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Australian Energy Market Operator

By email: DERProgram@aemo.com.au

NEM Virtual Power Plant (VPP) Demonstrations Program

Energy Consumers Australia appreciates the opportunity to comment on the NEM Virtual Power Plant (VPP) Demonstrations Program (Program) in the Australian Energy Market Operator (AEMO) Consultation Paper (the Paper). This letter sets out our response to the Paper.

Energy Consumers Australia is the national voice for residential and small business energy consumers. Established by the Council of Australian Governments Energy Council (the Energy Council) in 2015, our objective is to promote the long-term interests of energy consumers with respect to price, quality, reliability, safety and security of supply.

We see the development of the VPP capabilities and business models the Program will test as part of the larger, longer-term project of building a dynamic and sophisticated energy system and energy services market. This is a system and market which are not just about big infrastructure and selling electrons, but also about intelligent *individualised* services which are tailored to the unique circumstances and requirements of different people and businesses and which at a global level, act to optimise a large, distributed and increasingly complex energy system.

In the more immediate term, we are also looking to VPP and related models to improve *affordability* for households and small businesses being impacted by high energy prices. In a highly capital-intensive sector, we need to optimise the way we build out and operate physical infrastructure in the NEM to deliver essential energy services at the lowest possible cost for consumers.

The Program is one aspect of realizing the value of distributed energy resources (DER) for the benefit of all consumers, and Energy Consumers Australia supports the intention to evaluate ways to enable aggregated DER to participate in the wholesale markets. The critical point is that making VPPs work and realising these immediate and longer-term goals will depend as much on partnering with consumers to save them money and delivering a positive experience as overcoming technical and system challenges. Any sense that central control is being exercised without appropriate engagement and reward for consumers will undermine trust and confidence and slow the development of these new services.

Those designing and testing VPP models should therefore be particularly mindful of the results of our Energy Consumer Sentiment Survey that is showing that while consumers are eager to take charge and are reaching out for greater control over their energy use and costs, they are not confident that there is enough easily understood information available to make decisions about energy products and services.¹ Exploring new ways to structure and present new services to consumers should therefore be a key element of the Program.

¹ <https://energyconsumersaustralia.com.au/publication/energy-consumer-sentiment-survey-findings-december-2018/>

Distributed Energy Integration Program

As an active participant in the Distributed Energy Integration Program (DEIP), Energy Consumers Australia supports its aim that members collaborate to maximise the value of customers' DER to the Australian energy system and all energy users.

DEIP has two major focus areas:

1. **Exchanging value in markets** – Energy markets that efficiently exchange the fair value from customer owned distributed energy
2. **Distributed energy and the grid** – Technical systems that enable the efficient use and operation of the distributed energy system

Within these focus areas, DEIP has identified four key workstreams:

1. **Customer** – Capturing and sharing customers' preferences to inform the future
2. **Markets** – Enabling multi-party exchange of value in markets within physical network constraints
3. **Frameworks** – Optimising investment in and operation of network and non-network DER infrastructure
4. **Interoperability** – Standardising the physical operation, visibility and resilience of the distributed energy systems²

We note the comments of AEMO that:

A key element of AEMO's collaboration through the DEIP will be a program of demonstrations that will enable evidence-based learning to inform potential changes to fully integrate DER into Australia's energy market frameworks and operational processes. The demonstrations program aims to map a pathway towards full integration of DER.

The Paper states that:

Effective integration of DER will involve enabling:

- *Aggregated DER to respond to wholesale energy and Frequency Control Ancillary Services (FCAS) market price signals.*
- *System operators to have sufficient operational visibility of DER.*
- *Distribution network limits to be considered when dispatching DER.*

The VPP Demonstrations seek to address the first two elements, and AEMO's collaboration with ENA on the Open Energy Networks and the broader DEIP process seeks to tackle the third element.

The Program focuses on one issue – the ability to integrate aggregated DER into the operation of the wholesale markets for energy and frequency control services. This is an appropriate scope for AEMO given its role is the operation of the wholesale market. However, this scope does not cover other factors critical for the effective integration of DER.

² <https://arena.gov.au/where-we-invest/distributed-energy-integration-program/>

Importantly, it does not cover the relationship between DER and Distribution Network Service Providers (DNSPs). DER can create value by reducing the need for augmentation of the network and reducing overall costs for consumers. A related question is which system operator needs visibility of the DER; is it the national system operator or is it the Distribution System Operator (a function not yet defined and allocated)?

The focus on the wholesale market also masks some considerations of the role of consumers. For example, the VPP needs to present an ability to dispatch to the market operator, but the ability to do so depends on the agreements the VPP has with its customers and the competing values from DNSPs. Meaningful trialling of VPP market participation needs to be grounded in meaningful and scalable consumer participation.

Given the central focus on customer as part of the DEIP, as a general comment we continue to encourage all members of DEIP including AEMO to consider ways to incorporate the gathering and sharing of customer insights, ensure appropriate data protection and management and consumer information resources in all DER projects. In addition to the rule changes in response to the AEMC Reliability Frameworks Review we would point AEMO to two significant research projects (funded by ARENA), in which Energy Consumers Australia is participating.

- The Community Energy Models project, being run by ANU's Battery Storage and Grid Integration Program.
- The ARENA Distributed Energy Resources Pricing project, being run by Oakley Greenwood.

In each of these projects, and the rule change proposed by the Total Environment Centre on wholesale demand response, the interests and the voice of consumers are front and center.

