

9 November 2017



Ms. Anne Pearson
Chief Executive
Australian Energy Market Commission
PO Box A2449
Sydney South NSW 1235

Attention: Mr. Dominic Adams

ERC0222 Generator Technical Performance Standards – Consultation Paper

Ergon Energy Corporation Limited (Ergon Energy) and Energex Limited (Energex) welcome the opportunity to provide comment to the Australian Energy Market Commission regarding its Consultation Paper on the National Electricity Amendment (Generator Technical Performance Standards) Rule 2017.

This submission, which is available for publication, is provided by Energex and Ergon Energy as distribution network service providers operating in Queensland.

Should you require additional information or wish to discuss any aspect of Energy Queensland's submission, please do not hesitate to contact either myself on (07) 3851 6416 or Trudy Fraser on (07) 3851 6787.

Yours Sincerely

A handwritten signature in black ink, appearing to read 'Jenny Doyle'.

Jenny Doyle
General Manager, Regulation and Pricing
Telephone: (07) 3851 6416
Email: jenny.doyle@energyq.com.au

National Electricity Amendment (Generator Technical Performance Standards) Rule 2017

Joint response to the AEMC's
Consultation Paper

9 November 2017



Part of the Energy Queensland Group

ABOUT ERGON ENERGY

Ergon Energy Corporation Limited (Ergon Energy) is part of the Energy Queensland Group, and manages an electricity distribution network that supplies electricity to more than 740,000 customers. Our vast operating area covers over one million square kilometres – around 97% of the state of Queensland – from the expanding coastal and rural population centres to the remote communities of outback Queensland and the Torres Strait.

Our electricity network consists of approximately 160,000 km of powerlines and one million power poles, along with associated infrastructure such as major substations and power transformers.

We also own and operate 33 stand-alone power stations that provide supply to isolated communities across Queensland which are not connected to the main electricity grid.

ABOUT ENERGEX

Energex Limited (Energex) is part of the Energy Queensland Group and manages an electricity distribution network delivering world-class energy products and services to one of Australia's fastest growing communities – the South-East Queensland region.

We have been supplying electricity to Queenslanders for more than 100 years, and today provide distribution services to almost 1.4 million domestic and business connections, delivering electricity to a population base of around 3.4 million people via 52,000 km of overhead and underground network.

1 INTRODUCTION

Ergon Energy Corporation Limited (Ergon Energy) and Energex Limited (Energex) welcome the opportunity to provide comment to the Australian Energy Market Commission (AEMC) on its National Electricity Amendment (Generator Technical Performance Standards) Rule 2017 Consultation Paper (the Consultation Paper).

This submission, which is available for publication, is provided by Ergon Energy and Energex in their roles as distribution network service providers (DNSPs) operating in Queensland.

Ergon Energy and Energex are committed to providing:

- safe, reliable and affordable electricity supply;
- a great customer service experience;
- customers with greater control over their energy consumption;
- efficient and sustainable energy solutions; and
- access to the next wave of energy-linked innovative technologies and renewables.

Ergon Energy and Energex are both members of Energy Networks Australia (ENA), the national industry association that represents businesses operating Australia's electricity transmission and distribution and gas distribution networks. The ENA has prepared a comprehensive response to the Consultation Paper to which we have contributed, and we are supportive of the positions presented in their response.

Ergon Energy and Energex note the AEMC's involvement throughout the consultation process and appreciate their willingness to meet with the ENA and DNSPs throughout this process. The following section addresses the questions raised in the Consultation Paper and, in particular, notes our concerns with certain aspects of the proposed rule change. We are available to discuss this submission or provide further detail regarding the issues raised, should the AEMC require.



