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Richard Owens
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Australian Energy Market Commission
PO Box A2449
Sydney South NSW 1235

Reference code: ERC0227/RRC0011

Dear Richard

Consultation Paper on Register of Distributed Energy Resources

The COAG Energy Council Rule Change seeks to improve the collection and sharing of information about small-scale DER. We appreciate the opportunity to make this submission on AEMC's consultation paper on establishing a Register of Distributed Energy Resources (DER).

AusNet Services supports efforts being made to establish an efficient regulatory framework for collecting DER related technical information and which may strengthen regulation around customer agreements. Requirements on customers to provide more complete DER information would benefit DNSPs' ability to establish connection agreements and ongoing arrangements with customers. A solid information base will provide the basis for effective arrangements with DER customers and has the potential to defer augmentation. In addition, sharing DER information with AEMO could improve electricity forecasting and benefit all customers through better system management.

To be efficient and effective, the DER register should operate in conjunction with the existing connections framework prescribed in chapters 5 and 5A of the NER. Currently, DNSPs connection processes require customers to provide essential information related to network connection. The process for populating the DER register should not be permitted to weaken the certainty of obtaining critical information in a timely manner to meet connection obligations. In our view, the bilateral connections process between DNSP and customer should take precedence, with additional information that might be valuable in the register being a subsequent phase in the process.

Important DER information required by DNSPs

AusNet Services supports the ENA in its establishment of National DER Connection Guidelines, which will outline a set of nationally consistent technical information requirements for ranges of embedded generation equipment up to 5MVA. The technical guideline will outline the required information at each generating classification, because some information is only relevant for larger sized systems. This will be available by November 2018 and would represent a minimum set of DER related information.

Without seeking to presuppose the information requirements in the National DER Connection Guidelines we suggest at a high level the following DER information is valuable:

- Generation unit, battery and inverters rated capacity in kVA;
- Generation type and whether it is induction or synchronise;
- AS4777, other inverters settings;
- Inverter make and model;
- Whether the battery is AC or DC connected;
- Battery system capable of providing an uninterrupted power supply (UPS) when the premises is temporarily disconnected from the distribution network;
- Standby (or backup) generation that is not grid connected;
- Demand response capacity, including loads with AS4755 Demand Response Enabling Devices.

Attached in Appendix B is an example of the information form we request from customers applying to install and connect embedded generation to our network.

Incentive or enforcement framework to provide DER information

DNSPs currently lack practical mechanisms to participate in enforcement of customers' obligations to seek connection agreements for new or altered DER assets at their premises. The DER register should address this issue through a range of enforcement mechanisms including:

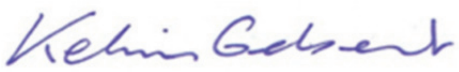
- Publishing Rules that communicate in plain language customer requirements to advise the DNSP of additions and changes to solar, battery, inverter and other DER systems.
- Metering Coordinators and Metering Providers could suspend the "export to the grid" channel ('b') until the customer obtains a connection agreement by reconfiguring the meter (or not reconfiguring the meter). This would mean the customer does not receive the benefits from their exports until they properly register their DER. Although it would require a change to NER 7.8.2(a)(7) requiring MPs to separately record bidirectional energy flows.
- Consideration of the feasibility of a temporary disconnection of customers whilst their export materially infringes the power transfer capacity set out in the connection agreement and causing network service impacts.
- Installation accreditation bodies ensure connection agreements with the DNSP are properly sort prior to connection of embedded generation.

It is important to establish a framework that motivates customers to cooperate with their DNSPs. Otherwise when the hosting capacity of the network is reached, customers will start losing the benefits of their DER systems due to voltage variation issues causing connected inverters to trip-off for a period of time.

The table of our stakeholder feedback to selected questions is attached in Appendix A.

If you have any queries about any of the positions outlined in this submission, please do not hesitate to contact Justin Betlehem on 03 9695 6288.

