AEMC

INFORMATION

Fact sheet: What is reliability?

AEMC Review of distribution reliability outcomes and standards

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 the 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.

For example, as shown in **Table 1** below in NSW over 2010/11, 99% of outages occurred due to issues on the distribution network.

Table 1: Average duration of outages in NSW over 2010/11

Component of the electricity supply chain	Average duration of outages in minutes	Proportion of outages
Generation	0	0%
Transmission	1.28	1%
Distribution	198.5	99%
Total	**199.78**	**100%**

Source: AEMC Reliability Panel, 2012, Annual Market Performance Review.

Large amounts of expenditure are currently being spent on distribution networks across Australia to provide a reliable supply of electricity. To further improve current levels of reliability, significantly more expenditure would be needed as reliability is already at a relatively high level. As a result, it would not be cost efficient to remove all outages on the distribution networks.

There are also a number of factors which can lead to unplanned outages, which distribution networks have only a limited control over. This includes factors such as birds or possums on lines, or extreme weather such as storms, which may bring lines down.

What is the AEMC's role in reliability?

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

Each state and territory government retains control over how transmission and distribution reliability is regulated, which has resulted in different regulations in each jurisdiction.

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In 2010, the AEMC developed a proposal for a national framework for transmission reliability standards. The implementation of this proposal is currently being considered.

We are currently undertaking a review to assess whether there would be merit in a nationally consistent approach to distribution reliability. We have also recently completed a review of the requirements for distribution reliability in NSW to examine the costs and benefits of providing different levels of reliability.

In NSW over 2010/11, 99% of outages occurred due to issues on the distribution network.

How is distribution reliability currently regulated?

In general, each state and territory has reliability standards for the average number and duration of unplanned outages that each distribution network should not exceed each year. For each network, these standards are often further split into specific standards for different levels of customer density, geographic areas, or customer types.

Most states and territories also have a number of other measures to regulate distribution reliability. For instance, in NSW, in addition to reliability standards which set standards for the average reliability performance of each distribution network, there are:

- Design planning criteria, which determine how the distribution networks should be built in the longer term;
- Individual feeder standards, which set minimum performance requirements for the duration and number of unplanned outages for each network component; and
- Customer service standards, which determine when distribution networks are required to compensate customers who have experienced poor performance.

The national energy regulator, the Australian Energy Regulator, is also implementing a scheme to improve distribution reliability performance. Under this scheme, distribution businesses will receive a financial reward where they improve their performance compared to their historical five year average reliability performance, or a financial penalty where they fall below their historical performance.

What is the current level of distribution reliability in New South Wales?

There are three different distribution networks in New South Wales, which include:

- Ausgrid, which operates in eastern Sydney, the Central Coast, the Newcastle area, and the Hunter Valley;
- Endeavour Energy, which operates in Greater Western Sydney, the Blue Mountains, the Southern Highlands, the Illawarra and the South Coast; and
- Essential Energy, which covers the remainder of NSW.

The reliability performance on the three distribution networks in New South Wales differs, due in part to differences in customer density, terrain, and exposure to extreme weather.

As shown in **Figures 1 & 2** below, the reliability of the two urban distribution networks, Ausgrid and Endeavour Energy, is significantly higher than that of Essential Energy. This largely reflects the difficulty associated with maintaining Essential Energy's rural and remote distribution network, which has very low levels of customer density.

Figure 1: Duration of unplanned outages on the NSW distribution networks 2010/11

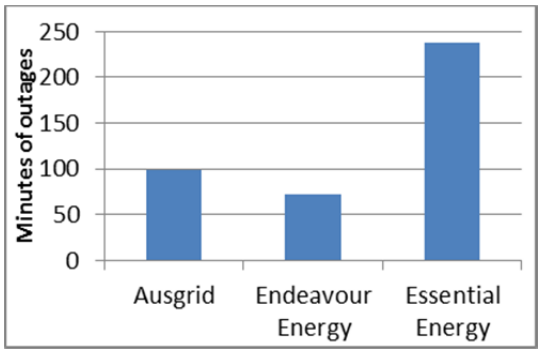
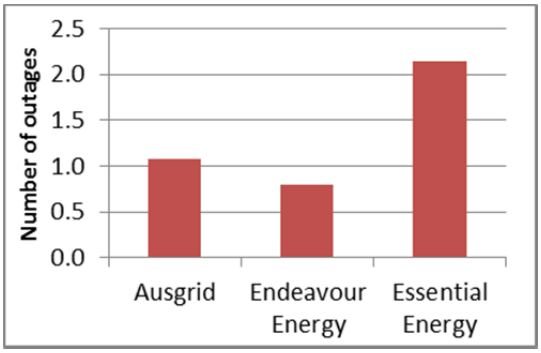


Figure 2: Number of unplanned outages on the NSW distribution networks 2010/11



Source: AEMC Reliability Panel, 2012, Annual Market Performance Review.

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