

30 August 2023

Australian Energy Market Operator

Lodged via email: contact.connections@aemo.com.au

Dear Sir/Madam,

Re: Technical Access Standards Review schedule 5.2 and 5.3a – ElectraNet Comments

ElectraNet welcomes the opportunity to comment on the 2023 AEMO review of technical requirements for connection and addendum.

ElectraNet shares AEMO's view on the timeliness for AEMO to review technical requirements for connection to ensure they are fit for purpose as we see the rapid and ongoing changes to the NEM power system. However, ElectraNet has reservations about progressing a number of the proposed rule drafting changes via the fast-tracked process noted in 1.5.4 p10 of the published recommendations report. The measure of what could be fast tracked and what may need to go through the normal Rule change consultation processes is currently unclear, unjustified and it is noted that some aspects of the proposed changes materially affect the application of the Rules beyond the negotiation of access standards. This is against the key considerations as noted in the Oct 2022 Approach Page "*Streamlining the technical standards for generating systems and integrated resource systems, to manage the high volume of connections required for the energy transition, without compromising power system security.*"

Proposed setting of AEMO advisory threshold for Negotiated Access Standards at 30 MW or 30 MVA

ElectraNet disagrees with the proposed increase to the AEMO advisory threshold for Negotiated Access Standards to 30 MW and considers that this change will have significant and unintended impacts on the application of the National Electricity Rules. It is also noted that 30 MW connections are clearly material to the operation of Distribution Networks and are material for some areas of Transmission Networks. ElectraNet considers that 30 MW connections are material to system security in South Australia.

ElectraNet notes that the National Electricity Law requires that all Generators be registered unless an exemption to registration is granted by AEMO. Based on the published AEMO guide, it is understood that standing exemptions are available for Generators with rating of less than 5 MW; Generators larger than this size are required to apply for exemptions and no exemptions are granted for Battery systems larger than 5 MW.

NER 2.2.1(e)(3) requires that, when registering a Generator, AEMO be satisfied that the generating system is capable of meeting or exceeding its performance standards. It is unclear how AEMO would gain comfort that, for a generator (production system) with capacity above the threshold for registration but below the proposed 30 MW AEMO advisory threshold, the agreed performance standards could be achieved without undertaking a review of the plant performance and access standards consistent with what is currently performed under AEMO's advisory function.

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The proposed drafting deletes NER 4.14(q) with the justification that AEMO is not required to agree to performance standards that are not advisory matters. Contrary to this position, ElectraNet considers that this clause enables AEMO to intervene in situations where it considers power system security would be adversely affected (regardless the clauses identified as AEMO advisory matters). Such action is consistent with AEMO responsibility for power system security under NER 4.3. It is unclear what benefits removing this clause brings.

NER 5.3.4A(f) sets out the situations where a Network Service Provider must reject proposed negotiated access standards and are unchanged by the proposed drafting. Importantly, these provisions include rejection for reasons of system security only under the advice of AEMO. It is considered that the threshold proposed by AEMO will likely result in the inability to reject negotiated access standards for proposals below 30 MW for security reasons. This presents a material risk to the secure operation of the power system in the expected outcome that relatively large numbers of such production systems connect to distribution systems in relatively close proximity.

Inclusion of Synchronous Condensers in schedule 5.2

While ElectraNet agrees that there are benefits to defining technical performance obligations for synchronous condensers, the effects of including network equipment in schedule 5.2 significantly changes the obligations of NSPs with material financial and resourcing implications that require further justification and consultation. It is not clear why the existing planning, modelling and commissioning obligations of NSPs with regard to network augmentations are not sufficient for network owned and operated synchronous condensers.

Proposed changes to S5.1.4 (Magnitude of power frequency voltage)

The proposed inclusion of new clause S5.1.4(a1) relates to transient voltages and is not considered to be consistent with the existing intent of NER S5.1.4 that relates to power frequency voltages. It is considered that this proposed clause is not appropriate in its current location in the draft Rules. Additionally, while the proposed Rule is understood to be intended to require the design of the network to manage transient voltages resulting from switching of network elements, the current drafting is not sufficiently clear. The specified standard is focused on determining the maximum withstand voltages of plant and the selection of standard insulation levels, yet it is understood that the intent of this clause is to ensure the effective management of peak over-voltages due to plant switching. The current drafting does not achieve this intent.