Yours sincerely,



Kelvin Gebert
Manager Regulatory Frameworks

Appendix A AusNet Services stakeholder feedback table

Questions		Feedback
Chapter 5 – Section 5.1.1 – Benefits of a register		
3.	What are the likely uses of a distributed energy resources register?	DNSPs collect DER information in the form of agreed Embedded Generation (EG) connection agreements and store the information. A DER register, insofar it is more than the DNSP's register of EG connection agreements, is likely to be used by: • AEMO for energy forecasting; • Government authorities wishing to track uptake; • Potentially by emergency services in the responding to a fire or flood where electricity storage is present and potentially causing the customers electrical installation to be live, even if it is disconnected from the distribution network; • Correlating information in the DER register with information provided to DNSPs for the purpose of establishing connection agreements for embedded generation. DNSPs require information for prospective DER installation before agreeing to its connection to the network. The DNSP's network may not be able to transport the electricity generated to other consumers without excessive voltage variations (typically excessive voltage rise). The capability for DNSPs to transport electricity generated to other consumers without excessive voltage variation or thermal constraints is known as hosting capacity.
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:	

Questions		Feedback
	a) more accurate load forecasting?	No position provided in respect to this question
	b) improving AEMO's ability to manage power system security during credible contingency, protected and non-credible contingency events?	No position provided in respect to this question
	c) improving AEMO's ability to set the bounds of the technical envelope at an efficient level?	No position provided in respect to this question
	d) improving efficient market and network investment?	The vast majority of DER systems installed are solar systems, and hence are passive in nature. Generation does not normally coincide with peak consumption on the distribution network, especially rural areas prone to costly. In fact, the increasing take-up of solar systems is causing excessive voltage rise and causing the need for costly network augmentation. This investment only benefits the customers generating and needing the network to transport the electricity to other customers. However, if DER were coordinated to avoid excessive voltage variations these costly impacts could be avoided. Additionally, if battery storage or demand response is available as a network support service the DNSP may be able to defer the need for network augmentation associated with load growth.
5.	Are there any other ways that a distributed energy resources register could benefit the National Electricity Market?	No position provided in respect to this question
6.	What features does a register need to have in order to meet the objectives outlined by the COAG Energy Council?	The key feature of the DER register is that it should be efficient and avoids unnecessary handling of information provided by installers and customers.

Questions		Feedback
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?	Installers or customers could provide the information to the DNSP in a connection application in the same way it is collected today, making the data collection for the DER Register at minimum additional cost.
8.	Do you agree with the costs identified by Jacobs for different stakeholders? If not, why?	The costs identified by Jacobs for the National Storage Database did not include legitimate costs for Ancillary Database adjustment. The DNSPs databases for storing DER information do not currently transact this information with AEMO systems. So whether DNSPs are providing DER information to AEMO or receiving DER information from AEMO. These systems will require interface changes in order to transact this information either via MSATS or another AEMO hosted system. Although DNSPs are updating systems that store DER information to ensure information is fit for purpose and relevant, these updates do not include system interface changes with AEMO systems (e.g. MSATS). Additionally, the costs assigned to DNSP random auditing protocols do not appear to adequately cover an ongoing statistically significant audit program across the National Electricity Market (NEM). More cost efficient alternatives to random audits, such as advanced data analytics of interval metering data should be considered.
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?	The rule change which initiated the implementation of the Power of Choice (PoC) B2B and MSATS procedures resulted in DNSPs incurring an additional cost to comply with the new regulatory obligations. Although the scope of the DER register changes is less than half of the expected changes associated with a centralised DER register, it is likely to be significant.
10.	How might the nature and magnitude of these potential costs change over time?	The costs associated with changing market system interface are largely once off in nature. However, the cost auditing the DER register information is ongoing.
Chapter 5 – Section 5.2 – Governance		

