3) <u>in the Network Service Provider’s reasonable opinion, adversely affect quality of supply for other Network Users; or</u></p> <p>(4) <u>in the opinion of NEMMCO or the Network Service Provider, in respect of a matter allocated to NEMMCO or the Network Service Provider, respectively, be lower than the corresponding minimum access standard; or</u></p> <p>(5) <u>in respect of the connection of generating plant, in NEMMCO’s reasonable opinion, not satisfy clause 5.3.4A(a)(5).</u></p>		
5.3.4A(g)	Delete	Submission and acceptance of performance standards and the relationship between performance standards and access standards is now dealt with in clauses 5.3.7A and 5.3.7B (transitional arrangements are in clauses 5.10 and 5.11).	Agree to deletion.
5.3.5(a)	<p>(a) The Network Service Provider to whom the application to connect is submitted:</p> <p>(1) <del>at the automatic access standard in accordance with</del> <u>under</u> clause 5.3.4; or</p> <p>(2) at a negotiated access standard that has been accepted by the Network Service Provider <del>in accordance with</del> <u>under</u> clause 5.3.4A(d);</p> <p><del>(3) — at any applicable plant standard;</del></p>	<p>The reference to clause 5.3.4A(d)(1) is now clause 5.3.4A(d) because of the change described above.</p> <p>“a Network Service Provider” has been changed to “the Network Service Provider ...” because it is specific to that connection.</p> <p>Clause 5.3.3(b3) deems applicable plant standards to be an automatic access</p>	Agree

Affected clause	Clause with proposed amendments	Reason	REGA Comments
	must proceed to prepare an offer to <i>connect</i> in response.	standard or negotiated access standard and in other cases a plant standard may be accepted as a automatic access standard or negotiated access standard. Therefore the reference to applicable plant standard is not necessary.	
5.3.5(d)(1)	(1) the <del>performance</del> <u>technical</u> requirements for the equipment to be <i>connected</i> ;	The change is for consistent usage of the terms “performance standards” and “technical requirements”.	Agree
5.3.5(g)	<b>Delete</b>	This is no longer required due to the proposed changes in this package.	Agree to deletion.
5.3.6(e)	<b>Delete</b>	This clause is a legacy of the Code prior to the introduction of negotiated access standards. The concept of variations is now specifically dealt with under the negotiation of access standards between minimum and automatic levels.	Agree to deletion: with comment: The level of the Automatic and Minimum Standards must be set to account for the impacts of geographic or local conditions.
5.3.7(a)	<p>(a) If the <i>Connection Applicant</i> wishes to accept an offer to <i>connect</i>, the <i>Connection Applicant</i> must:</p> <p>(1) <del>—————</del> [Deleted]</p> <p>(2) <del>—————</del> <u>enter into a negotiate a proposed connection agreement</u> with each relevant <i>Network Service Provider</i> identified in accordance with clause 5.3.3(b)(2) and, in doing so, must use its reasonable endeavours to negotiate in good faith with all parties with which the <i>Connection Applicant</i> must <del>enter into</del> <u>negotiate</u> such a <i>connection agreement</i>.</p>		Agree
<u>5.3.7</u>	(a1) <u>The proposed connection agreement must include proposed performance standards with respect to each of the technical requirements identified in schedules 5.2, 5.3 and 5.3a where applicable and each proposed performance standard must have been established in</u>		Agree

Affected clause	Clause with proposed amendments	Reason	REGA Comments
	<p><u>accordance with the relevant technical requirement.</u></p> <p><u>(a2) The proposed performance standards must be based on the automatic access standard or, if the procedures in clause 5.3.4A have been followed, the negotiated access standard.</u></p> <p><u>(a3) The Network Service Provider and the Connection Applicant must not enter into the proposed connection agreement until NEMMCO has accepted the proposed performance standard.</u></p>		
5.3.7(e)	<b>Delete</b>	This is being moved to clause 5.3.7A.	Agree to deletion.
5.3.7(f)	<b>Delete</b>	This is being moved to clause 5.3.7A(f).	Agree to deletion.

Affected clause	Clause with proposed amendments	Reason	REGA Comments
<p><b><u>5.3.7A</u></b></p>	<p><b><u>5.3.7A Submission of Performance Standards</u></b></p> <p>(a) <u>The Network Service Provider and the Connection Applicant must jointly advise NEMMCO when a proposed connection agreement has been negotiated between them and submit to NEMMCO the proposed performance standards for assessment by NEMMCO.</u></p> <p>(b) <u>The Network Service Provider must forward to NEMMCO a copy of the proposed connection agreement and relevant technical details of the proposed plant and connection, including, as applicable:</u></p> <p>(1) <u>details of all proposed performance standards that form part of the terms and conditions of the proposed connection agreement;</u></p> <p>(2) <u>in relation to generating plant, the arrangements for updating the information required in accordance with clause S5.2.4(b);</u></p> <p>(c) <u>Following receipt of the information referred to in clauses 5.3.7A(b) and S5.2.4 (if applicable) NEMMCO must assess whether, in its reasonable opinion, each proposed performance standard:</u></p> <p>(1) <u>satisfies the technical requirements set out in schedules 5.1, 5.2, 5.3 and 5.3a subject to any derogation applicable to the plant to which the proposed performance standards apply;</u></p> <p>(2) <u>is drafted to enable, in NEMMCO's reasonable opinion, a compliance program to be instituted and maintained in respect of the performance standard under clause 5.12(c); and</u></p> <p>(3) <u>can be complied with, based on the information provided to NEMMCO by the Network Service Provider and the Connection Applicant,</u></p>	<p>Throughout Chapter 5 the term 'access standard' has been adopted to refer to the automatic or negotiated standards that are recorded in the connection agreement. The standards in the connection agreement are proposed performance standards until they are accepted by NEMMCO and recorded on the register.</p>	<p>It is not appropriate for NEMMCO to see the connection agreement – the requirement should be for NEMMCO to be provided with the relevant technical and operational sections of the connection agreement.</p> <p>The commercial terms of a connection agreement are no concern of NEMMCO's.</p>

Affected clause	Clause with proposed amendments	Reason	REGA Comments
	<p>(d) <u>NEMMCO, or in respect of a matter concerning the quality of supply to Network Users, NEMMCO in consultation with the relevant Network Service Provider, must, when assessing the proposed performance standard for a particular requirement based on any provision of schedules 5.1, 5.2, 5.3 and 5.3a, require a Connection Applicant to meet or exceed the minimum access standard but must not require the Connection Applicant to exceed the relevant automatic access standard for that requirement.</u></p> <p>(e) <u>A Generator must forward to NEMMCO prior to registration relevant metering installation details of the proposed plant and connection, including:</u></p> <p>(1) <u>the proposed metering installation;</u></p> <p>(2) <u>arrangements for the Metering Provider to obtain physical access to the metering installation.</u></p> <p>(f) <u>NEMMCO must, within 20 business days of the receipt of the information referred to in clause 5.3.7A(e), advise the relevant Network Service Provider and Generator whether the proposed metering installation is acceptable for those metering installations associated with those connection points that are classified as metering installation types 1, 2, 3 and 4 as specified in schedule 7.2.</u></p>		
<b>5.3.7B</b>	<p><b><u>5.3.7B Acceptance of Performance Standards</u></b></p> <p>(a) <u>NEMMCO must, if it assesses that the proposed performance standard submitted under clause 5.3.7A(a):</u></p> <p>(1) <u>satisfies the requirements set out in clause 5.3.7A(c), accept the proposed performance standard on the condition that the connection agreement is entered into; or</u></p> <p>(2) <u>does not satisfy the requirements set out in clause 5.3.7A(c), reject the proposed performance standard.</u></p>	<p>This clause clarifies the process and criteria for acceptance of performance standards. Note that the reference to Registered Participants in clause 5.3.7B(d) includes Connection Applicants by virtue of the definition of Registered Participant.</p>	<p>Agree</p>

Affected clause	Clause with proposed amendments	Reason	REGA Comments
	<p>(b) <u>NEMMCO must advise the <i>Connection Applicant</i> and the <i>Network Service Provider</i> of its decision to accept or reject the proposed <i>performance standard</i> within 30 <i>business days</i> of the receipt by NEMMCO of the information referred to in clauses 5.3.7A(b) and S5.2.4 (if applicable).</u></p> <p>(c) <u>If NEMMCO rejects a proposed <i>performance standard</i> under clause 5.3.7B(a)(2), NEMMCO must, when advising the person under clause 5.3.7B(b) also provide the person with detailed reasons for its decision to reject the proposed <i>performance standard</i>.</u></p> <p>(d) <u>A <i>Registered Participant</i> whose proposed <i>performance standard</i> is rejected under clause 5.3.7B(a)(2) may dispute NEMMCO's decision to reject the proposed <i>performance standard</i>.</u></p> <p>(e) <u>If a dispute arising under clause 5.3.7B(d) is not resolved in accordance with clause 8.2.4 within 60 <i>business days</i>, notwithstanding any other provision in clause 8.2, the <i>Adviser</i> must refer the dispute for resolution to a <i>DRP</i> for determination in accordance with clauses 8.2.6A to 8.2.6D.</u></p>		
5.3.8	<p><b>5.3.8 Provision and use of information</b></p> <p>(a) The data and information to be provided by a <i>Connection Applicant</i> under clause 5.3 must be:</p> <ol style="list-style-type: none"> <li>(1) <u>be prepared, given and used in good faith;</u></li> <li>(2) <u>be treated as <i>confidential information</i>; and</u></li> <li>(3) <del>protected from being</del> <u>not be disclosed or made available by the recipient to a third party; except for the purpose of enabling <i>Network Service Providers</i> and NEMMCO to assess the effect of the proposed <i>facility</i> on the performance of the <i>power system</i> and determine the extent of any required <i>augmentation</i> or <i>extension</i> or for the purpose of enabling <i>Network Service Providers</i> to advise NEMMCO of <i>ancillary services</i> to be</u></li> </ol>	<p>The protection from disclosure that was in clause 5.3.8(a)(3) has been limited to the point where the project becomes a “<i>considered project</i>”. The information remains confidential. (a1) is reformatted from previous rule (a)(3).</p>	<p>Agree</p>

Affected clause	Clause with proposed amendments	Reason	REGA Comments
	<p style="text-align: center;"><del>provided under a <i>connection agreement</i> in the circumstances set out in clauses 5.3.2(b), 5.3.8(a1), 5.3.8(a2) and 5.3.8(a3).</del></p> <p>(a1) <u>The data and information to be provided under clause 5.3 may be disclosed by a <i>Network Service Provider</i> to <i>NEMMCO</i> and by <i>NEMMCO</i> to a <i>Network Service Provider</i> for the purpose of enabling <i>Network Service Providers</i> or <i>NEMMCO</i> (as the case may be) to:</u></p> <p style="padding-left: 20px;">(1) <u>assess the effect of the proposed <i>facility</i> or proposed alteration to <i>generating plant</i> (as the case may be) on the performance of the <i>power system</i> or another proposed <i>facility</i> or another proposed alteration;</u></p> <p style="padding-left: 20px;">(2) <u>determine the extent of any required <i>augmentation</i> or <i>extension</i>; or</u></p> <p style="padding-left: 20px;">(3) <u>advise <i>NEMMCO</i> of services described in clause 3.11.4(j).</u></p> <p>(a2) <u>Where a technical requirement in clause S5.2.5, S5.2.6, S5.2.8 or S5.2.9 requires a <i>Network Service Provider</i> or a <i>Generator</i> to take into account a <i>considered project</i> when negotiating an <i>access standard</i>, the data and information to be provided under clause 5.3 on the <i>considered project</i> may be disclosed by the <i>Network Service Provider</i> to the <i>Connection Applicant</i> to the extent reasonably necessary for the <i>Connection Applicant</i> to determine a proposed <i>access standard</i> for that technical requirement.</u></p> <p>(a3) <u>The data and information to be provided under clause 5.3 may only be disclosed by the recipient to a third party as allowed under clauses 3.13.3(k) and 3.13.3(k1) once:</u></p> <p style="padding-left: 20px;">(1) <u>a person is registered with <i>NEMMCO</i> as a <i>Registered Participant</i> in respect of the relevant <i>plant</i>; and</u></p> <p style="padding-left: 20px;">(2) <u>unless the disclosure is to a <i>Transmission Network Service Provider</i>, only if it does not contain data and information from which the load characteristics described in clause S5.5.5</u></p>		

Affected clause	Clause with proposed amendments	Reason	REGA Comments
	<p style="text-align: center;"><u>could be derived as an identifiable component.</u></p> <p>(b) A person intending to disclose information under clause 5.3.8(a)(3)(a1) must first advise the relevant <i>Connection Applicant</i> of the extent of the disclosure.</p>		
5.3.9	<p><b><u>5.3.9 Procedure to be followed by a Generator proposing to alter a Generating System</u></b></p> <p>(a) <u>If a Generator:</u></p> <p style="padding-left: 20px;">(1) <u>proposes to alter a <i>connected generating system</i>;</u> <u>or</u></p> <p style="padding-left: 20px;">(2) <u>proposes to alter a <i>generating system</i> for which <i>performance standards</i> have been previously accepted by <i>NEMMCO</i>,</u> <u>in a manner that will affect the performance of the <i>generating system</i> relative to any of the technical requirements set out in clauses S5.2.5, S5.2.6, S5.2.8 and S5.2.9, this clause 5.3.9 must first be followed by the <i>Generator</i>.</u></p> <p>(b) <u>The <i>Generator</i> must submit to the <i>Network Service Provider</i>, with a copy to <i>NEMMCO</i>:</u></p> <p style="padding-left: 20px;">(1) <u>a description of the nature of the alteration and the timetable for implementation;</u></p> <p style="padding-left: 20px;">(2) <u>in respect of the <i>generating system</i> as altered, details of the <i>generating unit</i> design data and <i>generating unit</i> setting data in accordance with schedule S5.5 or the <i>Generating System Model Guidelines, Generating System Design Data Sheet, or Generating System Setting Data Sheet</i>;</u></p> <p style="padding-left: 20px;">(3) <u>in respect of the <i>generating system</i> as altered, the information described in clause S5.2.4(b);</u> <u>and</u></p> <p style="padding-left: 20px;">(4) <u>proposed amendments to the relevant <i>performance standard</i> being, for each relevant technical requirement for which the proposed</u></p>	<p>The existing provisions of clause 5.3 apply to modifying a connection. It is possible to alter generating plant where the alteration has an impact without actually modifying the connection.</p> <p>It is therefore important that the Rules be amended to specifically deal with alterations to generating plant. Clause 5.3.9 is a truncated version of the process set out to establish a connection.</p> <p>An important aspect of this clause is that it clarifies that a modification to plant does not require that all performance standards need to be reconsidered, just those that may be affected by the proposed change. This is necessary because some aspects of plant design are not easily modified, and requiring all performance standards to be reassessed to current standards may discourage Generators from upgrading plant.</p>	<p>Agree with alterations to the table to ensure it is accurate.</p>

Affected clause	Clause with proposed amendments	Reason	REGA Comments																
	<p><u>alteration to the equipment will affect the performance of the <i>generating system</i>, the applicable <i>automatic access standard</i> or a proposed <i>negotiated access standard</i> determined by application of clause 5.3.4A as if that clause applied to the submission.</u></p> <p>(c) <u>Without otherwise limiting clause 5.3.9(b)(4), for the purposes of that clause, a proposed alteration to the equipment specified in column 1 of the table set out below is taken to affect the performance of the <i>generating system</i> relative to technical requirements specified in column 2 thereby necessitating a submission under clause 5.3.9(b)(4):</u></p> <table border="1"> <thead> <tr> <th><u>Column 1</u> <u>(altered equipment)</u></th> <th><u>Column 2</u> <u>(clause)</u></th> </tr> </thead> <tbody> <tr> <td><u>machine windings</u></td> <td><u>S5.2.5.1, S5.2.5.2, S5.2.9</u></td> </tr> <tr> <td><u>power converter</u></td> <td><u>S5.2.5.1, S5.2.5.2, S5.2.5.3C, S5.2.5.12, S5.2.5.13, S5.2.9</u></td> </tr> <tr> <td><u>reactive compensation plant</u></td> <td><u>S5.2.5.1, S5.2.5.2, S5.2.5.3C, S5.2.5.12, S5.2.5.13</u></td> </tr> <tr> <td><u>excitation control system</u></td> <td><u>S5.2.5.3C, S5.2.5.12, S5.2.5.13</u></td> </tr> <tr> <td><u>voltage control system</u></td> <td><u>S5.2.5.3C, S5.2.5.12, S5.2.5.13</u></td> </tr> <tr> <td><u>governor control system</u></td> <td><u>S5.2.5.11, S5.2.5.14</u></td> </tr> <tr> <td><u>power control system</u></td> <td><u>S5.2.5.11, S5.2.5.14</u></td> </tr> </tbody> </table>	<u>Column 1</u> <u>(altered equipment)</u>	<u>Column 2</u> <u>(clause)</u>	<u>machine windings</u>	<u>S5.2.5.1, S5.2.5.2, S5.2.9</u>	<u>power converter</u>	<u>S5.2.5.1, S5.2.5.2, S5.2.5.3C, S5.2.5.12, S5.2.5.13, S5.2.9</u>	<u>reactive compensation plant</u>	<u>S5.2.5.1, S5.2.5.2, S5.2.5.3C, S5.2.5.12, S5.2.5.13</u>	<u>excitation control system</u>	<u>S5.2.5.3C, S5.2.5.12, S5.2.5.13</u>	<u>voltage control system</u>	<u>S5.2.5.3C, S5.2.5.12, S5.2.5.13</u>	<u>governor control system</u>	<u>S5.2.5.11, S5.2.5.14</u>	<u>power control system</u>	<u>S5.2.5.11, S5.2.5.14</u>		
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<u>power control system</u>	<u>S5.2.5.11, S5.2.5.14</u>																		

Affected clause	Clause with proposed amendments	Reason	REGA Comments						
	<table border="1"> <tr> <td><u>protection system</u></td> <td><u>S5.2.5.3A, S5.2.5.3B, S5.2.5.3C, S5.2.5.8, S5.2.5.9</u></td> </tr> <tr> <td><u>auxiliary supplies</u></td> <td><u>S5.2.5.1, S5.2.5.2, S5.2.8</u></td> </tr> <tr> <td><u>remote control and monitoring system</u></td> <td><u>S5.2.5.14, S5.2.6.1, S5.2.6.3</u></td> </tr> </table> <p>(e) <u>The Network Service Provider may, as a condition of considering the submission made under clause 5.3.9(b), require payment of a fee to meet the reasonable costs anticipated to be incurred by it and any other Network Service Providers and NEMMCO in the assessment of the submission. The Network Service Provider must require payment of such a fee if so requested by NEMMCO. On payment of the required fee, the Network Service Provider must pay such amounts as are on account of the costs anticipated to be incurred by the other Network Service Providers and NEMMCO as appropriate.</u></p> <p>(f) <u>The Network Service Provider and the other party must immediately jointly advise NEMMCO when a variation to an existing connection agreement has been entered into between them in relation to an alteration to a generating system.</u></p>	<u>protection system</u>	<u>S5.2.5.3A, S5.2.5.3B, S5.2.5.3C, S5.2.5.8, S5.2.5.9</u>	<u>auxiliary supplies</u>	<u>S5.2.5.1, S5.2.5.2, S5.2.8</u>	<u>remote control and monitoring system</u>	<u>S5.2.5.14, S5.2.6.1, S5.2.6.3</u>		
<u>protection system</u>	<u>S5.2.5.3A, S5.2.5.3B, S5.2.5.3C, S5.2.5.8, S5.2.5.9</u>								
<u>auxiliary supplies</u>	<u>S5.2.5.1, S5.2.5.2, S5.2.8</u>								
<u>remote control and monitoring system</u>	<u>S5.2.5.14, S5.2.6.1, S5.2.6.3</u>								
<u>5.3.10</u>	<p><b><u>5.3.10 Acceptance of Performance Standards for Generating Plant that is Altered</u></b></p> <p>(a) <u>A Generator must not commission altered generating plant until the Generator has satisfied NEMMCO that clause 5.3.9 has been complied with and each amended performance standard submitted:</u></p> <p>(1) <u>either meets the automatic access standard applicable to the relevant technical requirement or, if the performance standard does not meet the automatic access standard, it would not be</u></p>	This clause is required to set out the procedure and tests to be applied in determining whether to accept or reject proposed performance standards submitted on alteration of generating plant.	An alteration to an existing generating system should only require the performance of the plant post modification to meet its existing performance standard.						

