

## RESPONSE TO CONSULTATION PAPER

<b>Consultation topic:</b>	OPEN ENERGY NETWORKS  A Joint AEMO and Energy Networks Australia Initiative  Consultation on how best to transition to a two-way grid that allows better integration of Distributed Energy Resources for the benefit of all consumers
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## **General comments:**

In the consultation paper, the concepts of active distributed energy resources (DER) and virtual power plant (VPP) are presented as disjoint independent entities, which is not strictly correct. The perception one gets is “active DERs are resources that are consumer-owned resources that could be controlled through price signals or another mechanism. An aggregator will combine these small-scale resources and bid them collectively to provide different services at the distribution level and in the electricity market. Whereas, VPP is either a utility-scale battery (Tesla VPP) or a large collection of household batteries (Reposit power)”.

A VPP should not be strictly associated with battery storage and in general, the scope of VPP is much broader. VPP is an aggregation concept that enables aggregation of a number of subsystems containing clusters of DER, loads and storage that can then be controlled by appropriate energy management strategies. The benefit being that the independent system operator does not require direct access to the control of individual DER or the visibility inside VPP. The best way to describe VPP is to think of it as generator comprising of flexible and inflexible resources deploying flexibility to increase revenue or decrease the cost for the owner, by providing grid services. An aggregator offering active DERs collectively is essentially a VPP. Furthermore, a VPP can also co-optimize different energy vectors to their advantage.

Another way to look at is that aggregator contracts different DERs, loads and storage, and collectively form a VPP. Then VPPs are allowed to bid in different markets just like other generators. In theory, VPPs are subjected to the same restriction as that of generators, such as ramp-rate, operational PQ charts, cost curves etc.

The point to be made here is that the definition of aggregator that is provided in the glossary is in-line with VPP, thus, requiring a clear distinction between VPP and aggregator, if need to be defined separately. In authors view both can be co-jointly defined under the larger umbrella of VPP.

### **Section 3 - Question 1. Are there additional key challenges presented by passive DER beyond those identified here?**

In section 3.3, blanket limits as a potential solution to mitigate some of the challenges are discussed along with its inefficiencies. One important thing here is to acknowledge that emerging technologies have empowered consumers to react and adapt to the network restrictions, thus they are no longer passive and should be considered as market players. In this context, it is rightly mentioned that such policies will reduce the value to customer investment, but at the same time, this might also incentivise them to invest more in storage, resulting in an inefficient investment that could have been averted in the

presence of active DER. Thus, it is important to estimate the impact of particular policy on consumer behaviour both in the presence of passive and active DER.

It is also important to understand that if not designed carefully, static policies that might be developed to deal with passive DERs can potentially incentivise consumers to act in their best interest.

**Section 4 - Question 5. At what point is coordination of the Wholesale, FCAS and new markets for DER required?**

In the authors' opinion, all resources can be aggregated through VPP concept, which will then serve as a coordination entity between distributed flexible resources and electricity markets. The vision is that control infrastructure of the individual flexible resource is linked to VPP control centre, which bid aggregated flexibility from those resources to electricity markets (wholesale, FCAS and others) accompanied by technical limits. The electricity markets then treat VPP equivalent to other generators and send dispatch instructions along with the applicable penalties if deviated from that schedule.