Questions		Feedback
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)?	Yes, systems larger than 5 MW are registered with AEMO and hence there is limited value of being included in this DER register.
	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?	Yes
	c) Is a 'distributed energy resource' "*an integrated system of energy equipment co-located with consumer load*"? If not, what else could it be characterised as?	Limiting DER to this definition may exclude from the register automated control systems of consumer appliances capable of timed or coordinated demand response. In terms of improving NEM system forecasting and opportunities for network support services these resources are just as relevant as controllable battery storage systems.
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?	We consider the NER should define what new and replacement assets constitute DER for inclusion in the DER register to address the current lack of clarity regarding DER asset replacements. An AEMO guideline would be appropriate in setting the capacity threshold for DER that is purely demand response in nature. Large demand response resources are potentially very valuable to Retailers and DNSPs, but the coordination costs for small resources make them less not relevant to the register.
	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?	No position provided in respect to this question
	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?	The process for populating the DER register should not be permitted to weaken the certainty of obtaining critical information in a timely manner to meet connection obligations. In our view, the bilateral connections process between DNSP and customer should take precedence, with

Questions		Feedback
		additional information that might be valuable in the register being a subsequent phase in the process. The guideline should promote efficient operations, avoiding unnecessary or repetitive handling of information provided by installers and customers.
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?	As often as customers install or update DER assets the data would need to be collected and updated. DNSPs or Retailers have the potential to monitor interval metering data.
14.	Do you agree that there is a need for consistency across network regions in what data should be collected?	We agree with consistency across networks.
15.	If DNSPs' connection application processes are considered a good method of collecting data, what changes are needed to existing processes?	DNSPs currently lack practical mechanisms to participate in enforcement of customers obligations to seek connection agreements for new or altered DER assets at their premises. The DER register provides an opportunity to address this issue.
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?	No, DSNPs are substantial enough to contract with other commercial parties to participate in DER data collection. MCs and MPs may be able to participate in the enforcement of DER collection through their ability to enable or disable the separate recording of bidirectional energy flows, or temporary disconnection of customers whilst their export exceeds agreed limits. However, these arrangements would require Rule changes to support their operation. .
17.	How would an obligation on the parties identified above best be applied and enforced? Please provide details.	The AEMC should establish a mix of soft and hard enforcement mechanisms.
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?	No position provided in respect to this question
19.	How else can compliance levels be improved?	• Publishing Rules that communicate in plain language customer requirements to advise the DNSP of additions and changes to

Questions		Feedback
		solar, battery, inverter and other DER systems. • Installation accreditation bodies ensure connection agreements with the DNSP are properly sort prior to connection of embedded generation.
20.	How can compliance best be maintained over time as technology changes?	No position provided in respect to this question
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?	Current arrangements are adequate, although as the Consultation Paper indicates these arrangements limit AEMO's ability to provide this information to other parties such as emergency services.
22.	If not:	
	a) What are the likely nature, and magnitude, of potential consequences of insufficient protection of such information?	No position provided in respect to this question
	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?	No position provided in respect to this question
	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?	No position provided in respect to this question
23.	Are there any competition concerns raised by the establishment of the register?	There are no competition concerns raised with the DER register. DNSPs already have a reasonable right to seek relevant technical information from connecting customers, and assuming DER register information would only be shared with the customers appointed market participants and service providers.
Chapter 5 – Section 5.5 – Safety issues and emergency response		

Questions		Feedback
24.	Would the sharing of data collected under a DER register be useful to emergency services, and if so, how?	In situations of fire and flood, emergency personnel may need to know about the presents of a hazardous reasonably large battery or any systems that allows the premises electrical installation to be live after the site is disconnected from the distribution network. We know this because emergency services sometimes request supply disconnection when responding to fires or floods.
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?	No position provided in respect to this question
26.	Is the proposed DER register the most practical mechanism to provide emergency services with the required information?	If DSNPs have fast convenient access to DER register information then emergency service personnel could seek this information when required as they do today in requesting an emergency supply disconnection.
27.	What important features does a register need to have in order to meet the needs of emergency services?	No position provided in respect to this question
28.	To what extent is energy related information already shared between relevant bodies (e.g. AEMO/CER) to emergency services for safety reasons?	No position provided in respect to this question
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?	No position provided in respect to this question

Appendix B: AusNet Services Embedded Generation application for Pre-Approval Forms

