

South Australia's power security and reliability

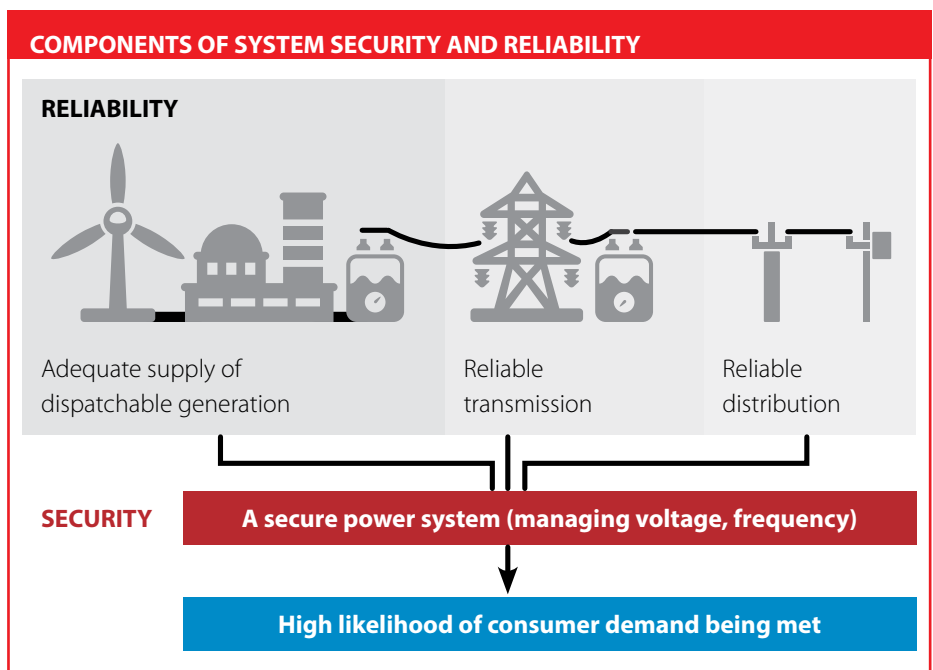
As power generation changes, South Australia needs to consider new way of managing power security and reliability.

POWER RELIABILITY

Reliability of the power system is about ensuring there is enough capacity to generate and transport electricity to meet consumer demand.

The level of reliability depends on the generation and supply, but also on the reliable performance of local transmission and distribution networks.

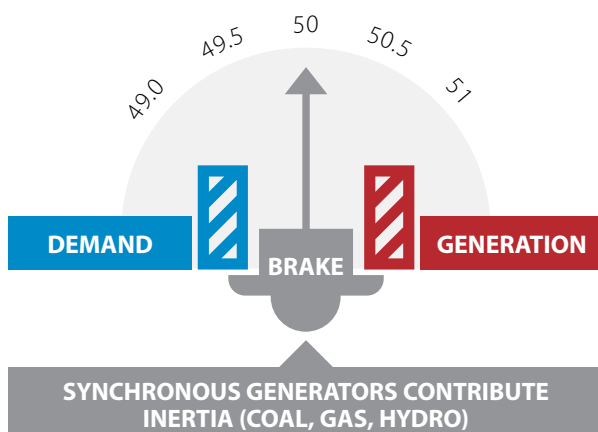
The national energy market reliability standards are the main way to signal to the market to deliver enough capacity to meet consumer demand for electricity.



FREQUENCY CONTROL

The power system operates at 50 Hertz (Hz), or cycles per second.

Traditional synchronous generators provide the power system with inertia, as all the generators rotate at the same speed to maintain frequency at 50 Hertz.



FREQUENCY

Controlling power system frequency requires constant balancing of electricity supply and demand.

If electricity supply exceeds demand at an instant in time, power system frequency will increase. If electricity demand exceeds supply at an instant in time, power system frequency will decrease.

If following a severe event, the power system is not quickly brought into balance, generators will automatically shut themselves down to protect the generator from damage.

If a large block of load is suddenly lost, generators would also automatically shut themselves down.



POWER SECURITY

The Australian Energy Market Operator is responsible for maintaining power system security. This means operating the power system so it is safe and secure, and also returning the system to this state following a disruption to power supply.

System security deals with voltage, frequency, the rate at which this might change and the ability of the system to withstand faults.

Large spinning conventional generators, such as coal, gas and hydro, resist large, rapid changes in frequency and increase system strength. These generators support the stability of the system by working together to maintain a consistent operating frequency and maintain the strength of the system in localised networks.

Currently, less conventional forms of electricity generators connected to the national electricity system, such as wind and rooftop solar, are not synchronised to the grid and are therefore limited in their ability to dampen rapid changes in frequency.

INITIATIVES FOR RELIABLE AND SECURE ELECTRICITY SUPPLY IN SOUTH AUSTRALIA



- New regulation for ElectraNet and the Australian Energy Market Operator (AEMO) to control frequency in the short term
- Rule changes to provide incentives to use new technology to help control frequency over the longer term
- Chief Scientist, Dr Alan Finkel AO, to lead a review and develop a national reform blueprint
- \$500,000 on the 2016 State Budget towards a study into a new interconnector between South Australia and the eastern states
- A tender to procure 75 per cent of the State Government's long term electricity needs, aimed at introducing new generation that can contribute to power system's security
- Source 25 per cent of the State Government's electricity from dispatchable renewable energy providers.

FOR MORE INFORMATION ABOUT SOUTH AUSTRALIA'S ENERGY MARKET VISIT

www.dpc.sa.gov.au