Ausgrid Submission

AEMO DistributedEnergy Resources (DER) register information guidelines

March 2019

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Ms Audrey Zibelman
Chief Executive Officer
Australian Energy Market Operator (AEMO)
Level 22, 530 Collins Street
Melbourne VIC 3001

Submitted by email: DERRegister@aemo.com.au

Dear Ms Zibelman,

RE: AEMO Issues Paper – Distributed Energy Resources Register Information Guidelines

Ausgrid welcomes the opportunity to make a submission in response to the Australian Energy Market Operator's (**AEMO**) Issues Paper on the *Distributed Energy Resources Register Information Guidelines (January 2019)*.

We commend AEMO for the consultation process they have undertaken so far with Distribution Network Service Providers (DNSPs) and the broader industry in the pre-consultation workshop and follow up consultation workshops and meetings.

Ausgrid supports the principles of the DER register outlined in the issues paper that;

- it is a static register of DER system details at the time of installation (or upgrade);
- it should have regard to costs of efficient compliance and the benefits of the DER information;
- it should incorporate best practice data collection methods and leverage existing data collection methods; and
- it should balance information and transparency and be accessible and easy to use while confidentiality and privacy are protected.

Ausgrid supports the data collection process for the DER register that leverages the existing installer data collection and submission processes of 'as installed' systems used by the Clean Energy Regulator for generating Small-scale Technology Certificates. As part of the data collection mechanism we would strongly encourage a methodology where a DNSP issues a DERID at the time of approval of a connection application according to an AEMO allocation procedure. The DERID can then be used by installers acting on behalf of customers to submit the 'as installed' information to the DNSP or to the DER register on behalf of the DNSP.

We encourage AEMO to continue the good consultation work with DNSPs and industry in developing and finalising the DER register information guidelines. We would also encourage AEMO to consider in more depth how the DNSP connection application process is incorporated into the DER register information collection, submission and validation framework. In addition, Ausgrid recommends further consideration into how the recently launched ENA National Connection Guidelines or other relevant international standards around DER can be leveraged as part of this process.

Ausgrid recommends further consultation on the scope and procedures for how the DSP information will be accessed by DNSPs as part of the DER register information guideline development and the scope of information reported publicly by AEMO on how the information is used for load forecasting.

Despite the good progress made so far, Ausgrid still believes that the timelines for the finalisation of the guidelines (31 May 2019) and the following implementation date (1 December 2019) may be too short. A rushed finalisation of the guidelines or implementation time frame may lead to unexpected inefficiencies or significant costs to DNSPs or other industry stakeholders (eg. installers). Ausgrid would support extension of the implementation timeframe to allow for more detailed consultation before finalising the guidelines and/ or more time to implement the necessary changes to processes and IT systems once the guidelines have been finalised. Alternatively, a staged approach to implementation of the national register would be beneficial.

We thank the AEMO for the opportunity to comment on the information guidelines that will give effect to a DER register and look forward to working collaboratively on this matter with AEMO. Please find attached more detailed responses to the questions in the issues paper. If you have any queries or wish to discuss this matter in further detail please contact Robert Simpson, Demand Management Development Manager, on 02 9269 4232 or via email robert.simpson@ausgrid.com.au.

Yours sincerely,

M. Webb

Matt Webb
Head of Asset Management

Feedback on individual questions

Questions		Feedback
Section 3.1 – Information Requirements		
1	Do you agree with the suggested format and method of data submission?	**General considerations** Ausgrid understands that the development of the exact format and method of data submission still requires significant work and consultation with relevant stakeholders. However, we agree with the principles outlined in the issues paper that the final data submission method should minimise the effort to submit data for all relevant parties as well as leveraging existing processes and systems. The consultation process so far for data collection has focused on exploring options to leverage the installer practices and processes used for submission of "as installed" information to the Clean Energy Regulator (CER) for creation of Small-scale Technology Certificates (STCs) under the Renewable Energy Target (RET) legislation. Ausgrid agrees that this is one of the most relevant and nationally consistent existing processes to leverage, and will be an important process to use to get the best possible 'as installed' information for the DER register for Solar Photovoltaic systems up to 100kW, which are the majority of DER systems types being installed throughout the NEM at this current point in time. Consideration needs to be given to types of DER Generation systems within the scope of the national DER register that do not lead to the creation of STCs. These include battery systems, non-renewable energy systems and renewable energy power stations (e.g. solar systems >100kWp) that are not eligible for generating STCs where the data is submitted to the CER via other processes or not submitted to the CER at all.

