

19 April 2018



Ms Daniela Moraes
Australian Energy Market Commission
PO Box A2449
Sydney South NSW 1235

Dear Ms Moraes

Energy Queensland submission on the National Electricity Amendment (Register of distributed energy resources) Rule 2018 Consultation Paper

Energy Queensland Limited (Energy Queensland) welcomes the opportunity to provide comment to the Australian Energy Market Commission (AEMC) on its Consultation Paper for the development of a national register for distributed energy resources (DER).

Queensland has the highest penetration of DER in the country. In light of continuous product and price innovations in the energy sector, Energy Queensland anticipates that customer demand for DER will persist. This situation presents both opportunities and challenges for system operators, electricity networks, and electricity retailers.

Energy Queensland strongly supports the COAG Energy Council's proposal for the establishment of a national DER register to be administered by the Australian Energy Market Operator (AEMO).

In the meantime, Energy Queensland's network businesses, Ergon Energy and Energex, have established a register capturing DER information collected through the network connections process. This information will be shared with AEMO to inform its market analysis and forecasting functions.

Energy Queensland's detailed responses to the AEMC's consultation questions are provided in the attached submission. Should the AEMC require additional information or wish to discuss any aspect of Energy Queensland's submission, please contact me on (07) 3851 6416 or Trudy Fraser on (07) 3851 6787.

Yours Sincerely

A handwritten signature in black ink, appearing to read "Jenny Doyle", is positioned above the typed name.

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Encl: Energy Queensland response to AEMC DER consultation paper

Energy Queensland Submission on the National Electricity Amendment (Register of distributed energy resources) Rule 2018

Consultation Paper

Energy Queensland Limited
19 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 business 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.

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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 Consultation Paper “*National Electricity Amendment (Register of distributed energy resources) Rule 2018*” (Consultation Paper).

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.

In response to the AEMC’s invitation, Energy Queensland has provided responses to all of the questions raised in the Consultation Paper. 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 Detailed responses to consultation questions

Questions	Feedback
Chapter 4 – Assessment framework	
<p>1. Is the assessment framework appropriate for considering the proposed rule changes?</p>	<p>Energy Queensland supports the proposed assessment framework for the rule change. However, Energy Queensland suggests that the criteria for the assessment framework could be improved with the following amendments:</p> <ul style="list-style-type: none"> - Improve operation of the power system – expand to acknowledge the potential improvements to DNSPs, i.e.: <i>“the potential of the proposed rule change to better inform AEMO’s and DNSP’s operational decisions and processes relating to the efficient operation of the power system and distribution network.”</i> - inclusion of an additional criterion to acknowledge the potential for better information to improve public safety outcomes. For example, providing emergency services responding to emergency events on site with information on the type of distributed energy resources (DER) installed, whether it will be isolated from loss of grid supply, and what chemical hazard may be present.
<p>2. Are there other relevant considerations that should be included in the assessing the proposed rule changes?</p>	<p>Energy Queensland recommends that the AEMC also consider the inclusion of network constraints in its assessment. Feeders and network protection systems have been designed to operate within specific technical parameters, and are</p>

Questions		Feedback
		<p>affected by higher penetrations of solar PV and battery systems.</p> <p>For example, network constraints may occur on a feeder with a large number of battery systems which are all exporting simultaneously, causing overload or protection mal-operation.</p>
Chapter 5 – Section 5.1.1 – Benefits of a register		
3.	What are the likely uses of a distributed energy resources register?	<p>The information captured in a DER register will provide Energy Queensland's network businesses, Ergon Energy and Energex, with improved knowledge of what equipment is connected throughout the network, and what the network implications may be under various dispatch scenarios. This knowledge will improve forecasting capability, assist network planning, and enhance network operation.</p> <p>The information captured in a DER register could also be used to enable more efficient identification and recruitment of owners/operators of DER resources to participate in demand response programs.</p>
4.	How, and to what extent, could the static information provided by a DER register meet the objectives outlined by the COAG Energy Council, namely:	
	a) more accurate load forecasting?	<p>The static information recorded in the DER register would assist networks and AEMO with more accurate load forecasting to assist in network planning and operation.</p> <p>Energy Queensland's network businesses, Ergon Energy and Energex, are currently experiencing concentrations of DER in parts of their networks. Early information on the distribution of DER throughout the networks would enable analysis and modelling of the implications for the rest of the network, and investigation of seasonal differences to anticipate problems and identify potential for coincidence of charging with localised peak demand. Greater visibility of DER will enable DNSPs to anticipate and address issues proactively rather than</p>