2 TABLE OF DETAILED COMMENTS

Consultation Paper Feedback Question	Ergon Energy and Energex response
1. Assessment Framework	
Do you agree with the Commission's proposed approach to assessing whether the rule change request will, or is likely to, contribute to the achievement of the national electricity objective? If not, how should it be assessed?	Ergon Energy and Energex generally agree with the proposed assessment framework.
2. Role of access standards	
Do the current generator access standards require changes to help maintain power system security?	Given the rapid changes in the generation mix, Ergon Energy and Energex consider that the generator access standards should be subject to regular review, and note that the last review of these standards was a decade ago. We consider that reviews should be done at more frequent intervals to respond more effectively to relevant changes.
Would making changes to generator access standards represent the lowest cost approach to maintaining system security relative to other options?	We believe that the incremental upfront cost for a generator to meet the proposed changes would be significantly lower than the cost for a Network Service Provider (NSP) to invest in new infrastructure such as Static Var Compensators (SVCs) or STATCOMs throughout its network.
Will mandating certain capabilities in generator access standards enable and support the establishment of ancillary services in future?	We consider that the overall least-cost option would be to require generators to be designed to incorporate these capabilities, as it would be costly to retrofit generators with this capability in the future. Furthermore, if this capability was already available in generators, this is likely to improve the take-up of future ancillary services when they are established. In addition, the requirement for ancillary services will increase in the future as the percentage of renewable generators increases, as has been the case in other jurisdictions.

Consultation Paper Feedback Question

Ergon Energy and Energex response

3. Proposed changes to generator access standards

For each of AEMO’s technical recommendations set out in Appendix B:

Do you agree with AEMO’s analysis of the issue in relation to the proposed change to the access standard?

Ergon Energy and Energex generally support all of the changes to the proposed access standards, with the exception of the proposed changes to the system standard in S5.1a.4 (power frequency voltage) and the multiple low voltage disturbance withstand requirements in S5.2.5.5 (generating system response to disturbances), as discussed below.

S5.1a.4 – Power frequency voltage

We have concerns regarding the proposed update to the high voltage withstand curve in S5.1a.4.

Before this system standard is changed, we recommend that the following issues be investigated and resolved:

- incompatibility with trip settings in AS4777 (Small Scale Inverter Energy Systems);
- incompatibility with AS61000 power quality requirements given potential of 20 min at 115%. We do not have sufficient transformer taps in many areas of the network to manage this issue while concurrently maintaining the quality of power supply to customers;
- review of network equipment capability and settings at HV/MV/LV and insulation coordination; and
- capability and settings of customer equipment, HV/MV/LV loads and generators.

The proposed change to S5.1a.4 could have a significant cost impact on DNSPs, as it could require:

- the replacement of power transformers with units with larger tapping range, and/or
- the installation of reactive plant.

During discussions with the AEMC, the ENA and other Network Service Providers (NSPs), it was agreed that the preferred approach is to implement the new high voltage withstand curve in the relevant Generator Performance Standards only, and to leave S5.1a.4 as is.

Consultation Paper Feedback Question	Ergon Energy and Energex response
	<p><u>S5.2.5.5 – Multiple low voltage disturbance withstand</u></p> <p>The cumulative timeframes of 1,800 ms for the automatic access standard and 1,000 ms for the minimum access standard proposed in Items 14 and 15 of Appendix B of the Consultation Paper will be problematic in distribution networks as the clearing time for a single fault could exceed these timeframes.</p>
<p>Would the proposed change address the issue raised by AEMO? If not, what alternative solutions are there?</p>	<p>Given the increasing levels of asynchronous generation, we agree that the proposed changes are generally required in order to maintain power system security (subject to the exceptions noted above).</p>
<p>Does the proposed change represent an unnecessary barrier to entry, having regard to the costs imposed by the change and the technical capabilities of different technologies?</p>	<p>We note that the new 2017 requirements identified by the Essential Services Commission of South Australia have been in place in South Australia (SA) for several months and a number of projects have now been assessed against these. At this stage, these arrangements do not appear to have presented a barrier to projects progressing in SA.</p>
<p>Can you provide an indication of the costs associated with the proposed change?</p>	<p>We are unable to quantify the costs at this stage.</p>
<p>4. System strength access standard</p>	
<p>Do you agree with AEMO’s analysis of the issue related to system strength?</p>	<p>Ergon Energy and Energex agree with the need for this new access standard. However, in our experience, most equipment manufacturers have equipment that is capable of operating at short circuit ratios (SCR) of 2 or below. Therefore, we would recommend that the minimum access standard be set at an SCR of 2.5, rather than at AEMO’s suggested level of 3.</p> <p>Further clarity is still required with regard to how the SCR is calculated and how the X/R ratio is to be considered. We also recommend that some guidance be provided to proponents as to how they would demonstrate compliance with these requirements.</p>
<p>Would the proposed changes address these issues, particularly in light of the Commission’s <i>Managing system fault levels rule change final determination</i>? If not, what alternative solutions are there?</p>	<p>The proposed rule change addresses the issues of ensuring that system strength isn’t unnecessarily compromised by the establishment of poorly-designed generating systems. This would maintain system strength going forward, and thereby reduce the costs that will be borne by future proponents.</p>

