



23 July 2020

Ms Merryn York
Acting Chair
Australian Energy Market Commission
GPO Box 2603
Sydney NSW 2000

Dear Ms York

RE: ERC0301 Energy Queensland submission to Technical Standards for Distributed Energy Resources

Energy Queensland Limited (Energy Queensland) welcomes the opportunity to provide comment to the Australian Energy Market Commission (AEMC) in response to their consultation on the National Electricity Amendment (Technical Standards for Distributed Energy Resources) Rule 2020 and National Energy Retail Amendment (Technical Standards for Distributed Energy Resources) Rule 2020 (Consultation Paper).

This submission is provided by Energy Queensland, on behalf of its related entities, including:

- Distribution network service providers, Energex Limited and Ergon Energy Corporation Limited;
- Retailer, Ergon Energy Queensland Pty Ltd (Ergon Energy Retail); and
- Affiliated contestable business, Yurika Pty Ltd including its subsidiary, Metering Dynamics Pty Ltd.

Energy Queensland has addressed the questions raised in the Consultation Paper in the attached submission.

Should you require additional information or wish to discuss any aspect of this submission, please do not hesitate to contact myself or Barbara Neil on 0429 782 860.

Yours sincerely

A handwritten signature in black ink, appearing to read "Trudy Fraser".

Trudy Fraser
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Encl: Energy Queensland comments to consultation questions

Energy Queensland Submission on the Technical Standards for Distributed Energy Resources

Consultation Paper

Energy Queensland Limited
23 July 2020



About Energy Queensland

Energy Queensland Limited (Energy Queensland) is a Queensland Government Owned Corporation that operates 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 (Yurika), which includes Metering Dynamics Pty Ltd (Metering Dynamics).

Energy Queensland's purpose is to 'safely deliver secure, affordable and sustainable energy solutions with our communities and customers' and is focused 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 experience.

Our distribution businesses, Energex and Ergon Energy Network, cover 1.7 million km² and supply 34,000GWh of energy to 2.25 million homes and businesses each year.

Ergon Energy Retail sells electricity to 738,000 customers in regional Queensland.

Energy Queensland also 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. Metering Dynamics, which is a part of Yurika, is a registered Metering Coordinator, Metering Provider, Metering Data Provider and Embedded Network Manager. Yurika is a key pillar to ensuring 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 National Electricity Amendment (Technical Standards for Distributed Energy Resources) Rule 2020 and National Energy Retail Amendment (Technical Standards for Distributed Energy Resources) Rule 2020 Consultation Paper (Consultation Paper). 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 Limited (Ergon Energy Retail) and Yurika Pty Ltd (Yurika).

Energy Queensland does not support the proposed rule change and considers that it is not required to achieve the stated outcomes. Energy Queensland believes that these outcomes can be delivered more economically and quickly through existing, established mechanisms and via the proposed Energy Security Board (ESB) standards governance framework which has just been released for consultation. We also consider that the stated need is not consistent with the problem statement and the rule change may cause conflict between jurisdictional and national obligations on Distribution Network Service Providers (DNSPs). Finally, we have concerns that the short-term and long-term economic impacts have not been fully considered or validated. Overall, we strongly oppose the proposed rule change.

Existing fit for purpose framework

Energy Queensland considers that the objective of the rule change could more efficiently be achieved through existing frameworks and a collaborative working relationship between the Australian Energy Market Operator (AEMO), Standards Australia, Energy Networks Australia (ENA), and/or DNSPs.

Energy Queensland is supportive of having nationally consistent generation standards and wishes to highlight that the industry is already proactively working to achieve these outcomes. This is evidenced by our work with ENA in the creation of National Connection Guidelines, and subsequent updates to our standards for small inverter energy system connections (STNW1170) and low voltage embedded generating connections (STNW1174) to reflect those Guidelines. These standards have been developed in conjunction with Standards Australia, Customers and Original Equipment Manufacturers (OEMs) to ensure maximum benefit is obtained.

In addition, the ESB has just released its consultation paper on a national governance model for distributed energy resources (DER) standards, which has a similar timeframe for this rule request, and which Energy Queensland believes provides a better overall solution.

We note the Consultation Paper suggests the Standards Australia process has been deemed too slow. Given the financial and resource limitations of Standards Australia, being largely supported by industry volunteers, we suggest a more appropriate solution would be to ensure Standards Australia have access to appropriate resources, to support the intended aims of a rapidly changing market. The recent update to AS/NZS 4777.2 to include changes to the disturbance ride-through and grid support functionality is an example of how this can be made work.

