

Initial DER minimum standard consultation: Fact sheet

The largest power station in Australia today is the 2.2 million rooftop solar PV systems on homes and businesses across the country. As these and other Distributed Energy Resources (DER) supply more power to homes and the grid, they are impacting how the grid operates.

AEMO is consulting on standardising the minimum performance and technical capabilities expected from DER across the National Electricity Market (NEM). With more of our power coming from DER, it is important that these devices perform as expected, working in-sync with the rest of the power system so that AEMO can balance electricity supply and demand and keep the power system running. So, what does the initial DER minimum standard involve and why?

The transforming energy landscape...

In order to comprehend why DER technical standards are needed, it's important to understand the changes taking place in the energy landscape.

Traditionally, Australia's power was generated by large scale power plants, which must meet minimum performance levels and capabilities to ensure that the power system can operate securely and reliably. The more DER in the system, the less power supplied by large power generators.

This means the traditional capabilities provided by large generators that are critical to operating the power system are reducing. So, as the scale of DER increases, without minimum performance and capabilities, these technologies can cause unintentional risks to the power system. One example is the sensitivity of household solar inverters to a sudden change in voltage on the electricity transmission network, which is causing large numbers of rooftop solar to unexpectedly and suddenly disconnect from the grid at the same time. If this happens on a large scale when power demand is really low, it could lead to cascading failure throughout the powerline network and blackouts.



What are DER?

DER are typically consumer-owned devices that, as individual units, can generate or store electricity or have the 'smarts' to actively manage energy demand.

Examples of DER devices include:

- Rooftop solar photovoltaic (PV) units
- Battery storage
- Hot water systems, pool pumps and air conditioners

Australian Standards already require inverters to stay connected during such disturbances but in many cases their performance is not holding up. As such fundamental capabilities change and we come to rely more on DER with varying levels of performance, operating a secure power system is becoming more difficult and complex.

AEMO's DER Program

AEMO's DER Program is committed to better integrating high levels of DER across the NEM, and Western Australia's Wholesale Electricity Market (WEM). Integration means that DER can safely, reliably and securely connect to and work together with the grid, while providing DER owners more opportunities to benefit by participating in the electricity market through the development of new products and services. This could include selling energy back into the grid, but also other essential services required for the stable operations of the power system.

To deliver this outcome, AEMO is trialling the integration of [Virtual Power Plants](#) into operating systems, analysing the impact of DER on real-time operations, forecasting and planning and is consulting here on what level of performance and capabilities DER require to support customers and the grid today, and into the future.

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Initial DER minimum technical standards

AEMO's issues paper on an initial DER minimum technical standard outlines our recommendations on the minimum performance and capability required at present to meet power security system needs and mitigate system security risks.

To summarise, AEMO recommends:

1. Including a new inverter testing procedure in the initial DER standard, that will ensure household solar stays connected during a power system voltage disturbance. This will help AEMO keep electricity demand and supply in balance and the power system secure.
2. That industry considers setting AS/NZS 4777.2 in its entirety as a minimum DER standard. This Australian Standard defines the safety, performance and functional capability for grid connection of energy systems to the low voltage network via inverters. AEMO is seeking feedback on including AS/NZS 4777.2 in full in the DER minimum technical standards to ensure uniform application of the performance and capabilities in this standard.
3. Developing a coordinated industry consultation and implementation plan regarding DER data, communications and interoperability capabilities. AEMO considers that standardisation is needed in these areas as soon as practicable to provide the tools and information needed to manage more complex power system operations with high levels of DER.

However, AEMO does not recommend incorporating DER data, communications and interoperability provisions into the Initial Standard at this time as technical requirements are not yet well prepared or consulted.

Consumer benefits

Improving the capability of inverters to withstand voltage disturbances will mean consumers can keep installing DER like solar PV and we'll avoid the need for inefficient operational measures and the cost of additional contingency reserves in anticipation of DER loss.

If we do so now, we can avoid further installation of inverters that continue to pose risks to the security and reliability of power supply to all electricity customers.

Related works

- The Australian Energy Market Commission is consulting on the rule change required to establish nationally consistent DER technical standards, [Technical Standards for DER consultation](#). A final determination on the rule change is due by December 2020.
- The Energy Security Board is also consulting on a governance regime for DER technical standards longer term to determine how these standards should be made, maintained, amended and enforced. This consultation commenced on 15 July with a recommendation due to the Council of Australian Governments Energy Council in October 2020.



For further information on the initial DER standard, please visit [AEMO's website](#).

Consultation Information:

First stage submissions close on 29 September 2020 at 5:00pm (AEST).

Questions?

Contact us:

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