Our ref: 46005419

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Andrew Dillon
Chief Executive Officer
Energy Networks Australia
Unit 5, Level 12, 385 Bourke St
Melbourne, VIC 3000

Dear Andrew,

Open Energy Networks Consultation Paper – Western Power Feedback

Thank you for the opportunity to comment on the Open Energy Networks Consultation Paper. Western Power commends the ENA on this exciting piece of work, which presents three appropriate potential options for Western Australia's future electricity grid.

Western Power supports the concept of a Distribution System Operator, and strongly believes that the final selected model should provide the optimal value at the lowest cost to our customers. There are a number of mechanisms to achieve this, but we believe it comes down to two key elements: deferral of network augmentation (by using technology including batteries rather than building new infrastructure for example) and lowest cost of implementation and ongoing maintenance.

Western Power is currently in the process of 'grid transformation,' where we are adapting to the changing energy market and transitioning to a flexible approach that enables the use of new technologies, facilitates 'no regret' decisions and minimises the risk of stranded assets, whilst continuing to meet our customers' energy needs at the most competitive cost.

Western Power has been active in applying this principle in regional areas where network elements are approaching the end of their useful life, in the form of Standalone Power Systems (SPS's) and DNSP controlled microgrids.

Though we recognise that there is still substantial assessment to be done, Option 2 is preferred by Western Power on the basis of the following key points:

1. Western Power has the best understanding of the distribution network and its characteristics, including constraints;
2. Western Power expects that local network constraints as a result of DER will materialise sooner than those at system level, and would expect to potentially draw on aggregated DER sooner and more frequently than AEMO at system level; and
3. The complexity and number of interfaces associated with this option are reduced as opposed to the other options.

Please find Western Power's responses to specific questions posed in the consultation paper in Table 1 attached. Should you have questions or require additional information relating to our comments, please contact Senior Government Relations Specialist Claire Evans at Claire.Evans@westernpower.com.au or (08) 9326 6365.

Yours Sincerely,

Guy Chalkley
CEO

Table 1: Western Powers' response to questions posed in the consultation paper

Report Section and page number	Question	Western Power Response
2 Path-ways for DER to provide value (Page 13)	2.1 - Are these sources of value comprehensive and do they represent a suitable set of key use-cases to test potential value release mechanisms?	Western Power believes that the following should be added: (a) The value of customer or DNSP microgrids has not been appropriately considered in the consultation paper. (b) Removing constraints in the distribution network (e.g. peak reduction). (c) Customer self-augmentation. This can provide: (i) Additional capacity beyond what the network can economically provide, whilst still interfacing with the network (within constraints). (ii) Improved reliability in the event of loss of network. (d) Electric vehicles as an active load DER has also not been considered. (e) Though the system need for active DER to be called upon is expected to be infrequent, with sufficient maturity this could be a credible, cost effective option to defer network augmentation and support DNSP microgrids. In the interim, small incremental investments that facilitate increased penetration of DER connections should continue to be investigated and trialled (e.g. change in voltage standards, OLTC). (f) No reference has been made as to the value to customers in a DNSP installing, operating and maintaining a grid scale battery.
	2.2 - Are stakeholders willing to share work they have undertaken, and may not yet be in the public domain, which would help to quantify and prioritise these value streams now and into the future?	Western Power would be willing to share high level details of: (a) Grid scale battery (Community Power Bank) (b) DNSP initiated microgrid case
3 Maximising passive DER potential (Page 19)	3.1 - Are there additional key challenges presented by passive DER beyond those identified here?	Western Powers' experience is that the management of voltage on LV, MV and HV networks is the biggest challenge (certainly relative to local network capacity, with the highest penetration of passive DER on LV networks currently being just over 50% of distribution transformer capacity). Western Power does expect that issues will present at extreme penetration levels, initially at LV, but then potentially at MV feeder level. The other challenges presented by passive DER not articulated in the consultation paper include: (a) LV neutral voltage rise (as a result of imbalance of DER on LV feeder) (b) Non-detection zones of inverter anti-islanding protection. (c) Protection for earth faults on MV system that is back energised from LV networks. (d) Degradation of sensitivity of backup protection schemes on MV system.
	3.2 - Is this an appropriate list of new capabilities and actions required to maximise network hosting potential for passive DER?	(a) Understanding the nature of the customer's connection (i.e. where they are physically connected to), and recognising that they are not infinite buses that can contribute to overcome system issues. (b) The comment "Dynamic management on the rare occasions when system challenges occur will enable higher penetrations of passive DER to be securely integrated to the grid, and will increase the value of DER to the network, the system as a whole and ultimately to the customer." appears to relate to contribution to overcome system constraints, though in reality may be called upon more frequently to overcome local constraints (e.g. peak shaving and load shaping). (c) By the design of the network that supplies them, some customers may be impacted 100% of the time (e.g. being constantly in Volt-Watt or Volt-var mode due to local voltage management practices). (d) The comment to "Utilise their load to soak up excess PV generation and/or make new investments to increase load during low demand periods" is an undesirable outcome, with the only acceptable approach being charging of batteries, whether community batteries or behind the meter.

