Anna Collyer
Chair
Australian Energy Market Commission
Level 15, 60 Castlereagh Street
Sydney NSW 2000
Lodged via https://www.aemc.gov.au/contact-us/lodge-submission

18. January 2024

Dear Ms. Collyer,

Re: ERC0375: Calculation of system strength quantity

Vestas welcomes the opportunity to provide our feedback on the AEMC's Draft Rule released on 30 November 2023 regarding the calculation of system strength quantity (SSQ).

Vestas has a vision to become the global leader in sustainable energy solutions, and everything we do revolves around the development and deployment of sustainable energy solutions.

We would like to express our general support for this Rule Change request proposed by the Australian Energy Market Operator (AEMO) with the aim to improve the way the system strength quantity component of the system strength charge is calculated to restore the intended original balance between the two available options for generators: self- remediation or paying the system strength charge.

However, we would like to point out that despite agreeing with the main policy principle behind this Draft Rule, which is removing the SSQ calculation from the NER and setting the general objectives of the system strength methodology, Vestas understands that the updated NER should not allow AEMO to include any additional variable in SSQ calculation that is not clearly justified and discussed with stakeholders in a public consultation, in order to reduce the level of uncertainty for generators.

In addition, we would like to highlight that the revised Rule should clearly state that AEMO must consult the stakeholders and incorporating their feedback, following the standard consultation process, before publishing the new version of the system strength impact assessment guidelines (SSIAG).

Please refer to the appendix for our feedback on the Draft Rule with the appropriate justification.

Should you wish to discuss any aspect of our comments, please contact Marco Aurelio Lenzi Castro via mlzto@vestas.com or 0488 152 925, or the undersigned.

Yours sincerely
Vestas - Australian Wind Technology Pty. Ltd.

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National Electricity Amendment (Calculation of system strength quantity) Rule 2024		
Chapter 4 - Power System Security		
AEMC's Proposal	**Vestas' Proposal**	**Justification**
4.6 Protection of Power System Equipment 4.6.6 System strength impact assessment guidelines (a) AEMO must make, publish and may amend system strength impact assessment guidelines that: ~~(1) in accordance with paragraph (b), set out the methodology to be used by Network Service Providers when undertaking system strength impact assessments under clause 5.3.4B and calculating a system strength locational factor;~~ (1) in accordance with paragraphs (b) and (b1), set out the methodology to be used by Network Service Providers when: (i) undertaking system strength impact assessments under clause 5.3.4B; and (ii) calculating a system strength locational factor and system strength quantity;	No comments	
(1A) require the preliminary assessment to be carried out using a simple isolated model such as a single machine infinite bus model; (2) require the full assessment to be carried out using a power system model that is reasonably appropriate for conducting system strength impact assessments and applicable to the location the transmission network or distribution network at which the facility is or may be connected and specified by AEMO from time to time for this purpose; (3) exclude from the assessment of the general system strength impact the impact on any protection system for a transmission network or distribution network;	No comments	

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(4) provide guidance about the different network conditions and dispatch patterns and other relevant matters that should be examined when undertaking a full assessment; (5) specify the nature of the impacts that AEMO considers to be general system strength impacts for the purposes of clause 5.3.4B; (6) provide guidance about the matters that must be considered when determining whether a connection or alteration will result in a general system strength impact; (7) include if applicable any thresholds below which an impact may be disregarded for the purposes of clause 5.3.4B(f)(3); and (8) provide general guidance about options for system strength remediation schemes and system strength connection works.~~;~~		
(b1) For subparagraph (a)(1)(ii), the system strength impact assessment guidelines must: (1)~~(9)~~ specify a methodology for calculation of the system strength locational factor for a connection point, which must be representative of the impedance between the connection point and the applicable system strength node and must use available fault level as the basis for the methodology;~~; and~~ (2)~~(10)~~ provide guidance about the circumstances in which a system strength locational factor is not reasonably able to be determined or would be manifestly excessive; and~~.~~	No comments	
(3) specify a methodology for calculation of the system strength quantity for a connection point, which must: (i) include the use of: (A) the short circuit ratio for the connection point; and	(3) specify a methodology for calculation of the system strength quantity for a connection point, which must: (i) include the use of: (A) the lowest short circuit ratio that a plant can ~~for~~ withstand at the connection point; and	According to AEMO's system strength impact assessment guidelines, the short circuit ration (SCR) should be interpreted as the withstand SCR, which is representative of the lowest Synchronous Three Phase Fault Level provided by the power system at the 4.6.6 Connection

