24 April 2019

Australian Energy Market Operator
GPO Box 2008
Melbourne VICTORIA 3001

DERRegister@aemo.com.au

Dear Sir/Madam

Energy Queensland submission to Distributed Energy Resources Register Information Guidelines - Draft Guidelines

Energy Queensland Limited (Energy Queensland) welcomes the opportunity to provide comment to the Australian Energy Market Operator (AEMO) on its Distributed Energy Resources Register Information Guidelines - Draft Guidelines (the Draft Guidelines).

Energy Queensland's Distribution Network Service Providers, Energex Limited and Ergon Energy Corporation Limited, currently manage networks with the highest penetration of solar photovoltaic generation in Australia. As customers seek to integrate other forms of distributed energy resources (DER) such as batteries and electric vehicles, greater visibility of these technologies will be required to enhance our understanding of the risks and opportunities they present while continuing to deliver reliable and cost-effective network services.

Energy Queensland's feedback on the Draft Guidelines is contained in the attached response table.

Should AEMO require additional information or wish to discuss any aspect of Energy Queensland's submission, please contact me on (07) 3664 4970 or Peter Wall on (07) 3664 4968.

Yours sincerely

Andrea Wold
A/Manager Policy and Regulatory Reform

Telephone: (07) 3664 4970
Email: andrea.wold@energyq.com.au

Encl: Energy Queensland submission on the Draft Guidelines

Stakeholder Feedback Template

This template has been developed to enable stakeholders to provide their feedback on the draft DER Register Information Guidelines.

AEMO encourages stakeholders to use this template, so they can have due regard to the views expressed by stakeholders on each issue. Stakeholders should not feel obliged to answer each question, but rather address those issues of particular interest or concern.

Stakeholder submissions will be published on AEMO's website unless they are clearly marked as being confidential. Submissions should be sent to DERRegister@aemo.com.au by Wednesday, 24 April 2019.

Organisation: Energy Queensland, on behalf of Energex Limited (Energex) and Ergon Energy Corporation Limited (Ergon Energy Network)

Contact name: Dean Comber, Product Manager Customer Inverter Systems

Contact details (email / phone): dean.comber@ergon.com.au, (07) 3851 6707

Questions		Feedback
1	Is 1 KW an appropriate minimum size of small generating unit to capture in the DER Register?	Issue 1: Energy Queensland notes that under the National Electricity Rules definition, a 'small generating unit' includes micro inverters, most of which are below 1 kilowatt (kW) (or 1 kilovolt ampere (kVA)). However, Energy Queensland presumes that micro inverters are not intended to be captured in the Distributed Energy Resources (DER) Register and recommends a change to terminology to avoid capturing micro inverters. Issue 2: Energy Queensland notes that in Ergon Energy Network's distribution area there are 74 arrays connected to the network which are rated less than 1 kW, and 61 inverters with capacities rated less than 1 kVA, with significant overlap between those groups. Energy Queensland recommends the DER Register define the minimum capacity based on inverter capacity, with 1 kVA as the minimum. At this level, 100-200 solar photovoltaic (PV) systems across Queensland would be excluded from the DER Register.

2	Are standard, packaged reports also required for NSPs? If so, what information is required?	Issue 1 – DNSP data extractions from the DER Register Energy Queensland is working to identify the standard DER data reports required. To date, one desired standard report template has been developed and is included as Attachment A - *Energy Queensland Standard Report A – Strategic Planning*. Issue 2 – Process reports Energy Queensland recommends that the Australian Energy Market Operator (AEMO) provide Distribution Network Service Providers (DNSPs) with reports on a monthly basis (or quarterly as necessary) on the volume and aspects such as data quality exceptions, pre- and post-installation data anomalies, timeframe exceptions and data issues.
3	What is the most effective means to communicate and inform key stakeholders on how to use the DER Register?	Ergon Energy Network and Energex have established communication channels to the solar PV industry which we intend to utilise to communicate the requirements of the DER Register including our expectations, tips and advice. These channels include: • Solar PV Installer Update (Energex) and Solar Industry Update (Ergon Energy Network), • Solar PV industry-facing web pages, on Energex and Ergon Energy Network websites, • Energy Queensland-led Energy Academy information sessions across Queensland, held annually, • Training of our Solar Team and Contact Centre members to enable them to guide new users, address basic issues, etc. In addition, as a means to target owners of electric vehicles (EV) with vehicle-to-grid (V2G) or vehicle-to-building (V2B) capability, as well as the EV charger installers which EV owners engage, we will include on our EV web pages advice about the issues arising from connecting a vehicle to the grid, and specifically about the DER Register requirements. Energy Queensland notes that AEMO will provide training material to installers of solar PV, batteries and EV chargers and DNSPs, and this will be leveraged in Energy Queensland's communications. It would be expected that DNSP staff could refer significant or difficult issues

		to a dedicated DER Register phone number and email if relevant.

