



Fact sheet: What is transmission reliability?

AEMC Review of the national framework for transmission reliability

What is reliability?

Reliability refers to the extent to which customers have a continuous supply of electricity. As electricity cannot be easily stored, a reliable supply of electricity requires generators to produce electricity and the transmission and distribution networks to transport the electricity to customers in real time.

As a result, a reliable supply of electricity to customers requires adequate planning, capacity, and maintenance on all components of the electricity supply chain to ensure electricity can be delivered to customers when it is required.

What are the causes of power outages?

Outages can be considered in terms of both planned and unplanned outages. Planned outages generally occur so that maintenance or construction can be undertaken on generators or the transmission or distribution networks. Unplanned outages occur when equipment failure causes electricity to be disconnected unexpectedly.

The reliability that customers experience is a combination of the service provided by generators, transmission networks, and distribution networks. However, most of the outages that customers experience are due to issues on the distribution networks due to the size of these networks.

What is the role of transmission networks in providing reliability?

Transmission networks are an important component of the electricity supply chain. Transmission networks transport electricity across the country from generators to major demand centres. Electricity is then transported by distribution networks to customers. Transmission networks also play a key role in maintaining the safe and secure operation of the electricity system.

Given these roles, an outage on the transmission network could cause widespread and severe disruptions to the supply of electricity. As a result, transmission networks are designed and built to provide a high level of reliability to ensure that the number of outages is low.

How are reliability levels currently set?

The AEMC's Reliability Panel sets the reliability standard for generation, which currently requires there to be sufficient generation to meet 99.998% of annual demand for electricity.

Each state and territory government retains control over how transmission and distribution reliability is regulated and the level of reliability that must be provided. This has resulted in different regulatory frameworks for transmission and distribution reliability in each jurisdiction.

How are transmission reliability levels currently regulated?

In most jurisdictions, transmission reliability levels are expressed in terms of the amount of spare capacity that must be built into the network.

For instance, in central business districts a high level of reliability is required. In these areas transmission networks may need to have enough spare capacity to ensure that customers have no interruptions to supply even where there has been a failure of two separate elements on the network.

The Australian Energy Market Commission has recommended a framework that promotes greater efficiency, transparency, and community consultation in how reliability levels are set and provided across the NEM.

In other areas which are less densely populated transmission networks may only be required to provide a level of reliability which enables supply to still be provided following one failure on the network.

In some jurisdictions, transmission networks also face requirements relating to the maximum length and impact of outages.

The reliability standards that transmission networks need to meet are generally set in advance of a transmission business' decision to invest and are set in place for a fixed period of time. The exception is in Victoria, where reliability levels are determined at the time an investment need arises.

What is the purpose of the AEMC's review?

On 8 February 2013, the AEMC received terms of reference from the Standing Council on Energy and Resources (SCER) to conduct this review.

The purpose of the AEMC's review is to develop a national framework for expressing, setting, and reporting on electricity transmission reliability in the National Electricity Market (NEM). SCER has also requested that the AEMC's framework allow jurisdictions to delegate responsibility for applying the framework to the Australian Energy Regulator (AER).

The Commission's final report has been developed after considering submissions received on the AEMC's issues paper and consultation paper and discussions with stakeholders.

This review was undertaken in parallel with a review to develop a national framework for regulating distribution reliability in the NEM. A substantially common set of arrangements has been developed for the distribution and transmission reliability frameworks to reduce the cost of implementing and applying the frameworks. However, some differences have been recommended to reflect the differing characteristics of transmission and distribution networks.

The AEMC's final report on the national framework for distribution reliability was published on 27 September 2013 and is available on the AEMC's website.

How would transmission reliability standards be set under the AEMC's framework?

The AEMC's framework would promote greater efficiency, transparency and community consultation in how transmission reliability levels are set and provided across the NEM. In particular:

- In setting transmission reliability standards, the costs of building and maintaining the transmission network would be compared against expected reliability outcomes. The value that customers place on a reliable electricity supply would also be taken into account. This should provide for more efficient investment and reliability levels which reflect customer preferences.
- Reliability standards would be expressed in terms of the amount of spare capacity that transmission networks would need to build into different parts of the network and the expected time to restore supply following an outage. Further reliability measures could be added to enhance these standards to better reflect the preferences of customers.
- Reliability standards would be set ahead of the need to invest to provide transparency to customers about the level of reliability they can expect to receive and make transmission networks accountable for the level of reliability delivered.
- Jurisdictional governments would retain responsibility for setting reliability standards, but would be able to delegate this responsibility to the AER or a jurisdictional body which is independent of the transmission business.

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1 November 2013