(B) the rated active power, the rated power transfer capability or the maximum demand (as applicable) for the connection point, each as agreed in accordance with clause S5.2.5.15, clause S5.3.11 or clause S5.3a.7 (as applicable) and as recorded in the relevant performance standards for the plant connected at the connection point; and	(B) the rated active power, the rated power transfer capability or the maximum demand (as applicable) for the connection point, each as agreed in accordance with clause S5.2.5.15, clause S5.3.11 or clause S5.3a.7 (as applicable) and as recorded in the relevant performance standards for the plant connected at the connection point; (C) the stability coefficient, as defined in the system strength impact assessment guidelines, representing the network limitations; and	Point necessary for the 4.6.6 Connection to operate stably. The stability coefficient is referred by AEMO in the guidance paper 'Calculating system strength quantities in the NEM', from May 2023, as well as in the rule change request as a factor that should be used to restore original balance between the self- remediation and paying the system strength charge alternatives.
(ii) reflect the adverse system strength impact of a new connection or alteration to a connected plant as well as any additional amount by which it reduces the available fault level at the connection point for the new connection or connected plant, so as to produce a result that is an approximation of the level of impact that would be required to be remedied or avoided by a system strength remediation scheme for that connection point, as assessed by AEMO having regard to the need to avoid a full system strength impact assessment.	(ii) reflect the adverse system strength impact of a new connection or alteration to a connected plant ~~as well as any additional amount by which it reduces the available fault level at the connection point for the new connection or connected plant~~, so as to produce a result that is an approximation of the level of impact that would be required to be remedied or avoided by a system strength remediation scheme for that connection point, as assessed by AEMO having regard to the need to avoid a full system strength impact assessment.	The subparagraph (b)(3)(ii) should provide the general objective of the system strength methodology and not allow AEMO to include any additional variable that is not clearly justified and discussed with stakeholders in a public consultation. AEMC's proposed text would significantly reduce the level of certainty for generators.

National Electricity Amendment (Calculation of system strength quantity) Rule 2024		
Chapter 5 - Network Connection Access, Planning and Expansion		
AEMC's Proposal	**Vestas' Proposal**	**Justification**
5.3 Establishing or Modifying Connection 5.3.4B System strength mitigation requirement (a) This clause applies in relation to: (1) a proposed new connection of a generating system or market network service facility to which rule 5.3 or 5.3A applies; (2) a proposed new connection for a Network User to whom schedule 5.3 applies where the facility to be connected includes an inverter based resource; and (3) a proposed alteration to a generating system where clause 5.3.9 applies or to other connected plant where clause 5.3.12 applies. (a1) In this clause, a reference to a Connection Applicant includes a reference to a Generator to whom clause 5.3.9 applies and a Network User or Market Network Service Provider to whom clause 5.3.12 applies.	No comments	
(a2) For each proposed new connection or proposed alteration to a generating system or other connected plant to which this clause applies, a Network Service Provider must: (1) undertake a preliminary system strength impact assessment in accordance with the system strength impact assessment guidelines; (2) subject to paragraph (a3), calculate the system strength locational factor for the new connection or proposed alteration in accordance with the system strength impact assessment guidelines;	No comments	The paragraph (a3) already provides the circumstance where the Network Service Provider (NSP) are exempt from calculating the system strength locational factor, so the correct objective of the subparagraph (a2)(2A) should be informing when the NSP have to perform such calculation. In addition, a clearer wording was suggested to improve the understanding of the text.

(2A) unless under paragraph (a3) the Network Service Provider is not required to calculate the system strength locational factor, calculate, in accordance with the system strength impact assessment guidelines, the indicative system strength quantity to be notified under clause 5.3.3(b5)(3);	(2A) unless under paragraph (a3) the Network Service Provider is ~~not~~ required to calculate the system strength locational factor and ~~, calculate, in accordance with the system strength impact assessment guidelines,~~ the indicative system strength quantity, in accordance with the system strength impact assessment guidelines, to be notified under clause 5.3.3(b5)(3);	
(3) undertake a full system strength impact assessment following the preliminary assessment, unless: (i) the preliminary assessment indicates there will be no general system strength impact or the impact is below any threshold specified in the system strength impact assessment guidelines for the purposes of paragraph (f)(3); or (ii) where applicable, the Connection Applicant has elected in accordance with paragraph (b1) to pay the system strength charge in relation to the connection; and (4) where the Connection Applicant has elected in accordance with paragraph (b1) to pay the system strength charge in relation to the connection or proposed alteration, undertake modelling in accordance with the system strength impact assessment guidelines to verify the stability of the plant. Note This paragraph is classified as a tier 2 civil penalty provision under the National Electricity (South Australia) Regulations. (See clause 6(1) and Schedule 1 of the National Electricity (South Australia) Regulations.)	No comments	
(a3) A Network Service Provider is not required to calculate the system strength locational factor where it determines in	No comments	