Affected clause	Clause with proposed amendments	Reason	REGA Comments
	<p><u>rejected if clauses 5.3.4A(a) and 5.3.4A(d) were applied at the time the submission of performance standards is received by NEMMCO;</u></p> <p>(2) <u>is drafted to enable, in NEMMCO's reasonable opinion, a compliance program to be instituted and maintained in respect of the performance standard under clause 5.12(c); and</u></p> <p>(3) <u>can be complied with, based on the information provided to NEMMCO.</u></p>		
5.4.1	<p><b>5.4.1 Applicability</b></p> <p><del>This clause</del> Clause 5.4 applies only to new installations and modifications to existing installations (<u>including, without limitation, alterations to existing generating plant</u>) after 13 December 1998 (in the case of installations located in <i>participating jurisdictions</i> other than Tasmania) and after <del>the date that Tasmania becomes a participating jurisdiction</del> <u>29 May 2005</u> in the case of installations located in Tasmania.</p>	<p>This change is necessary to make it clear that clause 5.4 (Design of Connected Equipment) applies to the alteration of generating plant.</p> <p>Also amended to clarify date when Tasmanian installations are covered.</p>	Agree
5.4.2	<p>(a) At any stage prior to commissioning the <i>facility</i> in respect of a <i>connection</i>, the <u>Registered Participant or the person intending to be registered as a Generator</u> must advise the relevant <i>Network Service Provider and NEMMCO</i> in writing of any inconsistency between the proposed equipment and the <del>provisions of the relevant connection agreement</del> <u>performance standards</u> and, if necessary, the <i>Network Service Provider</i> and the <i>Registered Participant</i> or the <u>person intending to be registered as a Generator</u> must negotiate in good faith any necessary changes to the <del>connection agreement</del> <u>relevant performance standards</u> under clause 5.3.9.</p> <p>(b) If there is an inconsistency in a <del>connection agreement</del> <u>performance standard</u> identified in clause 5.4.2(a), the <u>Registered Participant or the person intending to be registered as a Generator</u> and <i>Network Service Provider</i> must not commission the <u>facility</u> in respect of a</p>	<p>These changes are necessary to ensure that any inconsistency between the plant and the performance standards are resolved before commissioning. As the performance standards are accepted subject to the execution of the Connection Agreement the reference to connection agreement can be removed.</p>	NEMMCO should also be required to negotiate in good faith as they are a party to almost all negotiations

Affected clause	Clause with proposed amendments	Reason	REGA Comments
	<p><i>connection</i> unless the <i>facility</i> or the <del><i>connection agreement</i></del> <i>performance standard</i> has been varied to remove the inconsistency.</p> <p>(c) Nothing in this clause 5.4.2 affects the operation of clause 5.3.6(c1).</p>		
5.7.3(a)	<p>(a) Each <i>Generator</i> must, prior to the <i>Generator</i> implementing a compliance program in accordance with clause <del>4.15(b)</del>5.12(b), provide evidence to any relevant <i>Network Service Provider</i> with which that <i>Generator</i> has a <i>connection agreement</i> and <i>NEMMCO</i> that each of its <i>generating units</i> complies with the applicable technical requirements of clause S5.2.5 of schedule 5.2 and the relevant <i>connection agreement</i> and the <i>performance standards</i> for that <i>generating unit</i>.</p>	This change is required to ensure that correct referencing is applied.	Wording – the clause should also refer to “generating systems” as for wind farms some standards are only met at the connection point by the generating system.
5.7.3(c)	<p>(c) If, prior to the <i>Generator</i> implementing a compliance program in accordance with the requirements of clause <del>4.15(b)</del>5.12(b), a performance test or monitoring of in-service performance demonstrates that a <i>generating unit</i> is not complying with one or more technical requirements of clause S5.2.5 of schedule 5.2 and the relevant <i>connection agreement</i> or one or more of the <i>performance standards</i> for that <i>generating unit</i> then the <i>Generator</i> must:</p>	This change is required to ensure that correct referencing is applied.	Wording – the clause should also refer to “generating systems” as for wind farms some standards are only met at the connection point by the generating system.
5.7.3(e)	<p>(e) If <i>NEMMCO</i>:</p> <p>(1) is satisfied that:</p> <p>(i) a <i>generating unit</i> or <i>generating system</i> does not comply with <u>its <i>performance standards</i></u> in respect of one or more technical requirements of clauses S5.2.5, S5.2.6, S5.2.8 or S5.2.9 <del>of schedule 5.2</del> and the relevant <i>connection agreement</i>; or</p> <p>(ii) <del>does not have evidence demonstrating that a <i>generating unit</i> complies with the technical requirements set out in clause S5.2.5 of schedule 5.2</del> a <i>generating unit's</i> or <i>generating</i></p>	These amendments are to change the reference to technical requirements to references to performance standards, and to include inadequate models used to assess power system security as grounds for directing the <i>Generator</i> to operate the plant.	Agree

Affected clause	Clause with proposed amendments	Reason	REGA Comments
	<p><u>system's performance is not adequately represented by the applicable analytical model provided under clause 5.7.6(g) or clause S5.2.4; and</u></p> <p>(2) holds the reasonable opinion that there is, or could be, a threat to <i>power system security</i> because of the performance of the <i>generating unit</i> or <i>generating system</i>, or because the inadequacy of its analytical model is adversely affecting <i>NEMMCO's</i> ability to assess <i>power system security</i>, including <i>power transfer capabilities</i>; <del>and</del></p> <p><del>(3) holds the reasonable opinion that there is or could be a threat to the <i>power system security</i> because of the performance of the <i>generating unit</i>,</del></p> <p><i>NEMMCO</i> may direct the relevant <i>Generator</i> to operate the relevant <i>generating unit</i> or <i>generating system</i> at a particular <i>generated</i> output or in a particular mode until the relevant <i>Generator</i> submits evidence reasonably satisfactory to <i>NEMMCO</i> that the <i>generating unit</i> or <i>generating system</i> is complying with the relevant <del>technical requirement(s)</del> <u>performance standard and performing substantially in accordance with its analytical model.</u></p>		
5.7.6(a1)	<p>(a1) <u>If <i>NEMMCO</i> reasonably considers that:</u></p> <p>(1) <u>the analytical parameters for modelling of a <i>generating unit</i> or <i>generating system</i> are inadequate; or</u></p> <p>(2) <u>available information, including results from a previous test of a <i>generating unit</i> or <i>generating system</i> are inadequate to determine parameters for an applicable model developed in accordance with the <i>Generating System Model Guidelines</i>, or otherwise agreed with <i>NEMMCO</i> under clause S5.2.4(b1)(2).</u></p>	This clause gives NEMMCO a right to require an NSP to exercise its power to request testing to determine analytical parameters for modelling purposes. This is necessary because NEMMCO has a responsibility for power system security, and ability to ensure power system security is strongly affected by the quality of models used to determine stability limits.	Agree

Affected clause	Clause with proposed amendments	Reason	REGA Comments
	<u>NEMMCO may direct a Network Service Provider to require a Generator to conduct a test under clause 5.7.6(a). NEMMCO may witness such tests.</u>		
5.7.6(g)	(g) <del>The Network Service Provider must provide to a Generator such details of the analytic parameters of the model derived from the tests referred to in clause 5.7.6 for any of that Generator's generating units as may reasonably be requested by the Generator</del> The Generator must provide the test records obtained from a test under clause 5.7.6(a) to the Network Service Provider, who must derive the analytical parameters for the applicable model developed in accordance with the <i>Generating System Model Guidelines</i> , or otherwise agreed with NEMMCO under clause S5.2.4(b1)(2) and provide them to NEMMCO and the relevant Generator.	This amendment gives NEMMCO access to analytical parameters derived from tests under clause 5.7.6.	Agree
5.7.6(h)	(h) <del>Each of the Generator, the Network Service Provider and NEMMCO</del> must bear its own costs associated with tests conducted under this clause 5.7.6 and no compensation is to be payable for financial losses incurred as a result of these tests or associated activities.	This amendment adds NEMMCO and NSP to list of parties to bear their own costs for testing. (NSP previously only implied).	Excluding further testing carried out under 5.7.6(a1) at NEMMCO's request and cost.
5.10	<p><b><u>5.10 Performance Standards – transitional arrangements</u></b></p> <p><b><u>5.10.1 Submission of Performance Standards on or about the Performance Standards Commencement Date</u></b></p> <p>(a) <u>A Generator, Customer or Market Network Service Provider who, at the performance standards commencement date, engages in the activity of owning, controlling or operating plant must, within 30 days of the performance standards commencement date, submit to NEMMCO proposed performance standards for that plant, to be:</u></p> <p>(1) <u>in the case of a person who is registered as a Generator in relation to that plant – in accordance with schedule 5.2;</u></p> <p>(2) <u>in the case of a person who is registered as a Customer in relation to that plant – in</u></p>	<p>Clause 5.10.1(b) has been rewritten from 4.13.(b). The words “confidential information” have been removed because some of the information required is considered elsewhere in the Rules to be “confidential information”, but nevertheless may need to be provided.</p> <p>Clause 5.10.1(c) is required to correct an anomaly in the current Rules where people with signed connection agreements who were not Registered Participants at the time of the last changes to the Code (preceding the change to Rules), but who subsequently became registered, are not covered by the process to create performance standards either</p>	<p>A derogation is a more appropriate manner to deal with transitional changes with a sunset date.</p> <p>Must refer to the standards outlined in 5.10.3</p>

Affected clause	Clause with proposed amendments	Reason	REGA Comments
	<p><u>accordance with schedule 5.3; or</u></p> <p>(3) <u>in the case of a person who is registered as a Market Network Service Provider in relation to that plant –in accordance with schedule 5.3a.</u></p> <p>(b) <u>A Network Service Provider must, on request by a person who has made a submission under clause 5.10.1(a), 5.10.1(c) or 5.10.1(d) whose facility is connected to the Network Service Provider’s network, provide that person with all performance data and other information reasonably required by that person to satisfy its obligations under clauses 5.10.1(a), 5.10.1(c) and 5.10.1(d).</u></p> <p>(c) <u>A person who, at the performance standards commencement date:</u></p> <p>(1) <u>was not registered as a Generator, Customer or Market Network Service Provider; and</u></p> <p>(2) <u>was either:</u></p> <p>(i) <u>party to a connection agreement; or</u></p> <p>(ii) <u>negotiating a connection agreement, the negotiation of which was not subject to clause 5.3.4A; and</u></p> <p>(3) <u>who subsequent to the performance standards commencement date, but prior to the date this clause 5.10.1 became effective (“effective date”), registered as a Generator, Customer or Market Network Service Provider,</u></p> <p><u>must, within 30 days of the effective date, submit to NEMMCO proposed performance standards for that plant in accordance with clause 5.10.1(e).</u></p> <p>(d) <u>A person who at the effective date was not registered as a Generator, Customer or Market Network Service Provider, but was party to a connection agreement must, within 30 days of the effective date, submit to NEMMCO proposed performance standards for that plant in</u></p>	<p>under chapter 5 or chapter 4. This clause ensures that performance standards will now be recorded for these Participants.</p> <p>Clause 5.10.1(e) is required as a transitional arrangement for the introduction of the new process where performance standards are assessed before the connection agreement is signed.</p>	

Affected clause	Clause with proposed amendments	Reason	REGA Comments
	<p>accordance with clause 5.10.1(e).</p> <p>(e) <u>The <i>performance standards</i> required to be submitted under clause 5.10.1(c) and (d) must be in accordance with:</u></p> <p>(1) <u>schedule 5.2 if they are to be registered by a <i>Generator</i> in relation to relevant <i>plant</i>;</u></p> <p>(2) <u>schedule 5.3 if they are to be registered by a <i>Customer</i> in relation to relevant <i>plant</i>; or</u></p> <p>(3) <u>schedule 5.3a if they are to be registered by a <i>Market Network Service Provider</i> in relation to relevant <i>plant</i>.</u></p> <p><b><u>5.10.2 Submission of Performance Standards where the Technical Requirements Change</u></b></p> <p>(a) <u>If, subsequent to the establishment of the <i>performance standards</i> a technical requirement against which those <i>performance standards</i> were assessed changes, or has changed in any respect, or a new technical requirement is inserted into the <i>Rules</i>, the relevant <i>Generator</i>, <i>Customer</i> or <i>Market Network Service Provider</i> must submit to <i>NEMMCO</i> a proposed <i>performance standard</i> for each of the changed technical requirements.</u></p> <p>(b) <u>A <i>Network Service Provider</i> must, on request by a person who has made a submission under clause 5.10.2 whose <i>facility</i> is connected to the <i>Network Service Provider's network</i>, provide that person with all performance data and other information reasonably required by that person to enable it to satisfy its clause 5.10.2(a) obligations.</u></p> <p><b><u>5.10.3 Standard of Proposed Performance Standards</u></b></p> <p><u>A proposed <i>performance standard</i> submitted by a <i>Generator</i> or <i>person</i> under clauses 5.10.1 or 5.10.2 must be at a standard at least equal to:</u></p> <p>(a) <u>where there is already a relevant registered <i>performance standard</i>, that registered <i>performance standard</i>;</u></p>	<p>The existing Rules are deficient in that they do not deal with the situation where the technical requirements change. It is important that <i>Generators</i> address any changes in the technical requirements to ensure system security, reliability and quality of supply are maintained. Clause 5.10.2 is inserted to correct this omission.</p> <p>This clause is required so that the performance standards submitted are not of a lesser standard than what currently is agreed or if there is no agreement, then what is technically achievable by the plant.</p>	<p>Not acceptable – Open ended requirement. This provides no regulatory certainty. Participants may be required to upgrade their plants after building and agreeing performance standards.</p> <p>Subject to ongoing discussions regarding ‘Grandfathering’ of existing plant.</p>

Affected clause	Clause with proposed amendments	Reason	REGA Comments
	<p>(b) <u>where there is no relevant registered performance standard, the relevant technical requirement set out in the relevant connection agreement; and</u></p> <p>(c) <u>where there is no relevant registered performance standard and no relevant technical requirement in the connection agreement, the relevant design performance of the plant.</u></p>		
5.11	<p><b><u>5.11 Acceptance of Performance Standards</u></b></p> <p><b><u>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</u></b></p> <p>(a) <u>Following receipt of a proposed set of performance standards under clauses 5.10.1(a), 5.10.1(c), 5.10.1(d) 5.10.2(a) or 5.11.1(g), NEMMCO must assess whether, in its reasonable opinion, each proposed performance standard:</u></p> <ol style="list-style-type: none"> <li>(1) <u>satisfies clause 5.10.3 and the technical requirements set out in schedules 5.1, 5.2, 5.3 and 5.3a as at the performance standards commencement date subject to any derogation applicable to the plant to which the proposed performance standards apply;</u></li> <li>(2) <u>is drafted to enable, in NEMMCO's reasonable opinion, a compliance program to be instituted and maintained in respect of the performance standard under clause 5.12(c); and</u></li> <li>(3) <u>can be complied with, based on the information provided to NEMMCO by the Network Service Provider and the Connection Applicant.</u></li> </ol> <p>(b) <u>In respect of a submission under clause 5.10.1(a), 5.10.1(c), 5.10.1(d), 5.10.2, or 5.11.1(b) to 5.11.1(l) shall apply to NEMMCO and the person making the</u></p>	<p>Clause 5.11 reiterates the existing clause 4.14 with the necessary amendments.</p> <p>Clause 5.11.1(a1) deals with the situation regarding the requirement to lodge performance standards when the technical requirements change. The intent of this clause is that existing process of registering performance standards is continued for subsequent changes to performance standards (including the current proposals).</p>	<p>Generally agreed – Good process with comments as described below</p>

Affected clause	Clause with proposed amendments	Reason	REGA Comments
	<p><u>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.</u></p> <p>(c) <u>To the extent of any inconsistency between:</u></p> <p>(1) <u>a performance standard determined in accordance with a derogation in force at the performance standards commencement date and a performance standard determined in accordance with:</u></p> <p>(i) <u>the technical requirements set out in schedules 5.1, 5.2, 5.3 and 5.3a;</u></p> <p>(ii) <u>the connection agreement applicable to the plant to which the performance standard applies; or</u></p> <p>(iii) <u>the design performance of the plant at the performance standards commencement date,</u></p> <p><u>the performance standard determined in accordance with the derogation will prevail;</u></p> <p>(2) <u>a performance standard determined in accordance with an existing connection agreement and a performance standard determined in accordance with:</u></p> <p>(i) <u>the technical requirements set out in schedules 5.1, 5.2, 5.3 and 5.3a; or</u></p> <p>(ii) <u>the design performance of the plant at the performance standards commencement date,</u></p> <p><u>the performance standard determined in accordance with the connection agreement will prevail; and</u></p> <p>(3) <u>a performance standard determined in</u></p>		

Affected clause	Clause with proposed amendments	Reason	REGA Comments
	<p><u>accordance with the design performance of the plant at the performance standards commencement date and a performance standard determined in accordance with the technical requirements set out in schedules 5.1, 5.2, 5.3 and 5.3a, the performance standard determined in accordance with the design performance of the plant will prevail.</u></p> <p>(d) <u>NEMMCO must, if it assesses that a proposed performance standard:</u></p> <p>(1) <u>meets the criteria set out in clause 5.11.1(a), accept the proposed performance standard; or</u></p> <p>(2) <u>does not meet the criteria set out clause 5.11.1(a), reject the proposed performance standard.</u></p> <p>(e) <u>NEMMCO must advise the person who submitted a proposed performance standard, under clause 5.10.1(a) or 5.10.1(c), 5.10.1(d) or 5.10.2 or 5.11.1(g) of its decision to accept or reject the proposed performance standard under clause 5.11.1(d), within 60 business days of submission of the proposed performance standard to NEMMCO in accordance with clause 5.10.1(a), 5.10.1(c), 5.10.1(d), 5.10.2 or 5.11.1(g) (as the case may be).</u></p> <p>(f) <u>If NEMMCO rejects a proposed performance standard under clause 5.11.1(d)(2), NEMMCO must, when advising the person under clause 5.11.1(e), also provide the person with detailed reasons for its decision.</u></p> <p>(g) <u>If NEMMCO rejects a proposed performance standard under clause 5.11.1(d)(2), the person who submitted the proposed performance standard to NEMMCO must, within 20 business days of the date on which NEMMCO made its decision to reject the proposed performance standard, resubmit an amended proposed performance standard under clause 5.10.1(a), 5.10.1(c), 5.10.1(d) or 5.10.2 (as the case may be), taking NEMMCO's comments into consideration.</u></p> <p>(h) <u>If, 11 months from the date that a person is required</u></p>		

Affected clause	Clause with proposed amendments	Reason	REGA Comments
	<p><u>under clause 5.10.1(a), 5.10.1(c), 5.10.1(d) or 5.10.2 (as the case may be) to submit a proposed <i>performance standard</i> a <i>performance standard</i> has not been approved under clause 5.11.1(d)(1), the <i>performance standard</i> for the <i>plant</i> to which the proposed <i>performance standard</i> related is deemed to be (in order of priority):</u></p> <p><u>(1) the technical characteristics set out in the relevant <i>connection agreement</i> or, in the case of a submission made under clause 5.10.2, if there is an existing <i>performance standard</i> registered with <i>NEMMCO</i>, that <i>performance standard</i>;</u></p> <p><u>(2) if a <i>derogation</i> is in place, the <i>connection agreement</i> subject to the technical characteristics set out in the relevant <i>derogation</i>;</u> <u>or</u></p> <p><u>(3) the connection requirements of the <i>connection point</i> determined under schedule 5.2, 5.3 or 5.3a as applicable to the <i>plant</i> and where there is an <i>automatic access standard</i> for a technical requirement, that standard.</u></p> <p><u>(i) For the purposes of clause 5.11.1, <i>NEMMCO</i> must accept a <i>performance standard</i> materially based on and consistent with a <i>derogation</i> applicable to the <i>plant</i> to which the <i>performance standard</i> applies.</u></p> <p><u>(j) A person whose proposed <i>performance standard</i> is rejected under clause 5.11.1(d)(2) may dispute <i>NEMMCO's</i> decision to reject the proposed <i>performance standard</i> and will be taken to be a <i>Connection Applicant</i> for the purposes of the dispute.</u></p> <p><u>(k) If a dispute arising under clause 5.11.1(j) is not resolved in accordance with clause 8.2.4 within 60 <i>business days</i>, notwithstanding any other provision in clause 8.2, the <i>Adviser</i> must refer the dispute for resolution to a <i>DRP</i> for determination in accordance with clauses 8.2.6A to 8.2.6D.</u></p> <p><u>(l) <i>NEMMCO</i>, or in respect of a matter concerning the quality of <i>supply</i> to <i>Network Users</i>, <i>NEMMCO</i> in</u></p>		<p>Deeming of Performance Standards is a transitional arrangement and should be dealt with as such.</p> <p>Unrealistic – this clause deems the automatic access standard. If the Plant was capable of this standard, deeming would not be necessary.</p>

Affected clause	Clause with proposed amendments	Reason	REGA Comments
	<p><u>consultation with the relevant <i>Network Service Provider</i>, must, when determining the applicable <i>performance standard</i> for a particular requirement based on any provision of schedules 5.1, 5.2, 5.3 and 5.3a, require a person to meet or exceed the <i>minimum access standard</i> but must not require that person to exceed the relevant <i>automatic access standard</i> for that requirement.</u></p> <p><b><u>5.11.2 Access to Information for Assessment of Proposed Performance Standards</u></b></p> <p>(a) <u><i>NEMMCO</i> may request that a person who has submitted a proposed <i>performance standard</i> in accordance with clauses 5.3.7A (1), 5.10.1(a), 5.10.1(c), 5.10.2, 5.10.3, 5.10.2 or 5.11.1(g) provides additional supporting information including, without limitation, an up-to-date version of the <i>connection agreement</i>, to facilitate <i>NEMMCO</i>'s assessment of the <i>performance standard</i> submitted.</u></p> <p>(b) <u>A person who receives a request from <i>NEMMCO</i> under clause 5.11.2(a) must comply with the request within 5 <i>business days</i> of the request or such further time as agreed by <i>NEMMCO</i>.</u></p> <p>(c) <u>If a clause 5.11.2(a) request relates to a clause 5.3.7A(a) submission, <i>NEMMCO</i> must make the request within 5 <i>business days</i> of receiving the information referred to in clauses 5.3.7A(b) and S5.2.4.</u></p> <p>(d) <u>A <i>connection agreement</i> submitted under clause 5.11.2(b) or 5.3.7A(b) is <i>confidential information</i>.</u></p> <p>(e) <u><i>Performance standards</i> and proposed <i>performance standards</i> are <i>confidential information</i>.</u></p> <p><b><u>5.11.3 Register of Performance Standards</u></b></p> <p>(a) <u>This clause 5.11.3(a) does not apply to <i>generating plant</i>. An <i>automatic access standard</i> or, if the procedures in clause 5.3.4A have been followed, a <i>negotiated access standard</i> included in a <i>connection agreement</i>, is taken to be the <i>performance standard</i> applicable to the <i>connected plant</i> for the relevant technical requirement. If there is no</u></p>	<p>This clause is required to ensure <i>NEMMCO</i> has access to the information it requires to assess proposed performance standards. Appropriate safeguards are inserted to ensure that certain information is regarded as confidential information and so attracts the protection that the Rules afford such information.</p> <p>Clause 5.11.3(a) is a reworking of clause 5.3.4A(g). It has been amended so that it</p>	<p>A Generator should not be required to exceed any existing performance standard.</p> <p>Wording - change 'up-to-date' to 'current'</p> <p>Should only be the technical and operational sections of the Connection Agreement, complete Connection Agreement is not acceptable.</p> <p>Agree</p>