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		The other existing process to leverage is the connection application process for embedded generators under the National Energy Customer Framework (NECF) which involves DNSPs approving the connection of new and upgraded generation systems based on information submitted from the customer/ installer to the DNSP. In stakeholder discussions so far, there has been minimal discussion regarding how the connection application process is incorporated into the collection, submission and validation of information for the DER register and Ausgrid would be keen to explore this in more depth in follow up stakeholder consultation sessions. Amongst DNSPs, there is variability to the extent and quality of information collected from customers/ installers through the connection application process. As part of the data collection mechanism we would strongly encourage a methodology where AEMO allocates DERIDs that can be issued by the DNSP for an approved connection application and this identifier is then used by installers to submit the 'as installed' information to the DER register for the system. The DERID could be allocated to DNSPs according to a national guideline and data specification by AEMO similar to how NMIs are currently allocated by AEMO to DNSPs for issuing from their allocated list. The DERID could contain the NMI as a component of the DERID to make identification and matching more efficient. This would enable DNSPs and installers to validate the 'as installed' DER system details against the approved connection application information. Ausgrid believes this approach would be a logical and practical solution which links the required connection application process under the NECF and NER with the DER register information requirements. There should also be consideration given to the recently released DER National Connection Guidelines by the Energy Networks Association (ENA). These guidelines have been developed to streamline technical requirements across network service providers. Engagement and further

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		consultation with the ENA on this piece of work would be beneficial to ensure that the data model requirements for DER register information guidelines are consistent (wherever possible) with the technical requirements of the national connection guidelines. As a final point, consistency and compatibility with the DER register information guidelines and other relevant international standards is also worthwhile considering in further consultation. Internationally there have been numerous energy standards developed for DER communication and control. Some of these international standards may be worthwhile considering as part of the DER register information guidelines development. **Format and method of data submission** Ausgrid supports the approach of leveraging the existing MSATS processes wherever possible; however, we would require further clarity on the data collection and submission framework to understand whether existing MSATS data exchange protocols would need to be augmented. Ausgrid has not yet considered in detail whether we support the addition of an API for submission and change requests. In regards to the need for a bulk upload of DER information to load existing DER information at the commencement of the rule, Ausgrid only maintains aggregate information of DER system details at a NMI or premise in a structured database. This information as collected through our historic and current connection application process does not fulfil the requirements of the Level 2, 3 and 4 information required in the proposed data model in the issues paper (particularly Level 3 and 4 tables - AC Connection device details and DER system device details). In addition, information and data submitted to Ausgrid via the connection application process is collected at the point of initial application and is not always an accurate record of the final 'as

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		installed‘ DER system details. The actual installation date of a system is often estimated or inferred from other information sources such as bi-directional meter installation. The information submitted to Ausgrid via the Certificate of Compliance Electrical Work (CCEW) in NSW is also another indicator that is used to define the installation date but holds minimal information on the actual ’as installed’ DER system details.
2	Are there adequate access arrangements for Installers and installation software providers to submit data on behalf of NSPs into the DER Register? If not, how might this be improved?	As far as Ausgrid is aware, there is not currently an adequate access arrangement for installers and installation software providers to submit data to the DNSP or to the DER register on behalf of the DNSP. However, as noted in Q1, AEMO stakeholder consultation on leveraging the installer processes developed for STC submission to the CER is a promising development and has been well received by Ausgrid and other DNSPs. Development of a standardised API that can be used by installers to submit information to all DNSP’s or to the DER register on behalf of the DNSP is an access arrangement worth considering further in the consultation process during the development of the data collection, submission and validation framework.
3	Are there any risks associated with the different submission frequency between the DER generation information and DSP information?	There are potential risks in the different submission frequencies of the DER Generation information (ongoing for new and changed system details) and Demand Side Participation (DSP) information (annual submission) particularly where there is cross-over between the two data sources and conflicting information between the two data sets (e.g. Category B in Figure 1 in the issues paper). At this point, we have not assessed these risks but they may be material. For example, where battery information or participating generators in a demand response program have conflicting information recorded in the DSP information compared with the DER Generation information there would need to

