

Australian Energy Market Operator
By email: DERProgram@aemo.com.au

26 June 2020

Dear AEMO team,

Re: Consultation on short duration undervoltage disturbance ride-through test procedure

Engineers Australia welcomes the opportunity to provide feedback to the Australian Energy Market Operator (AEMO) on its June 2020 consultation: “[Short duration undervoltage disturbance ride through test procedure](#)”. This document addresses Distributed Energy Resource (DER) testing and certification requirements for distribution connected solar/battery inverters in South Australia.

Engineers Australia is the peak body of the engineering profession. It is a professional association with about 100,000 individual members. Established in 1919, Engineers Australia is a not-for-profit organisation, constituted by Royal Charter to advance the science and practice of engineering for the benefit of the community.

Background

This consultation addresses the issue of increasing solar penetration in South Australia (now exceeding 500MW), and reliability concerns of the aggregate generation during a credible contingency event. The central concern being that a significant percentage of solar DER was observed to trip off during a contingency event in 2017. The DER did not then start for 60 seconds in accordance with their anti-islanding protection.

In Australia, DER inverter design and certification requirements are specified in AS4777.2 2015. This standard is predominantly focused on mandated tripping to avoid anti-islanding. Anti-islanding is a safety function of DER. Its effect is to avoid generation when operating as an “island” when the upstream distribution system has been isolated during a fault for fault rectification. This has been implemented to ensure safe working on that isolated infrastructure.

The primary concern is that AS4777.2 2015 has no mandated ride through requirements. This is not unusual for DER standards which have only recently come into consideration, i.e. IEEE 1547. The proposed test procedure seeks to provide a short-term remedy while revised Australian Standards are finalised and implemented (circa December 2022).

Alternative solution

Engineers Australia does not support adopting the testing procedure set out in Appendix A1 and its subsequent incorporation into connection agreements. This is because:

- 1) Further work is required to define realistic and verifiable fault ride through conditions for:
 - Low Voltage Ride Through (LVRT) for a representative distribution fault (expected to be shallower and longer than a 50V 220ms)
 - High Voltage Ride Through (HVRT) noting that AS4777.2 2015 has a very strict high voltage anti-islanding requirement of 265V within 200ms
 - Rate of Change of Frequency (ROCOF).
- 2) Industry consultation and input cannot be foregone, if a suitable and workable solution is to be delivered at short notice.
- 3) The very short timeline for implementation is likely to generate costs and inefficiencies that have not been assessed.
- 4) The alternative pathway for applying standards has not been considered. We note that once the above engineering requirements are clearly specified, these requirements can be objectively demonstrated by Original Equipment Manufacturers (OEMs) via normal testing and certification. This information can then be provided to the Clean Energy

Council as a requirement for South Australian (SAPN) Distribution Connection Agreements (DCA) within six months of release. It can also be submitted into AS4777.2 for consideration as a new release or an addendum.

As this approach has no impact on existing DER, further analysis should be conducted to determine if this is a credible network contingency event. If so, it should be factored into the FCAS R6/R60 procurement during South Australian islanding events.

Engineers Australia would be happy to discuss this submission further. If you would like to do so, please contact Steve Rodgers, Senior Policy Advisor, on 0466 548 519 or at SRodgers@engineersaustralia.org.au.

Yours sincerely,

A handwritten signature in black ink, appearing to read 'J Russell'.

Jonathan Russell
National Manager, Public Affairs and Policy Advocacy