Questions	Feedback
	<p>reactively.</p> <p>Energy Queensland also acknowledges that load forecasting will be driven by financial and tariff models applied to the DER operation. For example, battery usage will be influenced by customer tariff selection, discharge regime employed by the customer and connection conditions (limited export or power quality response mode).</p>
<p>b) improving AEMO's ability to manage power system security during credible contingency, protected and non-credible contingency events?</p>	<p>Energy Queensland agrees that static DER information will assist AEMO. However Energy Queensland notes that the local distribution system may be subject to limitations or constraint, so that there is a risk if there is not careful co-ordination between AEMO and the DNSP, system damage, overload or safety issues may occur.</p> <p>For example, a feeder cable has been designed for a specified load with a particular assumed diversity. However, if each house has a 5kW battery and the batteries are all called on at the same time to charge or discharge, the expected diversity won't exist and the feeder may become overloaded leading to equipment damage and emergency protection operation.</p> <p>Information provided on available demand response modes may also give greater visibility on the potential load available for demand response in contingency events, should appropriate market/incentives for these services be available.</p> <p>Preliminary findings from Energex's Market Based Battery Trial found that the deployment of batteries generally reduces network demand, including demand between 4 to 8 pm.</p> <p>However, on peak demand days, the batteries only provided 26-50% of their useable capacity to support household loads during 4 to 8 pm. This was due to the batteries not fully charging during the day due to high household loads.</p> <p>This difference between the potential maximum support from DER and what was actually provided represents the opportunity for DER to contribute to demand response. The value of DER to provide grid support can be optimised through</p>

Questions		Feedback
		<p>demand response. For example, in the situation described above, batteries could have been pre-charged and discharged fully during the peak period to meet customer demand.</p> <p>Consequently the register itself may only go part way in assisting with network security. Engaging customers on demand response to deliver grid support provides an opportunity to increase the network benefits of batteries.</p>
	c) improving AEMO's ability to set the bounds of the technical envelope at an efficient level?	<p>A register, which includes details of inverter types and manufacturers, would allow DNSPs and AEMO to understand what EMT/PSCAD models they would be required to collect, and what they would need to model to understand what will happen in such a disturbance. This information would enable DNSPs and AEMO to determine therefore what changes to AS4777 and/or connection standards would be needed to ensure long-term system stability and the expected technical envelope.</p>
	d) improving efficient market and network investment?	<p>Energy Queensland disagrees with the following statement on pages 16 and 17 of the consultation paper:</p> <p><i>“At low levels of penetration, distributed energy resources can be, and have been, accommodated within Australia's distribution networks with little to no coordination or assessment of their cumulative impacts of the network. This is because networks generally have had spare capacity and are therefore able to adapt to the technical impacts of distributed energy resources.”</i></p> <p>This is not an accurate statement to apply to Energy Queensland's networks Ergon Energy and Energex. Recent network planning and investment been required to accommodate ever-increasing levels of solar PV. However, the effects to date have been localised rather than system wide, and long term strategic study is required to determine the potential implications.</p> <p>A register will inform forecasts of projected growth rates which, in turn, will help to inform required augmentation, and potential changes to tariff structures.</p>
5.	Are there any other ways that a distributed energy resources	Energy Queensland believes that a DER register has significant potential to