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	3.3 - What other actions might need to be taken to maximise passive DER potential?	(a) AS 60038 imparts a constraint on hosting capacity for passive DER. Alignment with European standards would relax this constraint (and provide this energy value to the customers) without compromising performance of customer equipment. (b) Advanced Metering Infrastructure (AMI) is a significant enabler (c) Installation of (in front of the meter) grid scale batteries (due to the economies of scale they present), and recognition that useful life of these batteries is likely to be significantly more than those behind the meter. (d) Other technologies are currently being trialled by DNSP's to maximise hosting potential, (including OLTC on distribution transformers). (e) Advanced tools for modelling LV networks benefitting Australia wide cooperation.
4 Maximising active DER potential (Page 24)	4.1 - Are these the key challenges presented by active DER?	(a) Establishment of communication network infrastructure and standards (particularly around cyber-security, inter-operability, standards & data protocols) is of extreme importance. (b) Aggregators need to understand network constraints before engaging customers to ensure that customers can realise return on investment. (c) Decision making framework in terms of DER dispatch and control is essential. (d) EV's need to be considered as an active DER load. (e) Voltage swings are not an issue if within limits, though will be heavily dependent on number of proponents' involved and geographic dispersion. Controls should be on the ramp rate of responses. (f) Smaller scale DER will be highly dependent on aggregators to maximise individual value. (g) Due to the characteristics of some areas of the network, aggregators may hold a monopoly in some parts of the network.
	4.2 - Would resolution of the key impediments listed be sufficient to release the additional value available from active DER?	Having not conducted any analysis (at this point in time), Western Power believes that there will be sufficient additional value from the perspective of DNSP, though (due to lack of maturity in the market) cannot comment on whether there is sufficient value from a customer's perspective. Other reforms will likely be the way that customers access this value.
	4.3 - What other actions might need to be taken to maximise active DER potential?	(a) Each value stream needs to be coordinated and prioritised (e.g. from local constraints to system wide needs). (b) Tariff reform and demand management
	4.4 - What are the challenges in managing the new and emerging markets for DER?	(a) Generally speaking, DNSP's currently have little to no visibility of LV networks. (b) Availability of existing communications infrastructure to support aggregation of DER will be highly location dependent. (c) Ability to game inefficient markets for profit that don't solve technical issues. Aggregators will operate and exist to make money. (d) Appropriate charters need to be put in place to protect the customer.
	4.5 - At what point is coordination of the Wholesale, FCAS and new markets for DER required?	Noting the impact increasing levels of DER are likely to have on Australian power systems (as articulated in Figure 5 and 6 of the consultation paper) Western Power believes that this work should commence now, such that the appropriate funding can be obtained in the next regulatory period (e.g. Western Power AA5 commences in 2022).
5 Frameworks for DER optimisation	5.1 - How do aggregator's best see themselves interfacing with the market?	N/A