Affected clause	Clause with proposed amendments	Reason	REGA Comments
	<p><u>automatic access standard and no minimum access standard for a technical requirement, the access standard set out in schedule 5.1, 5.3 or 5.3a (as the case may be) that is relevant to that technical requirement is taken to be the performance standard applicable to the connected plant for that technical requirement.</u></p> <p>(b) <u>From the performance standards commencement date, NEMMCO must establish, maintain and update a register of the performance standards applicable to plant. NEMMCO must record on the register performance standards once they are accepted by NEMMCO under clauses 5.3.7B(a) or 5.11.1(d) or deemed to be performance standards under clause 5.11.1(h).</u></p> <p>(c) <u>If a person becomes aware that the information utilised to obtain the acceptance of a performance standard is incorrect or incomplete in a material respect, that person must immediately notify NEMMCO of the details. If NEMMCO receives such a notice, or itself considers that the information used is incorrect or incomplete in a material respect, NEMMCO may recommence an assessment of that performance standard and clauses 5.3.7A, 5.3.7B, 5.10 and 5.11 and 5.12 shall apply and operate as if a submission had been made under clause 5.3.7A or 5.10 (as the case may be). This clause 5.11.3(e) operates notwithstanding that the relevant performance standard is registered.</u></p> <p>(d) <u>A performance standard may be amended at any time by agreement between NEMMCO, the relevant Registered Participant and Network Service Provider provided it does not adversely affect power system security.</u></p>	<p>does not apply to generators. This is because there is now a specific regime that applies to the determination of performance standards for generators. The text of the original 5.3.4A(g) has been amended in 5.11.3(a) to cover the situation where there are mandatory technical requirements. This situation was not dealt with by the original text of 5.3.4A(g).</p> <p>Clause 5.11.3(b) imposes an obligation on NEMMCO to establish and maintain a register of performance standards.</p> <p>Clause 5.11.3(c) imposes an obligation on persons to notify NEMMCO if information on which a proposed performance standard was assessed is found to be incorrect. This clause is necessary to ensure that in such cases NEMMCO is made aware of the situation and so can react in the appropriate manner.</p> <p>Clause 5.11.3(d) is inserted to introduce flexibility into the performance standard regime to change performance standards if agreed by all relevant parties.</p>	
5.12	<p><b>5.12 Performance Standard Compliance</b></p> <p>(a) <u>A Registered Participant must:</u></p>	Amendments are required to ensure appropriate referencing.	Change to ensure correct referencing - agreed

Affected clause	Clause with proposed amendments	Reason	REGA Comments
	<p>(1) <u>ensure that its <i>plant</i> meets or exceeds each applicable <i>performance standard</i>;</u></p> <p>(2) <u>ensure that its <i>plant</i> is not likely to cause a material adverse effect on <i>power system security</i>; and</u></p> <p>(3) <u>immediately ensure that its <i>plant</i> ceases to be likely to cause a material adverse effect on <i>power system security</i>, if:</u></p> <p style="padding-left: 40px;">(i) <u>the <i>Registered Participant</i> reasonably believes that its <i>plant</i> is likely to cause a material adverse effect on <i>power system security</i>; or</u></p> <p style="padding-left: 40px;">(ii) <u><i>NEMMCO</i> advises the <i>Registered Participant</i> that the <i>Registered Participant's plant</i> is likely to cause a material adverse effect on <i>power system security</i>.</u></p> <p>(b) <u>A <i>Registered Participant</i> who engages in the activity of planning, owning, controlling or operating <i>plant</i> to which a <i>performance standard</i> applies must, within 6 months of the later of the date of the acceptance of the <i>performance standard</i> by <i>NEMMCO</i> or the commencement of operation of the <i>plant</i>, institute and maintain a compliance program under clause 5.12(c).</u></p> <p>(c) <u>A compliance program instituted and maintained in accordance with clause 5.12(b) must:</u></p> <p style="padding-left: 40px;">(1) <u>monitor the performance of the <i>plant</i> in accordance with the compliance program;</u></p> <p style="padding-left: 40px;">(2) <u>ensure that the <i>plant</i> complies with the relevant <i>performance standards</i>;</u></p> <p style="padding-left: 40px;">(3) <u>be in accordance with <i>good electricity industry practice</i>; and</u></p> <p style="padding-left: 40px;">(4) <u>provide reasonable assurance of ongoing compliance with each applicable <i>performance</i></u></p>		<p>This should be assessed at time of connection and not be a continuous requirement, potentially requiring upgrades to plant in the future</p> <p>Duplication with 5.7.3(b)</p>

Affected clause	Clause with proposed amendments	Reason	REGA Comments
	<p style="text-align: center;"><u>standard.</u></p> <p>(d) <u>The AER may request that a Registered Participant who is required to institute and maintain a compliance program under clause 5.12(b) or 5.7.4(a1), deliver to the AER:</u></p> <p style="padding-left: 40px;">(1) <u>the compliance program records setting out the results of the performance monitoring conducted under clause 5.12(f); and</u></p> <p style="padding-left: 40px;">(2) <u>any other records maintained under clause 5.7.3 or 5.7.4, if applicable.</u></p> <p>(e) <u>Each Registered Participant must maintain the compliance program records and any other records developed or maintained under clause 5.7.3 or 5.7.4 for 7 years and deliver such records to the AER under clause 5.12(d) within 2 business days of the date of a request or such further period as the AER requires.</u></p> <p>(f) <u>A Registered Participant who engages in the activity of planning owning, controlling or operating plant to which a performance standard applies must immediately notify NEMMCO if:</u></p> <p style="padding-left: 40px;">(1) <u>the Registered Participant becomes aware that the plant is breaching a performance standard applicable to the plant; or</u></p> <p style="padding-left: 40px;">(2) <u>the Registered Participant reasonably believes that the plant is likely to breach a performance standard applicable to the plant.</u></p> <p>(g) <u>A clause 5.12(f) notice must detail:</u></p> <p style="padding-left: 40px;">(1) <u>the reason for actual or likely non-conformance of the plant with the relevant performance standard;</u></p> <p style="padding-left: 40px;">(2) <u>the actual or likely time of commencement of non-conformance of the plant with the relevant performance standard;</u></p> <p style="padding-left: 40px;">(3) <u>the expected duration of non-conformance of the</u></p>		

Affected clause	Clause with proposed amendments	Reason	REGA Comments
	<p><u>plant with the relevant performance standard; and</u></p> <p><u>(4) the expected performance of the plant in comparison with the relevant performance standard.</u></p> <p><u>(h) A Registered Participant who has notified NEMMCO under clause 5.12(f) must notify NEMMCO that its plant has returned to compliance with the performance standard immediately following the return of the plant to compliance.</u></p> <p><u>(i) Subject to clause 5.12(g), if:</u></p> <p><u>(1) a Registered Participant notifies NEMMCO in accordance with clause 5.12(f); or</u></p> <p><u>(2) NEMMCO otherwise reasonably believes that the plant of a Registered Participant in respect of which a performance standard applies is in breach of that performance standard.</u></p> <p><u>NEMMCO must, determine the period of time within which a Registered Participant must rectify a performance standard breach under clause 5.12(j), and advise the Registered Participant of that period.</u></p> <p><u>(j) When determining the period of time within which a Registered Participant must rectify a performance standard breach under clause 5.12(i), NEMMCO must take into consideration:</u></p> <p><u>(1) the time necessary, in NEMMCO's reasonable opinion, to provide the Registered Participant with the opportunity to remedy the breach; and</u></p> <p><u>(2) the need to act to remedy the breach given the nature of the breach.</u></p> <p><u>(k) If plant remains in breach of a performance standard for a period of time greater than that advised under clause 5.12(i), NEMMCO must notify the AER of the breach.</u></p> <p><u>(l) The effectiveness of a compliance program established</u></p>		

Affected clause	Clause with proposed amendments	Reason	REGA Comments
	<p><u>under clause 5.12(b) must be taken into consideration in any proceeding against a <i>Registered Participant</i> for a breach of clause 5.12(a).</u></p> <p>(m) Any clause 5.7.3(c) obligation imposed on a <i>Generator</i> ceases to operate upon commencement of a compliance program by the <i>Generator</i> under this clause 5.12.</p>		
<p><b>S5.1.7(c) and (d)</b></p>	<p>(c) A <i>Network Service Provider</i> must include conditions in <i>connection agreements</i> to ensure that each <i>Generator</i> will balance the voltage generated in each phase of its <i>generating units</i> and, when not generating, the current drawn in each phase, so as to achieve average levels of negative sequence voltage at each of the <i>generating unit connection points</i> due to phase imbalances within the <i>generating plant</i> not more than:</p> <p>(1) <i>Automatic access standard</i>: the values set out in Table S5.1a.1 and clause S5.1a.7;</p> <p>(2) <i>Minimum access standard</i>: the values determined by the <i>Network Service Provider</i> to achieve average levels of negative sequence voltage at the <i>connection points</i> of other <i>Network Users</i> of not more than the values set out in Table S5.1a.1 and clause S5.1a.7.</p> <p>(d) The <i>Network Service Provider</i> and <i>Generator</i> may include in the <i>connection agreement</i> a requirement to upgrade performance to an agreed level not higher than the <i>automatic access standard</i> if, at any time in the future, another <i>Network User</i> is adversely affected by negative sequence voltage or current imbalance because of this <i>generating plant</i>.</p>		<p>This is an NSP planning obligation not the generators. Any requirements on generator should be in S5.2 (as they are).</p> <p>This clause should deal with the allowable amount of negative sequence voltage on the network.</p> <p>Not acceptable; this is an open-ended requirement, potentially requiring unknown upgrades to plant in the future. It defeats the purpose for having a negotiated or minimum standard.</p>
<p><b>S5.2.1(a)</b></p>	<p>(a) This schedule sets out details of additional requirements and conditions <del>which that</del> <u>that</u> <del>(subject to clause 5.2)</del> <i>Generators</i> must satisfy as a condition of <i>connection</i> of a <i>generating unit</i> to the <i>power system</i>. It does not apply to <u>any generating unit(s) in so far as the person who owns,</u></p>	<p>This clause has been amended to clarify that small generating systems that are eligible for exemption do not need to comply with the requirements of schedule 5.2 whether or not they are registered.</p>	<p>Agree</p>

Affected clause	Clause with proposed amendments	Reason	REGA Comments
	<p><del>controls or operates them is exempt from registration as a Generator in respect of those generating units in accordance with clause 2.2.1(e) of the Rules and which are connected or intended for use in a manner which the Network Service Provider considers is unlikely to cause a material degradation in the quality of supply to other Network Users that is:</del></p> <p><u>(1) subject to an exemption from registration under clause 2.2.1(c); or</u></p> <p><u>(2) eligible for exemption under any guidelines issued under clause 2.2.1(c),</u></p> <p><u>and which is connected or intended for use in a manner the Network Service Provider considers is unlikely to cause a material degradation in the quality of supply to other Network Users.</u></p>	<p>The existing wording could be taken to mean that plant that is eligible for an exemption under the guidelines must still satisfy the technical requirements unless the owner or operator has formally sought and been granted exemption under clause 2.2.1.</p>	
S5.2.1(d)	Delete	<p>Clause S5.2.1(d) adds nothing and is not needed.</p> <p>It is misleading to state that negotiated access standards are derived from minimum access standards. The obligation to record standards in a connection agreement is a requirement of clause 5.3, not this schedule. The registration of performance standards is a requirement of clause 4.14, not this schedule.</p>	Agree with deletion
S5.2.3	<p><b>Technical matters to be co-ordinated</b></p> <p><u>(a) A Generator and the relevant Network Service Provider must use all reasonable endeavours to agree upon relevant technical matters in respect of each new or altered connection of a generating unit or generating system to a network including:</u></p> <p><u>(1a) design at the connection point;</u></p> <p><u>(2b) physical layout adjacent to the connection</u></p>	<p>These changes are necessary to ensure that the network constructed by a Generator complies with appropriate design criteria consistent with Australian Standards and good Electricity Industry practice. These are similar to the requirements already imposed on Customers (clauses S5.3.2 and S5.3.9)</p>	Agreed with comments

Affected clause	Clause with proposed amendments	Reason	REGA Comments
	<p><i>point;</i></p> <p>(3e) primary protection and backup protection (clause S5.2.5);</p> <p>(4e) control characteristics (clause S5.2.5);</p> <p>(5e) communications <u>facilities and alarms</u> (clause S5.2.6);</p> <p>(6f) insulation co-ordination and lightning protection (clause S5.2.3(b));</p> <p>(7g) fault levels and fault clearance <del>times</del> (clause S5.2.9);</p> <p>(8h) switching and isolation facilities (clause S5.2.9);</p> <p>(9i) interlocking and synchronising arrangements; and</p> <p>(10j) <del>metering installations as described in Chapter 7 of the Rules.</del></p> <p>(b) <u>A Generator must ensure that in designing a generating system's electrical plant operating at the same nominal voltage as at the connection point, including any substation for the connection of the generating system to the network:</u></p> <p>(1) <u>the plant complies with the relevant Australian Standards unless a provision of these Rules allows or requires otherwise;</u></p> <p>(2) <u>the earthing of the plant complies with the Electricity Supply Association of Australia Safe Earthing Guide to reduce step and touch potentials to safe levels;</u></p> <p>(3) <u>the plant is capable of withstanding, without damage the voltage impulse levels specified in the connection agreement;</u></p> <p>(4) <u>the insulation levels of the plant are co-ordinated with the insulation levels of the</u></p>	<p>and Market Network Service Providers (clause S5.3a.5 and S5.3a.12) and it is considered a serious omission that similar requirements have not applied to power stations high voltage plant. For example, insulation co-ordination is essential to ensure that plant is not damaged by lightning strikes.</p>	<p>This is implying that the Rules may call for plant to exceed the Australian Standards which REGA believes is unreasonable. Also given that most equipment is sourced from overseas and Australia is only a very small market for the suppliers, recognised International Standards should be allowed as well.</p>

Affected clause	Clause with proposed amendments	Reason	REGA Comments
	<p><u>network to which the generating system is connected as specified in the connection agreement; and</u></p> <p>(5) <u>safety provisions in respect of the plant comply with requirements applicable to the participating jurisdiction in which the generating system is located, as notified by the Network Service Provider.</u></p>		
S5.2.4	<p><b>S5.2.4 Provision of information</b></p> <p>(a) <del>The A Generator or person who has negotiated a proposed connection agreement for connection of a generating system and advised NEMMCO of this under clause 5.3.7A(a) must promptly on request by NEMMCO or the Network Service Provider provide all data of the kinds specified in schedule 5.5 reasonably required by NEMMCO of the Network Service Provider or the Generating System Model Guidelines, Generating System Design Data Sheet, or Generating System Setting Data Sheet about its generating systems.</del></p> <p>(b) <del>Three months before first synchronisation a Generator must, in respect of each proposed scheduled generating unit, provide</del> <u>In respect of an existing or proposed generating system comprised of generating units with a combined nameplate rating of 30 MW or more, by the earlier of:</u></p> <p>(1) <u>the date on which proposed performance standards or amendments to performance standards are submitted to NEMMCO under clause 5.3.7A(a), 5.3.9(b), 5.10.1(a), 5.10.1(c) or 5.10.1(d);</u></p> <p>(2) <u>three months before commissioning of a generating system or planned alteration to a generating system ; and</u></p> <p>(3) <u>5 business days before commissioning of an unplanned alteration to a generating system;</u></p>	<p>The term “scheduled” generating unit has been changed to “generating system comprised of generating units with combined nameplate rating of 30 MW or more” to extend the clause to cover large non-scheduled generating systems (eg some wind farms).</p> <p>The term <i>generating system</i> has also been extended to cover reactive power equipment.</p> <p>The obligation in clause S5.2.4(a) has been extended to an intending Generator that has entered into a connection agreement, because the information is required before registration. The references to schedules S5.5.1 and S5.5.2 have been changed to refer to the documents to be made under clause S5.5.7.</p> <p>The requirement for information in S5.2.4(b) has been extended to cover control systems that are applied to the generating system (as well as those applying to the generating unit), and including controls of such things as Statcoms and SVCs that contribute to the performance of the generating system.</p>	<p>Agreed with comments:</p> <p>Words needed to ensure that the requirements only apply when an alteration affects performance standards</p>

Affected clause	Clause with proposed amendments	Reason	REGA Comments
	<p><u>the Generator, or person required under the Rules to register as the Generator, must provide:</u></p> <p>(4) <u>to NEMMCO and the relevant Network Service Providers (including the relevant Transmission Network Service Provider in respect of an embedded generating unit) and any relevant Distribution Network Service Provider</u> with the following information about the <del>generating unit's control systems for frequency control and voltage control</del> <u>of the generating system:</u></p> <p>(i) a set of functional block diagrams, including all functions between feedback signals and <i>generating unit</i> output;</p> <p>(ii) the parameters of each functional block, including all settings, gains, time constants, delays, deadbands and limits; and</p> <p>(iii) the characteristics of non-linear elements; <u>and</u></p> <p>(5) <u>to NEMMCO only, simulation source code in an unencrypted form suitable for at least one of the software simulation products nominated by NEMMCO and in a form that would allow conversion for use with other software simulation products by NEMMCO,</u></p> <p>sufficient for <i>NEMMCO</i> and <i>Network Service Providers</i> to perform load flow and dynamic simulation studies.</p> <p><del>The information provided must be updated within 3 months after commissioning tests or other tests undertaken in accordance with clause 5.7.3 of the Rules are completed. The connection agreement must record the process for subsequently changing this information. Conformance with the requirements described in this clause is the responsibility of the Generator and is subject to the provisions of clause 5.7.3(f) of the Rules</del></p>		

Affected clause	Clause with proposed amendments	Reason	REGA Comments
	<p><del>for each <i>generating unit</i>.</del></p> <p>(b1) <u>The information provided under clause S5.2.4(b) must:</u></p> <p>(1) <u>encompass all <i>control systems</i> that respond to voltage or frequency disturbances on the <i>power system</i>, and which are either integral to the <i>generating units</i> or otherwise part of the <i>generating system</i>, including, without limitation, those applying to <i>reactive power</i> equipment that forms part of the <i>generating system</i>;</u></p> <p>(2) <u>conform with the applicable models developed in accordance with the <i>Generating System Model Guidelines</i>, or an alternative model agreed with <i>NEMMCO</i> to be necessary to adequately represent the <i>generating plant</i> to carry out load flow and dynamic simulations.</u></p> <p>(b2) <u>The <i>Generator</i> must update the information provided under clause S5.2.4(b) within 3 months after commissioning tests or other tests undertaken in accordance with clause 5.7.3 are completed.</u></p> <p>(c) For the purposes of clause 5.3.2(d) <del>of the <i>Rules</i></del>, the technical information that a <i>Network Service Provider</i> must, if requested, provide to a <i>Connection Applicant</i> in respect of the proposed <i>connection</i> for a <i>generating unit</i> includes:</p> <p>(1) the highest expected single phase and three phase fault levels at the <i>connection point</i> with the <i>generating unit</i> not <i>synchronised</i>;</p> <p>(2) the clearing times of the existing <i>protection systems</i> that would clear a fault at the location at which the new <i>connection</i> would be <i>connected</i> into the existing <i>transmission system</i> or <i>distribution system</i>;</p> <p>(3) the expected limits of <i>voltage</i> fluctuation, harmonic <i>voltage</i> distortion and <i>voltage</i> unbalance at the <i>connection point</i> with the</p>	<p>Clause S5.2.4(c) covers the information that the NSP is required to give to the Connection Applicant if requested. It has been extended to cover power system modelling information necessary to perform assessments required under clause S5.2.5.</p>	<p>Wording in clause (c) (1), (3) and (4) - the word “synchronised” should read “connected” as wind farms are generally asynchronous.</p>

Affected clause	Clause with proposed amendments	Reason	REGA Comments
	<p><i>generating unit not synchronised;</i></p> <p>(4) technical information relevant to the <i>connection point</i> with the <i>generating unit not synchronised</i> including equivalent source impedance information, sufficient to estimate fault levels, voltage fluctuations, harmonic voltage distortion (<u>for harmonics relevant to the <i>generating system</i></u>) and voltage unbalance; and</p> <p>(5) <del>any other information or data not being confidential information</del> relating to the performance of the <del><i>Network Service Provider's facilities</i></del> <u><i>national grid</i></u> that is reasonably necessary for the <i>Connection Applicant</i> to prepare an <i>application to connect</i>, <u>including, without limitation:</u></p> <p>(i) <u>a model of the <i>power system</i>, including relevant <i>considered projects</i> and the range of expected operating conditions, sufficient to carry out load flow and dynamic simulations; and</u></p> <p>(ii) <u>information on <i>inter-regional</i> and <i>intra-regional power transfer capabilities</i> and relevant <i>plant ratings</i>.</u></p> <p><del>except where the <i>Connection Applicant</i> agrees the <i>Network Service Provider</i> may provide alternative or less detailed technical information in satisfaction of this clause S5.2.4(e).</del></p> <p>(d) All information provided under this clause S5.2.4 must be treated as <i>confidential information</i>.</p>	<p>Clause S5.2.4(d) reiterates the requirement from clause 5.3.8 that recipients must treat information provided as confidential.</p>	
S5.2.5.1	<p><b>Reactive power capability</b></p> <p><del>For the purpose of this clause S5.2.5.1:</del></p> <p><del>'rated active power output' means the 'Rated MW (Generated)' (as defined in schedule 5.5.1) for the relevant <i>synchronous generating unit</i>; and</del></p>	<p>The definition of rated active power has been replaced to remove reference to Schedule 5.5.1, and remove technology-specific wording.</p>	<p>Agreed with comments:</p> <p>Agreed but not at any voltage level as identified in S5.2.5.1(a).</p>