ADDITIONAL RESPONSES AND QUERIES

Section	Subsection	Issue	Suggestions
4.2 (Draft Guidelines)		DNSP submission of historical data by 1 December 2019	Energy Queensland is comfortable with this requirement and is working closely with AEMO to facilitate historical data provision. Energy Queensland is aiming to supply data for all DER Register fields historically collected at the application stage (Stage 1.4 in DER Register Draft Collection Process Flow), as well as Connect Agreement numbers, well before 1 December 2019. In addition, where feasible and relevant, we intend to supplement historical data with DER Register requirements such as 'What standard applies to the inverter' and 'Reactive power mode' based on legislative and jurisdictional requirements and connection standards.
4.1 (Draft Report and Determination)	4.1.1 & 4.1.2	CER data collection process	Energy Queensland notes the data collection challenges described in 4.1.2. However, we highlight that it is becoming increasingly urgent that the possibility of utilising the Clean Energy Regulator's (CER) data collection process be defined, together with the form this utilisation will take. If the claiming of Small-scale Technology Certificates (STCs) is not contingent on the submission of accurate and complete post-installation data for the DER Register that is additional to existing CER requirements, there is a reduced likelihood of accurate and fulsome post-installation data being submitted.
4.3 (Draft Report and Determination)	4.3.3	Auto-population of application data into installers' apps	To reduce the data entry burden on installers, Energy Queensland envisages that in most cases, the DNSP could process application data, including the Connect Agreement number, prior to installation and before associated data entry occurs. If the fields to be populated post-installation could be auto-populated, this would reduce the installer's time to enter data and reduce the likelihood of

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			mismatched data. However, it is recognised that if the installed inverter has different attributes to the inverter applied for and approved, it is likely that some installers will simply confirm the inverter applied for rather than install the correct inverter, or stop the process and lodge a new application. We suggest that one way to address this risk is to require the serial number to be linked in the supporting database of inverter details to the relevant Manufacturer, Series and Model. In this way, if the serial number does not correspond with the Manufacturer, Series and Model, the installer will not be able to proceed to complete the submission.
4.4 (Draft Report and Determination)	4.4.3	20 business days time limit	Issue 1: Energy Queensland notes the key responsibility installers have for finalising the entry of post-installation data in the DER Register. Accordingly, Energy Queensland is concerned with the potential for DNSPs' compliance with the 20-day timeframe to be challenged if installer compliance with this timeframe is poor. Given the reasonable likelihood of incomplete data and exception investigations, we suggest that the total period be structured as a 5 business day limit for installers to submit data, allowing 15 business days for DNSPs to manage entries that are not straightforward. We also recommend the development of robust policies, associated communications, and supporting legislation to compel installer compliance. Issue 2: Energy Queensland notes that a generating system (typically larger systems) can be installed without immediate commissioning or connection to the distribution network. As such, Energy Queensland suggests the terminology be changed from 'installation' to 'connection to the distribution network' or similar. Additionally, there are varying time requirements for proponents to notify DNSPs on the type of connection and the connection contract associated with the connection application. These timeframes can

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			be six months from connection for large low voltage generating systems, and six to 12 months for embedded network connections such as Strata Title. The requirement to meet a 20 business-day timeframe for installations would have significant impacts on businesses involved in the commissioning and connection of these generating systems. Energy Queensland recommends introducing enforceable regulatory timeframes for submission of DER connection information for installers and customers.
4.9	Level 1	F<,F>,V<,V>	Energy Queensland notes that under- and over-frequency and under- and over-voltage disconnection times prescribed by DNSPs may vary from the standard, so it may be desirable to capture both the protection setting value and the specified disconnection time.
4.9	Level 1	Export limit terminology	Energy Queensland notes that the draft guideline defines export limit as *'Maximum amount of energy (kVA)…".* We believe this should be *"Maximum amount of power (kVA)…".*
4.9	Levels 2 and 3	'Inactive' status	Issue 1: Energy Queensland recognises that the responsibility to update the DER Register with the status of the installation ('inactive' and associated 'active/reactivated') will be the responsibility of installers. However, it is not clear if that notification is made via the DNSP or independently of the DNSP. If made via the DNSP, then Energy Queensland notes that it will be necessary to establish a significant system of data capture and reporting, policy communication and supporting processes. If this is the intent, Energy Queensland recommends that the notification of an 'inactive', and typically subsequent 'active', status be made directly to the DER Register by the installer. Regardless, there is concern that without significant regulatory obligations on installers, and/or without easy-to-use notification channels, there will be a reasonable likelihood that installers may not update the DER Register when a DER Installation, or individual DER Device, becomes inactive, then is reactivated. As such, timeframes and implications should be articulated by