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within distribution network limits (Page 33)	5.2 - Have the advantages and disadvantages of each model been appropriately described?	The number of and complexity of interfaces is a key component in the overall cost of the system, and needs to be articulated in the advantages / disadvantages section. Existing arrangement: (a) The consultation paper states that DNSP's have no formal arrangements in place to manage connection DER. This is incorrect for Western Australia (Western Power and Horizon Power), in that the DNSP's obligation to proponents currently requires unconstrained access. In the event that high levels of DER present network issues, the obligation is on the DNSP to relieve the constraint through network augmentation. Western Power's experience is that 95% of the time managing DER constraint is done through the assessment at connection, though we recognise this does not take into account system-wide constraints (as articulated in Figure 5). Option 1: (a) Under this option, it is not clear what precedence would be given in the face of local constraints vs system issues. (b) Further, advantage is stated as "DNSPs are best placed to understand, quantify and manage the limits of their own network, and this model potentially limits duplication of resources at other organisations to attempt to fulfil this role." Isn't AEMO role in this option to take network constraints into account (thereby duplicating roles)? (c) A key assumption in the consultation paper is active DER would be called upon very rarely (a figure of less than 1% in 2025 is referenced), though DNSP's may have a need to call on aggregated DER in a particular location more frequently to provide network support. Option 2: (a) DNSP's understand constraints on their networks, and the impact of customer DER on it. To this end, Western Power believes this is the optimal solution, though the value that can be released is heavily dependent on the regulations governing such services. (b) Billing interactions are missing from Figure 16 in the Consultation Paper. (c) Western Power has previously demonstrated its ability to understand network constraints and dispatch generation accordingly by setting up a ring fenced part of the business to undertake this function. Western Power is currently in the process of developing a Generator Interim Access (GIA) arrangement to provide this functionality to AEMO. (d) Noting comment from 5.4.1 "DNSPs are best placed to understand, quantify and manage the limits of their own network, and this model potentially limits duplication of resources at other organisations to attempt to fulfil this role", Western Power believes that the cost associated with this option is not as significant as that for option 1. (e) Assuming that regulations are in place to enable DNSP's to undertake this role, DNSP's would be incentivised to seriously consider active DER as an alternative to (costly) network augmentation in constrained parts of the network. Option 3: (a) This is the most complex of the three models presented, and present significant duplication of roles (DNSP and AEMO). (b) Would require significant investment to set up this independent body, and would need substantial resources from all DNSP's and AEMO to develop this capability initially, and into operational.
	5.3 - Are there other reasons why any of these (or alternative) models should be preferred?	Western Power strongly believes that the model that is selected should be that which provides the optimal value at the lowest cost to our customers. In the absence of an established framework, Western Power believes that the most logical way to achieve this is by minimising the complexity and number of interfaces to achieve the outcome.
6 Immediate actions to improve DER coordination (Page 35)	6.1 - Are these the right actions for the AEMO and Energy Networks Australia to consider to improve the coordination of DER?	Yes.
	6.2 - Are there other immediate actions that could be undertaken to aid the coordination of DER?	(a) Demand management and electric vehicles need to be considered as active DER. (b) Scenario modelling of future customer energy requirements will be vital to understanding timing of need for DER.

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Additional Comments		(a) There are some areas in the network that will not provide any system-wide benefit from aggregation. (b) The consultation paper refers to export control – this is only one method for controlling output of generation. As indicated in Western Power's review of the ENA Draft DER Connection Framework and Guidelines, we fundamentally disagree with allusion to export limiting as a minimum. It is our strong preference to refer to "Generation Control" instead, with export control as one option to achieve this. This allows for other methods and approaches to be developed to manage the penetration of generation and hosting capacity of networks into the future. Further to this, other DNSP's need to understand capacity of the customers' supply arrangement to more efficiently and equitably distribute the hosting capacity of the local network. Western Power has always taken an approach to maximise equitable distribution for these small customers. (c) WP agrees that DER will rarely be called upon to support system wide issues. However, for network constraints may be a regular occurrence on sections of the network with high penetration of DER. (d) Western Power recognises that it will take some time to implement control of DER. At this point, there may be significant amounts of passive DER installed that will not be able to be harnessed, and may have other consequences. (e) Billing link missing from Figure 16.