Questions		Feedback
	register could benefit the National Electricity Market?	facilitate the activation of the demand response market, and through the release of anonymised/aggregated data, a DER register can help support residential behavioural research, academic and market research and analysis.
6.	What features does a register need to have in order to meet the objectives outlined by the COAG Energy Council?	<p>Energy Queensland considers that a DER register should include the data fields listed in Table 2.2 of the consultation paper. There may also be benefit from capturing the following information:</p> <ul style="list-style-type: none"> - energisation mechanism/strategy (e.g. energisation on pool price, or to reduce peak evening load) - power quality modes. <p>The DER register must also be user friendly to ensure that entry/upload of information is easy and aligns with DNSP connections portals/systems</p> <p>The data held in the database should also enable easy analysis. For example, data should be available for download in .csv or .xlsx format.</p>
Chapter 5 – Section 5.1.2 – Expected costs		
7.	What costs do you believe would likely be involved in the collection of useful data about DER?	<p>Energy Queensland expects that costs could include:</p> <ul style="list-style-type: none"> - administrative costs associated with making changes to our connections portal fields - education of staff on register requirements - transfer of data into register - verification of data and follow up with customers/stakeholders on incomplete or incorrect data - customer interactions – additional customer queries - associated promotion and education of stakeholders on use of the register <p>However, Energy Queensland does not expect the costs of DER data collection to be significantly in excess of our normal costs for collection of this data.</p>

Questions		Feedback
		Further, we expect that the benefits of the DER register will greatly exceed DER data collection costs.
8.	Do you agree with the costs identified by Jacobs for different stakeholders? If not, why?	No comment
9.	Are stakeholders able to provide data or case studies that would support further quantification (in monetary terms) of any of costs likely to manifest?	<p>Energy Queensland notes that Energex and Ergon Energy already collect much of the information proposed for collection for the DER register as part of their existing network connection process, with additional information scheduled to be added as part of system updates in 2018.</p> <p>This approach minimises the costs of data collection and makes use of an existing process for which much of the relevant information is already required by the network. Ergon Energy and Energex have indicated that the costs arise from the collection of DER data are negligible.</p>
10.	How might the nature and magnitude of these potential costs change over time?	Energy Queensland considers that the cost of a DER register will be greatly influenced by the approach to administration, and the complexity of the database. For example, keeping DER data up to date, ensuring compatibility between systems and stakeholders, and maintaining customer privacy and data security.
Chapter 5 – Section 5.2 – Governance		
11.	Please comment on the suitability of the following:	
	a) Should 'small scale' systems be limited to generation systems below 5 MW? Should any further limitations be imposed (e.g. a minimum capacity or a threshold in MWh for energy storage)?	Energy Queensland supports limiting the definition of small-scale systems to below 5MW. This threshold aligns with what is considered non-market generation in the National Electricity Rules (NER).
	b) Is the NER definition of 'connection point' an appropriate spatial demarcation for 'behind the meter' DER? If not, what is an appropriate spatial demarcation for 'behind the meter' DER?	Energy Queensland supports the use of the 'connection point' (as defined in the NER) as the demarcation for 'behind the meter' DER.

Questions		Feedback
	c) Is a 'distributed energy resource' " <i>an integrated system of energy equipment co-located with consumer load</i> "? If not, what else could it be characterised as?	Energy Queensland supports the proposed definition of 'distributed energy resource'. However, Energy Queensland questions whether and how electric vehicles can be considered, noting though they are mobile, can charge at different locations, and may not be regularly housed at their registered address.
12.	Regarding the management of a DER register:	
	a) To what extent should the types and capacity of DER eligible for inclusion in the register be defined in the NER or in an AEMO guideline?	Energy Queensland contends that the NER should define the DER framework, with an AEMO guideline providing further details on types, capacity etc. of eligible DER. This provides a more flexible approach that can evolve over time as technology changes or as the market for DER develops.
	b) Should the nature of the information being collected and recorded in the register and any other requirements, such as how often parties need to report the data, be determined in an AEMO guideline?	Energy Queensland supports the administration of the DER register in an AEMO guideline. Energy Queensland recommends that reporting for the DER register should only be tied to system installation, changes (technology, size, or control mechanism) or decommissioning.
	c) What types of principles, factors or other criteria should AEMO be required to consider when developing guidelines on the collection and recording of information on DER?	Energy Queensland considers that AEMO should only capture the information that is reasonably required to meet the stated objectives, and register design and operation should be as simple and as easy to use as possible.
Chapter 5 – Section 5.3 – Data collection and compliance		
13.	How often does the data need to be collected and updated to achieve the objectives of a DER register?	Energy Queensland recommends that reporting for the DER register should be required in the following circumstances: <ul style="list-style-type: none"> - System installation and/or decommissioning (installer's responsibility) - Changes to system size or technology (installer's responsibility) - Changes to system energisation controls, such as a change of charge/discharge from a pool price trigger to a local demand response