Consultation Paper Feedback Question	Ergon Energy and Energex response
Would the proposed changes relating to system strength represent an unnecessary barrier to entry, having regard to the costs imposed by the change and the technical capabilities of different technologies?	As noted above, most asynchronous equipment manufacturers that we have worked with already have equipment that is capable of operating at SCRs below 2. Accordingly, Ergon Energy and Energex do not consider that this access standard would present an unnecessary barrier to entry.
5. Mandating active power control	
Do you agree with AEMO's analysis of the issue related to active power control?	Frequency control is not an issue for DNSPs. However, Ergon Energy and Energex support the views of AEMO and the Transmission Network Service Providers (NSPs) on this issue.
Would the proposed changes address these issues? If not, what alternative solutions are there?	No comment.
Would the proposed changes relating to active power control represent an unnecessary barrier to entry, having regard to the costs imposed by the change and the technical capabilities of different technologies?	No comment.
What are the risks associated with mandating active power control capabilities?	No comment.
What impacts would a mandated active power control capability have on competition in FCAS markets, and therefore FCAS prices?	No comment.
6. Reduction in system size thresholds	
Do you agree with AEMO's view that standards should not consider generating system size in their application appropriate? If not, what alternatives are there?	Ergon Energy and Energex agree that the standards should not differentiate based merely on the size of the particular generating system, as this parameter does not sufficiently consider the relevant interaction between the specific generating system and the particular area of the distribution network to which it may be connecting. Depending on the size of the generator and the capability of the network, the particular generator's output may be constrained.

Consultation Paper Feedback Question	Ergon Energy and Energex response
	For example, Ergon Energy has been managing a significant number of generating system connections less than 30 MW in weaker areas of the distribution network, and we are also seeing clusters of multiple generating systems <30 MW developing in some areas, where this cluster effectively aggregates to a significant generator.
Would the proposed changes to the thresholds for certain generator access standards represent an unnecessary barrier to entry, having regard to the costs imposed by the change and the technical capabilities of different technologies?	Generally speaking, Queensland DNSPs have been managing the issues with generators under the current 30 MW threshold by including appropriate contractual obligations in the relevant connection agreements. For this reason, this is already presenting a cost to proponents, and the introduction of the proposed rule changes will not present any additional barriers to entry.
Can you provide an indication of the costs associated with the proposed changes?	We are unable to quantify the costs at this stage.
7. Definition of continuous uninterrupted operation	
Do you think the current definition of continuous uninterrupted operation raises issues for maintaining power system security?	With the changing generation mix from synchronous generation to asynchronous generation, Ergon Energy and Energex agree that the definition of continuous uninterrupted operation needs to be strengthened to ensure that the security and stability of the power system is maintained.
Would the proposed change to the definition of continuous uninterrupted operation address the issues raised by AEMO? If not, what alternatives are there, for example what materiality thresholds should apply?	We agree that the proposed change would improve power system security by supporting network voltages during disturbances.
Would the proposed change to the definition of continuous uninterrupted operation represent an unnecessary barrier to entry, having regard to the costs imposed by the change and the technical capabilities of different technologies?	No comment.

