

27 April 2018

Ms Suzanne Falvi
Executive General Manager
Australian Energy Market Commission
PO Box A2449
SYDNEY SOUTH NSW 1235



Dear Ms Pearson,

EPR0059 – Frequency Control Frameworks Review – Issues Paper

Energy Queensland Limited (Energy Queensland) welcomes the opportunity to provide comment to the Australian Energy Market Commission (AEMC), on its consultation on the *Frequency Control Frameworks Review – Draft Report*. This submission is provided by Energy Queensland, on behalf of its related entities Energex Limited (Energex), Ergon Energy Corporation Limited (Ergon Energy), Ergon Energy Queensland (EEQ) and Yurika Pty Ltd (Yurika).

Should you require additional information or wish to discuss any aspect of this 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 blue ink, appearing to read "Jenny Doyle", is positioned below the text "Yours Sincerely".

Jenny Doyle
General Manager Regulation and Pricing

Telephone: (07) 3851 6416
Email: jenny.doyle@energyq.com.au

Encl: Energy Queensland's submission to the Draft Report

Energy Queensland Submission on the Frequency Control Frameworks Review

Draft Report

Energy Queensland Limited
27 April 2018



About Energy Queensland

Energy Queensland Limited (Energy Queensland) is a Queensland Government Owned Corporation that operates a group of businesses providing energy services across Queensland, including:

- Distribution Network Service Providers, Energex Limited (Energex) and Ergon Energy Corporation Limited (Ergon Energy);
- a regional service delivery retailer, Ergon Energy Queensland Pty Ltd (Ergon Energy Retail); and
- affiliated contestable business, Yurika Pty Ltd.

Energy Queensland's purpose is to "safely deliver secure, affordable and sustainable energy solutions with our communities and customers" and is focussed on working across its portfolio of activities to deliver customers lower, more predictable power bills while maintaining a safe and reliable supply and a great customer service experience.

Our distribution businesses, Energex and Ergon Energy, cover 1.7 million km² and supply 37,208 GWh of energy to 2.1 million homes and businesses. Ergon Energy Retail sells electricity to 740,000 customers.

The Energy Queensland Group now includes Yurika, an energy services businesses creating innovative solutions to deliver customers greater choice and control over their energy needs and access to new solutions and technologies. Yurika is a key pillar to ensure that Energy Queensland is able to meet and adapt to changes and developments in the rapidly evolving energy market.

Contact details

Energy Queensland Limited
Jenny Doyle
General Manager Regulation and Pricing
Email: jenny.doyle@energyq.com.au
Mobile: 0427 156 897

PO Box 1090, Townsville QLD 4810
Level 6, 420 Flinders Street, Townsville QLD 4810
www.energyq.com.au

Energy Queensland Limited ABN 96 612 535 583

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1 Introduction

Energy Queensland Limited (Energy Queensland) welcomes the opportunity to provide comment to the Australian Energy Market Commission (AEMC) on its Frequency Control Frameworks Review – Draft Report (Draft Report). This submission is provided by Energy Queensland, on behalf of its related entities Energex Limited (Energex) and Ergon Energy Corporation Limited (Ergon Energy) and Ergon Energy Queensland Limited (EEQ). Energy Queensland is a recently established Queensland Government Owned Corporation that operates a portfolio of businesses providing energy services across Queensland, including:

- Distribution network service providers (DNSPs), Energex and Ergon Energy; and
- A regional service delivery retailer, EEQ, limited in its scope of operations by jurisdictional legislation
- An energy services business, Yurika, creating innovative solutions to deliver customers greater choice and control over their energy needs and access to new solutions and technologies.

Energy Queensland's DNSPs 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 response to the Issues Paper and we are supportive of the positions presented in their response.

In response to the AEMC's invitation to provide comments on the Draft Report, Energy Queensland has focused on the recommendations for emerging needs. Energy Queensland is available to discuss this submission or provide further detail regarding the issues raised, should the AEMC require.

2 Specific comments

2.1 Recommendation 4

That a rule change request be submitted to enable:

(a) Market Ancillary Service Providers to classify small generating units as ancillary service generating units for the purposes of offering market ancillary services

(b) Small Generation Aggregators to classify small generating units as ancillary service generating units for the purposes of offering market ancillary services.

These changes may also require changes to AEMO's market ancillary service specification (MASS).¹

Energy Queensland seeks clarity on whether there is visibility on the scale of small-scale market ancillary services (MAS) required to have an effect on system frequency. While the Draft Report mentions the 250MW virtual power plant in South Australia, which is certainly significant; it is unclear what sort of penetration or scale of MAS would be required.

Energy Queensland agrees that management of small generating units would be required. This should be co-ordinated between the Australian Energy Market Operator (AEMO) and the relevant Network Service Provider. We suggest that in order to rely on aggregators in the future for MAS, they must have the same performance standards and reliability standards applied to them as the larger market participants.