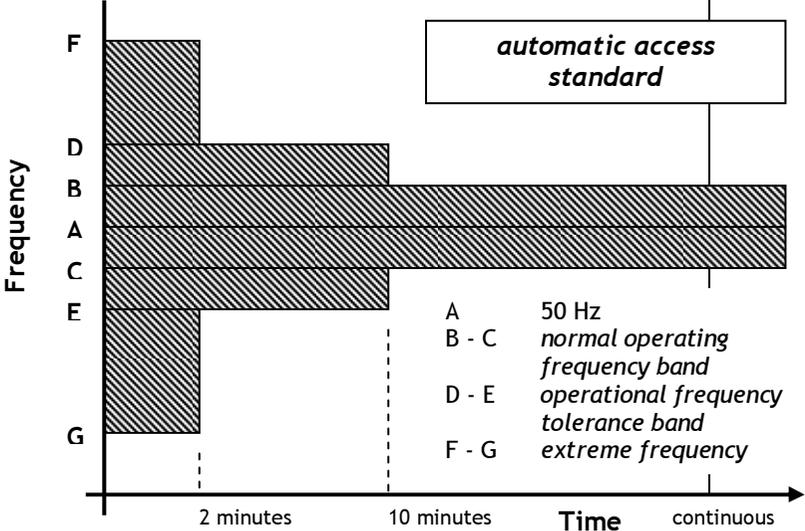
Affected clause	Clause with proposed amendments	Reason	REGA Comments
	<p><del>'nominal voltage' means the 'Nominal voltage at connection to Network' (as defined in schedule 5.5.1) at the connection point for the relevant synchronous generating unit.</del></p> <p>(a) <i>Automatic access standard:</i> Each <del>synchronous generating unit</del> or <i>generating system</i>, while operating at any level of active power output <u>and any voltage at the connection point within the limits established under clause S5.1a.4 without a contingency event</u>, must be capable of (1) <u>supplying and capable of absorbing, continuously at its connection point</u> an amount of reactive power of at least the amount equal to the product of the <del>rated active power output</del> of the <i>generating unit or generating system</i> <del>at nominal voltage</del> and 0.395(2) <del>absorbing at its connection point an amount of reactive power of at least the amount that would be absorbed equal to the product of the rated active power output of the generating unit at nominal voltage and 0.395.</del></p> <p>(b) <i>Minimum access standard:</i> No <u>capability is required</u> <del>ment</del> to supply or absorb reactive power at the connection point.</p> <p>(c) <u>When negotiating an access standard</u> <del>The Generator and the Network Service Provider:</del></p> <p>(1) <del>may in accordance with clause 5.3.4A of the Rules, negotiate a must, subject to any agreement under clause S5.2.5.1(d)(4), ensure that the reactive power capability of the generating unit or generating system is sufficient to ensure that all relevant system standards are met before and after under system normal and credible contingency events operating conditions under normal and planned outage operating conditions of the power system, taking into account at least existing and considered projects;</del></p> <p>(2) <u>may negotiate either a range of reactive power absorption and supply, or a range of power factor, at the connection point, within which the plant</u></p>	<p>Reference to S5.5.1 has been removed because this schedule is to be replaced and the replacement documents may no longer contain that reference.</p> <p>Sub-clauses (2) and (3) specify greater details about what can be negotiated and this will mean that alternative methods of providing reactive power capability more</p>	<p>Agreed but not at any voltage level as identified in S5.2.5.1(a).</p> <p>Requirements at the connection point are all that should be required for generating systems.</p> <p>Generators should also be able to negotiate the point at which the requirement is met (connection point or machine terminals)</p>

Affected clause	Clause with proposed amendments	Reason	REGA Comments
	<p><u>must be operated; and;</u></p> <p>(3) <u>may negotiate a limit that describes how the reactive power capability varies as a function of active power output <del>active power output</del> active power output due to a design characteristic of the plant.</u></p> <p>(d) <del>The Generator may reach a commercial arrangement with the Network Service Provider or a Registered Participant for the provision of reactive power capability sufficient to ensure the Generator's obligation under this clause is met.</del><u>If the proposed generating system is not capable of the level of performance established under clause S5.2.5.1(c)(1), the Network Service Provider may:</u></p> <p>(1) <u>require the Generator to pay compensation to the Network Service Provider for the provision of the deficit of reactive power (supply and absorption) from within the network;</u></p> <p>(2) <u>allow the Generator to install additional equipment connecting at the generating system's connection point or another location, to provide the deficit of reactive power (supply and absorption), which equipment is deemed to be part of the generating system;</u></p> <p>(3) <u>allow the Generator to reach a commercial arrangement with a Registered Participant to provide the deficit of reactive power (supply and absorption); or</u></p> <p>(4) <u>if the inability to meet the performance level only occurs for particular operating conditions, agree to and document as part of the access standard, operational arrangements by which the plant can achieve an agreed level of performance for those operating conditions.</u></p> <p>(e) <u>The access standard must record, the agreed value for rated active power and where relevant the method of determining the value. The value for a generating system must take into account its in-service generating</u></p>	<p>economically will be explicitly available.</p> <p>The automatic access standard has been extended to apply to any technology, and not just to synchronous plant, and to apply to generating systems.</p> <p>The basis of negotiation has been amended to clarify it, and provide flexibility in the way that reactive power is specified.</p>	

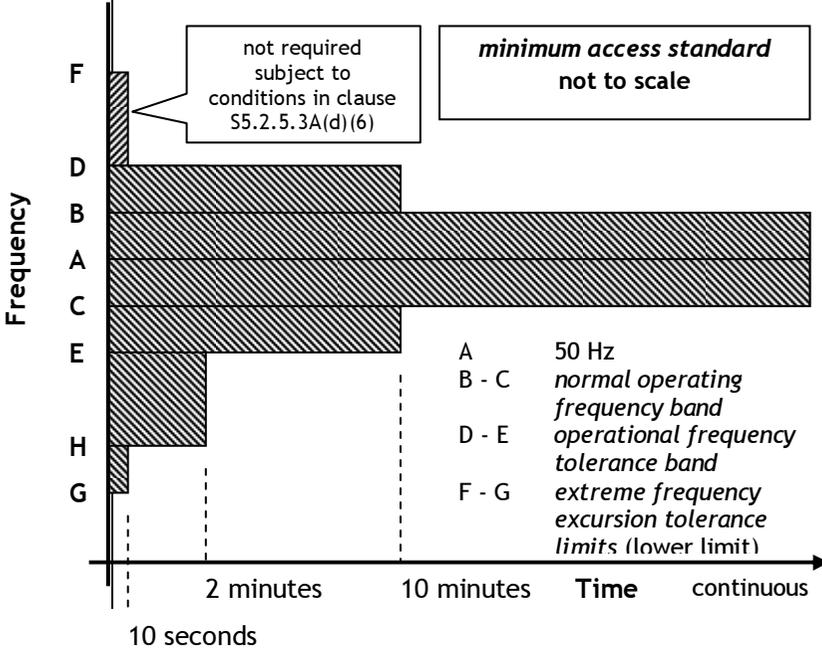
Affected clause	Clause with proposed amendments	Reason	REGA Comments
	<p><u>units and additional reactive power equipment that is part of the generating system.</u></p> <p><del>(f)(e)</del>—The <u>access standards for consumption of energy by a Generator generating system when not supplying or absorbing reactive power under an ancillary services agreement</u> <del>are to be determined in accordance with</del> <u>are to be established under</u> clause S5.3.5 of <del>schedule 5.3</del> as if the Generator were a Market Customer.</p>		
S5.2.5.2	<p><b>Quality of electricity generated</b></p> <p>(a) <i>Automatic access standard:</i></p> <p>(1) <del>The plant standard in accordance with clause S5.2.5.2(e); or</del></p> <p>(2) <del>Each generating system unit, when generating must generate a constant voltage level, and when not generating, must not produce at any of its connection points for generation draw electricity, with:</del></p> <p>(i) <del>voltage fluctuation equal to or less greater than the limits determined allocated by the Network Service Provider in accordance with</del> <u>under</u> clause S5.1.5(a); <del>and</del></p> <p>(ii) <del>harmonic voltage distortion equal to or less greater than the emission limits determined specified by a plant standard under clause S5.2.5.2(d) or allocated by the Network Service Provider in accordance with</del> <u>under</u> clause S5.1.6(a); and</p> <p>(iii) <del>voltage unbalance equal to or less greater than the limits allocated by the Network Service Provider in accordance with clause S5.1.7(c)(1).</del></p> <p>(b) <i>Minimum access standard:</i> <del>Each generating unit system, when generating and when not generating, must not</del></p>	To allow for the possibility that the generating system has multiple connection points. The words ‘for generation’ are necessary to distinguish between auxiliary supply connection points and generation connection points.	Agree

Affected clause	Clause with proposed amendments	Reason	REGA Comments
	<p><u>produce at any of its <i>connection points for generation</i>:</u></p> <p>(1) <u><del>must generate a constant</del> voltage <del>fluctuations</del> greater than limits determined under clause S5.1.5(b); level with balanced phase voltages and</u></p> <p>(2) <u>harmonic voltage distortion <del>equal to or less</del>more than the lesser of the emission limits determined by the relevant <i>Network Service Provider</i> <del>in accordance with</del>under clauses S5.1.5(b) and S5.1.6(b) and <del>clause S5.1a.7 of the system standards</del> specified by a <i>plant standard</i> under clause S5.2.5.2(d); and</u></p> <p>(3) <u>voltage unbalance more than limits determined under clause S5.1.7(c)(2).</u></p> <p>(c) <u>The <i>access standard</i> negotiated under clause S5.2.5.2 must not prevent the <i>Network Service Provider</i> meeting the <i>system standards</i> or contractual obligations to existing <i>Network Users</i>.</u></p> <p>(d) <u><i>Plant standard</i>: In respect of a <del>When operating unsynchronised, each synchronous generating unit, AS 1359.101 and IEC 60034-1 are plant standards for</del> must generate a constant voltage level with balanced phase voltages and harmonic voltage distortion equal to or less than permitted in accordance with <i>Australian Standard AS 1359 “General Requirements for Rotating Electrical Machines”</i>.</u></p>	<p>The AS 1359.101 refers to a superseded version of IEC 60034-1. Amendment is to include current version of IEC 60034-1</p>	
S5.2.5.3	Deleted	<p>The purpose of S5.2.5.3, and the clauses that replace it, is to set standards to prevent cascading events occurring on the power system.</p> <p>The mandatory standards (for frequency and voltage) have been translated to automatic access standards, and new minimum standards and basis for negotiation have been defined for each clause.</p>	Agreed

Affected clause	Clause with proposed amendments	Reason	REGA Comments
		<p>This clause has been deleted and separated into three clauses S5.2.5.3A, S5.2.5.3B and S5.2.5.3C for frequency, voltage and system disturbances respectively. The separation was necessary because when the frequency and voltage requirements are expressed as minimum and automatic standards it is necessary to clearly distinguish between the three sets of automatic standards and three sets on minimum access standards.</p>	
<p><b><u>S5.2.5.3A</u></b></p>	<p><b><u>Generating unit response to frequency disturbances</u></b></p> <p>(a) <u>For the purposes of clause S5.2.5.3A, 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.</u></p> <p>(b) <u>Automatic access standard: Each generating unit must be capable of continuous uninterrupted operation for frequencies in the following ranges provided that the rate of change of frequency is less than 4 Hz per second:</u></p> <p>(1) <u>the lower bound of the extreme frequency excursion tolerance limits to the lower bound of the operational frequency tolerance band for at least 2 minutes;</u></p> <p>(2) <u>the lower bound of the operational frequency tolerance band to the lower bound of the normal operating frequency band, for at least 10 minutes including any time spent in the range under clause S5.2.5.3A(b)(1);</u></p> <p>(3) <u>the normal operating frequency band for an indefinite period;</u></p> <p>(4) <u>the upper bound of the normal operating</u></p>	<p>Clause S5.2.5.3A(a) is required to clarify which of the various values of the frequency standard terms applies in a particular situation. Note that many frequency bands and limits in Tasmania are different compared with those in the other regions.</p> <p>The automatic access standard is based on the existing mandatory standard, but more explicit in terms of how the various frequencies are to be applied.</p> <p>The partial load rejection clause (S5.2.5.4) has been deleted, and instead, in S5.2.5.3A rate of change of frequency has been specified for automatic and minimum standards. This is more technology neutral than the partial load rejection concept, and is more appropriate for wind generation.</p>	<p>Additional requirements have been imposed in addition to those required for intermittent generation without any justification or apparent analysis. These include the acceptable rates of change of frequency in both automatic and minimum access standards. Depending on time of event and system demand the rate of change of frequency on the system will vary. This clause should be redrafted to make the minimum changes required to facilitate wind and them be subject to a major review by the Reliability Panel.</p> <p>Many combustion turbine Generators are not able to satisfy the extreme under-frequency requirements, particularly at elevated ambient temperatures (eg&gt;35C).</p>

Affected clause	Clause with proposed amendments	Reason	REGA Comments
	<p><u>frequency band to the upper bound of the operational frequency tolerance band, for at least 10 minutes including any time spent in the range under clause S5.2.5.3A(b)(5); and</u></p> <p><u>(5) the upper bound of the operational frequency tolerance band to the upper bound of the extreme frequency excursion tolerance limits for at least 2 minutes.</u></p> <p><u>(c) The automatic access standard is illustrated in the following diagram. To the extent of any inconsistency between the diagram and clause S5.2.5.3A(b), clause S5.2.5.3A(b) prevails.</u></p>  <p><u>(d) Minimum access standard: Each generating unit must be capable of continuous uninterrupted operation for frequencies in the following ranges provided the rate of change of frequency does not exceed 1 Hz per second:</u></p> <p><u>(1) lower bound of the extreme frequency excursion tolerance limits to 47.5 Hz for at least 10 seconds;</u></p>	<p>The minimum standard allows a relaxation of the durations for which the generating unit must operate. The value of 47.5 Hz comes from the IEC60034 standard as the minimum frequency level for continuous operation. <b>The value of 4 Hz/sec is based on expected performance in Tasmania for loss of</b></p>	<p>REGA does not support this minimum access standard and does not believe that it is a true representation of the minimum performance that could be connected anywhere in the grid without impacting on the</p>

Affected clause	Clause with proposed amendments	Reason	REGA Comments
	<p>(2) <u>47.5 Hz to lower bound of the <i>operational frequency tolerance band</i> for at least 2 minutes;</u></p> <p>(3) <u>lower bound of the <i>operational frequency tolerance band</i> to the lower bound of the <i>normal operating frequency band</i> for at least 10 minutes including any time spent in the ranges under clauses S5.2.5.3A(d)(1) and (2);</u></p> <p>(4) <u><i>normal operating frequency band</i> for an indefinite period;</u></p> <p>(5) <u>upper bound of the <i>normal operating frequency band</i> to the upper bound of the <i>operational frequency tolerance band</i> for at least 10 minutes including any time spent in the ranges under clause S5.2.5.3A(d)(6); and</u></p> <p>(6) <u>in respect of a <i>generating unit</i> that:</u></p> <p style="padding-left: 20px;">(i) <u>is part of a <i>generating system</i> comprised of <i>generating units</i> with a combined <i>nameplate rating</i> of 30 MW or more; or</u></p> <p style="padding-left: 20px;">(ii) <u>does not have a <i>protection system</i> to trip the <i>generating unit</i> if the <i>frequency</i> exceeds a level agreed with NEMMCO,</u></p> <p style="padding-left: 20px;"><u>the upper bound of the <i>operational frequency tolerance band</i> to the upper bound of the <i>extreme frequency excursion tolerance limits</i> (including islanded conditions) for at least 10 seconds.</u></p> <p>(d) <u>The <i>minimum access standard</i> is illustrated in the following diagram. To the extent of any inconsistency between the diagram and clause S5.2.5.3A(d), clause S5.2.5.3A(d) prevails.</u></p>	<p><b>high Basslink import.</b></p> <p>Small generating systems that are fitted with settable trip relays are permitted to trip for over-frequencies above the upper bound of the operational frequency tolerance band. This will ensure that they do not trip for credible contingency events.</p>	<p>REGA does not support this minimum access standard and does not believe that it is a true representation of the minimum performance that could be connected anywhere in the grid without impacting on the</p>

Affected clause	Clause with proposed amendments	Reason	REGA Comments
	 <p> <u>(f) A negotiated access standard can be accepted by the Network Service Provider provided that NEMMCO and the Network Service Provider agree that:</u>  <u>(1) the proposed access standard is as close as practicable to the automatic access standard while respecting the need to protect the plant from damage;</u> </p>	<p>Clause S5.2.5.3A(f) provides a basis for negotiation to prevent power system performance being eroded.</p>	<p>performance of the system. The current figures would be difficult to meet with most wind turbines and many gas turbines.</p> <p>References to absolute frequency limits should be removed. This may lead to a situation in which the minimum access standard may exceed the automatic should the reliability panel change the frequency criteria.</p>

Affected clause	Clause with proposed amendments	Reason	REGA Comments
	<p>(2) <u>the frequency would be unlikely to fall below the lower bound of the operational frequency tolerance band as a result of over-frequency tripping of generating units; and</u></p> <p>(3) <u>there would be no material adverse impact on quality of supply to other Network Users or on inter-regional or intra-regional power transfer capability.</u></p> <p>(g) <u>NEMMCO must be involved in the negotiation of access standards under clause S5.2.5.3A.</u></p>		<p>The proposition that performance standards should be as close to the Automatic Standard needs to be tested against the NEM objective to ensure that we are not “Gold plating” the system without providing cost</p>

Affected clause	Clause with proposed amendments	Reason	REGA Comments
			effective benefits to customers. (What benefit do customers really see from having a small 6MW generator meeting the Automatic Standards rather than the Minimum? The additional costs may kill a generation project and deprive customers of the network support the generator may provide.)
<b><u>S5.2.5.3B</u></b>	<p><b><u>Generating unit response to voltage disturbances</u></b></p> <p>(a) <u>Automatic access standard: Each generating unit must be capable of continuous uninterrupted operation during the occurrence voltage at the connection point:</u></p> <p>(1) <u>in the range of over-voltages for the durations permitted under clause S5.1a.4;</u></p> <p>(2) <u>in the range 90% to 100% of normal voltage continuously;</u></p> <p>(3) <u>in the range 80% to 90% of normal voltage for a period of at least 10 seconds; and</u></p> <p>(4) <u>in the range 70% to 80% of normal voltage for a period of at least 2 seconds.</u></p> <p>(b) <u>Minimum access standard: Each generating unit must be capable of continuous uninterrupted operation for voltages at the connection point in the range 90% to 110% of normal voltage, provided that the ratio of voltage to frequency (as measured at the connection point and expressed as percentage of normal voltage and a percentage of 50 Hz) does not exceed:</u></p> <p>(1) <u>115% for more than two minutes or</u></p> <p>(2) <u>110% for more than 10 minutes.</u></p> <p>(c) <u>Each generating unit must be capable of continuous uninterrupted operation for the range of voltages specified in the automatic access standard except where NEMMCO and the Network Service Provider agree that:</u></p> <p>(1) <u>the proposed access standard is as close as practicable to the automatic access standard</u></p>	<p>The voltage-recovery conditions that were previously included in the automatic standard (but not in the minimum standard) have been merged with the voltage excursions clause S5.2.5.3B because withstanding a voltage disturbance should not rely on there being a fault.</p> <p>The previous mandatory standard for over-voltages has been translated to the automatic standard. The previous standard referred to S5.1a.4 also for the under-voltage, which allows voltages to drop to zero for an indefinite period. It is not practical for generating plant to ride through such voltages. The clause has therefore been amended to include reasonable voltage bands for the automatic access standard.</p> <p>The minimum access standard has been relaxed to only require continuous operation with normal voltage plus or minus 10% at the connection point with allowance for frequency changes that affect magnetic flux levels. This will allow more flexibility to negotiate connection where tripping would not cause cascading failure of other generating units.</p>	<p>Needs further work and discussion. Should be fully reviewed by the Reliability Panel. Only those changes need for wind should be incorporated at this time. The standards as defined in this clause require performance well beyond that necessary in a distribution system. These requirements must also be considered.</p> <p>The clause should recognise generating systems and allow performance to be determined at that level rather than at unit level for wind farms.</p> <p>Lower voltages are already significantly lower than IEC60034.</p> <p>70-90% of normal voltage is not realistic except for transient conditions.</p> <p>This is +/-10% on the normal voltage where the automatic standard is only requiring up to 100% of normal. In addition it conflicts with S5.1a.4 which only requires 110% of normal voltage for 10 minutes.</p> <p>This is a higher obligation than that of the automatic access standard (S5.1a.4)</p>

Affected clause	Clause with proposed amendments	Reason	REGA Comments
	<p><u>while respecting the need to protect the <i>plant</i> from damage;</u></p> <p><u>(2) the <i>generating plant</i> that would be tripped, as a result of any voltage excursion within levels specified by the <i>automatic access standard</i>, is not more than 100 MW; and</u></p> <p><u>(3) there would be no material adverse impact on the quality of <i>supply</i> to other <i>Network Users</i> or on <i>inter-regional</i> or <i>intra-regional power transfer capability</i>.</u></p> <p><u>(d) The <i>access standard</i> must include any operational arrangements necessary to ensure the <i>generating unit</i> will meet its agreed performance levels under abnormal <i>network</i> or <i>generating system</i> conditions.</u></p> <p><u>(e) In carrying out assessments of proposed <i>access standards</i> under clause S 5.2.5.3B, <i>NEMMCO</i> and the <i>Network Service Provider</i> must take into account, without limitation</u></p> <p><u>(1) the expected performance of existing <i>networks</i> and <i>network</i> developments that are <i>considered projects</i>;</u></p> <p><u>(2) the expected performance of existing <i>generating plant</i> and <i>generation</i> projects that are <i>considered projects</i>, and</u></p> <p><u>(3) any corresponding <i>performance standard</i> (or where no <i>performance standard</i> has been registered, the <i>access standard</i>) that allows <i>generating plant</i> to trip for voltage excursions in ranges specified under the <i>automatic access standards</i>.</u></p> <p><u>(f) <i>NEMMCO</i> must be involved in the negotiation of <i>access standards</i> under clause S5.2.5.3B.</u></p>	<p>Clauses (c) and (d) set the basis for negotiation and place strict conditions on the allowance of access standards below the automatic level, to ensure that power system security, reliability of supply (in terms of impact on transfer capability) and quality of supply are not put at risk.</p>	<p>The basis of negotiation should not be prescriptive, but a genuine good faith negotiation between the generator, the NSP and NEMMCO and based on criteria set down by the Reliability Panel. The requirement will vary with location.</p> <p>‘Abnormal’ is not defined – could be anything</p>
<b><u>S5.2.5.3C</u></b>	<b><u>Generating unit response to disturbances following contingency events</u></b>	In the new wording of S5.2.5.3C credible contingencies are explicitly listed as events for which the generating unit must	Requires further work for distribution connections, although parts of this clause work well for wind farms.