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			AEMO for circumstances where an 'inactive' status has been advised but not reactivated after an extended period of time. Further, we suggest more clarity is required around the minimum length of time that an installation or device needs to be inactive in order for notification to the DER Register to be warranted. Issue 2: Energy Queensland seeks confirmation that that if a National Metering Identifier with DER is abolished without update of the installation status in the DER Register, AEMO will assume the DER is inactive.
4.9	Level 2	Inverter PQ response modes -volt-var -Reactive power mode	Energy Queensland notes that some of the reactive power compensation modes do not specify the quadrant. We suggest clarification is required as to whether it is intended that a positive or negative sign will define the sourcing or sinking aspect. Alternatively, will an additional field be added to capture this aspect as is the practice where power factor is specified? If a change of sign is used to specify sourcing/sinking, we suggest this approach should be consistent with international standards and clearly specified when data for this field is entered.
4.9	Level 3	Nominal export capacity (kW)	Energy Queensland notes the potential for confusion with the "Export Limit" value. Energy Queensland recommends that this field be renamed as "Nominal generation capacity", or "Rated generation capacity", or simply "Nominal capacity".
4.9	4.9.2	Voltage vector shift	Energy Queensland notes that although this has been required on some systems >30kVA in the past, there is emerging evidence that this protection scheme can lead to unintended disconnection of DER during system events and should not be allowed on future DER systems.
Appendix A (Draft Guidelines)	Export limitation	Other comments – includes an example that the "default value for an inverter connected energy system is 47Hz (Aust)…" This is a frequency setting and not an example of an export limitation in kVA.	Energy Queensland recommends removing the following text: "*For example, the default value for inverter connected energy systems is 47Hz (Australia) under AS/NZS 4777.1:2016 table 2.*

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			These settings may differ for other energy devices.“
Appendix A (Draft Guidelines)	Neutral Voltage Displacement	Description – This field has been listed as “Trip Voltage (V)” with Field Type “Numeric”. Energex and Ergon Energy Network specify HV Neutral Voltage Displacement in their joint connection standards as a percentage not as a voltage.	Energy Queensland recommends changing this to a “Text” Field type to enable different DNSPs to enter values which are suitable.
Appendix A (Draft Guidelines)	AC Equipment Type	Field Type – Pick List. If this list is expanded in the future, this should be automatically matched for inverters that are on the CEC list.	Energy Queensland recommends that if this list is expanded in the future, this value should be automatically matched for inverters that are on the Clean Energy Council (CEC) list to ensure information is useful and not subjective. Also, if this list is expanded in the future, standalone PV inverters that are not compliant with AS/NZS 4777.2:2015 should not be connected to the distribution network. As such, this option should not be available for an installer to select.
Appendix A (Draft Guidelines)	Islanding capability	Proposed new field for the DER Register.	Energy Queensland notes that a small but increasing number of solar PV and battery energy storage systems are designed with the ability to island themselves from the grid during grid outages to continue to supply the premises. Energy Queensland acknowledges that such generation and electricity usage during a grid outage is not relevant to network load. However, we intend to add this field to our application portals to enhance our understanding of the penetration of this technology.
Appendix A (Draft Guidelines)	Status	Connection date, i.e. first ‘active’ date	Energy Queensland notes that most Metering Providers issue a Business-to-business (B2B) Notification to the DNSP when a meter is installed to support a new DER installation. However, some Metering Providers do not do this consistently, or at all, and do not have regulatory obligations to do so. We consider that the DER register could be strengthened on this aspect. Also, in cases where no site visit is required (e.g. an array upgrade), there would be no basis for a B2B Notification. Cross-referencing with CER data may be useful in this scenario.
Appendix F	Nominal	A battery typically has two capacities – total storage	Different battery chemistries have differing recommended maximum