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		be some validation or rules to determine which data source is the more accurate. Given that the information may come from different market participants on different submission frequencies via different submission platforms at different compliance levels, some investigation would be needed to establish which information source is most accurate. We support AEMO's view that including DSP information submitted by market participants (e.g. Categories B + C in Figure 1) in the register would assist DNSPs to meet their regulatory obligations. DNSPs do not currently have access to information submitted by other market participants as part of the DSP information guidelines for customers in its service area. Although the DER Generation information guidelines will allow networks better visibility of DER Generation, DNSPs visibility of 'active DER' where customers may be participating with either load or generation in demand response activities by others. DNSPs often share the same information use cases as AEMO for both passive and active DER as outlined in Section 3.1 of the issues paper, which includes annual consumption and maximum demand forecasting, operational forecasting and power system modelling. For the same reasons that AEMO has requested DSP information, Ausgrid (and other DNSPs) would significantly benefit from understanding where, when and the scale of active DER in our network that is controlled by other market or non-market participants. For example, a large program of active DER within our network may have a significant unforeseen impact on operations or forecasting for each spatial forecast area. Where forecasts are flawed due to a gap in information, investment decisions may not be efficient. For this reason, we strongly support the development of processes and systems to enable DNSPs to access DSP information collected by AEMO from other registered participants for activities occurring in its service area. Ausgrid strongly recommends that this issue is established as a specific agenda

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		item for discussion in future stakeholder consultations on the DER register information guidelines.
4	What is an alternate approach to the frequency of data submission? How would this be implemented?	As outlined in Q3 above there are potential risks regarding the different submission frequencies between the DSP information and DER Generation information about which is the most accurate source of information where there is conflicting information. A more regular update of DSP information might be worth exploring. For example, a more useful timeframe of submission of DSP information could be every 6 months, before summer (end of October) and after summer (end of April) to align with summer readiness for operational reasons and the information submitted after summer information to help inform load forecasting processes. However, Ausgrid recognises that the level of detail requested in the DSP information guidelines, particularly for DSP programs >1MW is significant. As a market participant who submitted information via the DSP information portal in 2018, we also found some inefficient submission issues, particularly for upload of large lists of controlled load customers where the limit for bulk upload was 10,000 NMIs and Ausgrid needed to submit 500,000 customer NMIs. The DSP information portal may not be fit for purpose for regular updates of information or a change request type of submission. There are other alternate approaches that could be explored for more regular updating of DSP information, but this would require broader stakeholder consultation as it involves a larger number of market participants who must submit information under the DSP information guidelines (not just DNSPs).
5	Are there any other relevant issues that have not been considered?	Another relevant issue to consider in the guideline development is that although the obligation to provide DER information to AEMO remains with the DNSP, installers of DER systems will be the primary data source providers of the installed system details. As such, consideration needs to be

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		given in regards to holding the data source provider responsible for the quality and accuracy of the information rather than the DNSP. In addition, the DER installer or data source provider is acting on behalf of the retail customer at a particular site and it is the retail customer that bears responsibility for agreeing and following the conditions of their connection contract. There has been limited consideration for the provision of DSP information to DNSPs. This information will be critical in ensuring that DSP activity at a spatial level is appropriately accounted for when determining spatial trends and forecasts. Without this information, DNSPs spatial forecasts will be incorrect which may lead to inefficient investment. In particular, the existing data models do not include sufficient historical DSP activity to appropriately disaggregate the contribution to resultant spatial demand from customer DSP activity. Absent are the contracted and actual demand reductions and event dates and times by NMI for Data Model Section 2 activity.
Section 3.2 – DER Register Storage		
1	Are there any issues associated with the separate storage of DSP information and DER generation information?	In principle, if the DER register information is accessible and easy to use, Ausgrid does not foresee any significant issues as to whether the information is stored in the DSP information database or the DER Generation information database. However, as outlined in Q3 and Q4 in section 3.1, we would recommend further consultation on the topic of the cross-over between DSP information and DER Generation information. If the separate storage architecture of DSP and DER Generation information has implications on information