Affected clause	Clause with proposed amendments	Reason	REGA Comments
	<p>(a) <u>In clause S5.2.5.3C:</u></p> <p>(1) <u>a fault includes without limitation:</u></p> <p>(A) <u>a short circuit fault of the relevant type;</u> <u>and</u></p> <p>(B) <u>a fault of the relevant type resulting from reclosure onto a fault by the operation of automatic reclose equipment; and</u></p> <p>(2) <u>“fault type” means one or more of the following types:</u></p> <p>(A) <u>three-phase fault;</u></p> <p>(B) <u>two phase to ground fault;</u></p> <p>(C) <u>phase to phase fault; and</u></p> <p>(D) <u>phase to ground fault.</u></p> <p>(b) <u>The automatic access standard is:</u></p> <p>(1) <u>Each generating unit must remain in continuous uninterrupted operation for the disturbance caused by any 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:</u></p> <p>(i) <u>a credible contingency event;</u></p> <p>(ii) <u>a three phase fault in a transmission system cleared by all relevant primary protection systems;</u></p> <p>(iii) <u>a two phase to ground, phase to phase or phase to ground fault in a transmission system cleared in the longest time expected to be taken for a relevant breaker fail protection system to clear the fault or, if such protection is not installed, the greater of the time</u></p>	<p>continue to operate. The existing wording of clause S5.2.5.3 assumes that if a generating unit can operate continuously during a particular type of disturbance, it can operate continuously during disturbances considered less onerous.</p> <p>In the current wording the automatic access standard is for riding through a fault on the transmission system with causes the voltage at the connection point to fall to zero for 175 ms. The 175 ms was a figure drawn from the back-up protection clearance time for a particular generating system, and has no relevance to any other location. Now, the underlying principle has been set, which can be applied to any location.</p> <p>Under the previous wording it was not technically possible for a distribution-connected generating system to meet the automatic access standard. This has now been changed to cover the distribution-connected plant explicitly.</p>	<p>Resolve the reclose questions and (a) is acceptable</p> <p>Reclosure onto a fault is a new obligation – ride through of a single fault was the original standard. This is not part of the requirements for intermittent generation.</p> <p>There is no standard reclosure delay time in the NEM. They vary from region to region from +4secs to 0.5 sec. This should be standardised to provide certainty to developers.</p> <p>Clause 4.2.3(b) defines a three-phase fault as non-credible. Clause 4.2.4 refers to credible events only in its definition of system security.</p> <p>The definition of “transmission system” includes any 66kV to 220kV network that operates in parallel to and provides support to the higher voltage network. The</p>

Affected clause	Clause with proposed amendments	Reason	REGA Comments
	<p><u>specified in column 4 of Table S5.1a.2 (or if none is specified, 430 milliseconds) and the longest time expected to be taken for all relevant primary protection systems to clear the fault; and</u></p> <p>(iv) <u>a three phase, two phase to ground, phase to phase or phase to ground fault in a distribution network cleared in the longest time expected to be taken for the breaker fail protection system to clear the fault or, if such protection is not installed, the greater of 430 milliseconds and the longest time expected to be taken for all relevant primary protection systems to clear the fault.</u></p> <p>(2) <u>Each generating unit and generating system must, in respect of any fault of the types described in clause S5.2.5.3C(b)(1)(ii) to (iv), subject to any changed power system conditions or energy source availability beyond the Generator's reasonable control:</u></p> <p>(i) <u>to assist the maintenance of power system voltages during the application of the fault, deliver to the network capacitive reactive current of at least the greater of its pre-disturbance reactive current and 4% of the maximum continuous current of the generating unit (in the absence of a disturbance) for each 1% reduction (from its pre-fault level) of connection point voltage during the fault;</u></p> <p>(ii) <u>from 100 milliseconds after disconnection of the faulted element, deliver to the network active power of at least 95% of the level existing just</u></p>	<p>In the current wording backup protection clearance time has been substituted. It was felt that few generating units would be able to ride through a 3 phase fault at its connection point cleared in back-up protection time because the power system would likely become unstable for such a fault. Therefore, this has been relaxed in the automatic access standard to a 3 phase fault cleared by primary protection, but 2 phase and single phase faults cleared by breaker fail protection.</p>	<p>fault clearance times for 100kV and above are defined in the NER (table S5.1a.2). There is no definition for fault clearance times at lower voltages.</p> <p>This could be in the order of seconds for some distribution systems. It is unrealistic to expect any generator to stay on line that long.</p> <p>Such amount not to exceed requirements under clause S5.2.5.1</p> <p>This requirement appears to be directed to large power stations connected to transmission networks. This performance requirement should be considered in the</p>

Affected clause	Clause with proposed amendments	Reason	REGA Comments
	<p style="text-align: center;"><u>prior to the fault; and</u></p> <p style="text-align: center;">(iii) <u>after <i>disconnection</i> of the faulted element, deliver to the <i>network reactive power</i> sufficient to ensure that the <i>connection point</i> voltage is within the range for <i>continuous uninterrupted operation</i> under clause S5.2.5.3B.</u></p> <p>(c) <u>The <i>minimum access standard</i> is:</u></p> <p>(1) <u>Each <i>generating unit</i> must remain in <i>continuous uninterrupted operation</i> for the disturbance caused by any of the events described below, provided that the event is not one that would disconnect the <i>generating unit</i> from the <i>power system</i> by removing <i>network elements</i> from service:</u></p> <p>(i) <u>a <i>credible contingency event</i>:</u></p> <p>(ii) <u>a single phase to ground, phase to phase or two phase to ground fault in a <i>transmission system</i> cleared in the longest time expected to be taken for all relevant <i>primary protection systems</i> to clear the fault; and</u></p> <p>(iii) <u>a single phase to ground, phase to phase or two phase to ground fault in a <i>distribution network</i>, cleared in the longest time expected to be taken for all relevant <i>primary protection systems</i> to clear the fault, unless <i>NEMMCO</i> and the <i>Network Service Provider</i> agree that:</u></p> <p>(A) <u>the total reduction of <i>generation</i> in the <i>power system</i> due to that fault would not exceed 100 MW;</u></p> <p>(B) <u>there is unlikely to be an adverse impact on quality of</u></p>	<p>The minimum standard has been amended to cover distribution-faults explicitly. The wording recognizes that in some cases it may be reasonable to allow small distribution-connected plant to trip for a distribution fault provided there is no material adverse impact on other Network Users. It has also been amended to be based on actual operating times of all relevant primary protection systems, rather than a number out of a table in the system standards.</p>	<p>context of small generating systems embedded in weak distribution networks as well as large generating stations connected to strong transmission networks.</p> <p>Such amount not to exceed requirements under clause S5.2.5.1</p> <p>Timeframe must be defined</p> <p>Agree</p>



Affected clause	Clause with proposed amendments	Reason	REGA Comments
	<p><u>generating system conditions</u></p> <p>(f) <u>A proposed negotiated access standard may be accepted if the connection of the plant at the proposed access level would not cause other generating plant or loads to trip as a result of an event, when they would otherwise not have tripped for the same event.</u></p> <p>(g) <u>NEMMCO must be involved in the negotiation of access standards under clause S5.2.5.3C.</u></p>		<p>to the high risk of damage to generators.</p> <p>Abnormal conditions are undefined. Abnormal conditions are mentioned in several causes and the intention should be clearly defined.</p>
S5.2.5.4	Deleted.	This clause has been the cause of considerable confusion. A more practical concept is to require that plant operate continuously provided the rate of change of frequency is within a specified limit. This has been incorporated in S5.2.5.3A.	Agree to deletion if S5.2.5.3A can be resolved.
S5.2.5.8	<p><b>Protection of generating units from power system disturbances</b></p> <p>(a) The <i>minimum access standard</i> is:</p> <p>(1) Subject to clauses S5.2.5.8(b)(2) and S5.2.5.8(b)(3), if a <del>Connection Applicant</del> <u>Generator or Network Service Provider</u> requires <del>that its</del> <u>generating unit</u> to be automatically disconnected from the <i>power system</i> in response to abnormal conditions arising from the <i>power system</i>, the relevant <i>protection system</i> or <i>control system</i> must not disconnect the <i>generating unit</i> for conditions, <del>under for</del> <u>which it must remain in continuously uninterrupted operations</u> or <u>conditions</u> it must withstand under a <del>provision of the Rules.</del></p> <p>(2) Each <del>scheduled</del> <u>generating unit with a nameplate rating of 30MW or more, or generating system comprised of generating units with combined nameplate rating of 30 MW or more, connected to a transmission system</u> must have <i>facilities</i> to automatically and rapidly reduce its <i>generation</i>:</p> <p>(i) <u>by at least half if the frequency at the connection point exceeds a level</u></p>	<p>The scope of the clause has been amended to be based on size rather than whether scheduled or not because this power system security issue has no relationship to being scheduled.</p> <p>The methods of meeting the power system security requirement have been clarified and extended to include fast operating governors, which already exist on some types of generating plant.</p>	<p>Agree</p> <p>This is no S5.2.5.8(b)(2) and (b) (3)?</p>

Affected clause	Clause with proposed amendments	Reason	REGA Comments
	<p>nominated by <i>NEMMCO</i> <del>that is</del> (not less than the upper limit of the <i>operational frequency tolerance band</i>) and the duration above this <i>frequency</i> exceeds a value nominated by <i>NEMMCO</i>. The reduction may be achieved:</p> <p>(A) <u>by reducing the output of the <i>generating unit</i> within six seconds, and holding the output at the reduced level until the <i>frequency</i> returns to within the <i>normal operating frequency band</i>;</u> or</p> <p>(B) <u>by disconnecting the <i>generating unit</i> from the <i>power system</i>; or</u></p> <p>(ii) <u>in proportion to the difference between the <i>frequency</i> at the <i>connection point</i> and a level nominated by <i>NEMMCO</i> (not less than the upper limit of the <i>operational frequency tolerance band</i>), such that the <i>generation</i> is reduced by at least half, if the <i>frequency</i> reaches the upper limit of the <i>extreme frequency excursion tolerance limits</i>.</u></p> <p>(3) <u><i>NEMMCO</i> or the <i>Network Service Provider</i> may require that an <i>access standard</i> include a requirement for the <i>generating unit</i> or <i>generating system</i> to automatically <i>disconnect</i> whenever the part of the <i>network</i> to which it is <i>connected</i> has been disconnected from the <i>national grid</i>, forming an island that <i>supplies</i> a <i>Customer</i>. The <i>access standard</i> must include specification of conditions for which the <i>generating unit</i> or <i>generating system</i> must trip and must not trip.</u></p> <p>(4) <u>Notwithstanding clauses S5.2.5.3A, S5.2.5.3B and S5.2.5.3C a <i>generating unit</i> or <i>generating system</i> may be automatically disconnected from the <i>power</i></u></p>	<p>Paragraph (3) has been included to permit situations where local issues, such as impact on supply to nearby customers, can require disconnection without adverse impact on overall power system security. Such situations already exist and need to be acknowledged under the Rules.</p> <p>Paragraph (4) has been included to resolve inconsistencies with clauses</p>	

Affected clause	Clause with proposed amendments	Reason	REGA Comments
	<p><u>system under any of the following conditions:</u></p> <p>(i) <u>in accordance with an ancillary services agreement between the Generator and NEMMCO;</u></p> <p>(ii) <u>where a load that is not part of the generating system has the same connection point as the generating system and NEMMCO and the Network Service Provider agree that the disconnection would in effect be under-frequency load shedding;</u></p> <p>(iii) <u>where the generating unit is automatically disconnected under clauses S5.2.5.8(b)(3) or S5.2.5.9;</u></p> <p>(iv) <u>where the generating unit is automatically disconnected under clause S5.2.5.10 due to a failure of the generating plant; or</u></p> <p>(v) <u>in accordance with an agreement between the Generator and a Network Service Provider (including an agreement in relation to an emergency control scheme under clause S5.1.8) to provide a service that NEMMCO agrees is necessary to maintain or restore power system security in the event of a specified contingency event.</u></p> <p>(b) <del>There is no automatic access standard for this technical requirement for protection of generation units from power system disturbances.</del></p> <p>(c) <del>For the purposes of this clause, abnormal conditions include:</del></p> <p>(1) <del>frequency outside the extreme frequency excursion tolerance limits;</del></p> <p>(2) <del>sustained and uncontrollable stator current beyond the generating unit's "Rated Stator Current" (as described in schedule 5.5.1);</del></p> <p>(3) <del>stator voltage above the generating unit's stator</del></p>	<p>S5.2.5.3A, S5.2.5.3B and S5.2.5.3C by comprehensively including all situations where automatic disconnection is or should be permitted, taking precedence over clauses S5.2.5.3A, S5.2.5.3B and S5.2.5.3C. For example, a Generator with a system restart ancillary services agreement with NEMMCO could be in breach of existing clause S5.2.5.3. Also, a Generator tripping its generating units for an emergency control scheme such as the System protection Scheme in Tasmania could be in breach of existing clause S5.2.5.3.</p> <p>The abnormal conditions listed as examples in existing paragraph (c) have been removed because:</p> <ul style="list-style-type: none"> <li>• Some had a strong technology bias;</li> <li>• Some were not practical; and</li> </ul>	<p>There is no clause S5.2.5.8 (b)(3)</p> <p>Good provision –trip due to failure of plant is acceptable</p> <p>‘abnormal conditions’ is now an undefined term.</p>

Affected clause	Clause with proposed amendments	Reason	REGA Comments
	<p><del>voltage maximum rating or sustained below the lower limit for stable operation;</del></p> <p><del>(4) voltage to frequency ratio beyond the generating unit's magnetic flux based voltage to frequency rating;</del></p> <p><del>(5) sustained voltage fluctuations at the connection point beyond the level determined under clause S5.1.5(a);</del></p> <p><del>(6) sustained harmonic voltage distortion at the connection point beyond the level determined under clause S5.1.6(a);</del></p> <p><del>(7) sustained negative phase sequence voltage at the connection point beyond the level determined under clause S5.1.7(a); and</del></p> <p><del>(8) any similar condition agreed between the Generator and the relevant Network Service Provider after consultation with NEMMCO.</del></p> <p><del>NEMMCO must be involved in the negotiation of access standards in relation to this under clause S5.2.5.8 must involve NEMMCO under clause 5.3.4A(b) of the Rules.</del></p> <p><del>(d) The Network Service Provider is not liable for any loss or damage incurred by the Generator or any other person as a consequence of a fault on either the power system, or within the Generator's facility.</del></p>	<ul style="list-style-type: none"> <li>Some were inconsistent with S5.2.5.3.</li> </ul> <p>The voltage to frequency ratio allowance has been moved to S5.2.5.2B.</p>	<p>This clause is excessively wide, and is not relevant to a generator standard</p>
S5.2.5.9	<p><b>Protection systems that impact on power system security</b></p> <p><del>The requirements of this clause apply only to protection measures which may be necessary to maintain power system security. Protection solely for Generator risks is at the Generator's discretion.</del></p> <p>(a) The automatic access standard is:</p> <p>(1) Primary protection systems must be provided to disconnect from the power system any faulted element <u>in the generating system and in within the</u></p>	<p>The introductory paragraph of this clause has been removed because it is misleading and does not assist the understanding of the technical requirements. It predates the access standards regime, when the protection requirements were expressed more generally than now.</p> <p>Wording of the automatic and minimum</p>	<p>Agreed subject to comments</p>

Affected clause	Clause with proposed amendments	Reason	REGA Comments
	<p>protection zones that include the <i>connection point</i>, <del>the <i>generating unit</i> stator winding or any <i>plant</i> connected between them</del>, within the applicable <i>fault clearance time</i> determined under clause S5.1.9(a)(1), but subject to clauses S5.1.9(k) and S5.1.9(l).</p> <p>(2) Each primary <i>protection system</i> must have sufficient redundancy to ensure that a faulted element within its protection zone is disconnected from the <i>power system</i> within the applicable <i>fault clearance time</i> with any single protection element (including any communications facility upon which that <i>protection system</i> depends) out of service.</p> <p>(3) <i>Breaker fail protection systems</i> must be provided to clear faults that are not cleared by the circuit breakers controlled by the primary <i>protection system</i> within the applicable <i>fault clearance time</i> determined under clause S5.1.9(a)(1).</p> <p>(b) The <i>minimum access standard</i> is:</p> <p>(1) <i>Protection systems</i> must be provided to disconnect from the <i>power system</i> any faulted element within the <u><i>generating system</i></u> and in protection zones that include the <i>connection point</i>, <del>the <i>generating unit</i> stator winding and any <i>plant</i> between them</del>, within the applicable <i>fault clearance time</i> determined under clause S5.1.9(a)(2), but subject to clauses S5.1.9(k) and S5.1.9(l).</p> <p>(2) If a <i>fault clearance time</i> determined under clause S5.1.9(a)(2) for a protection zone is less than 10 seconds, a <i>breaker fail protection system</i> must be provided to clear from the <i>power system</i> any fault within that protection zone that is not cleared by the circuit breakers controlled by the primary <i>protection system</i> within the applicable <i>fault clearance time</i> determined under clause S5.1.9(a)(3).</p> <p>(c) The <i>Network Service Provider</i> and the <i>Generator</i> must cooperate in the design and implementation of <i>protection</i></p>	<p>access standards has been amended to remove technology-specific working.</p> <p>A basis for negotiation has been added to clarify when redundancy of protection systems is required and how the decision is to be made.</p>	

Affected clause	Clause with proposed amendments	Reason	REGA Comments
	<p><i>systems</i> to comply with clause <u>S5.2.5.9</u>, including cooperation <del>with regard to</del> <u>on</u>:</p> <p>(1) the use of <i>current transformer</i> and <i>voltage transformer</i> secondary circuits (or equivalent) of one party by the <i>protection system</i> of the other;</p> <p>(2) tripping of one party's circuit breakers by a <i>protection system</i> of the other party; and</p> <p>(3) co-ordination of <i>protection system</i> settings to ensure inter-operation.</p> <p><u>(d) The <i>protection system</i> design must:</u></p> <p>(1) <u>be coordinated with other <i>protection systems</i> already existing in the <i>power system</i> or to be provided as part of a <i>considered project</i>;</u></p> <p>(2) <u>avoid consequential disconnection of other <i>Network Users' facilities</i>; and</u></p> <p>(3) <u>take into account existing obligations of the <i>Network Service Provider</i> under <i>connection agreements</i> with other <i>Network Users</i>.</u></p> <p><u>(e) The <i>Generator</i> must provide redundancy in the primary <i>protection systems</i> under clause S5.2.5.9(a)(2) and provide <i>breaker-fail protection systems</i> under clause S5.2.5.9(a)(3) if <i>NEMMCO</i> or the <i>Network Service Provider</i> consider that a lack of these <i>facilities</i> could result in a material adverse impact on <i>power system security</i> or quality of supply to other <i>Network Users</i>, or a reduction in <i>inter-regional</i> or <i>intra-regional power transfer capability</i>, through any mechanism including:</u></p> <p>(1) <u>consequential tripping of, or damage to, other <i>network equipment</i> or <i>facilities</i> of other <i>Network Users</i>, that would have a <i>power system security impact</i>; or</u></p> <p>(2) <u>instability that would not be detected by other <i>protection systems</i> in the <i>network</i>.</u></p> <p><u>(f) <i>NEMMCO</i> must be involved in the negotiation of <i>access</i></u></p>	<p>Paragraph (f) is consistent with clause S5.1.9(b) and makes it clear that the negotiation of protection system performance must include NEMMCO whether under S5.1.9 or S5.2.5.9.</p>	<p>The NSP or NEMMCO should be obliged to provide assistance with this.</p>