Energy Queensland have always been and will continue to be responsive to AEMO requests for changes to our connection agreements, systems, processes or standards that provide long term benefits and system security to consumers.

Reason for the rule change and conflict of obligations

Energy Queensland acknowledges AEMO's requirement to manage system security and recognises that increasing penetrations of DER brings a range of new and unforeseen challenges. However, the justification for this rule change in Table 2.1 is not related to system security but to network performance, namely "*... limitations have begun to be reached in distribution systems related to managing voltages, thermal capacity and protection coordination...*".¹ Queensland jurisdictional legislation, including the *Electricity Act 1994* and *Electricity Regulation 2006*, place these obligations on the relevant DNSP, namely Energex and Ergon Energy, not on AEMO.

Energex and Ergon Energy have been effectively managing distribution issues related to photovoltaic (PV) connections, and together have connected more than 3GW of distributed PV generation while maintaining the required voltage, capacity and protection requirements defined in the National Electricity Rules (NER) and in the *Electricity Regulation 2006* (Qld). This has been achieved through longstanding participation with Standards Australia and progressively engaging the market and updating our connection agreements as needs arise.

The NER also references the requirements for customers' technical standards to be maintained via the network connection agreement with the relevant DNSP. The recommended rule change would increase AEMO's role beyond that prescribed in the National Electricity Law (NEL) and would create conflict with jurisdictional obligations for distribution network voltage and capacity management, protection coordination and customer connection provisions.

¹ AEMC, *Technical Standards for Distributed Energy Resources Consultation Paper*, 2020, pg.3

Without clarity on the governance arrangements there is a risk that unilateral changes in connection agreements without the appropriate technical assessments may trigger a raft of DNSP investments to manage unforeseen risks or equally, could result in unnecessary restriction on customers or over-investment by the DNSP.

Economic impacts of the rule change

Notwithstanding the impacts on DNSPs, there are other potential market impacts which must be considered when standards are changed. Lack of certainty on changes to standards increases the risk to manufacturers participating in the Australian market, likely requiring them to increase cost or reduce offerings, potentially impacting end use customers. These impacts do not appear to have been considered in the proposal, nor is there any reference to how consultation would occur with impacted parties to help optimise any proposed standards and minimise any potential impacts. Given the recent experiences from the Council of Australian Governments (COAG) to mandate AS4755, it would seem appropriate that a change of this magnitude be accompanied by a significant impact assessment to ensure that it meets the overall intent of the National Electricity Objective (NEO) and National Energy Retail Objective (NERO). The rule change lacks detail on the standards, reach or governance arrangements, making it impossible for any market body to agree to impose a set of standards without understanding the implications of doing so.

Despite opposing the proposed rule change, Energy Queensland reiterates that we will continue to work collaboratively with AEMO on requests that provide long term benefits and system security to consumers.

Energy Queensland is 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	Energy Queensland Comment
Issue 1: Assessment Framework	
<p>1. Do you agree with the proposed assessment framework? Should the assessment framework include any additional considerations, and if so, what are they and why?</p>	<p>Energy Queensland notes the proposed framework is a significant expansion of AEMO's role and powers, beyond those specified in the NEL and contradicts with several DSNP obligations under jurisdictional legislation, as outlined in section 1 above.</p> <p>We suggest that any changes to the framework should consider the roles of existing market bodies and participants and assess whether the necessary changes can be driven through existing structures. Should the AEMC decide to support the rule change, the subordinate instrument would need to be structured in a way that addresses the conflicting obligations noted above.</p> <p>The assessment framework should consider the appropriateness of applying the proposed changes across the NEM. Energy Queensland notes the specific challenges in South Australia and Western Australia at a system level but does not agree that the situation is equivalent in all regions at the present time.</p> <p>Any assessment should also consider the potential adverse impacts to market participants, beyond the regulatory burden, such as potential increases in network augmentation and operational expenditure if standards are too onerous or equally, not fit for purpose and the DER impact on the local distribution network is adverse. It is likely that these costs will ultimately flow through to all consumers, and it is unclear whether small customers in particular will benefit from this rule change.</p> <p>Given AEMO is predominantly transmission focussed, the consideration of efficient risk allocation needs to be expanded beyond system security to all components currently being proposed for inclusion in the standards. Furthermore, given the scope of the proposed standards, an assessment of which participants are the most suitable to perform these functions needs to be undertaken.</p>