Specific Comments in response to consultation questions

1.1 The primary focus of these trials is to demonstrate VPP aggregating battery storage systems. Do intending participants envisage incorporating demand response resources into your aggregated portfolios, and should this be incorporated into the VPP Demonstrations?

While the resources to be incorporated in the VPP trial are an issue for project proponents, our view is that the trial design should place no limit on the resources that can be potentially included. The tendency to think in terms of centralised control may inhibit innovative applications of inexpensive technology to provide new services.

New inexpensive technologies are opening-up new possibilities for consumers to manage their energy use and partner with energy services providers. For example, one service provider has developed an inexpensive device that utilises the light that flashes on the front of an interval meter and Bluetooth wireless to provide real time access to consumption at the level of wathours.³ Another is an air conditioning controller that enables remote activation of any air-conditioner currently controlled by an Infra-Red controller, for under \$200.⁴ Basic light and power switches are a standard part of home automation suites. The combination of these technologies with cloud-based services is rapidly changing the ability of load to respond to price signals.

It is early days for these technologies. We should learn from the experience with rooftop solar PV where integration issues were not addressed early. Today we are in a position where the full load of any residential home could be incorporated into a VPP service that was designed to respond to actual and

³ <https://www.powerpal.net/>

⁴ <https://sensibo.com.au/>

expected prices. This might, for example, factor-in the value of pre-cooling an empty house in the middle of the day when solar PV is putting downward pressure on wholesale prices to reduce the air conditioning load in the evening, delivering savings for individual consumers and the system.

2.1 Are the VPP Demonstrations objectives logical and achievable? Should any other objectives be considered for these VPP Demonstrations?

The three objectives outlined in the Paper are:

- 1. Allow participants to demonstrate basic control and coordination capability for VPPs providing market services in the NEM relating to both energy and FCAS.*
- 2. Develop basic systems and capability to provide AEMO with operational visibility of VPPs to understand their impact on power system security and how they interact with the market.*
- 3. Assess current regulatory arrangements affecting participation of VPPs in energy and FCAS markets, and inform new or amended arrangements where appropriate.*

From the perspective of AEMO and the existing market design these are reasonable objectives, framed in a world without an operating DSO model. As such they preclude consideration of the role a DSO might play. For example, it could be that the DSO operates as a complete intermediary between the VPP and the wholesale market.

The objectives of the Program need to explicitly include consideration of the possible futures including a DSO function. They also need to consider how the full value stack can be realised which includes DNSP benefits not just wholesale market benefits.

2.2 How can the VPP Demonstrations projects better capture consumer insights and improve customer experience and outcomes?

VPPs can only operate as aggregators of DER on the basis of the agreements reached with consumers to allow the aggregator some degree of control of their resources. A challenge for early stage VPP trials is that there is often some additional inducement to the consumer to enter this agreement, such as a subsidy on the cost of the storage.

In non-trial conditions, if VPP aggregators have the capability to control DER in a residential household, then it will be necessary for both the aggregator and the consumer to understand the safety and lifestyle impacts. It will also be important to consider what price signals the end-user is seeing and responding to. On the one hand, increasing consumer exposure to variable prices provides greater incentive to participate, however it carries significant risks in unmanageable peak events.

Understanding the consumer experience and gaining consumer insights is therefore fundamental. The approach to obtaining this information needs to be part of each project's design and highly transparent. Accordingly, proponents seeking to register for the VPP Demonstration projects must be required to detail their approach to the consumer research that will be conducted in conjunction with their trial. They must also be willing to appropriately share the outcomes of that research.

Energy Consumers Australia is keen to engage with any prospective proponents about the design of their consumer experience and insights research. The way in which consumers provide their consent is an area that we believe will require special attention. The objective could be a standardised set of

terms and conditions for consent with a severely limited number of options that the consumer needs to consider. More choice does not necessarily lead to better decision making.⁵

2.3 Is AEMO’s high-level approach to the VPP Demonstrations appropriate? What other arrangements could be tested under the VPP Demonstrations framework?

We have no additional comments apart from those that we have already made about the need to consider the role of a DSO and the importance of consumer research and insights.

4.3 What is the appropriate frequency for VPP operators to submit the device level dataset to AEMO? Is there a material difference in resources required to upload the data on a daily, weekly, or monthly basis?

We have no comment to make on this issue (although we would be surprised if the answer were that daily uploads would be materially more onerous than less frequent uploads).

4.4 Are there any regulatory or other obstacles to participants facilitating the data sharing arrangements contemplated in this section?

Ultimately, the single biggest obstacle to data sharing will be failure to develop the consent arrangements appropriately with consumers. Consumers can consent to their data being made available and the terms and conditions for consumer participation should carefully consider this.

Conclusion

Energy Consumers Australia is supportive of the Program and we encourage all participants to be aware of the customer and consumer impacts and commit to capturing and sharing appropriate consumer insights. The Program is an important avenue for integrating DER work and its implications for the regulatory frameworks and market design in a holistic, systems approach rather than looking at complex and interrelated issues on an ad hoc basis. Without a demonstration of how consumers are integral to a decentralised energy system, and are appropriately rewarded, consumers will not have the confidence they need to fully participate and engage with new energy services.

If you have any questions regarding our submission, please contact David Havyatt on 02 9220 5508 or david.havyatt@energyconsumersaustralia.com.au.

Yours sincerely,

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⁵ Consumer Policy and Research Centre - <http://cprc.org.au/cprc-research-pathways-program-2/making-consumer-decisions-easier-and-fairer/>.