Furthermore, while it may be beneficial to have small aggregators bid into the market at increments of 1MW (or less), we suggest consideration be given to the flow-on effect this will create in terms of increased resourcing requirements for modelling and system management, which have the potential to be significant. For example, upgrades to existing supervisory control and data acquisition systems or distribution management systems might be required to facilitate large scale implementation of small scale MAS.

¹ The MASS sets a detailed description of each kind of market ancillary service (e.g. FCAS) and how a market participant's performance is measured and verified when providing these market ancillary services.

2.2 Recommendation 5

That AEMO:

- (a) provide more information regarding particular service characteristics that may be able to be trialled under the MASS*
- (b) undertake trials of distributed energy resources providing FCAS that consider various technology types and different options for metering and verification, with a view to sharing the outcomes of the trials with relevant stakeholders*
- (c) conduct a broader review of the MASS and consider how the value of distributed energy resources can be appropriately recognised.*

Energy Queensland agrees with the recommendation that more information, trials and studies are required. We suggest metering provisions should be consistent with other areas unless particular evidence can be provided that more stringent metering is required. Consideration must also be given to how the dispatch signals would be broadcast and what communications methods would be utilised.

2.3 Recommendation 6

That Energy Networks Australia, in developing its national connection guidelines, provide guidance on:

- what capability is reasonable to require from distributed energy resources as a condition of connection in order to address the impact of that connection*
- the expected application of AS4777 to different connection types and sizes*
- the technical justification for any mandated services*
- the extent to which any mandated services would detract from the ability for distributed energy resources to offer system security services.*

The AEMC encourages stakeholders to provide input into the development of these guidelines.

Australian Standard (AS) 4777 applies up to 10kVA for single phase and 30kVA for three phase connections. While the standard is often applied to larger systems, it is not clear whether a new standard is required for larger systems, or whether an addendum or similar directly addressing larger systems would be sufficient. It is our position that it would be unreasonable to require a small residential customer to pay for a more complicated and expensive inverter, when the frequency response needs may be met by larger commercial-sized systems. We believe more research is required to assess the cumulative effect of the commercial inverter energy systems (IES). For example, if all schools and universities had inverter energy systems installed, there could be a significant

cumulative effect during peak export periods. However, the extent that this will impact on system stability is unclear without further system wide research.

Energy Queensland would support further research into analysing the performance of existing inverters using electromagnetic transient (EMT) models, to determine if small programming changes may deliver significant results in terms of system stability.

Notwithstanding, Energy Queensland's DNSPs are actively providing input into the development of ENA's connection guidelines.

2.4 Recommendation 7

That:

(a) AEMO, in conjunction with DNSPs, conduct trials of aggregated distributed energy resources providing Frequency Control Ancillary Services (FCAS) to assess their ability to provide services under different conditions, and how the provision of those services affect the local network and the power system more broadly

(b) DNSPs and aggregators share information about the types of energy resources providing system security services, and the types of services, and the types of services that may affect network conditions, with a view to determining how the value of distributed energy resources can be maximised for both parties.

Energy Queensland agrees that local system impacts, conditions and constraints must be assessed and taken into account before the development of any system which would rely on distributed energy resources (DER) for frequency control services. The distribution system is complex and is often reconfigured for planned or unplanned works and a mechanism to determine how much could potentially be exported at any particular time must be developed. Due to the complexity of a distribution network, uncontrolled mass export could potentially cause safety and power quality issues through thermal or voltage constraint exceedance.

We support the ENA positions on visibility of DER and aggregator impacts.

2.5 Recommendation 8

That in the medium term:

(a) AEMO conduct a broader review of the MASS to recognise the capability, and more accurately value the response profile, of new technologies that are capable of providing frequency control services

(b) the AEMC and AEMO refine the time frames and develop a work program for making any substantive changes to FCAS frameworks, informed by:

(i) an assessment of any consequential impacts arising from the implementation of any revisions to frequency control arrangements in the normal operating frequency band

(ii) investigations undertaken by AEMO into:

- the emerging capabilities of fast frequency response technologies, including trials of various technology types, with a view to publishing the outcomes of the trials with relevant stakeholders, and to inform the development of future service specifications*
- the evolving technical and operational requirements of the power system and the inter-relationships between different system services, including frequency response, inertia and system strength.*

Energy Queensland agrees that frameworks will require updating in the future as the synchronous generation in the system reduces. However, further research is required to determine the extent of fast frequency response required. For example, what changes would be required now if problems are not expected until 2025? We suggest that any changes implemented now should be made in such a way to enable future technologies without disadvantaging current participants.

Energy Queensland suggests that mechanisms for maintaining inertia are technology-agnostic. That is, modelling should prove the performance of new technologies rather than mandating a particular mix. Moreover, certainty in investment revenue is required if the solutions are to be market-driven. We believe that the path forward should be supported by a positive cost benefit analysis.