Affected clause	Clause with proposed amendments	Reason	REGA Comments
	<u>standards under clause S5.2.5.9.</u>		
S5.2.5.10	<p><b>Protection to trip plant for unstable operation</b><del>Asynchronous operation of synchronous generating units</del></p> <p>(a) The <i>automatic access standard</i> is:</p> <p>(1) Each <i>synchronous generating unit</i> must have a <i>protection system</i> to <del>promptly disconnect it promptly</del> in order to prevent pole slipping or other conditions where the <i>generating unit</i> causes <u>active power, reactive power or voltage at the connection point to become unstable as assessed in accordance with the power system stability guidelines established under clause 4.3.4(h);</u></p> <p>(2) Each <i>generating unit</i> that is not a <i>synchronous generating unit</i> must have a <i>protection system</i> to <i>disconnect</i> it promptly for conditions where the <u>active power, reactive power or voltage at the connection point become unstable as assessed in accordance with the power system stability guidelines established under clause 4.3.4(h).</u></p> <p>(b) The <i>minimum access standard</i> is: Each <i>generating unit</i> must not cause a voltage disturbance <u>at the connection point</u> due to <u>sustained unstable behaviour</u> <del>pole-slipping</del> of more than the maximum level specified in Table 7 of <i>Australian Standard AS/NZS 61000.3.7:2001</i>.</p> <p>(c) <del>The actual settings of protection installed on a generating unit to satisfy the requirements of clause S5.2.5.10(a) must be approved by the Network Service Provider. If the Network Service Provider and the Generator agree, a protection system proposed to meet a negotiated access standard may also trip any other part of the generating system in order to cease the instability.</del></p> <p>(d) A <i>protection system</i> to trip the affected <i>generating unit</i> must be provided where:</p> <p>(1) the <i>Network Service Provider</i> considers it necessary to prevent consequential tripping of, or damage to,</p>	<p>The clause has been amended to allow it to be applied to asynchronous as well as synchronous plant.</p> <p>Requiring the Network Service Provider to approve settings has been removed as it currently means that the Network Service Provider takes the risk associated with design of the Generator's plant. That risk should lie with the Generator.</p> <p>These new clauses (c) and (d) provide greater detail in relation to tripping.</p> <p>Basis of negotiation added to remove risk of wasted costs if NEMMCO later rejects standard.</p>	<p>Agreed.</p> <p>Note that most pole-slip protection only detects pole slips and disconnects the units. It will not prevent a pole-slip from happening.</p>

Affected clause	Clause with proposed amendments	Reason	REGA Comments
	<p><u>other generating units, network equipment or other Network Users' facilities, or</u></p> <p>(2) <u>NEMMCO considers it necessary to prevent unstable operation having an adverse impact on power system security.</u></p> <p>(e) <u>NEMMCO must be involved in the negotiation of access standards under clauses S5.2.5.10(c) and S5.2.5.10(d).</u></p>		
S5.2.5.11	<p><b>Frequency control</b></p> <p><del>General:</del></p> <p>(a) For the purpose of <del>this</del> clause <u>S5.2.5.11:</u></p> <p><del>"maximum operating level" means, in relation to—a generating unit, the greater of its nameplate rating and its value for "PMAX" as described in schedule 5.5.1:</del></p> <p>(1) <u>a non-scheduled generating unit, the maximum sent out generation consistent with its nameplate rating;</u></p> <p>(2) <u>a scheduled generating unit, the maximum sent out generation (but not emergency generation) consistent with its registered bid and offer data;</u></p> <p>(3) <u>a non-scheduled generating system, the combined maximum sent out generation consistent with the nameplate ratings of its in-service generating units; and</u></p> <p>(4) <u>a scheduled generating system, the maximum combined sent out generation (but not emergency generation) of its in-service generating units, consistent with its registered bid and offer data.</u></p> <p><del>"minimum operating level" means, in relation to—a generating unit, the greater of zero and its value for "PMIN" as described in schedule 5.5.1:</del></p> <p>(1) <u>a non-scheduled generating unit, its minimum sent out generation for continuous stable operation;</u></p>	<p>Minor reformatting of the clause has been undertaken.</p> <p>The definitions have been clarified to remove reference to S5.5.1 and make the definitions stand alone.</p> <p>“Scheduled” removed from each of the clauses. This allows the automatic access standard to be applied to non-scheduled plant such as wind farms and to generating systems.</p>	<p>Agreed subject to comments</p> <p>Clauses (b)(2)(iii) and (b)(3)(iii) NOT accepted</p>

Affected clause	Clause with proposed amendments	Reason	REGA Comments
	<p><u>(2) a scheduled generating unit, its minimum sent out generation for continuous stable operation consistent with its registered bid and offer data;</u></p> <p><u>(3) a non-scheduled generating system, the combined minimum operating level of its in-service generating units; and</u></p> <p><u>(4) a scheduled generating system, the minimum combined sent out generation of its in-service generating units, consistent with its registered bid and offer data.</u></p> <p>"system frequency" means the <del>electrical</del> frequency of the transmission system or distribution system to which the generating unit is connected;</p> <p>"pre-disturbance level" means, in relation to a generating unit and a frequency disturbance, the generating unit's level of output just before the system frequency first exceeds the upper or lower limit of the normal operating frequency band during the frequency disturbance.</p> <p><u>(b) Automatic access standard:</u></p> <p><u>(1b) A Generator must ensure that in respect of eEach of its <del>scheduled generating system's units</del> (1) its active power transfer to the power system <u>must not</u> does not:</u></p> <p><u>(i) increase in response to a rise in system frequency; and</u></p> <p><u>(ii) its <del>active power transfer to the power system</del> does not decrease in response to a fall in system frequency</u></p> <p><u>(3) <del>any oscillatory behaviour in respect of its active power transfer to the power system (other than authorised power system stabiliser action) is damped with a damping ratio of more than 0.4.</del></u></p> <p><u>(2e) A Generator must ensure that eEach generating system of its <del>scheduled generating units</del> is <u>must</u></u></p>	<p>Reference to damping of oscillations has been moved to new clause S5.2.5.14.</p>	<p>Clause conflicts with S5.2.5.8</p>

Affected clause	Clause with proposed amendments	Reason	REGA Comments
	<p><u>be capable of automatically reducing its active power transfer to the power system:</u></p> <p>(i+) whenever the <i>system frequency</i> exceeds the upper limit of the <i>normal operating frequency band</i>;</p> <p>(ii) by an amount that <u>equals or exceeds</u> <del>is at the least the smallest</del> of:</p> <p>(Ai) <del>twenty percent</del> <u>20%</u> of its <i>maximum operating level</i> times the <i>percentage frequency difference</i> between <i>system frequency</i> and the upper limit of the <i>normal operating frequency band</i>;</p> <p>(Bii) <del>ten percent</del> <u>10%</u> of its <i>maximum operating level</i>; and</p> <p>(Ciii) subject to the <i>frequency recovering gradually</i>, the <i>difference between the generating unit's pre-disturbance level</i> and <i>minimum operating level</i>, but zero if the difference is negative.</p> <p>(iii) <u>sufficiently rapidly for the Generator to be in a position to offer measurable amounts of lower services to the spot market for market ancillary services.</u></p> <p>(3d) <del>A Generator must ensure that</del> <u>Each of its scheduled generating units or generating system is must be</u> capable of automatically increasing its <del>output</del> <u>active power transfer to the power system:</u></p> <p>(i+) whenever the <i>system frequency</i> falls below the lower limit of the <i>normal operating frequency band</i>;</p>		<p>And subject to a limit of its <i>minimum operating level</i></p> <p>Not Accepted: This is an ancillary service by definition, not a technical obligation and should be a commercial decision.</p> <p>And subject to a limit of its <i>maximum operating level</i></p> <p>Wind turbine output depends on wind conditions. Output cannot be raised automatically on demand.</p>

Affected clause	Clause with proposed amendments	Reason	REGA Comments
	<p>(ii<del>2</del>) by the amount that is <u>equal or exceeds the</u> at least the smallest of:</p> <p>(A<del>i</del>) <del>twenty percent</del> <u>20%</u> of its <i>maximum operating level</i> times the percentage <i>frequency</i> difference between the lower limit of the <i>normal operating frequency band</i> and <i>system frequency</i>;</p> <p>(B<del>ii</del>) <del>five percent</del> <u>5%</u> of its <i>maximum operating level</i>; and</p> <p>(C<del>ii</del>) subject to the <i>frequency</i> recovering gradually, one third of the difference between the <i>generating unit's maximum operating level</i> and <i>pre-disturbance level</i>, but zero if the difference is negative; and</p> <p>(iii) <u>sufficiently rapidly for the Generator to be in a position to offer measurable amounts of raise services to the spot market for market ancillary services.</u></p> <p><u>(c) Minimum access standard:</u></p> <p><del>(e) A Generator must ensure that at each of its connection points in relation to its scheduled generating units:</del></p> <p>(1) <del>the active power transfer to the power system does not increase in response to a rise in system frequency;</del></p> <p>(2) <del>the active power transfer to the power system does not decrease more than 2 percent per Hz in response to a fall in system frequency; and</del></p> <p>(3) <del>any oscillatory behaviour of active power transfer to the power system (other than authorised power system stabiliser action) is damped with a</del></p>		<p>Not Accepted: This is an ancillary service by definition, not a technical obligation and should be a commercial decision.</p>

Affected clause	Clause with proposed amendments	Reason	REGA Comments
	<p style="text-align: center;"><del>damping ratio of more than 0.4.</del></p> <p><u>For each generating system, active power transfer to the power system must not:</u></p> <p>(1) <u>increase in response to a rise in system frequency;</u> <u>and</u></p> <p>(2) <u>decrease more than 2% per Hz in response to a fall in system frequency.</u></p> <p>(d) <u>Each control system used to satisfy clause S5.2.5.11 must be adequately damped.</u></p> <p>(e) <u>A Generator proposing a negotiated access standard in respect of clause S5.2.5.11(c)(2) must demonstrate to NEMMCO that the proposed increase and decrease in active power transfer to the power system are as close as practicable to the automatic access standard for that plant.</u></p> <p>(f) <u>The access standard must record the agreed values for maximum operating level and minimum operating level, and where relevant the method of determining the values. The values for a generating system must take into account its in-service generating units.</u></p> <p>(g) <u>The amount of a relevant market ancillary service for which the plant may be registered must not exceed the amount that would be consistent with the performance standard registered in respect of this requirement.</u></p> <p>(h) <u>NEMMCO must be involved in the negotiation of access standards under clause S5.2.5.11.</u></p> <p><i>Negotiated access standards:</i></p> <p>(f) <del>If, in accordance with clause 5.3.4A of the Rules, the Generator and the Network Service Provider determine a negotiated access standard is to apply, the Network Service Provider must ensure that the negotiated access standard is equal to the value determined by NEMMCO as unlikely to materially adversely affect system security.</del></p> <p>(g) <del>The negotiation of access standards in relation to this clause S5.2.5.11 must involve NEMMCO under</del></p>	<p>In paragraph (i), a link has been made between the performance standards that are registered in respect of this clause and the eligibility of the generator to participate in market ancillary services for frequency control. This means that the performance is subject to the compliance monitoring requirements of clause 5.12.</p> <p>A basis for negotiation has been added.</p>	<p>This clause must be interpreted 'in response to the system frequency' and not as a coincidental increase or fall in the wind</p> <p>Suggest the following words be added (or equivalent)</p> <p><u>'For each generating system under relatively stable input energy conditions, active power transfer to the power system must not:'</u></p> <p>This implies a link between the obligations of the ancillary services market and technical standards. Not all participants are involved in the AS market.</p>

Affected clause	Clause with proposed amendments	Reason	REGA Comments
	clause 5.3.4A(b) of the Rules.		
S5.2.5.12	<p><b>Stability Impact on network capability</b></p> <p>(a) <i>Automatic access standard:</i> <del>Each</del> <del>A</del> <del>generating unit</del> must have plant capabilities and <i>control systems</i>, <del>including, but not limited to inertia, short circuit ratio and power system stabilisers</del>, sufficient <u>not to:</u></p> <p style="padding-left: 20px;"><del>(1) not cause any inter regional or intra regional power transfer capability based on:</del></p> <p style="padding-left: 40px;"><del>(i) transient stability;</del></p> <p style="padding-left: 40px;"><del>(ii) oscillatory stability; or</del></p> <p style="padding-left: 40px;"><del>(iii) voltage stability;</del></p> <p style="padding-left: 20px;"><del>to be reduced below the level that would apply if the generating unit were disconnected;</del></p> <p style="padding-left: 20px;"><u>reduce any inter-regional or intra-regional power transfer capability below the level that would apply if the generating unit were disconnected.</u></p> <p style="padding-left: 20px;"><del>(2) not cause instability that would adversely impact on other Registered Participants.</del></p> <p>(b) <i>Minimum access standard:</i> The <del>generating unit</del> <i>system</i> must have plant capabilities and <i>control systems</i>; <del>including, but not limited to inertia, short circuit ratio and power system stabilisers</del>, sufficient <del>to not reduce any inter regional or intra regional power transfer capability to import into the generating unit's region by more than its loading level whenever it is synchronised and operational arrangements sufficient to not reduce:</del></p> <p style="padding-left: 20px;"><del>(1) the ability to supply Customer load as a result of a reduction in power transfer capability;</del></p> <p style="padding-left: 20px;"><del>(2) power transfer capabilities into a region by more than the combined sent out generation of its generating units ; and</del></p> <p style="padding-left: 20px;"><del>(3) power transfer capabilities into another region by more than the lesser of 15 per cent of the</del></p>	<p>The requirement in the automatic access standard not to ‘cause instability that would adversely impact other Registered Participants’ has been moved to clause S5.2.5.13 to combine this requirement with the other power system stability requirement.</p> <p>The clause has been extended to include all types of network impact (including impact on thermal transfer limits). This arose out of situations arising with some new wind farm installations, in which generation from the wind farm reduced import capability (associated with a thermal limit) by a ratio greater than 1:1.)</p> <p>Clause (b)(2) relates to the impact on intra-regional flow paths.</p>	<p>Agreed subject to comments</p> <p>Need to ensure that consistent application of methodology is applied across all NSPs in assessing this requirement. There may be some contingencies, however unlikely that may prevent a generator from achieving the automatic access standard.</p>

Affected clause	Clause with proposed amendments	Reason	REGA Comments
	<p><u>combined nameplate rating of its generating units and 30 MW, unless NEMMCO considers that the connection of that generating system is likely to result in a net improvement in supply reliability across all regions,</u></p> <p>(c) <u>The relevant requirements for short circuit ratio in IEC 60034-3 are a plant standard in relation to clause S5.2.5.12(a)(1)(i). In carrying out assessments of proposed access standards under clause S5.2.5.12, the Network Service Provider and NEMMCO must at least take into account, without limitation:</u></p> <p>(1) <u>the expected performance of existing networks and network developments that are considered projects;</u></p> <p>(2) <u>the expected performance of existing generating plant and generation projects that are considered projects;</u></p> <p>(3) <u>the expected range of power system operating conditions; and</u></p> <p>(4) <u>the expected performance of control systems and protection systems, including automatic reclose equipment.</u></p> <p>(d) <u>The access standard must include operational arrangements, including curtailment of generation if necessary, to the satisfaction of NEMMCO, to ensure that the generating plant is operated in a way that meets at least the minimum access standard under abnormal network and generating system conditions, so that power system security can be maintained.</u></p> <p>(e) <u>The Generator must take measures, to the satisfaction of NEMMCO and the Network Service Provider, to minimise any reduction in power transfer capabilities. The following matters must be considered in the design of the generation system, and implemented, where they would have a material impact on power transfer capability to the extent that the total cost of mitigation measures does not exceed 5% of the capital cost of the generation project, where the</u></p>	<p>The clause has been extended in the minimum standard to cover a reduction in import capability into another region (where generation may reduce the reliability of another region.)</p> <p>The focus of this clause has been changed to be on equipment, facilities and control mechanisms that will achieve minimum impact on network transfer capability.</p> <p>A problem with the original wording of the clause was that it applied an on-going risk to the Generator – on-going compliance with the clause depended on factors outside the Generator’s control, including design and configuration of the network, new generation plant and load growth. To avoid this consequence the current wording makes it clear that the assessment is to be based on the current system, considered projects and expected network developments only. The access standard (and therefore the performance standard) documents the facilities</p>	<p>Clause (c) add (5) Australian Standards or International standard.</p> <p>5% of the project cost is at risk, at the discretion of NEMMCO and NSP planning. The requirement for dynamic reactive power support would have to be directly related to the generation project and not an existing system shortfall.</p>

Affected clause	Clause with proposed amendments	Reason	REGA Comments
	<p><u>capital cost is based on a project design that would at least meet the <i>minimum access standard</i>:</u></p> <p>(1) <u>control system functions and settings;</u></p> <p>(2) <u>dynamic reactive power capability of the generating unit or additional plant such as SVC or STATCOM;</u></p> <p>(3) <u>choice of technology and plant parameters;</u></p> <p>(4) <u>transmission network augmentation or distribution network augmentation; and</u></p> <p>(5) <u>location and manner of connection to the network.</u></p> <p>(f) <u>The access standard under clause S5.2.5.12 must detail the plant capabilities, control systems and operational arrangements that will be maintained by the Generator, notwithstanding that changes to the power system, but not changes to the generating system, may reduce the efficacy of the plant capabilities, control systems and operational arrangements over time.</u></p> <p>(g) <u>If a Network Service Provider considers that power transfer capabilities of its network would be increased through provision of additional control system facilities to a generating system (such as a power system stabiliser), the Network Service Provider and the Generator may negotiate for the provision of such additional control system facilities as a commercial arrangement.</u></p> <p>(eh) <u>The negotiation of access standards in relation to under this clause S5.2.5.12 must involve NEMMCO in accordance with under clause 5.3.4A(b) of the Rules.</u></p>	<p>equipment and control systems agreed to be provided.</p> <p>The clause also allows for the Network Service Provider and the Generator to negotiate for additional control system facilities on a commercial basis.</p>	
S5.2.5.13	<p><b><u>Control systems and stability</u></b><del>Excitation control system</del></p> <p>[Replace entirely with the following]</p> <p>(a) For the purpose of clause S5.2.5.13:</p> <p><u>'settling time' means, in relation to a step response test or simulation of a control system, the time measured from initiation of a step change in an input quantity to the time</u></p>	<p>Some of the definitions used in this clause were not fully specified in the previous clause, and have been amended so that</p>	Agreed subject to comments.

Affected clause	Clause with proposed amendments	Reason	REGA Comments
	<p><u>when the magnitude of error between the output quantity and its final settling value remains less than 10% of:</u></p> <p>(1) <u>if the sustained change in the quantity is less than half of the maximum change in that output quantity, the maximum change induced in that output quantity; and</u></p> <p>(2) <u>otherwise the sustained change induced in that output quantity; and</u></p> <p><u>'rise time' means, in relation to a step response test or simulation of a control system, the time taken for an output quantity to rise from 10% to 90% of the maximum change induced in that quantity by a step change of an input quantity.</u></p> <p>(b) <u>The automatic access standard is:</u></p> <p>(1) <u>Each generating unit must have plant capabilities and control systems sufficient to ensure that:</u></p> <p>(i) <u>power system oscillations, for the frequencies of oscillation of the generating unit against any other generating unit, are adequately damped;</u></p> <p>(ii) <u>operation of the generating unit does not degrade the damping of any mode of oscillation of the power system; and</u></p> <p>(iii) <u>operation of the generating unit does not cause instability (including hunting of tap-changing transformer control systems) that would adversely impact other Registered Participants.</u></p> <p>(2) <u>Each control system must have:</u></p> <p>(i) <u>permanently installed and operational monitoring and recording facilities for key variables including each input and output, for disturbance monitoring and</u></p>	<p>they apply to a test or a simulation, and “settling time” can be applied to responses that are largely oscillatory.</p> <p>The automatic and minimum standards have been written in terms of scheduled and non-scheduled plant.</p> <p>The mandatory requirements have been translated into the automatic access standard requirements. (The exception to this is ceiling voltage which is slightly higher in the automatic and slightly lower in the minimum standard than the original mandatory standard.)</p> <p>A power system stabiliser specification has been added for the automatic access standard.</p> <p>The existing version of this clause is written around synchronous generating units. The criteria for synchronous plant are well developed, and equivalent subclauses for asynchronous plant which will usually apply to wind farms have been added, rather than attempting to make the existing clauses non-technology specific.</p> <p>The clause was written previously with most of the requirements mandatory.</p>	<p>For large synchronous machines this okay.</p> <p>The automatic standard is written at the generating unit level. In (1) and (2) what if a generating system can meet the automatic standard through a combination of unit control and connection point control?</p> <p>All inputs and outputs are not key variables. Overly onerous for individual wind turbines.</p>

Affected clause	Clause with proposed amendments	Reason	REGA Comments
	<p><u>testing purposes; and</u></p> <p>(ii) <u>facilities for testing the <i>control system</i> sufficient to establish its dynamic operational characteristics.</u></p> <p>(3) <u>Each <i>synchronous generating unit</i> must have an <i>excitation control system</i> that:</u></p> <p>(i) <u>regulates voltage at the <i>connection point</i> or another agreed location in the <i>power system</i> (including within the <i>generating system</i>) to within 0.5% of the setpoint.</u></p> <p>(ii) <u>is able to operate the stator continuously at 105% of <i>nominal voltage</i> with <i>rated active power</i> output;</u></p> <p>(iii) <u>regulates voltage in a manner that helps to support <i>network</i> voltages during faults and does not prevent the <i>Network Service Provider</i> from achieving the requirements of clause S5.1a.3 and S5.1a.4;</u></p> <p>(iv) <u>allows the voltage setpoint to be continuously controllable in the range of at least 95% to 105% of <i>normal voltage</i> at the <i>connection point</i> or the agreed location, without reliance on a <i>tap-changing transformer</i>;</u></p> <p>(v) <u>has limiting devices to ensure that a voltage disturbance does not cause the <i>generating unit</i> to trip at the limits of its operating capability;</u></p> <p>(vi) <u>has an excitation ceiling <i>voltage</i> of at least 2 times the excitation required to achieve <i>generation</i> at <i>nameplate rating</i> for rated power factor, rated speed and <i>nominal voltage</i>;</u></p>	<p>The clause has been reworded as automatic and minimum access standards.</p> <p>The previous automatic access standard requirement from S5.2.5.12 not to cause instability that would adversely affect other Registered Participants has been moved to this clause, and has been included in both minimum and automatic access, because the causing of instability that would adversely affect other participants is not acceptable even at minimum access level.</p>	