Embedded Generation Type (choose multiple)	☐ Battery Storage ☐ Solar ☐ Wind ☐ Hydro ☐ Other energy source……
Customer supply number of Phases	☐ Single phase ☐ Two phase ☐ Three phase

INVOICING DETAILS – Invoice and Approval / Rejection letter will be sent to company below

COMPANY NAME:	COMPANY CONTACT:	COMPANY ABN:	EMAIL:
COMPANY ADDRESS:			**POSTCODE:**

SECTION 1: INSTALLATION DETAILS

Installer Company Name		**Installer Phone**	
Installer Company Address		**Installer email**	
Does the system include battery storage as well as a generation source?	☐ Yes AC coupled ☐ Yes DC coupled ☐ No		
Is an existing Embedded Generator Installed at the premise	☐ Yes ☒ No	**Existing rating:** kW	**Existing export limit:** kW
Generator/Solar Inverter Manufacturer		**Generator/Solar Inverter Model**	
Generator/Solar inverter AC power rating	kW	**Solar panel DC rating**	kW
Battery Inverter Manufacturer (mark N/A if battery DC coupled)		**Battery Inverter Model Name** (mark N/A if battery DC coupled)	
Battery inverter AC power rating (mark N/A if battery DC coupled)	kW	**Battery rated storage capacity**	kWh
Battery type:	☐ Lead-acid ☐ Lithium-ion ☐ Flow battery ☐ Salt water ☐ Other:_____		
Total Installed Capacity (Total rating of all existing and new generation ,including sum of all inverters for generation and battery storage systems)			kW
Total Installed Capacity Per Phase (mark N/A for phases not available)	**Phase A:** kW	**Phase B:** kW	**Phase C:** kW
Export Limit (if applicable) maximum amount to be exported into the electricity grid	kW	**Confirm compliance with procedure SOP 33-06**	☐ Yes ☐ No

SECTION 2: INSTALLATION COMPLIANCE *(to be completed and signed by the installer)*

Are all Inverters 'Approved' Inverters	☐ Yes ☐ No From Clean Energy Council Approved Grid-Connected Inverters list

By signing this form, you acknowledge and represent that the information provided is true and correct and that the minimum requirements in the applicable AusNet Services policies and guidelines for Embedded Generation connection will be met, including SOP 11-16, SOP 33-06 and SOP 33-08.

Unless any adverse impacts to the network are identified, AusNet Services accepts Embedded Generation installed capacities of up to 3.5kW/phase (SWER System) and 5kW/phase (on a single or three Phase System) based on the sum of all existing and proposed inverter and generator ratings. Consideration will be given to larger installed capacities where export limitation can be demonstrated and proven in accordance with SOP 33-06.

- **AusNet Services accepts no responsibility for any costs if a customer installs an Embedded Generator prior to receiving authorisation and will require such systems to disconnect in accordance with applicable laws to protect the safety of network operators and the public as well as the security of the network.**
- **Other charges associated with metering alterations, approvals or commissioning and testing are not included in pre-approval charge.**
- **If any adverse impacts to the network are identified, the capacity of the proposed system might need to reduced, export limitation may be proposed, connection may be refused, or a financial contribution may be required to upgrade the electricity network.**
- **Embedded Generation systems that do not meet the minimum requirements as set out in applicable policies and guidelines will not be accepted, and when identified will be required to disconnect until modified to comply.**
- **AusNet Services monitors the export of embedded generation systems to ensure that the agreed installed capacity and export limits are not breached. Where breaches are identified, the Embedded Generation system will be required to disconnect until modified to comply.**

Installer Name:* _____ **Installer Accreditation No:*** _____

Installer Signature:* _____ **Date:*** _____

Application is valid for 90 days from this date. If not installed within 90 days a new application is required.

NOTE to AusNet PreApprovals Team: Please send all correspondence regarding this application to the CTP staff member submitting the application - NOT to the installer / customer. THANKS

SECTION 3: GENERATOR OWNER DETAILS

Customer Name*		**Customer NMI*** (Refer to your electricity bill)		**Existing Meter Number***	
Supply Address*					
Mailing Address*				**Phone Number***	