

20 April 2021

Mr Adam Wilson  
Chief Executive Officer  
Essential Services Commission of South Australia  
GPO Box 2605  
Adelaide SA 5001

Dear Adam

## Authorisation of Virtual Power Plant operations

Thank you for the opportunity to make a submission on the potential extension and variation of the current exemption afforded to participants in the Australian Energy Markets Operator's (AEMO's) trial, and on the appropriate licensing conditions for the operation of virtual power plants (VPPs). According to AEMO, a VPP broadly refers to an aggregation of resources (such as decentralised generation, storage and controllable loads) coordinated to deliver services for power system operations and electricity markets.

The AEMO VPP trial has demonstrated that VPPs can be extremely responsive to market price signals and can quickly switch operation from charge to discharge. The trial has indicated that VPPs can be used to provide quick response Frequency Controlled Ancillary Services (FCAS) for the benefit of the Market. Therefore, VPPs have the potential to play an important role in the security and stability of the Market.

A VPP is different from other Distributed Energy Resources (DER) resources (eg generators) as it typically comprises many small DER located at different locations within the State and connected to our distribution network. These individual DER can either be owned by the VPP and leased to the customer or owned by the customer who has a contract with the VPP to operate the DER on the customer's behalf. This typically means that SA Power Networks does not negotiate a connection contract with the customer for the operation of their DER but must rely on our deemed connection contract or on the terms and conditions of our Model Standing Offer where the customer installed the DER.

The Australian Energy Market Operator's (AEMO's) power system security responsibilities in the National Electricity Rules (NER) rule 4.3.1 cover transmission and distribution systems. However, AEMO's view<sup>1</sup> is that it can assess power system security impacts in the transmission system, but that Distribution Network Service Providers (DNSPs) are best placed to do so for distribution systems.

AEMO's VPP trial indicates that VPPs can effectively respond to power system events and price signals. This includes responding to frequency excursions beyond the normal operating range (49.85–50.15 Hz) and pre-charging (or discharging) to cater for future high (or low) price events, respectively. This behaviour can generate significant swings in both electricity consumption and export. These swings can be managed at a 'whole of system' level by AEMO like other generators, but unlike these larger

<sup>1</sup> AEMO WDR (Wholesale Demand Response) Q&R session Monday 8 February 2021.

generators, the VPP may also be subject to a variety of other constraints within the distribution network, depending on where each electricity generating plant is located which could impact on the security, reliability, and quality of supply for other electricity customers. As DER proliferation continues and becomes a more central part of the energy system, and as VPPs grow in their aggregated size, it will be essential that DER becomes “smarter” and more aware of the constraints of the local distribution system. It must be noted that DER, when controlled by a VPP, effectively operate together, and as such can have a greater impact on the distribution system, than when operating independently.

We have proposed that in the future all DER must have ‘smart’ capabilities in accordance with our ‘LV Management Strategy’. This strategy was supported by the AER in their 2020-25 Pricing Determination on the back of significant customer and industry support. This will be introduced as part of our new “Flexible Exports” connection offering, which would offer customers with DER a variable export limit, subject to network constraints, issued via a standard internet-based interface (API). This is unlikely to be provided as a standard service offering until mid-2022, with further technology development currently being undertaken by SAPN and industry. At this stage we expect our flexible exports DER connection offering to provide a minimum export of 1.5kW to a maximum of 10kW, reflecting the capacity of the distribution network depending on distribution system configuration, at any particular time of day and time of the year.

We have been operating a “flexible exports” API interface with the South Australian Tesla VPP as part of a trial and intend to offer this to other VPP operators as part of a broader trial later this year.

Currently, SA Power Networks negotiates an individual connection agreement with any customer with a generator or a generator who has an export capacity exceeding 30kVA. These connection agreements ensure that the operation of the customer’s generation source does not adversely impact the distribution network and other customers. VPPs can have under their control more than 1MW of generation, and if located at a single connection point would require the VPP to negotiate a connection agreement with us to minimise the impact on other customers.

