



# Clean Energy Council submission to the SA Power Networks 2020-2025 Regulatory Proposal

## Executive Summary

The Clean Energy Council (CEC) welcomes the opportunity to provide feedback to the Australian Energy Regulator (AER) on the SA Power Networks 2020-2025 Regulatory Proposal.

The CEC is the peak body for the clean energy industry in Australia. We represent and work with hundreds of leading businesses operating in solar, wind, hydro, bioenergy, marine and geothermal energy, energy storage and energy efficiency along with more than 6,500 solar installers. We are committed to accelerating the transformation of Australia's energy system to one that is smarter and cleaner.

We welcome the AER's support in the Draft Determination for the low voltage (LV) component of the SA Power Networks Regulatory Proposal. However, we are disappointed that the general approach to expenditure appears not to have kept up with the latest thinking. As outlined by the Australian Energy Market Commission (AEMC) in September 2019<sup>1</sup>, the network regulatory framework currently imposes no consequences on distribution network service providers (DNSPs) for constraining off DER generation and similarly provides no benefits for increasing DER hosting capacity where this is in the long-term interest of consumers. Rather than placing hurdles in front of DNSPs like SA Power Networks that are taking an innovative approach, the AER should be using its regulatory powers to hold accountable those DNSPs that have not demonstrated the steps they have taken toward improving network DER hosting capacity. There is an urgent need to develop metrics for measuring hosting capacity and frameworks for DNSPs to report on the steps they are taking to enhance hosting capacity and enabling exports of zero marginal cost DER generation.

SA Power Networks has played an important thought leadership role among Australian DNSPs, by developing a methodology for assessing costs and benefits of investments to enable dynamic management of DER. We anticipate that the framework and methodology will continue to evolve in 2020 and beyond. It would be extremely counter productive to lock SA Power Networks into expenditure premised on the early-2019 thinking exemplified in the AER's recent Consultation Paper, *Assessing DER integration expenditure*. There needs to be a mechanism for DER integration expenditure decisions to be reviewed more regularly than

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<sup>1</sup> AEMC, Integrating distributed energy resources for the grid of the future, Economic regulatory framework review, 26 September 2019

once every five years so that regulators have a chance of keeping up with the rapid developments in DER technology and uptake.

The CEC supported the proposed expenditure for modernising the SA Power Networks grid, as outlined in the SA Power Networks original proposal. We strongly support the SA Power Networks proposal to move toward dynamic export management of DER.

There is a clear and demonstrated need for dynamic management so that DER can better support management of the grid and to enable more DER to be accommodated on distribution networks. Dynamic management strategies for DER offer net benefits to all customers, not just those who own DER. A grid management strategy that relies on zero export limitation or repeated inverter tripping would hasten grid defection and would have wider negative impacts – it would be inequitable, it could worsen over-voltage problems, it would undermine prospects for VPPs, it would degrade the value of DER investments, it would adversely affect network performance and it would do nothing to address problems arising from high DER penetration that are not restricted to voltage rise.

The SA Power Networks business case has explained clearly the rationale for the proposed expenditure in the 2020-2025 regulatory control period to develop new operational systems and business processes to actively manage the integration of rooftop solar PV, battery storage and virtual power plants (VPPs) into the distribution network. The AER's rationale for rejecting those proposals does not appear to be as robust.

On 8 May 2019 the AER released a Consultation Paper on Information and Communication Technology (ICT) expenditure, which stated that a paper on investments to enable better integration of distributed energy resources (DER) would be published in late 2019 and that decisions arising from AER review of ICT expenditure assessment methodologies would be applied to the SA Power Networks 2020 to 2025 Proposal. However, we note that the AER's final guidance will now be published in June 2020, which will be after the final decision on SA Power Networks' expenditure.

The adoption of dynamic management strategies in the SA Power Networks grid cannot wait until after 2025. Given that the slippage in timeframes has been due to delays in publication by the AER, it seems more appropriate for the AER to approve the expenditure proposed in SA Power Networks' original proposal with the possibility of a review following the completion of the AER's guidance on DER integration expenditure. Failing that, we support the revised proposals for LV transformer monitoring (which has been reduced from \$18 million down to \$5.1 million) and business as usual (BAU) quality of supply (which has been reduced from \$44 million to \$41.4 million). This seems to be a sensible minimal investment in network visibility to enable better planning in a high-DER network. It is very modest in the context of the overall proposal. We do not understand why the AER is taking a 'penny-pinching' approach to DER integration expenditure when the amount involved is such a small fraction of total expenditure and has high potential payoff.

We would be very happy to discuss these issues in further detail. We look forward to contributing further to this important area for policy development.

## **The CEC supports the proposal to modernise the SA Power Networks grid**

SA Power Networks' proposed expenditure to enable dynamic export limitation is in the long-term interests of consumers in SA.

South Australians have embraced DER and this has contributed to lower electricity costs for all customers, not just those who have invested in their own system. Solar PV has reduced the need for additional network augmentation expenditure and contributes a positive downward impact on wholesale energy prices.