Consultation Paper Feedback Question	Ergon Energy and Energex response
8. Negotiated access standard requirements under specific clauses	
Do you agree with AEMO's analysis of the issues in relation to negotiated access standard requirements?	In relation to Item 5 of Appendix B of the Consultation Paper, Ergon Energy and Energex can see why the capability to operate in voltage control will be needed in the future power system, even if a reactive power mode is used for operation today. As a general comment, we are implementing voltage control in any event, and, accordingly, do not believe that the inclusion of this requirement will impose any additional barrier or cost.
Would the proposed changes address the issues raised by AEMO? If not, what alternatives are there?	No comment.
Would the proposed changes represent an unnecessary barrier to entry, having regard to the costs imposed by the change and the technical capabilities of different technologies?	No comment.
9. Technical standards relevant to the alteration of generating plant/system	
Do you agree with AEMO's analysis of the issues related to the technical standards for alteration of generating plants or system?	Ergon Energy and Energex support AEMO's proposed changes to apply in respect of alterations to generating systems.
Would the proposed changes address the issues identified by AEMO? If not, what alternatives are there?	No comment.
Would the proposed changes to standards relevant to the alteration of generating systems or plant represent an unnecessary barrier to investment, having regard to the costs imposed by the change and the technical capabilities of different technologies?	No comment.

Consultation Paper Feedback Question	Ergon Energy and Energex response
10. Jurisdictional issues and harmonisation	
<p>How important is a consistent approach to generator access standards across regions?</p>	<p>Ergon Energy and Energex agree with AEMO’s view that there should be a consistent approach across the National Electricity Market, as this will allow proponents to expect similar approaches and interpretations from all NSPs and AEMO and minimise barriers to entry where a proponent is seeking to expand into a different jurisdiction.</p> <p>If regular reviews of the performance standards are conducted with this in mind, this should minimise the need for differences in application across jurisdictions.</p> <p>We also note that the National Electricity Rules (NER) already contain provision for flexibility in application in different areas through the negotiated access standard mechanism, which allows for a lesser obligation where this is justified in the relevant circumstances.</p> <p>We suggest AEMO consider the development of guidelines to assist NSPs with the implementation of a consistent approach to access standards, in particular the analysis of access standard compliance.</p>
<p>Are AEMO’s proposed changes sufficient to manage system security across all areas of the power system so that jurisdictional arrangements (such as ESCOSA’s licensing conditions for connecting generators in South Australia) are not required?</p>	<p>No comment.</p>
<p>Are there changes in addition to those proposed by AEMO that stakeholders consider necessary to avoid the need for jurisdictional specific arrangements?</p>	<p>Ergon Energy and Energex recommend process changes also need to be addressed to assist the connection process.</p>
11. Issues with the current negotiating framework	
<p>Do AEMO and NSPs have adequate powers under the NER to require connection applicants to set performance standards at levels that do not negatively impact power system security? Are there other factors that may impact the effectiveness of the negotiating process?</p>	<p>Although automatic access standards are the default approach in the NER, there are some circumstances (for example, as identified in AEMO’s rule change request) where the parameters set out in the automatic access standards may be insufficient to optimally manage the power system, and there is no ability in the NER to impose an access standard that is more stringent than the automatic access standard.</p>