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		accessibility or data accuracy, then there may be a potential issue that should be addressed in further stakeholder consultation and solution development.
2	Are there any other relevant issues that have not been considered?	No other relevant issues have been identified.
Section 3.3 – DER Register information access to NSPs		

1	What regulatory obligations or requirement do NSPs intend to use DER register data for?	There are numerous regulatory obligations and requirements that Ausgrid currently uses DER information for. Ausgrid would intend to use DER register information for the following;
		• Relevant reporting and compliance obligations under the National Electricity Rules
		• Uses outlined by AEMO in section 3.1 of the issues paper including;
		  ○ Annual consumption forecasting;
		  ○ Maximum demand forecasting;
		  ○ Operational forecasting; and
		  ○ Power system modelling which includes low voltage, medium voltage (11kV) and sub-transmission load flow analysis.
		• Managing customer DER connection status and the connection application process
		• Customer complaint investigations
		• Power supply quality investigations

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		• Informing asset investment decisions, including investigating the viability of demand management options • Network tariff development There may also be future use cases of the DER register information by DNSPs in the transition to a future Distribution System Operator model where there is a higher proportion of electricity being produced or stored within the distribution network and a higher proportion of flexible load and generation responding to real time price signals or other market signals. The main advantage for Ausgrid's customers from a better level of visibility of 'as installed' DER Generation system characteristics and those active DER systems that are participating in DSP programs will be to inform the efficient investment, management and operation of our distribution network assets.
2	Do you have a preferred process for accessing DER register information?	Ausgrid does not currently have a preferred process for accessing the DER register information without further clarity around the final data collection, submission and validation framework for the DER register. We would value the opportunity to comment further when the process is more clearly defined.
2a	Is existing NMI discovery (adding in DER) useful?	Yes, Ausgrid believes that a NMI discovery process (including DER) would be useful.
2b	Are existing C1, C4 and C7 reports (including DER) suitable? Is an	Ausgrid has not performed any detailed analysis or consideration regarding the suitability of C1, C4 and C7 reports for accessing the DER information from the MSATS database.

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	additional report required? If a new report is required, what should it include?	Before providing detailed comments about additional reporting requirements or suitability of these reports, we would prefer further stakeholder engagement regarding the overall data collection, submission and access framework.
2c	What are your views on using an API to develop custom reports?	An API for developing custom reports may be useful but Ausgrid is not yet in a position to comment in detail without further clarity around the final data collection, submission and validation framework. The integration and utilization of an API would need to be considered when the framework is further developed within the context of current and future planned Ausgrid technology capabilities.
3	Do existing C1, C4 and C7 reports need to be provided if an API is provided?	As per 3.2b we are not yet in a position to comment in detail on this question.
4	Are there any other relevant issues that have not been considered?	As mentioned in Q3, Q4 and Q5 from section 3.1, to support better customer outcomes and effiicnet decision making, Ausgrid requires access to not just the DER Generation information but also DSP information, both of which will form part of the DER register information guidelines. For each NMI in our service area, access to DSP information from Data Model Section 1 and 2 from the Demand Side Participation Information Guidelines is critical to ensuring efficient network investment. As noted in Q5, Section 3.1 above, the existing data models do not include sufficient historical DSP activity to appropriately disaggregate the contribution to resultant spatial demand from customer DSP activity. In addition, more detailed consideration is needed regarding DER generation installers and the data validation and processes by which they may be required to submit ‘as installed’ DER system information to the DNSP or to the DER register on behalf of the DNSP. Stakeholder consultation discussions around data collection have explored how DER installers might be able to validate DER

