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By email: SAPN2020@aer.gov.au

Submission in response to SAPN regulatory proposal

Redback Technologies employs technology to design, build and market solutions that support the fast and affordable transition to a smarter, greener and more affordable future of energy. Our goal is to open up more opportunity for customers to invest in their own renewable power at lower cost. We welcome the opportunity to provide input into the AER's regulatory determination for SA Power Networks.

As a willing and interested participant in SA Power Networks consultation on its draft plan and subsequent workshops, we have appreciated the efforts that SA Power Networks has gone to in order to explain key concepts of its proposal and the extent to which it seeks to accommodate increasing levels of distributed energy resources in its network.

Our comments are focussed toward expenditure put forward in terms of investment in low voltage network visibility and initiatives for dynamic export limitation of rooftop solar as part of its low voltage business case. We strongly support the initiatives put forward by SA Power Networks. However, we do not believe the initiatives proposed go far enough to ensure the network can keep pace with changes in the modernised grid over the next 5-10 years and more expenditure should be focussed toward these initiatives.

In summary, we believe that more should be invested in capability of the network to monitor and manage the grid with an expansion of different options looking at the best way that customer owned rooftop PV can be orchestrated at lowest cost and which minimises the impact on customers wishing to invest in decentralised renewable energy.

It is now well accepted that millions of customers – rather than incumbent generation providers or utilities – will play a major role in meeting the future generation needs of Australia. These customers are forecast to invest over \$200 billion over the next few decades and are expected to contribute up to 45% of all electricity generated. The AEMC estimates the total residential rooftop PV capacity across the NEM to be approximately 6500 MW. It also noted that 2017/18 represented the highest period of growth for residential rooftop PV since installations were first recorded.

The AEMC also predicts that:

- in 20 years, 15% of all residential rooftop PV installations will be integrated with batteries with behind the metre battery system systems constituting 2.6 GW of storage capacity.
- by 2024, generation output across South Australia will exceed demand mainly driven by output from residential rooftop PV generation in some hours.
- consistent with AEMO feedback 5.5 million residential and commercial electric vehicles are forecast to be on Australian roads by 2038.

The energy transformation, where customers make their own choices to invest in generation, embrace new technology, take more control over their energy decision or respond positively to global climate challenges delivers substantial benefits in terms of renewable, affordable energy. Customer owned self generation through rooftop PV:

- has largely contributed to a flattening or reduction of demand across distribution networks. SA Power Networks state that only \$18.6 million of the \$1.7 billion capital investment relates to investment to address forecast demand growth. Before the uptake of solar, increasing demand was a substantial driver of network expenditure.
- is already recognised as a low cost source of generation that already provides a positive downward impact on wholesale energy prices.
- is localised, meaning that losses in transportation to load is minimal compared to other options.
- is a renewable energy source that contributes positively to improving climate change outcomes – something that South Australian customers want networks to support.
- has been shown to provide wider market benefits such as assisting in over-frequency management at some times.
- provides untapped potential for avoidance of future generation and network costs if orchestrated correctly as evidenced by a number of publications.

Despite these substantial benefits, rooftop solar PV is often cast in an unforgiving light as the network costs of integrating DER are interrogated without the corresponding wider market benefits being included. To their credit, SA Power Networks have attempted to look at the opportunity cost of failing to invest in localised networks to accommodate increasing decentralised generation. However, it is likely that all the wider market benefits of increased capacity may not have been modelled, particularly given some of the wider system challenges from a transitioning energy market noted by the AEMC.

We note the recognition of wider market impacts that we have seen from limited interconnectivity in the wholesale NEM and the challenges in not planning and investing in a renewable energy future. For example, system strength interventions in South Australia during the reporting period cost approximately \$34 million per annum. Consumers bore a cost of \$52 million in 2017/18 for the reliability and emergency trader mechanism. The estimated impact on market prices from interventions relating to system strength exceeded \$270 million in the same period.

These issues are likely to intensify with the energy transition towards more intermittent and distributed sources of energy. Integration of distributed energy resources into the grid should be seen in its wider context of enabling low cost future energy markets and addressing some of these challenges. However, the potential wider market impacts does require broader consideration of how we plan and manage our distribution networks.

SA Power Networks has proposed over the next 5 years a template based model which allows for small incremental investment in a limited operation of dynamic export using arrangements with VPPs (with the potential to expand the template model near the end of the period). While we fully support this initiative, more needs to be done to consider the impact of more decentralised generation arrangements and a range of likely models that will facilitate a range of customer needs at these decentralised markets.

This would promote the need to an expanded model with greater network visibility, optionality and flexibility. We support more investment in an expanded model capable of testing and trialling broader options for battery integration for several reasons:

- The minimum investment results in SA Power Networks “picking a winner” in terms of the dynamic load control arrangements. However, this approach appears to entrench the VPP as the vehicle for which customers can access connection of greater levels of solar capacity. To the

extent that this is the only option invested in and is replicated across the NEM, it has the potential to concentrate future markets for distributed generation.

- There are additional complexities in adopting multiple platforms to engage of VPP which need to be considered. Over the long term, the ultimate market requirement for VPP participating in wholesale energy market dispatch may be of limited significance as significant storage capacity is implemented.
- We would also prefer to see models trialled which open up a direct relationship with DNSPs and customers and remove transaction costs or arbitrage which may occur through middle market platforms and arrangements. We think strong distribution level markets are best enabled where DNSPs are able to access or control behind the meter DER (or load) for network stability purposes, as part of a connection agreement or incentive arrangement with customers.

We would also like to see more investment in network visibility. Networks must transition their business toward a future focussed network operator which embraces improved intelligence and data to enable better outcomes for customers in terms of safety, reliability and affordability. This includes better access to more granular levels of data to assist with planning and operation of the network.

Other networks have demonstrated that investment in network visibility has, over the long term, reduced risks to electrocution and fire, reduced time take to respond to outages, lowered replacement investment and improved customer experience. This further substantiates the argument in favour of increased investment in data access and analysis of the low voltage network. While benefits are multi-period, one would expect that additional concentrated investment in data analytics would have payoffs into future periods.

Creating strong regulatory incentives for lower cost of service through data-led decision making, and procurement for behind the meter storage and load will enable the market of the future to be established quicker as it will increase the demand for storage in current markets and create more transparent customer value propositions than the alternatives currently put forward.

Our views appear to be consistent with views put forward by many customers in research undertaken by SA Power Networks which found:

- Three quarters of customers surveyed had a positive attitude to SA Power networks spending more money on the network to enable more solar PV.
- 1 in 3 customers expressed a preference for substantially higher investment in the network that what SA Power Networks has proposed to integrate more solar PV whereas around 1 in 10 customers expressed a preference for less investment because it would unduly curtail solar uptake.
- 40 per cent of customers thought that if SA Power Networks spent substantially more to allow for increased levels of solar PV output, this would be in the long term interests of customers, even if it resulted in higher network prices.

Redback submits, in an environment where cost of capital rates are at historical lows, customer attitudes toward investment to support increasing solar PV penetration are strong and market challenges and opportunities are high, that a greater proportion of investment should be prioritised toward these future grid initiatives.

Brendon Crown
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