



## Review of the System Black Event in South Australia on 28 September 2016

### AEMC publishes the final report from its South Australian black system event review

The Australian Energy Market Commission (AEMC) has published the final report from its South Australian black system event review. The final report identifies systemic issues with existing NER frameworks for system security and recommends implementing a new operational mechanism for AEMO to enhance power system resilience to indistinct events under abnormal conditions.

### Background

South Australia experienced a 'black system' event at 16:18 AEST on Wednesday 28 September 2016 (the event). Approximately 850,000 South Australian customers lost electricity supply including households, businesses, transport, community services, and major industries. The total cost of the black system event to South Australian business was estimated at \$367 million.<sup>1</sup>

This report presents recommendations from the Commission's South Australian black system event review (BSE review).

This review was commissioned by the COAG Energy Council, which required the Commission to identify and report on any systemic issues that contributed, or affected the response to, the black system event in South Australia. The Commission was required to consider and build on earlier investigations into the event, which were completed in December 2018.

The South Australian black system event illustrates how the risk profile of the power system is changing. In particular, the power system now faces new, indistinct risks, which reflect the changing generation mix and new external effects, particularly the impacts of climate change.

This demonstrates the need to evolve the existing security and resilience frameworks, to better reflect the full range of emerging risks present as the power system changes.

The Commission has focussed on operational approaches to enhancing power system resilience. In particular, we found there is a clear opportunity to develop new operational measures that will better enable AEMO to manage risks from 'indistinct' events.

### Policy issue

The AER finalised its compliance review into the South Australia black system event in December 2018. In that report, it identified a number of issues related to the operational management of risks to power system security. These issues included the extent to which the current contingency classification framework remained appropriate to manage emerging, indistinct type risks.

Existing frameworks for system security are designed to manage the risks from traditional, "distinct" contingency events - which typically involve the sudden failure of a single generator or network line. The AER's investigation into the pre-event period identified the emergence of a new "indistinct" type of event.

These indistinct events are typically distributed over a wide area, and may impact multiple generators and network lines. They may occur over a period of time, and are often related

<sup>1</sup> Business SA, Blackout survey results: [https://www.business-sa.com/getmedia/1b28b42b-0fc3-4ce4-ac24-de71d825c51a/J009159\\_blackout-Survey-results\\_v8](https://www.business-sa.com/getmedia/1b28b42b-0fc3-4ce4-ac24-de71d825c51a/J009159_blackout-Survey-results_v8)

to external conditions that affect a wide area, like a major storm system crossing a state. They are different from traditional events, which are usually discrete, occur suddenly, and aren't necessarily related to external conditions.

The AER identified a specific type of indistinct event, associated with rapid changes in output from multiple wind farms, due to wind gusts across South Australia. However, many other kinds of indistinct events may exist, and can also have significant impacts on the power system.

The AER and AEMO had different interpretations of whether the NER accounted for these kinds of indistinct events. The Commission has therefore sought to develop new frameworks to manage these indistinct events, when they are most likely to have material impacts on the power system.

## Key Recommendations

The Commission has recommended a number of changes to better manage these new risks. This includes new tools for AEMO to protect the system during periods of increased risk. We have also proposed a new review process that will help AEMO, NSPs and market participants better understand the nature of new risks as they emerge.

The review presents detailed recommendations for changes to NER frameworks for power system security in the following three areas:

- **Implementing a General Power System Risk review (GPSR)** process is recommended to effectively identify emerging risks to power system from all sources. The GPSR will act as a front-end risk identification process to inform risk management actions through other processes including protected events and operation, RIT-T/D, and ISP.
- **Introduction of 'protected operation'** is recommended as a new operational tool for AEMO to enhance the resilience of the power system to indistinct events that are associated with abnormal conditions. Protected operation will either be pre-defined or ad-hoc:
  - Pre-defined protected operation involves AEMO identifying, through the GPSR, an indistinct event the risk of which increases during abnormal conditions, specifying and publishing criteria setting out its approach to assessing the level of risk arising from the indistinct event, and the actions it would take to prevent a cascading failure, or maintain the system in a secure state.
  - Ad-hoc protected operation will allow AEMO to take operational action to manage indistinct risks that are either unanticipated, or where AEMO has identified a new and severe risk from an indistinct event but there has been insufficient time to complete the pre-defined protected operation process.
- **Clarifying the applicability of rule arrangements during a period of market suspension.** The review also recommends clarifying the applicability of rule arrangements during a period of market suspension, including to provide AEMO with limited additional flexibility to prioritise system security where compliance with a rule would place a material risk on their ability to maintain power system security during a period of spot market suspension.

## Next steps

The review proposes a future work program in a range of areas including the management of indistinct risks to power system security under normal operating conditions. The AEMC intend to work closely with AEMO and the ESB in developing an ongoing work stream in this, and other areas, relevant to enhancing the resilience of the power system.

For information contact:

Director, **Christiaan Zuur** (02) 8296 7800

Adviser, **Graham Mills** (02) 8296 7800

Media: Communication Director, Prudence Anderson 0404 821 935 or (02) 8296 7817

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