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		system details against those held in the DER register or those approved for connection by the DNSP before installation. However, market processes and access to MSATS is often limited to market participants and DER installers who are generally acting on behalf of the retail customer and are not market participants in most cases.
Section 3.4 – AEMO reporting and publication		
1	Are there additional variables that should be published in the DER register report (see Appendix B for list of data)? Why?	As outlined in section 2.2.2 of the issues paper, DSP information forms a component of the DER register information and AEMO should also publish aggregate information about how much DSP is active within different regions and the types of DSP, scale in MW and potentially class of market participant depending on confidentiality considerations. Demand response is an important topic of debate currently within the industry with particular relevance to the Wholesale Demand Response Mechanism AEMC rule change process consultation that is currently ongoing. Publication of aggregate information by AEMO would better inform this debate based on information that market participants have submitted. Aggregation of the same DER Generation and DSP information by type and size according to other regions that align with AEMO forecasting regions (e.g. Transmission Connection Points) would also be useful to Ausgrid and potentially other market participants.
2	Is aggregation at the post code level suitable? If not, what is an appropriate aggregation variable and why?	Aggregation at the post code level appears to be appropriate for public information particularly for small scale generators and can be aligned and validated against Clean Energy Regulator information released publicly for small scale generation units (up to 100kW).

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3	Do you agree with monthly updating of the DER register report? Why/ why not?	Monthly updating would appear to be appropriate for most purposes and balances the need for regular updating to track short and medium term trends and the costs and benefits that may be associated with a shorter timeframe of updates .
4	Are there any other relevant issues that have not been considered?	In section 3.4.1 of the issues paper, AEMO lists clause 3.7E(f) of the NER which includes requirements for AEMO to publish how AEMO uses the DER register information in their load forecasts. Ausgrid would welcome further stakeholder consultation with AEMO on the reporting of DER register information for forecasting purposes (which includes both DER Generation and DSP information). For example, Ausgrid recommends that more detailed information on the forecasting assumptions is reported by AEMO. This might include information on how the historical information is used to determine any forecast trend used in the forecasting model. This is to ensure that the use of the DER information is transparent to other market participants. As per Q1, Ausgrid would also like to see a summary of overall peak impacts in MW used by AEMO for forecasting purposes (e.g. by Transmission Connection Points) that use or are informed by the DER register information. .
Section 4 – Proposed Data		
1	What are the costs and impacts of AEMO's proposed data requirements? Please break down and describe the costs based on:	There is not yet sufficient clarity for Ausgrid to quantify the costs and impacts of implementation of the DER register requirements including the data requirements outlined in Section 4 of the issues paper. We believe that further consultation is required on the data collection, submission and validation

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		framework to better understand the final preferred framework(s). Once this is decided upon, then Ausgrid will be in a better position to identify the activities required and quantify the costs associated with implementing the DER register. Implementation activities that will incur various kinds of costs would include; • Changes to our existing connection application processes and systems, which have only recently been updated • Changes to customer connection contracts, which will require AER review and approval • Changes to customer and installer communication materials (eg. website) • Installer and industry engagement and education sessions to notify of the changes • Changes to our IT systems, both collection and storage considerations, which may be significant depending on the final implementation framework • Developing interfaces and APIs for data transfer to/ from external organisations, including AEMO and/or DER installers • Legal and project management costs for upfront and ongoing implementation Depending on the level of information in the initial upload by DNSPs required there could also be significant rectification or data validation costs required, as data currently stored by Ausgrid in structured formats is limited to only some of the DER Installation table (level 2) aggregate data information in the data structure and is based on connection application information (not on installed DER system information). Ausgrid considers that significant rectification and validation of existing DER information provided for the initial upload would not be considered to have regard to costs of

