INFORMATION

FACT SHEET: BLACK SYSTEM EVENTS

A large scale blackout of the power system is called a black system event. Following one of these events electricity supply is restored using system restart ancillary services which are procured in accordance with the system restart standard.

What happens in a black system event?

A sudden, unexpected loss of a major source of supply can cause very rapid changes in system frequency. In this event, networks and generators will automatically disconnect, or trip, in order to protect people and equipment from harm.

How frequent are black system events?

Black system events are rare. The most recent was in South Australia in September 2016. There were two before that; northern Queensland in 2009; and New South Wales in 1964.

Who coordinates the response to a black system event?

The Australian Energy Market Operator (AEMO) is responsible for maintaining power system security. Following a black system event AEMO coordinates the restart and restoration process.

Restart services allow electricity services to be restored. If supply from the system is lost, most generators are not capable of independently restarting in the event of tripping off. Restart services put energy back into the grid after a power outage so generators can start producing electricity again. Some generators have specialised equipment that allows them to restart without an external ‘kick start‘ These generators can provide dependable restart capability and function as back up for the power system. These generators provide what are called system restart ancillary services, or SRAS.

AEMO contracts system restart ancillary services from generators throughout the power system. These restart services are procured in accordance with the provisions of the System Restart Standard and are delivered in accordance with SRAS Guidelines prepared by AEMO.

Who sets the system restart standard and what does it do?

The standard is set under the National Electricity Rules by the AEMC’s Reliability Panel. It is a procurement standard under which AEMO contracts the system restart ancillary services from generators. It sets out several key parameters for system restart including the maximum time within which the services are required to restore supply to other generators in electrical sub-networks to specified levels.

What doesn’t the system restart standard do?

The Standard does not set out the level of or time in which supply needs to be restored to consumers. This is because restoring supply to consumers depends on many things, such as the extent of network damage that may have happened during a black system event that are beyond the scope of the Standard. It would be difficult and unhelpful for AEMO to be required to estimate the time to do this and provide for it when it is buying SRAS.

Who does what in a black system event?

In the instance of a major supply disruption such as black system event AEMO coordinates the restoration process under black start system procedures and, if necessary, the exercise of emergency services powers. Transmission network companies work with AEMO to establish network paths to generators.

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Black system events can have significant economic and social impacts, so it is important there are enough restart services available to quickly restore power supply.

- Transmission network companies work with the distribution network providers to prepare blocks of load to be reconnected progressively.
- Distribution network providers prepare local networks to have power restored and coordinate reconnection with the transmission business.
- AEMO, the transmission and distribution network companies must coordinate the restoration process with each state's system security coordinator. These are known as Jurisdictional System Security Coordinators.

2016 review of the system restart standard

Following a comprehensive 12 month review by the Reliability Panel, an updated standard was published on 15 December 2016.

Information

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