Consultation Paper Feedback Question	Ergon Energy and Energex response
	<p>Furthermore, even if the automatic access standard would be sufficient, the proponent is entitled to submit negotiated access standards for any technical requirements where they will be unable to meet the automatic access standard. The acceptance or rejection of a proposed negotiated access standard typically requires involvement with AEMO and the TNSP, and, even though the provisions of the NER purportedly allow relevant parties to protect power system security, in practice the negotiations can become controversial and commercial and/or political influences can be brought to bear, which can result in a less-than-optimal outcome.</p>
<p>How does the negotiating process operate in practice for participants? Is AEMO's view that connection applicants generally aim for the minimum access standards, and negotiate away from that position, an accurate representation of most negotiations?</p>	<p>We have always indicated that the default approach is that of the relevant automatic access standard, unless a negotiated access standard is agreed. This approach is generally adopted and followed by proponents.</p> <p>However, there are a number of technical parameters in respect of which the proponent is seeking to adopt a negotiated access standard without apparently considering whether compliance with the automatic access standard could be feasible. For example, it is common practice for proponents of solar farms to seek negotiated access standards for S5.2.5.1 (reactive power capability), in order to minimise inverter capacity and thus reduce project costs.</p> <p>This approach typically results in a lengthy and controversial negotiation process, which costs the proponent time and money to resolve.</p>
<p>What are the costs of the current negotiating framework for market participants and AEMO?</p>	<p>We are unable to quantify the costs at this stage.</p>
<p>12. Rationale for negotiating framework</p>	
<p>Given the changing nature of connections to the power system, does the rationale for a negotiating framework governing the connection process remain appropriate? Do you value the ability to negotiate and why?</p>	<p>Ergon Energy and Energex agree that the rationale for a negotiating framework remains appropriate as long as proponents target the automatic access standards as the default approach. Negotiation should only be required should a particular technical limitation apply to either the specific generation technology or specific network.</p>
<p>What are the appropriate respective roles of the automatic, minimum and negotiated access standards?</p>	<p>We believe that all proponents should aim to comply with the automatic access standards. Only when the specific technology has limitations which cannot be addressed by other design or network considerations should a negotiated access standard be considered.</p>

Consultation Paper Feedback Question	Ergon Energy and Energex response
13. AEMO's proposed changes to the negotiating framework	
<p>AEMO proposes changing the negotiations so that the onus is on the connection applicant to prove that they cannot practicably meet an automatic access standard. Does this change strike the appropriate balance between security and costs?</p>	<p>Ergon Energy and Energex welcome this proposed change, which will place the burden of proof on the connection applicant to demonstrate that it cannot meet the automatic access standards. In our opinion, this change is consistent with the least-cost approach to maintaining security.</p>
<p>Would the proposed changes present unnecessary barriers to entry for particular technologies, scales or locations?</p>	<p>We believe that the proposed changes will not present any unnecessary barriers to entry.</p>
<p>Would the proposed changes have any unintended adverse consequences for connecting MNSPs or large customers?</p>	<p>We do not foresee any adverse consequences as a result of the proposed changes.</p>
14. Nature of the issues raised	
<p>What are the potential negative impacts on system security that could arise from connection of new equipment under existing arrangements?</p>	<p>There is currently a large volume of asynchronous generating equipment in the connection pipeline in Queensland. Should these connections proceed under existing arrangements, there will be a significant number of generators in Queensland that will not meet the proposed new standards.</p>
<p>What other options may be available to address the issues raised, taking into account the limitations set out in section 6.2.1 below?</p>	<p>The transitional arrangements must balance the need for swift implementation of the new standards against the potential impact to proponents in terms of redesign (which will need to take into account the relevant stage of the connection process that they are currently at).</p>
15. AEMO's proposed transitional arrangements	
<p>What is the nature of the system security implications of an immediate transition to a new role, as against a grandfathered transition?</p>	<p>There is a large volume of generator connections in the pipeline which could progress under the old rules and may create technical problems in the future as the percentage of renewables increases.</p>



Consultation Paper Feedback Question	Ergon Energy and Energex response
<p>What is the nature of the cost implications of an immediate transition to a new rule, as against a grandfathered transition, and could this vary from different technology types, or depending on the stage a project has reached?</p>	<p>We agree it would be reasonable for some form of transitional period to apply, particularly in relation to those projects that are well progressed (for example, where detailed design has been finalised and the project is about to commence, or in the process of commencing, construction).</p> <p>We suggest if a Generator Performance Standard has been agreed between AEMO, the relevant NSP and the proponent, then it would be fair for that project to continue based on the existing access standards.</p> <p>We also caution that the introduction of relevant transitional dates is managed appropriately, as it is our experience that proponents will seek to accelerate their projects to meet relevant deadlines. Any such mass of activity will impose stresses on our connection processes and personnel, which is particularly problematic given the detailed nature of the changes that need to be considered.</p>