



Part of Energy Queensland

17 June 2021

Ms Anna Collyer  
Chair  
Australian Energy Market Commission  
GPO Box 2603  
Sydney NSW 2000

Dear Ms Collyer

**ERC0300 Efficient Management of System Strength on the Power System – Draft Determination**

Ergon Energy Corporation Limited (Ergon Energy) and Energex Limited (Energex) welcome the opportunity to provide comment to the Australian Energy Market Commission (AEMC) in response to its consultation on the Efficient Management of System Strength on the Power System – Draft Determination (Draft Determination). Ergon Energy and Energex are distribution network service providers in Queensland.

Ergon Energy and Energex broadly support the proposed rule change to provide a more collaborative and forward-looking approach to system strength planning. However, we have some concerns with a number of details in the Draft Determination and have provided commentary on these in the attached submission.

Should the AEMC require additional information or wish to discuss any aspect of this submission, please contact either myself, on 0467 782 350 or Barbara Neil on 0429 782 860.

Yours sincerely

A handwritten signature in cursive script that reads 'Trudy Fraser'.

Trudy Fraser  
**Manager Regulation**

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# Efficient Management of System Strength on the Power System

Joint response to the Australian Energy Market Commission

17 June 2021



Part of Energy Queensland

# Efficient Management of System Strength on the Power System

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## ABOUT ERGON ENERGY

Ergon Energy Corporation Limited (Ergon Energy) is part of Energy Queensland and manages an electricity distribution network which 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 kilometres 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 Energy Queensland 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 52,000km of overhead and underground network.

## Contact details

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# Efficient Management of System Strength on the Power System

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## 1 INTRODUCTION

Ergon Energy and Energex, as distribution network service providers (DNSPs) operating in Queensland, welcome the opportunity to provide comment to the Australian Energy Market Commission (AEMC) on its Efficient Management of System Strength on the Power System – Draft Determination (Draft Determination).

Ergon Energy and Energex continue to accommodate large numbers of registered generators. We have a total of 26 projects currently committed and connected, with a capacity of 1.4GW, a further seven projects with a capacity of 750MW currently going through the application process, and 40 projects with a capacity of 1.1GW in the Preliminary Enquiry or Detailed Enquiry stages.

We are supportive of a more collaborative and forward-looking approach to system strength planning and would like to reiterate the view that generators should be required to contribute to system strength services, as noted in Energy Queensland's submission to the AEMC on the System Services Rule change consultation.<sup>1</sup> We are also supportive of the improved performance standard regarding short-circuit ratio.

Notwithstanding, we would like to raise concerns with several details in the Draft Determination, and these are outlined in the following section.

Ergon Energy and Energex are available to discuss this submission or provide further detail regarding the issues raised, should the AEMC require.

## 2 GENERAL COMMENTS

The Draft Determination posits the onerous nature of the existing modelling framework. In our experience, the quality of models provided to network service providers remains a significant issue, with most projects having their application under 5.3A.9 of the National Electricity Rules (NER) rejected under clause 5.3A.9(d) several times before the quality of the modelling provided is acceptable to even commence a full assessment under clause 5.3.4B(a)(2) of the NER. This has even been the case where a proponent has proposed their own system strength remediation to ensure a short-circuit ratio of above three with their application to connect. Of all of Ergon Energy's and Energex's committed projects, remediation in the form of an asset such as a synchronous condenser has only been required on one out of 22 projects, even with short-circuit ratios below

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<sup>1</sup> Energy Queensland Submission to AEMC System Services Rule change, 13 August 2020.

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two. Any stability issues have been addressed through tuning and in some cases, curtailment schemes. It is Ergon Energy's and Energex's experience that to adequately conduct this tuning exercise, detailed power system computer aided design modelling is required, even where a proponent has opted for the "generator charge" or the addition of system strength supporting plant. Ergon Energy and Energex would like to reiterate that electromagnetic transient (EMT) modelling is essential in determining plant performance and interactions between generation and the network. In our experience, PSS/E can be inadequate even where the short-circuit ratio is above three. We note the Draft Determination gives the perception that where a full assessment is no longer required, no EMT modelling will take place. We believe this presents an immediate and future risk to the power system, where accuracy of models from all generators continue to be essential to manage the network.

Ergon Energy and Energex note the change proposed under clause 4.6.6(b)(1A) of the NER requires the preliminary assessment to be conducted with a single machine infinite bus (SMIB) model at the Detailed Enquiry stage (section 5.3A.8 of the NER). While we do not in-principle object to the concept, we would like to highlight that at this stage of the project, often the plant design including the model and manufacturer, has not been finalised. In addition, it is unlikely that the design process will be mature enough to have developed an accurate SMIB model. Items of plant such as harmonic filters, cable lengths, number and configuration of inverters, all have an effect on the plant's performance, and as such, where this is uncertain, may lead to expensive or time-consuming changes later in the project.

Furthermore, we note the AEMC has not included a specific joint planning clause for system strength with DNSPs on the basis that it is adequately covered under clause 5.14.1 of the NER. However, as DNSPs, Ergon Energy and Energex do not consider that clause 5.14.1 is comprehensive enough to cover the additional joint planning required under the evolved system strength methodology. In particular, given the extensive sub-transmission<sup>2</sup> network in Queensland, Ergon Energy and Energex anticipate that joint planning with the transmission network service provider will be essential to ensure the most efficient outcome for system strength planning, and will ensure that unexpected outcomes, such as exceedance of equipment fault ratings, will be avoided. We would welcome further conversations on pragmatic ways that this could be achieved.

Finally, we seek clarification on the mechanism to bill a Distribution Network User for system strength charges. Specifically, it is unclear whether the intent is to recover system strength charges directly from eligible Network Embedded Generators (as suggested in the draft clause 6.20.3A of

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<sup>2</sup> Owned and operated by Ergon Energy and Energex.

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the NER), or included under the Network Tariff via the Pricing Proposal (as suggested in Appendix E.2.4 of the Draft Determination).

In the event system strength charges are to be recovered via the Pricing Proposal (and therefore within Network Tariffs), it must be noted that from 1 July 2020, Ergon Energy and Energex no longer include a Network Tariff Class for Embedded Generators in their Tariff Structure Statements. As such, Customers are allocated to a Tariff Class of either Connection Asset Customer (CAC) or Individually Calculated Customer (ICC). While transmission costs are largely treated as a pass through for our ICC Customers in Network Tariffs, they are not allocated to individual CAC Customers. This may challenge the ability to pass through the replicated amount, structure and timing of system strength charge in accordance with the draft rule 6.20.3A(b).