accordance with the system strength impact assessment guidelines that a system strength locational factor cannot reasonably be calculated or would be manifestly excessive.		
(a4) A Connection Applicant in receipt of the Network Service Provider's calculation of the system strength locational factor or indicative system strength quantity may request the Network Service Provider to undertake a further preliminary system strength impact assessment in accordance with the system strength impact assessment guidelines and provide a revised system strength locational factor and a revised indicative system strength quantity for a new connection or proposed alteration to a generating system or other connected plant. The Network Service Provider may require payment of a fee to meet the reasonable costs anticipated to be incurred by the Network Service Provider in undertaking any further preliminary assessment. ~~Note This paragraph is classified as a tier 2 civil penalty provision under the National Electricity (South Australia) Regulations. (See clause 6(1) and Schedule 1 of the National Electricity (South Australia) Regulations.)~~	(a4) A Connection Applicant ~~in receipt of the Network Service Provider's calculation of the system strength locational factor or indicative system strength quantity~~ may request the Network Service Provider to undertake a further preliminary system strength impact assessment in accordance with the system strength impact assessment guidelines and provide a revised system strength locational factor and a revised indicative system strength quantity for a new connection or proposed alteration to a generating system or other connected plant. (a5) The Network Service Provider may require payment of a fee to meet the reasonable costs anticipated to be incurred by the Network Service Provider in undertaking any further preliminary assessment.	The aim is improving the wording without change the meaning. The proposed text was too long and confused, with different commands for connection applicants and NSP.
5.3.4C Information about system strength connection points …….. (b) The Network Service Provider must notify the: (1) system strength locational factor and indicative system strength quantity; (2) short circuit ratio and rated active power, rated power transfer capability or maximum demand for the system strength	5.3.4C Information about system strength connection points …….. (b) The Network Service Provider must notify the Connection Applicant about the: (1) system strength locational factor and indicative system strength quantity; (2) short circuit ratio and rated active power, rated power transfer capability or maximum demand for the system strength connection point agreed in accordance with clause S5.2.5.15, clause S5.3.11 or clause S5.3a.7 (as applicable);	The aim is improving the wording without change the meaning.

connection point agreed in accordance with clause S5.2.5.15, clause S5.3.11 or clause S5.3a.7 (as applicable); (3) the expected date from which the system strength charge for the connection will commence or the amendment take effect; and (4) information reasonably required by the System Strength Service Provider to identify the relevant connection.	(3) ~~the~~ expected date from which the system strength charge for the connection will commence or the amendment take effect; and (4) information reasonably required by the System Strength Service Provider to identify the relevant connection.	
(b1) A Network Service Provider for a system strength connection point who is not also the System Strength Service Provider for the system strength connection point must notify to the relevant System Strength Service Provider, within 20 business days of execution of the connection agreement for the connection point: (1) the short circuit ratio and rated active power, rated power transfer capability or maximum demand for the system strength connection point agreed in accordance with clause S5.2.5.15, clause S5.3.11 or clause S5.3a.7 (as applicable); and (2) the Network Service Provider's calculation of the system strength quantity for the system strength connection point calculated in accordance with the system strength impact assessment guidelines in effect at the time the election to pay the system strength charge was notified under clause 5.3.4B(b1).	No comments	
5.3A Establishing or modifying connection - embedded generation 5.3A.3 Publication of Information (a) A Distribution Network Service Provider must publish the following in the same location on its website:	No comments	

(1) an enquiry form for connection of an embedded generating unit; (2) a register of completed embedded generation projects under rule 5.18B; and (3) an information pack. (b) An information pack must include: (1) a description of the process for lodging an application to connect for an embedded generating unit, including: ……. (vi) the process for negotiating negotiated access standards under clause 5.3.4A and any system strength remediation scheme under clause 5.3.4B and a summary of the factors the Distribution Network Service Provider takes into account when considering proposed negotiated access standards and system strength remediation schemes and where applicable, in determining the system strength locational factor and the indicative system strength quantity; and …….		

