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Submission to Open Energy Networks Consultation

Jemena Electricity Networks (Vic) Ltd (**JEN**) welcomes the opportunity to comment on the paper *Open Energy Networks* (**Paper**) develop jointly by Australian Energy Market Operator (**AEMO**) and Energy Networks Australia.

JEN is responsible for providing electricity distribution services to approximately 350,000 residential and business customers in the north west of Melbourne. JEN is a regulated Distribution Network Service Provider (**DNSP**) and therefore has a direct interest in the proposals put forward in the Paper.

The Paper sets out a series of questions and seeks responses from interested stakeholders. JEN has formed views around each question and provides a response in Attachment 1 to this letter.

Given the complexity of the issues and the impacts (both direct and indirect) on energy consumers, JEN believes that Energy Networks Australia and AEMO should continue it's consultation process to allow stakeholders to share insights and test possible market design options.

Please feel free to contact me on 03 9173 7000 if you have any questions in relation to this submission.

Yours sincerely

[*signed*]

Matthew Serpell
Manager Asset Regulation and Strategy

Attachment 1 – JEN's response to the questions outlined in the Paper.

Consultation question	JEN response
2. Pathways for Distributed Energy Resource (DER) to provide value	
(1) Are these sources of value comprehensive and do they represent a suitable set of key use-cases to test potential value release mechanisms?	JEN considers the Paper has identified the value streams that are known today and hence they represent a good starting point for use cases to test potential value release mechanisms. JEN suggests that there could be a stronger inter-play between various use cases. For example, a customer may reduce their Photovoltaic (**PV**) electricity export based on a voltage control agreement with the DNSP to allow another customer to export energy to participate in the National Electricity Market (**NEM**).
(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?	JEN has conducted 'demand flexibility' trials with both residential and C&I customers and is willing to share the work on a confidential basis.
3. Maximising passive DER potential	
(1) Are there additional key challenges presented by passive DER beyond those identified here?	JEN considers the DNSP challenges presented in Section 3.1 pf the Paper is under-stated. From JEN's experiences, challenges caused by passive DER (such as roof-top PV without battery storage or smart inverter) include: • Localised voltage rise when excess PV generation is exported into the grid. Voltage rise can lead to tripping of solar generators on over voltage protection so PV customers are not getting return on their PV investment. The over voltage can also affect the longevity of customer electrical equipment; • Excessive current flowing in the neutral conductors of the 4-wire Low Voltage network caused by imbalance between the three supply phases leading to voltage appearing on the neutral conductor and creating health and safety hazards; • Phase current imbalance which shortens the life of network assets; • Voltage fluctuations caused by intermittent PV generation (caused by cloud passage); • Reverse power flow affecting voltage regulation equipment; • Overloading of network assets; and • General system stability issues. Contrary to what is stated in Section 3.3, distribution issues caused by high DER occur frequently; it can occur daily. DNSPs are currently using a mixture of operational

Consultation question	JEN response
	responses and new network investments to manage the impact of high passive DER penetration.
(2) Is this an appropriate list of new capabilities and actions required to maximise network hosting potential for passive DER?	JEN agrees that dynamic management of DER impact is an effective strategy moving forward. This would involve: • improved visibility of the network particularly low voltage (**LV**) network, as DNSP cannot manage issues that it cannot see; • establish LV network model which enables advanced planning actions to be undertaken; and • improve capability to manage DER and impact where and when required. JEN notes that DER management can involve both DER taking action to adjust its own output and/or DNSP taking action to reduce the impact of the DER output. For example, it is possible for a DNSP to take action to balance loads/generation between the three supply phases on a particular LV network when there is phase imbalance caused by DER actions.
(3) What other actions might need to be taken to maximise passive DER potential?	Refer above.
4. Maximising active DER potential	
(1) Are these the key challenges presented by active DER?	Agreed, the key challenges have been identified.
(2) Would resolution of the key impediments listed be sufficient to release the additional value available from active DER?	The consultation document has correctly identified that operation of active DER is likely to cause challenge on the DNSP before it reaches a scale that would impact system-wide security (first paragraph, Section 4.2). In this regard, it appears more attention should be devoted to how DNSP challenges can be overcome from both a technical and a regulatory investment perspective. In particular, it is clearly understood that DNSP constraints are likely to have a material impact on the merit order by which aggregated active DER may be despatched in the NEM (Point 2, Section 4.5) so they are worthy of attention.
(3) What other actions might need to be taken to maximise active DER potential?	No comment at this stage.
(4) What are the challenges in managing the new and emerging markets for DER?	The major challenges are to coordinate the approaches from DNSPs, TNSPs and other parties as they respond to the new and emerging markets to avoid the industry developing inefficient and disparate processes and systems.

Consultation question	JEN response
(5) At what point is coordination of the Wholesale, FCAS and new markets for DER required?	Discussion on coordination of various DER market services should start now with a long-term plan of how IT platforms and performance responsiveness are to be evolved over time.
5. Frameworks for DER optimisation within distribution network limits	
(1) How do aggregators best see themselves interfacing with the market?	No comment at this stage.
(2) Have the advantages and disadvantages of each model been appropriately described?	In order to move to an enhanced model that will enable optimised management of active DER in the energy market, there are some key steps to enable functionality: • Understand the low voltage network issue which is limiting the benefit of DERs. This is important as this is impacting customer benefit today. This requires visibility of LV network data; • The next step is to determine the best way to manage low voltage networks across the distribution system. That is, the most effective and lowest cost from a network management perspective; • Value the benefits from DER's within a distribution system that is dynamically managed and benefits from other DER value pools, for example, wholesale and FCAS markets; and • Design the system that best enables those benefits for the customer (to lower whole of system costs). Once the above steps are worked through, DNSPs would be in a better position to view network constraints with active DER requirements to optimise the distribution system (**DSO**) and provide the market with the smarts to provide dynamic management of aggregation of bids at a network level. This role would need to be managed by a Distribution Market Operator (**DMO**). JEN considers an evolutionary approach should be taken with regard to the platform design. The single integrated platform approach may be considered as the ultimate long-term vision however it would be highly complex due to the number of interfaces it would need to cover the whole NEM. The two-step tiered platform approach has the advantage that it allows the DNSPs to manage DER despatch for both the NEM and the local markets subject to its network constraints, and can be an extension of its Advanced Distribution Management Systems (**ADMS**).
(3) Are there other reasons why any of these (or alternative) models should be preferred?	As above
6. Immediate actions to improve DER coordination	

Consultation question	JEN response
(1) Are these the right actions for the AEMO and Energy Networks Australia to consider to improve the coordination of DER?	No comment at this stage.
(2) Are there other immediate actions that could be undertaken to aid the coordination of DER?	Traditionally, pricing structures have been set based on 'load' connection. With the DER, tariff designs needs to be reviewed and provide the right market framework to provide effective signals and incentive taking into account two way power flows and the use of the network.