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		efficient compliance and the benefits of the DER information
1a	Upfront once-only costs vs ongoing costs	See Q1, Ausgrid requires more clarity on the final data collection, submission and validation framework in order to quantify once-only vs ongoing costs.
1b	Separation of internal labour costs, contracted labour, system improvement	See Q1, Ausgrid requires more clarity on the final data collection, submission and validation framework in order to quantify and separate internal labour, contracted labour and system improvement costs.
2	Do you agree with the proposed data requirements? Why/ why not?	The proposed data requirements need some further consultation and refinement particularly around non-inverter generation system treatment. There are also some advantages to adding in aggregate information fields to the level 2 data model including total inverter, generator and storage capacity.
3	Do you agree with the proposed data structure (see appendix B, figure 3)? If not, please explain why it would not work and propose an alternative.	Ausgrid agrees that the overall data structure and hierarchy in figure 3 of a DER Installation table (level 2) and AC Connection device table (level 3) and DER device table (level 4) is generally workable, but further consultation is needed to finalise the specific data fields and defining which tables are best to collect and store information about non-inverter DER systems. As mentioned in the Q1 response to section 3.1, by allowing DNSPs to allocate a DERID to approved connection applications this will allow DNSPs to have a key identifier to validate the “as installed” information being submitted by DER installers to the DNSP or to the DER register on behalf of the DNSP against the approved connection application information.
4	Should data variables that have default	It would be useful to have discrete inputs for the AS4777 inverter settings in the data model.

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	values prescribed by the AS4777 standards (e.g. Under-frequency protection, Over-frequency protection, Undervoltage protection, Overvoltage protection, etc) be requested as discrete inputs? Why/ why not?	However, the quality of information submitted by installers of the “as installed” inverter settings may be questionable. In some instances, we have found installed inverters that should have been set to the default Australian standard have actually been set to some other international standard when investigated in detail. In addition, different DNSPs may request different default settings for the Power Quality response modes (Volt-VAR, Volt-Watt) and these would need to be set as the time of installation and updated settings submitted to the DER register. The ability to also change these settings to other DNSP approved settings based on results from a site investigation may be beneficial. For example, witin the AS4777 standard conditions, DNSPs are able to allow exceptions to the default settings which Ausgrid has needed to do in some cases to manage customer inquiries and expectations around DER system operation.
5	For the AC connection table (appendix B), is it relevant to include protection modes for non-inverter DER? If so, what is the relevant information that should be captured?	Where non-inverter protection mode settings and non-inverter generator controller settings best reside within the data model and structure needs further consultation and consideration. This type of information may be better as an attribute in the level 2 DER Installation table for example. However there are also examples where the non-inverter generation information may fit within the level 3 and 4 tables. In relation to protection modes for non-inverter generators, Ausgrid’s NS194 standard specifies the information we ask from customers/ installers in order to assess their connection application and may be used as a guide to the other relevant information Ausgrid captures for non-inverter generator systems at the time of connection application. AEMO should also consider the DER connection guidelines development work being conducted by

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		the ENA, which includes information requirements for larger DER systems and non-inverter generators.
6	Do you agree with the data source/ providers for the physical collection, listed in Appendix B? If not, explain why and who else or what other data sources should be involved.	The DNSP may be the better data source/ provider of the DERID which would be issued by the DNSP when a connection application is approved for connection of a DER system. The DERID would be issued by the DNSP to the retail customer (or installer or other party acting on their behalf) according to an AEMO allocation procedure. The DNSP could hold the status of this DERID as Proposed until the DER system device information is submitted at the time of installation and these details are validated against the connection application information. The format and allocation procedure of the DERID could be specified by AEMO in a similar manner to the NMI allocation procedure that DNSPs currently follow to issue NMIs.
7	Are there any other requirements that have not been considered? Why are these important? Which table are they relevant to?	Recording the details of the installer that is the data source provider will also be important to enable a compliance or audit process or system to be implemented more effectively.
8	In terms of the examples given, are their other DER installation configurations that AEMO should consider?	Another example we would like to see included is an upgrade example where a site has an existing solar PV system (DERID1), and where a customer/ installer adds a second Solar PV system (DERID2) and a battery system with a separate inverter (DERID3). In this case it could be treated as three separate DERIDs at the same NMI or potentially as a single DERID with three different ACConnectionIDs. We would recommend that some flexibility is allowed to DNSPs in how they might treat these multiple

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		DER system sites in terms of allocating a single or multiple DERIDs (still uniquely linked to the NMI). In some cases, it may be more useful for the DNSP to be able to allocate different DERIDs depending on generation system type or installation date rather than changing the information held at the Level 3 or 4 and using the same DERID.
9	Are there any other relevant issues that have not been considered?	Further consultation on the data collection, submission and validation framework is needed to help further inform and refine the data requirements for the DER Generation information.


Thank you
Ausgrid