Under the National Electricity Rules (NER) a generator must negotiate a connection agreement with the network service provider for the terms and conditions associated with the connection and access to their network. There is no requirement for a VPP to negotiate a connection agreement with the network service provider for the aggregated generation plant they control, as the connection agreement is with the customer at each connection point.

We believe that there should be a requirement for a VPP operator to negotiate an operating agreement with SA Power Networks to ensure that the simultaneous operation of the many individual generation plants do not adversely impact the distribution system and other customers. This formal operating agreement could detail requirements like providing assurance that:

- the aggregate VPP operation does not cause an individual generation plant to breach their connection agreement with SA Power Networks.
- the VPP at an aggregated level does not overload the distribution system when charging or discharging the DER or result in quality of supply issues for other customers.
- The ramp rate (ie discharge or recharge) does not result in adverse quality of supply issue for other customers.
- The operation of the VPP does not result in power system security impacts related to SA Power Networks roles and responsibilities in the management of DER for system security on behalf of AEMO.



The Licence Clause 5 “Access” is about the generator granting access to those parts of the generator’s generating plant to ensure the proper integrated operation of the South Australian power system and the proper conduct of operations authorised by the network service provider’s transmission licence or distribution licence. It also details that where an agreement to the terms for access does not exist the Commission will determine those terms. We propose that Clause 5 be amended to include the requirement for a VPP to negotiate an operating agreement with the network service provider(s) for which the DER they control is connected to that network.

#### 5.1 The licensee must:

- a) in accordance with, and to the extent required by, the Electricity Transmission Code, grant to a network service provider rights to use, or have access to, those parts of the licensee’s electricity generating plant that are interconnected or interface with the network service provider’s assets for the purpose of ensuring the proper integrated operation of the South Australian power system and the proper conduct of the operations authorised by the network service provider’s transmission licence or distribution licence; and
- b) in the absence of agreement as to the terms on which such rights are to be granted, comply with a determination of the Commission as to those terms.
- c) **have an operating agreement with the licensee of the network for distributed energy resources (DER) under its control connected to that network, to minimise any adverse impact to other customers connected to that network and minimise any augmentation of that network resulting from the operation of the DER. The Commission will determine the terms of the operating agreement where no agreement can be reached.**

Further, we support additional conditions being incorporated into a VPP’s generation licence like that proposed by ESCoSA in its consultation paper (eg Clause 17 Compatibility). We consider that the proposed Clause 19, “Compliance with laws”, should be expanded to ensure that the operation of an individual generation plant by the VPP does not result in that individual generating plant breaching its legal obligations. We propose the following amendment for consideration:

“The **licensee (including the generation plant it controls)** must comply with all applicable laws including, but not limited to, any technical or safety requirements or standards contained in regulations made under the Act.

As mentioned, SA Power Networks is currently engaged in a trial with VPP operator Tesla to better understand how to integrate VPPs with the distribution network; enabling greater network access to provide market services while maintaining the quality and security of supply for all customers. This trial, along with other trials conducted under AEMO’s market demonstrations and AEMO’s MASS review are building further understanding on VPP operation and integration. We believe further exploration is required before the industry can determine the appropriate long term operating agreements and regulatory framework for VPP operators, and are supportive of exemptions in the short term to allow this to occur.

#### **Summary**

The Commission has posed two questions in their consultation paper being:

1. Whether the exemption for enrolled program participants should be extended for a further 12-month period.
2. The suitability of the proposed conditions listed below for VPP licences and for the varied exemption.

SA Power Networks supports the proposed extension of the exemption for VPPs under the AEMO trial to be licensed, provided that the VPPs are subject to the conditions proposed by the Commission and incorporating the amendments to Clause 5 and Clause 19 proposed by SA Power Networks above.

If you have any question or wish to discuss this submission in more detail, please contact Mr Grant Cox 08 8404 5012 or email [Grant.Cox@sapowernetworks.com.au](mailto:Grant.Cox@sapowernetworks.com.au).

Yours sincerely



Doug Schmidt

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