National Electricity Amendment (Calculation of system strength quantity) Rule 2024		
Chapter 6A - Economic Regulation of Transmission Services		
AEMC's Proposal	**Vestas' Proposal**	**Justification**
6A.23 Pricing Principles for Prescribed Transmission Services 6A.23.5 System strength charge …… (j) Subject to paragraph (k), the system strength quantity for a system strength connection point is ~~the product of~~: the quantity calculated in accordance with the methodology in the applicable version of the system strength impact assessment guidelines as determined under paragraph (j1), using: (1) the short circuit ratio; and (2) the rated active power, rated power transfer capability or maximum demand for the system strength connection point, each as agreed in accordance with clause S5.2.5.15, clause S5.3.11 or clause S5.3a.7 (as applicable) and recorded in the relevant performance standards for the plant connected at the system strength connection point.	6A.23 Pricing Principles for Prescribed Transmission Services 6A.23.5 System strength charge …… (j) Subject to paragraph (k), the system strength quantity for a system strength connection point is: the quantity calculated in accordance with the methodology in the applicable version of the system strength impact assessment guidelines as determined under paragraph (j1), using: (1) the lowest short circuit ratio that a plant can withstand at the connection point; ~~and~~ (2) the rated active power, rated power transfer capability or maximum demand for the system strength connection point, each as agreed in accordance with clause S5.2.5.15, clause S5.3.11 or clause S5.3a.7 (as applicable) and recorded in the relevant performance standards for the plant connected at the system strength connection point; and~~.~~ (3) the stability coefficient, as defined in the system strength impact assessment guidelines.	According to AEMO's system strength impact assessment guidelines, the short circuit ration (SCR) should be interpreted as the withstand SCR, which is representative of the lowest Synchronous Three Phase Fault Level provided by the power system at the 4.6.6 Connection Point necessary for the 4.6.6 Connection to operate stably. The stability coefficient is referred by AEMO in the guidance paper 'Calculating system strength quantities in the NEM', from May 2023, as well as in the rule change request as a factor that should be used to restore original balance between the self- remediation and paying the system strength charge alternatives.
(j1) The applicable version of the system strength impact assessment guidelines for a system strength connection point is the version that was in effect: (1) subject to subparagraph (2), at the time the election to pay the system strength charge was notified under clause 5.3.4B(b1) in respect of the system strength connection point; or (2) where the connected plant has been altered and clause 5.3.9 or 5.3.12 applied in respect of that alteration, at the time the latest	No comments	

election to pay the system strength charge was notified under clause 5.3.4B(b1) in respect of the system strength connection point.		
(k) If a change to the short circuit ratio, rated active power, rated power transfer capability or maximum demand (as applicable~~) the system strength quantity~~ for a system strength connection point (as recorded in the performance standards applicable to the plant connected at the system strength connection point) comes into effect part way through a regulatory year, the System Strength Service Provider must calculate the monthly instalments of the annual system strength charge for the remaining months of the regulatory year using the new system strength quantity.	No comments	

National Electricity Amendment (Calculation of system strength quantity) Rule 2024		
Chapter 11 - Savings and Transitional Rules		
AEMC's Proposal	**Vestas' Proposal**	**Justification**
11.[XXX] Rules consequential on the making of the National Electricity Amendment (Calculation of system strength quantity) Rule 2024 **11.[XXX].1 Definitions** In this rule 11.[XXX]: **Amending Rule** means the National Electricity Amendment (Calculation of system strength quantity) Rule 2024. effective date means 1 July 2024, being the date of commencement of Schedule 1 of the Amending Rule. **existing application to connect** has the meaning given in clause 11.[XXX].5(a)(1). **existing connection enquiry** has the meaning given in clause 11.[XXX].4(a)(1). **existing payment election** has the meaning given in clause 11.[XXX].6(a). **new clause 6A.23.5(j)** means clause 6A.23.5(j) as in effect on and from the effective date. **new clause 6A.23.5(j1)** means clause 6A.23.5(j1) as in effect on and from the effective date. **new system strength impact assessment guidelines** means the system strength impact assessment guidelines published by AEMO in accordance with rule 11.[XXX].2. **old clause 6A.23.5(j)** means clause 6A.23.5(j) as in effect prior to the effective date.	No comments	
11.[XXX].2 Amendments to the system strength impact assessment guidelines (a) By 30 June 2024, AEMO must update and publish the system strength impact	11.[XXX].2 Amendments to the system strength impact assessment guidelines (a) By 30 June 2024, AEMO must update and publish the system strength impact assessment guidelines to ~~take into account~~ consider the	It is important to highlight in the Rule that AEMO must consult the stakeholders and incorporating their feedback, following the standard consultation process, before publishing the updated guidelines.