	<p>The framework should also consider the timing of the requests and a cost/benefit analysis for the introduction of the proposed standards, in the context of the national governance model for DER standards currently being consulted on by the ESB.</p> <p>We note that recent experiences from COAG to mandate AS4755 included a substantial regulatory impact assessment, and it would seem appropriate that a change of the magnitude proposed in this rule change would also be accompanied by a significant impact assessment. The proposal as presented lacks such an assessment and therefore it is difficult to determine any benefit or assess whether it is consistent with the NEO or NERO.</p>
Issue 2: Setting the Initial Standard and Definition of DER	
1. Should the initial DER technical standard be set by AEMO?	<p>Energy Queensland questions the justification for this rule change set out in Table 2.1 of the Consultation Paper. Energy Queensland acknowledges that the growth of distributed PV in aggregate can lead to challenges in managing the wider system, particularly in response to system-wide faults. However, the table intimates that the driver for this rule change is challenges in managing voltage at the distribution network level. Energy Queensland disputes this claim. While the Renewable Integration Study has explored the challenges at a distribution level, Energy Queensland disagrees that a new standard or rule change is required to manage this.</p> <p>Energy Queensland's DNSPs, Energex and Ergon Energy have integrated more than 3GW of small-scale renewable generation into their networks while maintaining the required system power quality requirements defined in Schedule 5.1a of the NER and the <i>Electricity Regulation 2006 (Qld)</i>. Energy Queensland acknowledges the challenges being faced in South Australia but does not consider that these issues are consistent across the NEM and believes that caution is required to ensure any framework is appropriate for all jurisdictions.</p> <p>Energy Queensland would like to highlight the collaborative work that has been undertaken to date with the ENA and DNSPs across Australia to develop consistent connection guidelines, noting that connection standards cover a wide range of localised technical factors including protection and power quality. This rule change request asserts that the Standards Australia process is too slow. However, the Australian Standards are developed under a volunteer arrangement; with recent involvement from other parties including AEMO. If the requirements under AS4777.2 are considered inadequate, we suggest appropriately funding and resourcing Standards Australia to help accelerate their process would be a more appropriate solution. To that end, it is noted that Standards Australia have just released a draft version of AS/NZS 4777.2 for comment which has been developed in coordination with AEMO and was accelerated in order to maintain system security for customers and includes changes to the disturbance ride-through and grid support functionality, amongst others.</p>

	<p>Energy Queensland acknowledges AEMO's requirement to manage system security and recognises that increasing penetrations of DER brings a range of new and unforeseen challenges in this regard. While the statutory functions of AEMO as defined in Section 49 of the NEL include to, <i>inter alia</i>, maintain and improve system security, the justification for this rule change is not related to system security but to network performance as defined in Table 2.1 of the Consultation Paper, including limitations on the distribution systems related to managing voltages, thermal capacity and protection coordination. Queensland jurisdictional legislation, including the <i>Electricity Act 1994</i> and the <i>Electricity Regulation 2006</i>, place these obligations on the relevant DNSP, namely Energex and Ergon Energy.</p> <p>The NER also references the requirements for customers' technical standards to be maintained via the network connection agreement with the relevant DNSP. The recommended rule change would increase AEMO's role beyond that prescribed in the NEL and would create conflict with jurisdictional obligations for distribution network voltage and capacity management, protection coordination and customer connection provisions. Unnecessarily increasing the complexity in an already complex regulatory framework will ultimately result in increased risk, cost and poor customer outcomes.</p> <p>Consideration must also be given to the appropriate framework for technical decisions. For example, interoperability should be an industry decision, which can be implemented Australia wide, and led by OEMs and the ENA. Cybersecurity is governed through the Cybersecurity Capability Maturity Model program so additional governance in this space would be inefficient and represent a divergence.</p> <p>Given the lack of clarity as to the bound of the standards and the fact that the rule change proposal covers several areas outside AEMO's role in relation to system security, it is difficult to support the proposal as submitted.</p> <p>Notwithstanding, Energy Queensland is generally supportive of a standard similar to that applied to larger systems in Schedule 5.2 of the NER that defines certain requirements at a system level. Such requirements could be defined at either device or connection point level, where there has been appropriate engagement in the development of these requirements.</p>
2. Should the minimum standards be inserted into the minimum content requirements of connection contracts, negotiation frameworks and model standing offers or terms?	<p>Energy Queensland agrees it would be reasonable to include technical performance requirements in connection contracts. However, the extent to which they are specified in the connection contract will depend on the final rule and contents of the standard. As an example, behind the meter household devices such as air-conditioners are currently covered by industry standards, such as AS4755, as well as DNSP standards, but are not contained in specific connection contracts with the DNSP as they form part of the household's overall load. We suggest the minimum standard for system security</p>