The SA Power Networks business case<sup>2</sup> is credible and well-founded. The economic modelling indicates that implementing a dynamic export limit scheme in SA is likely to deliver the greatest value to consumers in the long-term from a whole-of-market perspective. The business case clearly demonstrates that zero export limitation delivers a worse economic outcome for the community than enabling more DER exports through smarter and more flexible management of capacity.

The CEC supports the proposal for expenditure to modernise the SA Power Networks grid. The lack of monitoring capability on the low voltage network requires distribution businesses to take a more conservative position on DER integration than would otherwise be the case. The AEMC has acknowledged that, "Improving DNSPs visibility of their LV networks is likely to require additional expenditure. The Commission considers that this expenditure is warranted where it is prudent and efficient". In the absence of final guidelines for prudent and efficient DER expenditure, the AER should ensure that it does not lock SA Power Networks into an outdated approach either by allowing for a review of its decision following further developments in the expenditure assessment framework or by erring on the side of conservatism, which would mean allowing more rather than less expenditure on DER integration.

## **There is a demonstrated need for changes to accommodate more solar PV**

Demand by customers for rooftop solar and batteries will continue to grow and penetration on the distribution network will continue to rise. Distribution networks are obliged to connect DER under an open access framework. Even if distribution networks could refuse solar PV connections, many customers would choose to go off-grid. CEC members are reporting a demand for off-grid systems by customers in fringe of grid areas that have the alternative of connecting to a single wire earth return (SWER) line.

Customers, industry participants, policy makers, distribution networks and community representatives want and expect DER to play a role in supporting management of the grid and bringing down wholesale electricity prices for all customers. Rooftop solar PV, batteries and virtual power plants (VPPs) are expected to become an essential part of future energy systems.

We agree with the AEMC's view that, "static export limits on export are a blunt approach to addressing the impacts of DER on the network".

The AER would be turning back the clock if its approach to DER integration expenditure leads to the imposition of zero export limitation or to a situation whereby conditions on congested

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<sup>2</sup> SAPN, *Supporting document 5.18—LV management business case*, 25 January 2019

parts of the network worsen to a point where inverters repeatedly trip off due to grid conditions. Tripping due to high voltage is already an emerging issue for SA Power Networks.

There would be serious reputational issues for SA Power Networks if it constrains customers to zero export, refuses DER connections or if consumers find that their inverters constantly trip off due to grid conditions. Customers expect their solar PV system to 'work'. If it becomes widely known that many systems are not working and the fault lies with conditions on the distribution network, customers will direct their anger at SA Power Networks and their political representatives. Those who can afford to will consider alternatives to remaining on the grid.

### **Zero export limitation is inevitable without investment in DER integration**

Export limits in the SA Power Network area have reduced from 10kW per customer in 2017 to 5kW today. According to SA Power Networks, continued connection of new 5kW PV systems will reach or exceed network capacity across many areas of its network in the 2020-25 period. At high levels of PV penetration, over-voltage becomes a serious issue. This is being ameliorated by requirements for inverter capabilities such as Volt-var and Volt-Watt response. These inverter requirements are necessary, but not sufficient, to enable higher DER penetration on the network. We are actively supporting further improvements to inverter standards, including moves toward dynamic management capabilities such as those used in California and drawing on international standards. SA Power Networks has taken a leading role in that work. However, it is not enough to simply demand that inverters must be more intelligent. The capability will be wasted if networks are unable to take advantage of it because they fail to make the necessary investments in ICT systems and open standards in a timely manner.

### **Reliance on inverter tripping would undermine VPPs and reduce customer value**

If the network management approach was to allow inverter over-voltage protection settings to operate more and more often, VPPs could not operate effectively. VPPs could have a very important role to play in network support and reducing wholesale electricity prices. Such an approach would seriously set back the development of VPPs in Australia.

A network management strategy that relies on inverter protections would also seriously degrade the value of investments made by customers in solar and energy storage. Under the AS 4777.2 inverter standard, voltage rise on distribution networks affects the inverter's performance and power output, not just the output seen by the network. Increasingly frequent tripping would seriously undermine financial returns on investment in DER. This approach would tilt the cost-benefit equation for customers away from grid-connected DER and toward off-grid DER. In a high-tripping network environment, customers with grid-connected DER would have very little predictability regarding their system's performance whereas those that go off-grid will have a much greater degree of certainty, independence, a well-performing system and much less frustration with SA Power Networks.

### **The proposed investments cannot wait until after 2025**

SA Power Networks is already reaching the limits of its DER hosting capacity on certain feeder types and by 2025 it will have reached or exceeded the hosting capacity on most feeder types.

The SA Power Networks distribution network and the DER connecting to it will reach a 'fork in the road' in the 2020-2025 period. One path leads to exceedance of DER hosting capacity,

zero export limitation, repeated inverter tripping, grid instability, higher electricity prices, customer dissatisfaction, reputational damage to the AER and SA Power Networks and, in all likelihood, an unstoppable move towards unmanaged, economically inefficient grid defection by angry DER owners.

The other path, supported by the SA Power Networks proposal, leads to dynamic export limitation, use of batteries to support the network, innovations such as VPPs, better grid management, lower electricity prices and efficient utilisation of grid-connected DER to the financial benefit of all SA consumers. CEC supports this second path.