Affected clause	Clause with proposed amendments	Reason	REGA Comments
	<p><u>(vii) has settling times for a step change of voltage setpoint or voltage at the location agreed under clause S5.2.5.13(b)(3)(i) of:</u></p> <p><u>(A) generated voltage less than 2.5 seconds for a 5% voltage disturbance with the generating unit not synchronised;</u></p> <p><u>(B) active power, reactive power and voltage less than 5.0 seconds for a 5% voltage disturbance with the generating unit synchronised, from an operating point where the voltage disturbance would not cause any limiting device to operate; and</u></p> <p><u>(C) in respect of each limiting device, active power, reactive power and voltage less than 7.5 seconds for a 5% voltage disturbance with the generating unit synchronised, when operating into a limiting device from an operating point where a voltage disturbance of 2.5% would just cause the limiting device to operate;</u></p> <p><u>(viii) is able to increase field voltage from rated field voltage to the excitation ceiling voltage in less than 0.5 second;</u></p> <p><u>(ix) has a power system stabiliser with sufficient flexibility to enable damping performance to be maximised, with characteristics as described in clause S5.2.5.13(d); and</u></p>		

Affected clause	Clause with proposed amendments	Reason	REGA Comments
	<p>(x) <u>has reactive current compensation settable for boost or droop.</u></p> <p>(4) <u>Each <i>generating unit</i>, other than a <i>synchronous generating unit</i>, must have a <i>voltage control system</i> that:</u></p> <p>(i) <u>regulates voltage at the <i>connection point</i> or an agreed location in the <i>power system</i> (including within the <i>generating system</i>) to within 0.5% of its setpoint;</u></p> <p>(ii) <u>regulates voltage in a manner that helps to support <i>network</i> voltages during faults and does not prevent the <i>Network Service Provider</i> from achieving the requirements of clauses S5.1a.3 and S5.1a.4;</u></p> <p>(iii) <u>allows the voltage setpoint to be continuously controllable in the range of at least 95% to 105% of <i>normal voltage</i> at the <i>connection point</i> or agreed location in the <i>power system</i>, without reliance on a <i>tap changing transformer</i>;</u></p> <p>(iv) <u>has limiting devices to ensure that a voltage disturbance does not cause the <i>generating unit</i> to trip at the limits of its operating capability;</u></p> <p>(v) <u>with the <i>generating system</i> connected to the <i>power system</i>, has <i>settling times</i> for active power, reactive power and voltage due to a step change of voltage setpoint or voltage at the location agreed under clause S5.2.5.13(b)(4)(i), of less than:</u></p> <p>(A) <u>5.0 seconds for a 5% voltage disturbance with the <i>generating unit</i> connected to the <i>power system</i>, from an</u></p>		<p>For generating systems the requirement should be at the connection point if required. NEMMCO should not be concerned with what is happening within the generating system.</p>

Affected clause	Clause with proposed amendments	Reason	REGA Comments
	<p><u>operating point where the voltage disturbance would not cause any limiting device to operate; and</u></p> <p>(B) <u>7.5 seconds for a 5% voltage disturbance with the generating unit connected to the power system, when operating into any limiting device from an operating point where a voltage disturbance of 2.5% would just cause the limiting device to operate;</u></p> <p>(vi) <u>has reactive power rise time, for a 5% step change in the voltage set point, of less than 2 seconds;</u></p> <p>(vii) <u>has a power system stabiliser with sufficient flexibility to enable damping performance to be maximised, with characteristics as described in clause S5.2.5.13(d); and</u></p> <p>(viii) <u>has reactive current compensation.</u></p> <p>(c) <u>The minimum access standard is:</u></p> <p>(1) <u>Each generating unit must have plant capabilities and control systems, including if appropriate, a power system stabiliser, sufficient to ensure that:</u></p> <p>(i) <u>power system oscillations, for the frequencies of oscillation of the generating unit against any other generating unit, are adequately damped;</u></p> <p>(ii) <u>operation of the generating unit does not degrade any mode of oscillation that is within 0.3 nepers per second of being unstable, by more than 0.01</u></p>	<p>In the minimum standard, the control system parameters are specified only for generating systems &gt;30 MW, and taking into account the allowance for plant connected at voltages below 100 kV to have power factor control. Models are not required for plant less than 30 MW, and therefore it is not possible to assess (as part of the access standards) whether the plant is capable of complying with these performance levels. Allowance is made in the minimum standard for plant that is distribution-connected (&lt;100 kV) to operate with power factor control or reactive power control instead of voltage</p>	

Affected clause	Clause with proposed amendments	Reason	REGA Comments
	<p><u>neper per second and does not degrade any other mode of oscillation to within 0.29 nepers per second of being unstable; and</u></p> <p>(iii) <u>operation of the <i>generating unit</i> does not cause instability (including hunting of <i>tap-changing transformer control systems</i>) that would adversely impact other <i>Registered Participants</i>.</u></p> <p>(2) <u>Each <i>generating system</i> comprised of <i>generating units</i> with combined <i>nameplate rating</i> of 30 MW or more must have <i>facilities</i> for testing its <i>control systems</i> sufficient to establish their dynamic operational characteristics.</u></p> <p>(3) <u>Each <i>generating unit</i> or <i>generating system</i> must have facilities:</u></p> <p>(i) <u>where the <i>connection point nominal voltage</i> is 100 kV or more, to regulate voltage in a manner that does not prevent the <i>Network Service Provider</i> from achieving the requirements of clauses S5.1a.3 and S5.1a.4;</u></p> <p>(ii) <u>where the <i>connection point nominal voltage</i> is less than 100 kV, to regulate voltage or reactive power or power factor in a manner that does not prevent the <i>Network Service Provider</i> from achieving the requirements of clauses S5.1a.3 and S5.1a.4; and</u></p> <p>(iii) <u>in either case, sufficient to achieve the performance agreed in respect of clauses S5.2.5.1, S5.2.5.2, S5.2.5.3A, S5.2.5.3B, S5.2.5.3C and S5.2.5.12.</u></p> <p>(4) <u>Each <i>synchronous generating unit</i>, that is part of a <i>generating system</i> comprised of <i>generating units</i> with a combined <i>nameplate rating</i> of 30 MW or more, must have an <i>excitation control</i></u></p>	control.	If transmission connected is intended then this should be stated rather than a voltage level. There are 132kV distribution lines in the network.

Affected clause	Clause with proposed amendments	Reason	REGA Comments
	<p><u>system that:</u></p> <p>(i) <u>regulates voltage at the connection point or an agreed location in the power system (including within the generating system), to within 0.5% of its setpoint or, where the connection point nominal voltage is less than 100 kV, regulates voltage, power factor or reactive power as agreed with the Network Service Provider and NEMMCO;</u></p> <p>(ii) <u>has excitation ceiling voltage of at least 1.5 times the excitation required to achieve generation at the nameplate rating for rated power factor, rated speed and nominal voltage ;</u></p> <p>(iii) <u>subject to coordination under clause S5.2.5.13(g), has a settling time of less than 5.0 seconds for a 5% voltage disturbance with the generating unit synchronised, from an operating point where such a voltage disturbance would not cause any limiting device to operate; and</u></p> <p>(iv) <u>has over- and under-excitation limiting devices sufficient to ensure that a voltage disturbance does not cause the generating unit to trip at the limits of its operating capability.</u></p> <p>(5) <u>Each generating system comprised of generating units with combined nameplate rating of 30 MW or more and which are not synchronous generating units, must have a control system that:</u></p> <p>(i) <u>regulates voltage at the connection point or an agreed location in the power system (including within the generating system) to within 0.5% of its setpoint</u></p>		<p>The requirement to regulate the voltage possibly within the generating system and not at the connection point removes the flexibility with which a voltage control</p>

Affected clause	Clause with proposed amendments	Reason	REGA Comments
	<p><u>or, where the <i>connection point nominal voltage</i> is less than 100 kV, regulates voltage, power factor or reactive power as agreed with the <i>Network Service Provider</i> and <i>NEMMCO</i>;</u></p> <p>(ii) <u>subject to coordination under clause S5.2.5.13(g), has settling time less than 7.5 seconds for a 5% voltage disturbance with the <i>generating unit</i> electrically connected to the <i>power system</i> from an operating point where such a voltage disturbance would not cause any limiting device to operate; and</u></p> <p>(iii) <u>has limiting devices to ensure that a voltage disturbance would not cause the <i>generating unit</i> to trip at the limits of its operating capability.</u></p> <p>(d) <u>A <i>power system</i> stabiliser provided under clause S5.2.5.13(b) must have the following characteristics:</u></p> <p>(i) <u>for a <i>synchronous generating unit</i>, measurements of rotor speed and active power output of the <i>generating unit</i> as inputs, and otherwise measurements of <i>power system frequency</i> and active power output of the <i>generating unit</i> as inputs;</u></p> <p>(ii) <u>two washout filters for each input, with ability to bypass one of them if necessary;</u></p> <p>(iii) <u>sufficient (and not less than two) lead-lag transfer function blocks (or equivalent number of complex poles and zeros) with adjustable gain and time-constants, to compensate fully for the phase lags due to the <i>generating plant</i>;</u></p> <p>(iv) <u>an output limiter, which for a <i>synchronous generating unit</i> is continually adjustable over the range of -10% to +10% of stator voltage;</u></p>		<p>system could be implemented on a wind farm.</p>

Affected clause	Clause with proposed amendments	Reason	REGA Comments
	<p>(v) <u>monitoring and recording facilities for key variables including inputs, output and the inputs to the lead-lag transfer function blocks; and</u></p> <p>(vi) <u>facilities to permit testing of the <i>power system</i> stabiliser in isolation from the <i>power system</i> by injection of test signals, sufficient to establish the transfer function of the <i>power system</i> stabiliser.</u></p> <p>(e) <u>A limiting device provided under clauses S5.2.5.13(b) or S5.2.5.13 (c) must:</u></p> <p>(1) <u>not detract from the performance of any <i>power system</i> stabiliser; and</u></p> <p>(2) <u>be coordinated with all <i>protection systems</i>.</u></p> <p>(f) <u>If a <i>generating unit</i> cannot meet the <i>automatic access standard</i>, the <i>Generator</i> must demonstrate why that standard could not be reasonably achieved. The <i>negotiated access standard</i> proposed by the <i>Generator</i> must then be the highest level that the <i>generating system</i> can reasonably achieve, including by installation of additional dynamic reactive power equipment, and through optimising its <i>control systems</i>.</u></p> <p>(g) <u>The <i>Network Service Provider</i> may require that the design and operation of the <i>control systems</i> of a <i>generating unit</i> or <i>generating system</i> be coordinated with the existing voltage <i>control systems</i> of the <i>Network Service Provider</i> and of other <i>Network Users</i>, in order to avoid or manage interactions that would adversely impact on the <i>Network Service Provider</i> and other <i>Network Users</i>. The <i>access standards</i> must record such requirements.</u></p> <p>(h) <u>The assessment of impact of the <i>generating units</i> on <i>power system</i> stability and damping of <i>power system</i> oscillations shall be in accordance with the <i>power system</i> stability guidelines established under clause 4.3.4(h).</u></p> <p>(i) <u><i>NEMMCO</i> must be involved in the negotiation of <i>access</i></u></p>		<p>The application of the automatic standard is written solely for generating units. There are a number of wind turbines that would not individually contain the control systems referred to in the automatic standard; however there are wind farm control systems that would provide the control and response to connection point.</p> <p>Agreed this is the single most important voltage control requirement.</p>

Affected clause	Clause with proposed amendments	Reason	REGA Comments
	<u>standards</u> under clause S5.2.5.13.		
<b>S5.2.5.14</b>	<p><b><u>Active power control</u></b></p> <p>(a) <u>Automatic access standard: A generating system comprised of generating units with a combined nameplate rating of 30 MW or more must have an active power control system capable of:</u></p> <p>(1) <u>for each scheduled generating unit or, if subject to aggregation approved by NEMMCO under clause 3.8.3, scheduled generating system:</u></p> <p>(i) <u>maintaining and changing its active power output in accordance with its dispatch instructions; and</u></p> <p>(ii) <u>ramping its active power output linearly from one dispatch level to another, and</u></p> <p>(2) <u>for each non-scheduled generating unit or non-scheduled generating system, subject to the energy source availability:</u></p> <p>(i) <u>subject to clause S5.2.5.14(a)(2)(iii), automatically reducing or increasing its active power output within five minutes, at a constant rate, to below the level specified in an instruction electronically issued by a control centre;</u></p> <p>(ii) <u>automatically limiting its active power output, to below the level specified in clause S5.2.5.14(a)(2)(i); and</u></p> <p>(iii) <u>not changing its active power output within five minutes by more than the raise and lower amounts specified in an instruction electronically issued by a control centre.</u></p> <p>(b) <u>Minimum access standard: A generating system</u></p>	<p>The requirement for active power control is currently implied in the dispatch requirements for scheduled generating units, but has not previously been expressed as a technical requirement. A number of concerns have been raised about the lack of active power control from wind farms – particularly with respect to control of line loading and reduction in reliability as a result of ramp rate limitations in scheduled plant that is regulating output to compensate for load and wind farm variability. Therefore it is necessary to formalise in technical requirements a requirement for active power control.</p> <p>The requirements for scheduled generating units are consistent with existing dispatch arrangements.</p>	Agreed

Affected clause	Clause with proposed amendments	Reason	REGA Comments
	<p><u>comprised of <i>generating units</i> with combined <i>nameplate rating</i> of 30 MW or more must have an active power <i>control system</i> capable of:</u></p> <p>(1) <u>for each <i>scheduled generating unit</i> or, if subject to aggregation approved by <i>NEMMCO</i> under clause 3.8.3, <i>scheduled generating system</i>, maintaining and changing its active power output in accordance with its <i>dispatch instructions</i>.</u></p> <p>(2) <u>for each <i>non-scheduled generating system</i>:</u></p> <p>(i) <u>reducing its active power output, within five minutes, to or below the level required to manage <i>network</i> flows that is specified in a verbal instruction issued by the <i>control centre</i>;</u></p> <p>(ii) <u>limiting its active power output to or below the level specified in clause S5.2.5.14(b)(2)(i);</u></p> <p>(iii) <u>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 <i>control centre</i>; and</u></p> <p>(iv) <u>being upgraded to receive electronic instructions from the <i>control centre</i> and respond within five minutes.</u></p> <p>(c) <u>Each <i>control system</i> used to satisfy the requirements of clauses S5.2.5.14(a) and S5.2.5.14(b) must be <i>adequately damped</i>.</u></p> <p>(d) <u>The <i>access standard</i> must document to <i>NEMMCO</i>'s satisfaction any operational arrangements necessary to manage <i>network</i> flows, that may include a requirement for the <i>generating system</i> to be operated in a manner that prevents its output changing within five minutes by more than an amount specified by a <i>control centre</i>.</u></p>		

Affected clause	Clause with proposed amendments	Reason	REGA Comments
	<p>(e) <u>A negotiated access standard may provide that if the number or frequency of verbal instructions becomes difficult for a control centre to manage, NEMMCO may require the Generator to upgrade its facilities to receive electronic instructions and act automatically on those instructions.</u></p> <p>(f) <u>NEMMCO must be involved in the negotiation of access standards under clause S5.2.5.14.</u></p>		
S5.2.6.1	<p><b>Replace clause S5.2.6.1 with the following:</b></p> <p><b><u>Remote Monitoring</u></b></p> <p>(a) <u>The automatic access standard is:</u></p> <p>(1) <u>Each scheduled generating unit or non-scheduled generating unit with a nameplate rating of 30MW or more or non-scheduled generating system with a combined nameplate rating of 30MW or more, must have remote monitoring equipment to transmit to NEMMCO's control centres in real time in accordance with clause 4.11, the quantities that NEMMCO reasonable requires to discharge its market and power system security functions set out in Chapters 3 and 4.</u></p> <p>(2) <u>The quantities that NEMMCO may request include:</u></p> <p>(i) <u>in respect of each scheduled generating unit or non-scheduled generating unit with a nameplate rating of 30MW or more, current, voltage, active power and reactive power in respect of generating unit stators or power conversion systems (as applicable), that status of all switching devices that carry the generation, tap-changing transformer tap position, and aggregate power if subject to aggregation approved by NEMMCO under clause 3.8.3;</u></p> <p>(ii) <u>in respect of each non-scheduled generating system that includes a generating unit with a nameplate rating of less than 30MW, its</u></p>		<p>Agreed - see comment on (a) (2) (ii)</p> <p>For systems less than 30 MW this appears to require</p>

Affected clause	Clause with proposed amendments	Reason	REGA Comments
	<p><u>connected status, tap-changing transformer tap position and voltages, active power and reactive power aggregated for groups of identical generating units, and either the numbers of identical generating units operating or the operating status of each non-identical generating units;</u></p> <p>(iii) <u>in respect of each auxiliary system with capacity of 30MW or more associated with a generating unit or generating system, active power and reactive power;</u></p> <p>(iv) <u>in respect of reactive power equipment that is part of a generating system but not part of a particular generating unit, its reactive power,</u></p> <p>(v) <u>in respect of each wind farm, wind speed, wind direction and ambient temperature; and</u></p> <p>(vi) <u>any other quantity that NEMMCO reasonable requires to discharge its market and power system security functions as set out in Chapters 3 and 4.</u></p> <p>(b) <u>Minimum Access Standard: Each scheduled generating unit or, if subject to aggregation approved by NEMMCO under clause 3.8.3, scheduled generating system, or non-scheduled generating system with a combined nameplate rating of 30MW or more must have remote monitoring equipment to transmit to NEMMCO's control centres in real time in accordance with clause 4.11:</u></p> <p>(1) <u>the active power output of the generating unit, scheduled generating system, or non-scheduled generating system (as applicable);</u></p> <p>(2) <u>if connected to a transmission system, the reactive power output of the generating unit, scheduled generating system, or non-scheduled generating system (as applicable);</u></p> <p>(3) <u>if a wind farm, number of units operating, wind speed and wind direction.</u></p>		<p>more information for those greater than 30 MW.</p>

Affected clause	Clause with proposed amendments	Reason	REGA Comments
	(c) <u>NEMMCO must be involved in the negotiation of access standards under clause S5.2.6.1</u>		
S5.2.6.3	<p><b>Replace clause S5.2.6.3 with the following:</b></p> <p><b><u>Communications Equipment</u></b></p> <p>(a) <u>The automatic access standard is:</u></p> <p>(1) <u>A generator must provide and maintain two separate telephone facilities using independent telecommunications service providers, for the purposes of operational communications between the Generator's responsible operator under clause 4.11.3(a) and NEMMCO's control centre.</u></p> <p>(2) <u>A Generator must provide electricity supplies for remote monitoring equipment and remote control equipment installed in relation to its generating units or generating system capable of keeping such equipment available for at least three hours following total loss of supply at the connection point for the relevant generating unit</u></p> <p>(b) <u>The minimum access standard is:</u></p> <p>(1) <u>A generator must provide and maintain a telephone facility for the purposes of operational communications between the Generator's responsible operator under clause 4.11.3(a) and NEMMCO's control centre.</u></p> <p>(2) <u>A Generator must provide electricity supplies for remote monitoring equipment and remote control equipment installed in relation to its generating units or generating system capable of keeping such equipment available for at least one hour following total loss of supply at the connection point for the relevant generating unit</u></p> <p>(c) <u>Where the Network Service Provider or NEMMCO reasonably requires that a back-up telephone facility be independent of commercial telephone service providers, the Network Service Provider must provide and maintain the separate facility on a cost-recovery basis only through the</u></p>		Agreed

Affected clause	Clause with proposed amendments	Reason	REGA Comments
	<p><u>charge for connection.</u></p> <p>(d) <u>A Generator must provide communications paths (with appropriate redundancy) from the remote monitoring equipment or remote control equipment installed for each of its generating units, or generating system as appropriate, to a communications interface in a location reasonably acceptable to the Network Service Provider at the relevant generation facility. Communications systems between this communications interface and the control centre must be the responsibility of the Network Service Provider unless otherwise agreed by the Generator and the Network Service Provider. The Generator must supply accommodation and secure power supplies for communications facilities provided by the Network Service Provider under clause S5.2.6.3</u></p> <p>(e) <u>NEMMCO must be involved in the negotiation of access standards under clause S5.2.6.3</u></p>		
S5.2.8	<p><b>Replace clause S5.2.8 with the following:</b></p> <p><b><u>Power station auxiliary supplies</u></b></p> <p><u>In cases where a generating system takes its auxiliary supplies via a connection point through which its generation is not transferred to the network, the access standards must be established under clause S5.3.5 as if the Generator were a Market Customer.</u></p>		Agreed
S5.2.9	<p><b>Replace clause S5.2.9 with the following:</b></p> <p><b><u>Fault Current</u></b></p> <p>(a) <u>The automatic access standard is:</u></p> <p>(1) <u>The contribution for the generating system to the fault current on the connecting network through its connection point must not exceed the lesser of:</u></p> <p>(i) <u>three times the combined maximum continuous current of the operating generating units of the generating system; and</u></p>		NEMMCO have not provided comment on why they want to replace this clause. This change has nothing to do with the integration of wind power. There are no known issues with S5.2.9 as it is currently drafted. There is no justification for changing the rule.