	<p>should be defined in Chapter 5A and included within a DNSP's standard and then referenced in connection agreements.</p> <p>It is unclear that there would be any additional benefit in changing Model Standing Offers (MSO), as they are approved by the AER and apply for the duration of a regulatory control period. As such, any change to these during a regulatory control period (which for Energex and Ergon Energy commenced on 1 July 2020) represents an administrative burden unless the rule change also includes provision for automatic change of the MSOs.</p>
3. What should the standard apply to and is a DER definition needed in the NER?	<p>Notwithstanding our opposition to the proposed rule change, Energy Queensland would support an appropriate definition of DER to be included in the NER if the rule change is made as described. It would be prudent for the technical standard to clearly define the devices to which it applies. However, Energy Queensland does not agree with the definition of DER provided by AEMO as part of the submission.</p> <p>The rule change proposal discusses the challenges with distributed PV (DPV), and yet it defines DER to which the standards would apply, as including batteries, electric vehicles, diesel generators, air-conditioners, pool pumps and other behind the meter devices. This blurs the reasoning behind the rule change, and the development of the standard. While we are of the view that the potential exists for the AEMC to use new powers to shape load, this is not what this rule change considers.</p> <p>It is accepted that DPV is beginning to cause issues at a system-wide level during the day time, and it is believed that electric vehicles and batteries may either help or hinder these issues, depending on tariff incentives and how they are controlled. Consideration should also be given to the value to the customer of controllable load and to whether a customer wishes to allow the proposed equipment to be controllable. We suggest there is a need for a clear price signal if the customer allows for the operation of their DER. We acknowledge that DER represents a very broad range of devices, and we suggest that the standard should apply to specific devices such as DPV. It also must be clarified whether the standard would apply at the device level, or at the connection point level.</p> <p>It is also noted that the request appears to focus on small-scale, household generation systems and does not consider exempt generation, specifically inverter capacities above 200kW and below 5MW. This is a rapidly increasing market that poses a larger risk to system security. Chapter 5A governs connections from 1kW to 4.99MW, and there is scope for more cost-effective targeting of reforms within that range. It is understood that Victoria and New South Wales in particular, have seen large numbers of connections of 4-4.99MW systems, whose performance could have a large impact on the wider system. There would be additional benefits in examining these systems, in that often larger inverters are used, which are not covered by AS4777.2. Energy Queensland has developed our own performance standards for these systems and considers that national consistency will be helpful for</p>

	both system performance and the industry. Energy Queensland believes that this could be an opportunity to review the connection timeframes and described processes under Chapter 5A of the NER, to better balance customer and technical requirements and consider standardised performance in inverter capacities greater than 200kW.
4. Do stakeholders agree that the standards should only apply to new and replacement devices? Will this meet the objectives of the desired policy outcome of this rule change request?	Energy Queensland believes that the standard should only apply to new and replacement devices. Retrospectively installing devices such as AS4755 Demand Enabled Response Devices on air-conditioners and other DER represents an enormous cost, but it is unclear if this would be borne by customers, networks or AEMO. Likewise renegotiating existing connection contracts and enabling additional visibility and controls would be extremely costly in time and effort. Finally, updating the firmware of existing small-scale PV systems presents a risk for system performance as there have been a number of cases of remote firmware updates for PV systems deleting setting such as volt-var and export limitations resulting in cost to both networks and customers.

Issue 3: Content and Duration of the Initial Minimum Technical Standard

1. Should the scope of the initial technical standard be limited by the NER?	Energy Queensland agrees the scope must be limited to consideration of system-wide issues, given the obligations which DNSPs must discharge at the local level. AEMO should specify the minimum DER requirements required to 'operate' the market and maintain system security, and these would either be within the national standard, or be required to be included in DSNP standards. DNSPs should still own their own standards, which have much broader requirements including network operation, power quality performance and protection details, and could also include interoperability. Networks have a regulatory responsibility to maintain power quality and performance, network safety and to prudently manage costs for customers and are therefore the appropriate custodian of the standard.
2. If so, should there be an arrangement to allow for a review of the scope at a future date?	Energy Queensland suggests the broader governance framework currently being developed by the ESB should address the requirement to review the scope of the standards. Notwithstanding, given the pace of innovation in technology and market changes, we suggest a review period of no longer than 2 years is required to assess the appropriateness of the standards for correcting network security and reliability, and to ensure there is no scope-creep particularly in regard to influencing the wholesale market.
3. Should the role of AEMO in setting DER minimum technical standards (the subordinate instrument) be limited in time, with the ESB's governance review	Long term governance of such a standard is vital to manage the impact of the standard on DNSPs, consumers and manufacturers. Given that this governance regime has just been released for consultation by the ESB and additional measures have been taken in jurisdictions with immediate issues, such as South Australia, Energy Queensland does not see the need for a time-limited