Proposed changes to S5.2.5.4 (Response to voltage disturbances)

The proposed drafting for S5.2.5.4 includes a definition for *point of application*. In the case of connection points at or below 66 kV, the proposed definition defines the location of voltage disturbances at the nearest electrical location with a *nominal voltage* above 66 kV. For some DNSP connection points this location will be on the transmission system and may be significantly remote from the actual PoC. This can have the effect of introducing significant impedance between the generating system and the location of the defined voltage disturbance and therefore reduce the effective ride through obligation of these connections. It is suggested that while such consideration may be appropriate for the Negotiated Access Standard, the Automatic Access Standard should be maintained with the disturbance assessed at the PoC.

Proposed changes to S5.2.5.13 (Voltage and reactive power control)

There are a number of concerns with the proposed drafting for S5.2.5.13, as follows:

- Clause (a1) – The proposed drafting results in no performance obligations for voltage or reactive power control for generating systems smaller than 30 MW (i.e. the drafting negates even the Minimum Access Standard requirements). ElectraNet also understands that the specification of 5% of the maximum credible contingency event size in the *frequency operating standard* does not apply in any jurisdiction except for Tasmania under the current drafting of the standard. This lack of any obligation is of significant concern, negates any

value in the obligations under S5.2.5.1 for production systems below 30 MW and is not considered justified given the available flexibility in the existing Minimum Access Standard to select a single mode of control.

- Clause (c)(1) – The proposed drafting requires synchronous condensers to have either rotor speed and active power or frequency and active power as inputs to a power system stabiliser. Use of active power as an input to a power system stabiliser for a synchronous condenser application is not appropriate. Suitable input signals for this application are frequency and (possibly, subject to network connection location and topology) power transfer through adjacent transmission lines.
- Clause (c1)(3) – The proposed drafting removes any technical performance obligations with respect to the control of reactive power or power factor in these control modes. The proposed clause limits the obligations to the response to voltage disturbances. ElectraNet’s experience with commissioning projects has demonstrated that the stable control of reactive power or power factor following a step in setpoint cannot be assumed, is dependent on the design and implementation of the control systems and should be subject to GPS obligations.
- Clause (m) – This new clause requires that NSPs advise a range of apparent system impedances for use by proponents in tuning voltage and reactive power control systems. Further clarity is required in the calculation methodology to ensure clarity and consistent application across all NSPs.

Additionally, further clarity is required from AEMO on the following proposed revisions:

- S5.2.5.5(d)(1) requires that the NSP advise the “minimum three phase fault level at the connection” for tuning of the plant. This fault level is then applied as a threshold below which further disturbance ride through is not required. Noting that S5.2.5.13 refers to “apparent system impedance” and that the definition of this impedance is different from a fault level, it is considered important that the requirements in these two clauses be aligned.
- S5.2.5.5(r2) requires that the NSP specify all combinations of multiple contingency events to be assessed by the proponent for the purposes of a Negotiated Access Standard. Clause (r3) then restricts the NSP from requiring the assessing any other events. Further clarity on this is required, specifically whether there is any restriction on the NSP undertaking their own assessments that may vary the sequence or combination of events in review of the proposed Negotiated Access Standard.
- S5.2.5.7 – It is not clear why this Clause has been specified for synchronous condensers. The original intent of this clause is understood to be requiring generators to remain online for loads down to Pmin for a large frequency disturbance. It is noted that the proposed drafting already obliges synchronous condensers to ride through frequency, voltage and power system disturbances (S5.2.5.3, S5.2.5.4 and S5.2.5.5 respectively), and it is unclear what additional performance is gained from this clause.
- Chapter 10, definition of *Settling time* - This change in definition has the effect of requiring much tighter tolerances for settling when the maximum change is large relative to the sustained change. It is unclear why this change is proposed. The new drafting materially affects the interpretation of performance standards under s5.2.5.13 and presents a risk to 5.3.9 proposals for existing generators.

ElectraNet appreciates the opportunity to provide feedback on the draft 2023 AEMO review of technical requirements for connection. Should you have any queries, please contact Lucas Millmore in the first instance on (08) 8404 7255.

Yours sincerely,



Lucas Millmore

Manager Network Connections