Affected clause	Clause with proposed amendments	Reason	REGA Comments
	<p>(ii) <u>the level that can be safely interrupted by the circuit breakers of the <i>connecting network</i> and safely carried by the <i>connecting network</i> for the duration of the applicable <i>breaker fail protection system fault clearance times</i>, as specified for the relevant <i>connection point</i> by the <i>Network Service Provider</i>.</u></p> <p>(2) <u>A <i>generating system's</i> connected plant must be capable of withstanding fault current through the <i>connection point</i> up to the higher of:</u></p> <p>(i) <u>the level specified in clause S5.2.4(c)(1); and</u></p> <p>(ii) <u>the highest level of current at the <i>connection point</i> that can be safely interrupted by the circuit breakers of the <i>connecting network</i> and safely carried by the <i>connecting network</i> for the duration of the applicable <i>breaker fail protection system fault clearance times</i>, as specified by the <i>Network Service Provider</i>.</u></p> <p>(3) <u>A circuit breaker provided to isolate a <i>generating unit</i> or <i>generating system</i> from the <i>network</i> must be capable of breaking, without damage or restrike, the maximum fault currents that could be reasonably expected to flow through the circuit breaker for a fault in the <i>network</i> or in the <i>generating unit</i>, or <i>generating system</i>, as specified in the <i>connection agreement</i>.</u></p> <p>(b) <u>The <i>minimum access standard</i> is:</u></p> <p>(1) <u>The <i>generating system</i> does not need to limit fault current contribution.</u></p> <p>(2) <u>A <i>generating system's</i> connected plant must be capable of withstanding fault current through the <i>connection point</i> up to the level specified in clause S5.2.4(c)(1)</u></p> <p>(3) <u>A circuit breaker provided to isolate a <i>generating unit</i> or <i>generating system</i> from the <i>network</i> must be capable of breaking, without damage or restrike, the maximum fault currents that could be reasonably expected to flow through the circuit breaker for a fault in the <i>network</i> or</u></p>		

Affected clause	Clause with proposed amendments	Reason	REGA Comments
	<p><u>in the generating unit, or generating system, as specified in the connection agreement.</u></p> <p>(c) <u>The Network Service Provider must consider alternate network configurations in the determination of the applicable fault current level and must prefer those options that maintain an equivalent level of service to other Network Users, and which in the opinion of the Generator, impose the least obligation on the Generator.</u></p> <p>(d) <u>In carrying out assessments of proposed access standards under clause S5.2.9, the Network Service Provider must take into account, without limitation:</u></p> <p>(1) <u>The expected performance of the existing networks and network developments that are considered projects;</u></p> <p>(2) <u>The expected performance of existing generating plant and generation projects that are considered projects; and</u></p> <p>(3) <u>The expected range of power system operating conditions.</u></p> <p>(e) <u>The Network Service Provider is not liable for any loss or damage incurred by the Generator or any other person as a consequence of a fault on either the power system, or within the Generator's facility.</u></p>		<p>It is inappropriate that a clause referring to a NSP's liability to everyone exists in a Generator standard.</p>
S5.5.2	<p><b>Under the heading “Preliminary system planning data”:</b></p> <p>This data is required for submission with the <i>application to connect</i>, to allow the <i>Network Service Provider</i> to prepare an offer of terms for a <i>connection agreement</i> and to assess the requirement for, and effect of, <i>network augmentation</i> or <i>extension</i> options. Such data is normally limited to the items denoted as Standard Planning Data (S) in the <del>technical data schedules 5.5.1 to 5.5.5</del> <i>Generating System Model Guidelines Generating System Design Data Sheet, Generating System Setting Data Sheet</i> and in schedules 5.5.3 to 5.5.5.</p> <p>The <i>Network Service Provider</i> may, in cases where there is reasonable doubt as to the viability of a proposal, require the submission of other data before making an offer to <i>connect</i> or to</p>	<p>The references to schedules 5.5.1 and 5.5.2 (implied) have been amended to refer to the documents to be prepared under clause S5.5.7.</p>	<p>Agree</p>

Affected clause	Clause with proposed amendments	Reason	REGA Comments
	amend a <i>connection agreement</i> .		
S5.5.4	<p>Schedules 5.5.3 to 5.5.5 cover the following data areas:</p> <p>(a) <del>schedule 5.5.1 — <i>Generating Unit Design Data</i>. This comprises <i>generating unit fixed design parameters</i>.</del></p> <p>(b) <del>schedule 5.5.2 — <i>Generating Unit Setting Data</i>. This comprises settings which can be varied by agreement or by direction of the <i>Network Service Provider</i> or <i>NEMMCO</i>.</del></p> <p>(c) <del>schedule 5.5.3 - <i>Network Plant Technical Data</i>. This comprises fixed electrical parameters.</del></p> <p>(db) schedule 5.5.4 - <i>Plant and Apparatus Setting Data</i>. This comprises settings <del>which</del> <u>that</u> can be varied by agreement or by direction of the <i>Network Service Provider</i> or <i>NEMMCO</i>.</p> <p>(e) schedule 5.5.5 - <i>Load Characteristics</i>. This comprises the estimated parameters of loads <del>groups in respect of, for example, harmonic content and response to frequency and voltage variations.</del></p> <p>The <u>documents and</u> schedules applicable to each class of <i>Registered Participant</i> are as follows:</p> <p>(1) <i>Generators</i>: <del>schedules 5.5.1 and 5.5.2</del> <u>the <i>Generating System Model Guidelines</i>, <i>Generating System Design Data Sheet</i> and <i>Generating System Setting Data Sheet</i>;</u></p> <p>(2) <i>Customers and Network Service Providers</i>: schedules 5.5.3 and 5.5.4; <u>and</u></p> <p>(3) <i>Customers</i>: schedule 5.5.5.</p>	The references to schedules 5.5.1 and 5.5.2 have been removed or amended to refer to the documents to be prepared under clause S5.5.7.	Agree
S5.5.5	<p><b>Replace clause S5.5.5 with the following:</b></p> <p>S5.5.5 A <i>Generator</i> that connects a <i>generating unit</i>, that is not a <i>synchronous generating unit</i>, must be given exemption from complying with those parts of <del>schedules 5.5.1 and 5.5.2</del> <u>the <i>Generating System Model Guidelines</i> <i>Generating System Design Data Sheet</i> and</u></p>	The references to schedules 5.5.1 and 5.5.2 have been amended to refer to the documents to be prepared under clause S5.5.7.	Agree

Affected clause	Clause with proposed amendments	Reason	REGA Comments
	<p><u>Generating System Setting Data Sheet</u> that are determined by the <i>Network Service Provider</i> to be not relevant to such <i>generating units</i>, but must comply with those parts of schedules 5.5.3, 5.5.4, and 5.5.5 that are relevant to such <i>generating units</i>, as determined by the <i>Network Service Provider</i>.</p>		
S5.5.6	<p><b>Replace clause S5.5.6 with the following:</b></p> <p>S5.5.6 A <i>Generator</i> that connects a <i>synchronous generating unit</i> equal to or smaller than 30 MW or a number of <i>synchronous generating units</i> totalling less than 30 MW to a <i>connection point</i> to a <i>distribution network</i> will usually be required to submit less registered system planning data and less registered data than is indicated in <del>schedule 5.5.1</del> <u>the <i>Generating System Model Guidelines</i>, <i>Generating System Design Data Sheet</i> and <i>Generating System Setting Data Sheet</i></u>. In general these data will be limited to confirmation of the preliminary system planning data, marked (S), but other data must be supplied if required by the <i>Network Service Provider</i> or <i>NEMMCO</i>.</p> <p>Codes:</p> <p>S = Standard Planning Data</p> <p>D = Detailed Planning Data</p> <p>R = Registered Data (R1 pre-connection, R2 post-connection)</p>	The reference to schedules 5.5.1 has been amended to refer to the documents to be prepared under clause S5.5.7.	Agree
S5.5.7	<p>(a) <u><i>NEMMCO</i> must, subject to clause S5.7.7(b), publish in accordance with the <i>Rules consultation procedures</i>:</u></p> <p>(1) <u>a <i>Generating System Design Data Sheet</i> describing, for relevant technologies, the <i>generating system design parameters of generating units and generating systems including, without limitation, plant configurations, impedances, time constants, non-linearities, ratings and capabilities, to be</i></u></p>	This modification removes the data schedules S5.5.1 and S5.5.2 and allows their replacements to be changed outside of the Rule change process. This is because the data requirements need to change from time to time to reflect changes in technology. Currently the data schedules are heavily biased toward thermal synchronous plant, and some of the requirements are not applicable to	Agree

Affected clause	Clause with proposed amendments	Reason	REGA Comments
	<p><u>provided under clauses S5.2.4 and S5.5,</u></p> <p>(2) <u>a <i>Generating System Setting Data Sheet</i> describing, for relevant <i>generation and control system</i> technologies, the <i>protection system and control system</i> settings of <i>generating units and generating systems</i> including, without limitation, configurations, gains, time constants, delays, deadbands, non-linearities and limits, to be provided under clauses S5.2.4 and S5.5; and</u></p> <p>(3) <u><i>Generating System Model Guidelines</i>, describing, for relevant <i>generation and control system</i> technologies, <i>NEMMCO's</i> requirements when developing mathematical models for <i>generating units and generating systems</i>, including, without limitation, the impact of their <i>control systems and protection systems on power system security</i>.</u></p> <p>(b) <u>If the first version of:</u></p> <p>(1) <u>the <i>Generating System Design Data Sheet</i> published under paragraph (a) is identical to schedule 5.5.1;</u></p> <p>(2) <u>the <i>Generating System Setting Data Sheet</i> published under paragraph (a) is identical to schedule 5.5.2,</u></p> <p><u>as each of those respective schedules existed one day before the <i>Rules</i> changes that give effect to this clause S5.5.7 take effect, <i>NEMMCO</i> is not required to comply with the <i>Rules consultation procedures</i> in publishing them.</u></p> <p>(c) <u>The purpose of making the <i>Generating System Design Data Sheet, Generating System Setting Data Sheet</i> and <i>Generating System Model Guidelines</i>, is to:</u></p> <p>(1) <u>allow <i>generating units and generating systems</i> to be mathematically modelled by <i>NEMMCO</i> and relevant <i>Registered Participants</i> in load flow and dynamic stability assessments with</u></p>	<p>asynchronous plant. It is proposed that changes to these schedules will be made through a Rules consultation process. Because of the urgency of replacing these schedules with documents covering wind generation technologies, NEMMCO would like to be able to commence the Rules consultation process before these changes come into effect.</p>	

Affected clause	Clause with proposed amendments	Reason	REGA Comments
	<p><u>sufficient accuracy to permit:</u></p> <p>(i) <u>the <i>power system</i> operating limits for ensuring <i>power system security</i> to be quantified with the lowest practical safety margins;</u></p> <p>(ii) <u>proposed <i>access standards</i> and <i>performance standards</i> of <i>generating units</i> and <i>generating systems</i> to be assessed; and</u></p> <p>(iii) <u>settings of <i>control systems</i> and <i>protection systems</i> of <i>generating units</i>, <i>generating systems</i> and <i>networks</i> to be assessed and quantified for maximum practical performance of the <i>power system</i>; and</u></p> <p>(2) <u>identify for each type of data its category in terms of clause S5.5.2.</u></p> <p>(d) <u>Any consultation commenced by NEMMCO in accordance with the <i>Rules consultation procedures</i> prior to this clause coming into effect is taken to have been conducted in accordance this clause S5.7.7.</u></p>		
schedules 5.5.1 & 5.5.2	Delete		Agree to deletion.
schedule 5.6(c1)	(c1) details of each <i>access standard</i> agreed between the <i>Network Service Provider</i> and the <i>Registered Participant</i> and all related conditions of agreement resulting from the application of any of the <del>access provisions for access</del> contained in schedule 5.1 for <i>Network Service Providers</i> , or schedule 5.2 for <i>Generators</i> , or schedule 5.3 for <i>Customers</i> , or schedule 5.3a for <i>Market Network Service Providers</i>	This amendment is required to correct an incorrect reference to the term performance standard. Access standards are what are agreed between Network Service Providers and Registered Participants.	Agree

Affected clause	Clause with proposed amendments	Reason	REGA Comments
8.6.2(m)	(m) <b>(modelling):</b> the disclosure, use or reproduction of data held by NEMMCO or a <i>Network Service Provider</i> for the purpose of modelling the operation of the <i>power system</i> , to the extent reasonably necessary to enable a <del>Network User</del> <i>Connection Applicant</i> to develop an <i>application to connect</i> .	The change here corrects an error in the previous formulation of this clause by replacing the term <i>Network User</i> , which relates to people already connected to the network, with the term <i>Connection Applicant</i> , which relates to people wanting to develop an application to connect.	Agree
8.6.2(n)	(n) <u>the disclosure of a <i>performance standard</i> to a <i>Network Service Provider</i> for the purpose of establishing a compliance monitoring program, or if <i>connection</i> at that <i>performance standard</i>, in NEMMCO's opinion, affects, or is likely to affect, the performance of that <i>Network Service Provider's network</i>.</u>	This is necessary so that NEMMCO can provide the performance standards to other NSPs	Performance Standards are between the Generator, the NSP and NEMMCO, not with all other NSPs. Specific permission should be sought for this to happen on a case by case basis as required.
Chapter 10	<p><b><u>access standard</u></b></p> <p><u>Either an <i>automatic access standard</i> or a <i>negotiated access standard</i> for a particular technical requirement as recorded in a <i>connection agreement</i>.</u></p> <p><b><u>adequately damped</u></b></p> <p><u>In relation to a <i>control system</i>, when tested with a step change of a feedback input or corresponding reference, or otherwise observed, any oscillatory response at a frequency of:</u></p> <p>(a) <u>0.05 Hz or less has a damping ratio of at least 0.4;</u></p> <p>(b) <u>between 0.05 Hz and 0.6 Hz has a halving time of 5 seconds or less (equivalent to a damping coefficient – 0.14 nepers per second or less); and</u></p> <p>(c) <u>0.6 Hz or more has a damping ratio of at least 0.05 in relation to a <i>minimum access standard</i> and a damping ratio of at least 0.1 otherwise.</u></p> <p><b><u>considered project</u></b></p>	<p>The concept of access standard is used extensively in the technical requirements in Schedule 5.2.</p> <p>This definition is needed to describe what facilities need to be considered when</p>	<p>Agree</p> <p>Agree</p> <p>It should be noted that there is increasing difficulties</p>

Affected clause	Clause with proposed amendments	Reason	REGA Comments
	<p><u>In respect of a <i>generating system</i>, a project that meets both of the following criteria:</u></p> <p>(a) <u>A <i>connection agreement</i> has been entered into.</u></p> <p>(b) <u>An <i>offer to connect</i> has been made and the <i>Network Service Provider</i> considers that if the <i>offer to connect</i> were accepted that project might adversely affect the <i>Connection Applicant's</i> proposed <i>generating system</i>.</u></p> <p><u>In respect of a <i>transmission network</i> augmentation, a project that meets all of the following criteria:</u></p> <p>(a) <u>The <i>Network Service Provider</i> has acquired the necessary <i>land and easements</i>.</u></p> <p>(b) <u>The <i>Network Service Provider</i> has obtained all necessary <i>planning and development approvals</i>.</u></p> <p>(c) <u>As applicable:</u></p> <p>(i) <u>the <i>augmentation project</i> has passed the <i>regulatory test</i>; or</u></p> <p>(ii) <u>in respect of a <i>new small transmission network asset</i>, an <i>intention to proceed with the project</i> has been published in the <i>Network Service Provider's Annual Planning Report</i>; or</u></p> <p>(iii) <u>in respect of a <i>funded augmentation</i> the <i>arrangements</i> have been made for its <i>funding</i>.</u></p> <p>(d) <u>Construction has either commenced or the <i>Network Service Provider</i> has set a firm date for it to commence.</u></p> <p><u>In respect of a <i>distribution network</i> augmentation, a project that meets all of the following criteria:</u></p> <p>(a) <u>The <i>Network Service Provider</i> has acquired the necessary <i>land and easements</i>;</u></p> <p>(b) <u>The <i>Network Service Provider</i> has obtained all necessary <i>planning and development approvals</i>;</u></p> <p>(c) <u>Construction has either commenced or the <i>Network Service Provider</i> has set a firm date for it to commence.</u></p>	<p>assessing a proposed generating system connection.</p> <p>It is also needed to describe the stage at which a project's technical details (such as control system models and generator details) should reasonably be made available to other persons applying to connect.</p>	<p>with achieving development approval for both generation project and transmission projects. The final achievement of development approval can be subject to significant delays at the discretion of the relevant planning department. As such project should be considered if they have an offer to connect and the planning approval.</p>

Affected clause	Clause with proposed amendments	Reason	REGA Comments
	<p><b><u>continuous uninterrupted operation</u></b></p> <p><u>In respect of a <i>generating unit</i> operating during a <i>power system</i> disturbance, not disconnecting from the <i>power system</i> and, after clearance of any associated electrical fault, delivering <i>active power</i> and <i>reactive power</i> in accordance with its <i>performance standards</i>, with all essential auxiliary and reactive <i>plant</i> remaining in service, so as to not exacerbate or prolong the disturbance for other <i>connected plant</i>.</u></p> <p><b>generating system</b></p> <p><u>A system comprising one or more <i>generating units</i> and includes auxiliary or reactive <i>plant</i> that is located on the <i>Generator's</i> side of the <i>connection point</i> and is necessary for the <i>generating system</i> to meet its <i>performance standards</i>.</u></p> <p><b><u>Generating System Design Data Sheet</u></b></p> <p><u>The data sheet published by <i>NEMMCO</i> under clause <i>S5.5.7(a)(1)</i>.</u></p> <p><b><u>Generating System Model Guidelines</u></b></p> <p><u>The guidelines published by <i>NEMMCO</i> under clause <i>S5.5.7(a)(3)</i>.</u></p> <p><b><u>Generating System Setting Data Sheet</u></b></p> <p><u>The data sheet published by <i>NEMMCO</i> under clause <i>S5.5.7(a)(2)</i>.</u></p> <p><b>Generator</b></p> <p>A person who engages in the activity of owning, controlling or operating a <i>generating system</i> that is <i>connected</i> to, or who otherwise <i>supplies</i> electricity to, a <i>transmission</i> or <i>distribution system</i> and who is registered by <i>NEMMCO</i> as a <i>Generator</i> under Chapter 2 and, for the purposes of Chapter 5 (other than clause 5.10), the term includes a person who is required to, or intends to</p>	<p>This new definition is required to clarify that behaviour that exacerbates or prolongs the disturbance is not acceptable.</p> <p>This definition is modified to clarify that a generating system includes other equipment that is provided by the Generator in order to meet its performance standards.</p> <p>The term Generator has been extended to cover its use in Schedule 5.2 where it refers to persons who are connection applicants in respect of generating plant</p>	<p>Inconsistent with NET proclamation. Leaves uncertainty for compliance. (eg. no reference to post disturbance loading levels)</p> <p>Agree</p> <p>Agree</p> <p>Agree</p> <p>Agree</p> <p>Agree</p>

Affected clause	Clause with proposed amendments	Reason	REGA Comments
	<p>register in that capacity.</p> <p><b>nameplate rating</b> The maximum continuous output or consumption in MW of an item of equipment as specified by the manufacturer, <u>or as subsequently modified.</u></p> <p><b>nominal voltage</b> <u>The design <i>voltage</i> level, nominated for a particular location on the <i>power system</i>, such that power lines and circuits that are electrically connected other than through transformers have the same nominal <i>voltage</i> regardless of operating <i>voltage</i> and <i>normal voltage</i>.</u></p> <p><b>non-scheduled generating system</b> <u>A <i>generating system</i> comprising <i>non-scheduled generating units</i>.</u></p> <p><b>normal voltage</b> <u>In respect of a <i>connection point</i>, its <i>nominal voltage</i> or such other voltage up to 10% higher or lower than <i>nominal voltage</i>, as approved by NEMMCO, for that <i>connection point</i> at the request of the <i>Network Service Provider</i> who provides <i>connection</i> to the <i>power system</i>.</u></p> <p><b>performance standard</b> <del>A standard of performance established as a result of it being:</del> (1) <del>accepted by NEMMCO in accordance with clause 4.14(d)(1);</del> (2) <del>taken to be an applicable performance standard in accordance with clause 5.3.4A(g);</del></p>	<p>as “Generators”.</p> <p>This term has been widely used in the Generator requirements as well as in the definition of normal voltage.</p> <p>This definition currently in the system standards (S5.1a.4) is now used more widely, and therefore is to be moved into the glossary.</p> <p>This definition has been simplified. It identifies performance standards as those standards registered as such with NEMMCO under clause 5.12.</p>	<p>Agree</p> <p>Agree</p> <p>Agree</p> <p>It should be clear that the normal voltage is specified at time of connection and is not continually variable</p> <p>Agree</p>



Affected clause	Clause with proposed amendments	Reason	REGA Comments
	<p><u>generating units can deliver at the connection point, when its in-service generating units are operating at their nameplate ratings.</u></p> <p><b>reliability</b></p> <p><del>The probability of a system, device, plant or equipment performing its function adequately for the period of time intended, under the operating conditions encountered.</del></p> <p><u>In respect of equipment, the probability of its performing its function adequately for the period of time intended under the operating conditions encountered.</u></p> <p><u>In respect of supply, the probability that it is sufficient to satisfy the demand for that supply, taking into account available generation, power transfer capability and other demand.</u></p> <p><b>scheduled generating system</b></p> <p><u>A generating system comprising scheduled generating units.</u></p>	<p>This definition is extended to distinguish reliability of supply from reliability of equipment.</p>	<p>Agree</p> <p>Agree</p>