outcomes to be introduced into the framework at a later date?	subordinate instrument. Rather, we suggest AEMO's role is limited to defining the requirements they require for inclusion in each of the DNSP connection standards. This will create the greatest benefit with the least work and disruption.
Issue 4: Applying the Standard and Monitoring Compliance	
1. How can the proposed solution be applied in Western Australia, Victoria and the Northern Territory?	Energy Queensland suggests it would be of national interest if the AEMC can fast-track measures to have less jurisdictional requirements (such as legacy distribution codes and voltage standards) that makes both enforcement and compliance easier for the industry. This must of course be balanced with either moving to the 'lowest common denominator' or enforcing overly stringent requirements and driving unnecessary costs and complexity for customers.
2. Is it sufficient to specify a commencement date for the DER minimum technical standard only and have the implementation dates for the individual standard components set out in the standard itself?	Energy Queensland suggests that a commencement date for the standard cannot be considered in isolation from the contents and requirements of the standard itself. Given that the proposed rule change does not provide sufficient information on the details of the technical standard, this cannot be assessed.
3. What level of compliance monitoring is needed?	Energy Queensland suggests the proposed rule change does not provide sufficient information to allow this to be assessed, as the coverage and detail of the actual standard will determine what compliance mechanisms are already in place and what could be required. In determining the level of compliance monitoring required, associated reporting costs, along with privacy and access issues in the compliance modelling framework should be adequately considered.
4. Who should monitor compliance with the technical standards?	Energy Queensland notes compliance monitoring of the DNSP connection standards will be defined in the governance framework currently under development. While DNSPs are responsible for ensuring the power quality performance of connected devices on the network, they are not funded or resourced to perform compliance on system security issues.
5. How can compliance be enforced?	In Energy Queensland's experience, there is a small percentage of DPV connections with compliance issues (Queensland connects approximately 5000 small-scale inverter energy systems per month). While Energy Queensland's DNSPs have historically completed a light compliance check at the same time as meter installations, this is not currently undertaken as the DNSP is no longer responsible for the metering installation. Where power quality issues are identified, Energy Queensland has undertaken reactive compliance checks which can (depending on the scale of issue) include power quality logging, and non-compliance is addressed as a breach of the connection agreement with the DNSP. Notwithstanding, connection contracts are with the customer and owner of the system, not the installer, so there is no direct ability to manage the installer responsible for the compliance issues. If

an issue is found with a particular installer, Energy Queensland can work with the Clean Energy Council to address this. If compliance is seen as a key issue by the AEMC, then a mechanism for stronger action against installers should be enabled through the rules. Additionally, Queensland has a requirement for engineering registration, and for embedded generating systems over 30kVA, a registered professional engineer of Queensland report is required after commissioning, which has contributed towards an acceptable compliance level of performance for those systems.

Issue 5: Cost of the Initial Standard

1. Considering AEMO's proposed initial standard in section 5.2, Box 1, what are the expected costs and benefits of implementing the initial standard for consumers, other affected parties and DNSPs?

In our view, the costs outlined in the consultation paper are grossly understated. For example, we believe digital meter servicing costs are \$30-\$110 per annum, excluding additional data processing and storage costs if it is intended to be on market, especially with the impending implementation of the five-minute settlement changes.

Not being able to pass the true costs of any subsequent upgrades to the relevant DER owner could mean that cost being spread across the entire consumer base in the form of network charges, which could potentially disadvantage vulnerable consumers.

Consequently, a detailed cost-benefit analysis must be undertaken before this rule change is progressed. This analysis must include the costs to the consumer of lost PV (e.g. lost feed-in tariff) and the actual cost to consumers of being switched off (e.g. business costs).

We expect AEMO's publication of the proposed standard should provide sufficient detail to be able to comment more fully on the potential costs.

Energy Queensland is strongly supportive of the ESB governance framework review and believes that appropriate standardisation can lead to cost savings for both customers and networks, noting that there is the risk of additional cost where those standards are unsuitable.