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(Draft Guidelines)	storage capacity (kW)	and usable	Depth of Discharge (DoD), stated as a percentage. For example, a lead-acid battery system with a 210 kWh nominal storage capacity with a maximum DoD of 30 per cent hasusable capacity of only 63 kWh. A similarly sized lithum-ion battery has a much greater nominal DoD and therefore a greater proportion of usable capacity. Energy Quensland recommends consideration of this aspect and either collection of both values or clear guidance to DNSPs, DER applicants and installers as to the type of value to be entered.
Appendix F (Draft Guidelines)	F.1 (2)	Unsuitability of existing portals to collect post-installation data	Energy Queensland notes that the wording implies that post-installation data will be collected through DNSP portals. However, Energex's and Ergon Energy Network's application portals cannot feasibly be upgraded to also collect post-installation data. We suggest that AEMO develop a separate app which will apply nationally and can be managed by DNSPs. In this way, manufacturer specifications, such as 'Inverter device capacity' (from CEC) and DER Device type (from manufacturer), can be auto-populated once key details (manufacturer, series, model) are entered. In addition, Australian standards values can be auto-populated as default values, but then overridden by DNSPs where relevant based on state or DNSP connection standards.
Appendix F (Draft Guidelines)	F.1 (3)	Management of auto-populated and default values	Energy Queensland has assumed that manufacturer and Australian standards default details will be sourced and managed by app developers to support the post-installation data collection process. It is not feasible for DNSPs to do this separately.
Appendix F (Draft Guidelines)	F.2	Installer submission of data	Energy Queensland notes the potential for installers to submit incomplete or inaccurate data and for responsibility for data reconciliations and investigations to fall on the DNSPs. We recommend the use of mandatory fields and other technological measures to encourage completion of the submission. We also note that if a submission by an installer is started but not completed, it will be auto-submitted after 20 business days. This appears to place the burden on the DNSP to pursue the installer for

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			outstanding information which will consume DNSP resources. It is also unclear what measures are in place to compel an installer to submit information to the DER Register as soon as possible after installation and within a defined period. If the claiming of STCs was contingent on the submission of DER Register data, we anticipate that this would greatly enhance compliance, and could enhance the timeliness of completion.
Appendix F (Draft Guidelines)	F.2	Auto-submission after three months	Energy Queensland notes that it is proposed that if DER application details are entered into the DER Register by the DNSP, but then no post-installation data entered with three months, the application details will be auto-submitted to the DER Register. Energy Queensland highlights that Energex and Ergon Energy Network offer an extension of the original 65-business-day connection window for up to an additional 65 business days (three months). In 10-20 per cent of installations, the period from application to lodgement of an Electrical Work Request denoting that the DER has been installed is longer than three months. On this basis, we recommend that auto-submission not occur until six months after the DNSP submits initial data.
N/A		Pending registered status of generating systems >5 to 30 MW	Energy Queensland considers that if the registered status of a generating system 5 to 30 MW is not resolved at the time of network connection application, it should be assumed that the DNSP will treat the DER installation as non-registered and submit data to the DER Register. Energy Queensland is unclear as to how the registered status of the DER installation will be advised to the DNSP.
Other issues to consider our response to			
		Managing remote changes to inverter settings	Energy Queensland notes advice provided to AEMO from Original Equipment Manfacturers (OEM) of inverters that functionality is being increasingly integrated into inverters that allows for remote changes to inverter settings, and that this functionality could be leveraged to provided updated data. Energy Queensland cannot envisage a workable model that would allow the multiple inverter

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			OEMs to transfer data to multiple DNSPs, or for DNSPs to use OEM software to check settings.

Additional questions posed by AEMO in Appendix F, and not already addressed:

	Q3.	Views from DNSPs on how the designation of data fields as editable or read-only should work. For example, do DNSPs want autonomy over this designation as there are unique circumstances in their network or connection process, or can AEMO designate this in the system design?	Energy Queensland would prefer for fields to be editable by DNSPs. However, there are concerns about the level of effort required to validate data (end-to-end process).
	Q4.	How would DNSPs and installers wish to receive notifications?	Without details on the database structure to be used, Energy Queensland cannot comment on the optimal method for DNSPs to receive notifications. However, we suggest there should be a degree of automation between the DER Register and our PEACE customer databases.
		Are there other devices / equipment which should be included in the DER Register	Energy Queensland considers that V2G-capable electric vehicles may need special consideration.