Questions		Feedback
		signal (contracting party or market participant responsibility)
14.	Do you agree that there is a need for consistency across network regions in what data should be collected?	Energy Queensland agrees that DER data collection should be consistent throughout the NEM, and questions the need for any differences between jurisdictions.
15.	If DNSPs' connection application processes are considered a good method of collecting data, what changes are needed to existing processes?	Energy Queensland recommends that DNSP connection application processes are the ideal mechanism for collecting DER data. However, it is possible that changes may need to be made to what or how that data is recorded to align DNSP processes and to meet the requirements of AEMO.
16.	Should obligations on parties other than DNSPs be considered to support data collection? If yes, which parties are best placed to collect and report this data?	<p>Energy Queensland considers that DNSPs are the most appropriate party to support DER data collection as they have the process and customer privacy guidelines already in place, and are prevented from targeting customers. While other parties may also collect data on DER, we caution against aggregators or similar parties collecting data for the DER register.</p> <p>Energy Queensland suggests that DER installers should be required to provide DER data to DNSPs. Existing ambiguity around the provision of information on battery storage connected to the network has resulted in a number of installations not being the subject of a connection application.</p>
17.	How would an obligation on the parties identified above best be applied and enforced? Please provide details.	Energy Queensland considers that there may be benefit in the introduction of obligations to report DER information to DNSPs to assist compliance. However, Energy Queensland notes that the introduction of such obligations on the parties with direct involvement with DERs may be beyond the jurisdiction of the AEMC and AEMO and may require regulatory activity from state/territory governments.
18.	Will a register be beneficial if the levels of compliance in relation to providing information are similar to the low levels of compliance with the DNSP connection application processes? What levels of compliance are needed?	<p>Energy Queensland acknowledges the significant potential for a national DER register enabled via the NER to improve DER data collection rates. While there is value in DER data even at low levels of reporting, the higher the reporting of DER data, the greater the benefits for networks and the community.</p> <p>Energy Queensland believes that misinformation around requirements for</p>

Questions		Feedback
		submitting a connection application in Queensland has contributed to the lower numbers of applications to Energex and Ergon Energy. The establishment of a National DER register would dispel this misinformation, improving compliance.
19.	How else can compliance levels be improved?	<p>Energy Queensland suggests that DER compliance levels can be improved by simplifying or even automating the collection process as part of the DNSP connection process.</p> <p>Compliance can also be strengthened through marketing and promotion of the DER register and reporting requirements to make relevant stakeholders aware of their obligations, supported by enforcement activity.</p>
20.	How can compliance best be maintained over time as technology changes?	<p>Energy Queensland believes that compliance can be fostered by the establishment of a robust and easy to use database system. Compliance may also be enhanced through engagement with installers and technology providers, as well as jurisdictional electrical safety and licencing agencies.</p> <p>Future compliance needs to be responsive to the market and compliance activities should be reviewed periodically to ensure that they remain relevant.</p>
Chapter 5 – Section 5.4 – Transparency and confidentiality		
21.	Given the nature of information that may be required to be provided by registered participants under the proposed rule change, are existing regulatory arrangements (such as the protected information provisions under the NEL and Privacy Act 1988) regarding the collection and disclosure of information adequate to protect market participants and consumers whose DER systems are included in the register?	Energy Queensland anticipates that existing regulatory arrangements will be sufficient to protect information collected in the DER register. However, we acknowledge that there may be value in undertaking a privacy assessment to provide additional assurance or inform further safeguards of customer information.
22.	If not:	
	a) What are the likely nature, and magnitude, of potential consequences of insufficient protection of such	Energy Queensland notes the potential for exploitation of private information for commercial benefit. If anything other than aggregated/anonymised data was