assessment guidelines to take into account the Amending Rule. (b) Changes to the system strength impact assessment guidelines made in accordance with paragraph (a) must come into effect on the effective date.	Amending Rule and the feedback from stakeholders in accordance with the rules consultation procedures. (b) Changes to the system strength impact assessment guidelines made in accordance with paragraph (a) must come into effect on the effective date.	
11.[XXX].3 Saving of connection enquiries etc The Amending Rule does not affect the validity of a connection enquiry, application to connect, offer to connect or other matter under Chapter 5.	11.[XXX].3 Saving of previous connection ~~enquiries etc~~ milestones The Amending Rule does not affect the validity of a connection enquiry, application to connect, offer to connect or other matter under Chapter 5.	The aim is improving the wording without change the meaning.
11.[XXX].4 Indicative system strength quantity for existing connection enquiries (a) This clause applies where, before the effective date, a Connection Applicant has, in respect of plant that the Connection Applicant proposes to connect: (1) made a connection enquiry in accordance with clause 5.3.2 or 5.3A.5 (existing connection enquiry); and (2) not made an application to connect to a Network Service Provider.	11.[XXX].4 Indicative system strength quantity for existing connection enquiries (a) This clause applies where, before the effective date, a Connection Applicant has~~, in respect of plant that the Connection Applicant proposes to connect:~~ (1) made a connection enquiry in accordance with clause 5.3.2 or 5.3A.5 (existing connection enquiry); and (2) not made an application to connect to a Network Service Provider.	The aim is improving the wording without change the meaning.
(b) If a response to the existing connection enquiry was provided before the effective date, the Network Service Provider must as soon as practicable after that date notify to the Connection Applicant the indicative system strength quantity for the plant the subject of the existing connection enquiry calculated using the new system strength impact assessment guidelines.	(b) If a response to the existing connection enquiry was provided before the effective date, the Network Service Provider must ~~as soon as practicable after that date~~ notify to the Connection Applicant the indicative system strength quantity for the plant the subject of the existing connection enquiry calculated using the new system strength impact assessment guidelines within 10 business days.	It's important to establish a clear deadline for NSP to provide a response to the connection applicant. The use of general terms such as “as soon as practicable” should be avoided in the NER because they give room for different interpretations among NSPs and connection applicants.
11.[XXX].5 Where a Connection Applicant elected not to pay the system strength charge	No comments	

(a) This clause applies where, in respect of plant that a Connection Applicant proposes to connect: (1) before the effective date, the Connection Applicant made an application to connect to a Network Service Provider (existing application to connect); (2) the Connection Applicant has not entered into a connection agreement with the relevant Network Service Provider in respect of the existing application to connect; (3) the existing application to connect is not one where, under clause 5.3.4B(a3), the Network Service Provider is not required to calculate the system strength locational factor; and (4) in the existing application to connect, the Connection Applicant made an election under clause 5.3.4B(b1) that the system strength charge will not be payable in relation to the new connection or alteration to the generating system or other connected plant (as applicable). (b) Despite anything to the contrary in clause 5.3.4B(b1), the Connection Applicant may change its election under that clause by notice to the Network Service Provider under this clause within 20 business days after the effective date. The new election cannot be revoked. (c) The Network Service Provider must within 10 business days after the effective date, notify the Connection Applicant for the existing application to connect of the opportunity to change its election by giving a notice in accordance with paragraph (c).		

(d) If a Connection Applicant gives a notice in accordance with paragraph (b) changing its election, the election has effect as if it had been made as part of its existing application to connect except that for clause 5.3.4C(a), the time for notifying the election to the System Strength Service Provider is 10 business days after the election being made under paragraph (b).		
11.[XXX].6 Existing payment election (a) This clause applies where, before the effective date, a Connection Applicant made an election under clause 5.3.4B(b1) that the system strength charge will be payable in relation to a connection or alteration to the generating NATIONAL ELECTRICITY RULES CHAPTER 11 VERSION 203 SAVINGS AND TRANSTIONAL RULES system or other connected plant (as applicable) (existing payment election). (b) Despite new clause 6A.23.5(j), the system strength quantity for the system strength connection point in respect of which the existing payment election was made: (1) for any period prior to the effective date, must be determined in accordance with old clause 6A.23.5(j); and (2) for any period after that, must be determined in accordance with new clause 6A.23.5(j). (c) For paragraph (b)(2) and new clause 6A.23.5(j1), the new system strength impact assessment guidelines will be taken to have been in effect at the time the existing payment election was notified under clause 5.3.4B(b1)	No comments	