Questions		Feedback
	information?	made available to market participants, sensitive information could be used and result in predatory sales tactics or pressure on unsuspecting customers by installers and technology providers, and potentially unfair changes to pricing.
	b) Should the NER limit, on the basis of confidentiality concerns, the information that registered participants or others would be required to provide to AEMO under the DER Register Guidelines? If yes, how?	Energy Queensland considers that only the required technical details should be collected. If demographic studies are to be conducted using data in the DER register, these must be kept anonymous and/or voluntary.
	c) Should the NER limit, on the basis of confidentiality concerns, how AEMO may use or disclose information provided to it under the DER Register Guidelines? If yes, how?	Energy Queensland considers that AEMO has a responsibility to protect the information provided to it in the DER register and should be subject to limits on how it shares the information recorded in the DER register. However, AEMO should have the flexibility (or obligation) to make freely available aggregated/anonymised data to the industry to help support academia and market development benefits without impacting on privacy rights of the individuals.
23.	Are there any competition concerns raised by the establishment of the register?	Energy Queensland has not identified any competition issues associated with the proposed DER register. However, the AEMC should ensure that the DER register features appropriate privacy measures and access to data is managed appropriately to minimise risk of anti-competitive use of data.
Chapter 5 – Section 5.5 – Safety issues and emergency response		
24.	Would the sharing of data collected under a DER register be useful to emergency services, and if so, how?	<p>Energy Queensland understands that some data collected in a DER register is valuable to emergency services. For example, fire services would benefit from knowing of the existence of a battery in order to implement appropriate safety measures and extinguishing techniques.</p> <p>Energy Queensland is involved in discussions with Queensland Emergency Services and the Queensland Electrical Safety Office regarding how the provision of this data would be useful to them (including format, data included etc).</p>

Questions		Feedback
25.	Are there existing mechanisms currently in place (e.g. requisite IT systems) that could facilitate the practical sharing of data with emergency responders on a real time basis?	Engagement with emergency services has revealed opportunities to enable the sharing of relevant DER data and Energy Queensland is currently exploring the framework for sharing such data. However, the establishment of a guideline would support a common dataset format so that DER data delivery can be aligned to avoid the need for multiple formats and frequencies.
26.	Is the proposed DER register the most practical mechanism to provide emergency services with the required information?	Based on discussions to date, a DER register administered by AEMO seems to be a logical and practical mechanism for provision of DER data. However, Energy Queensland notes the need for co-ordination with the emergency services' geo-spatial system (Energy Queensland is currently exploring this with Queensland Fire and Rescue Service).
27.	What important features does a register need to have in order to meet the needs of emergency services?	Energy Queensland understands that the items listed in Table 2.2 of the consultation paper are appropriate for emergency services. In addition, the location of a battery has also been suggested, noting that inclusion of this information may be difficult.
28.	To what extent is energy related information already shared between relevant bodies (e.g. AEMO/CER) to emergency services for safety reasons?	No comment.
Other comments on the rule change request or consultation paper		
29.	Do you have any other comments on the rule change request or the consultation paper?	<p>Energy Queensland strongly supports the establishment of a national register of DER administered by AEMO.</p> <p>In the meantime, our network businesses, Ergon Energy and Energex have established a register capturing DER information collected through the connections process. This register has been set up in anticipation of the introduction of a national DER register.</p> <p>To stimulate participation, Ergon Energy and Energex are also offering a \$50 incentive for customers with grid-connected batteries to register their systems:</p>

Questions	Feedback
	<p>https://www.ergon.com.au/network/smarter-energy/battery-storage/energy-resource-register</p> <p>https://www.energex.com.au/home/control-your-energy/smarter-energy/battery-storage/energy-resource-register</p> <p>Energy Queensland is also partnering with AEMO to share DER information captured by Ergon Energy and Energex.</p>

