RELIABILITY PANEL AEMC

INFORMATION

2019 Annual Market Performance Review

The AEMC's Reliability Panel's annual review assesses the performance of the national electricity market (NEM) over the past year. The review brings together and synthesises information from the Australian Energy Market Operator (AEMO), the Australian Energy Regulator (AER), jurisdictional regulators and market participants to provide insight and analysis on the reliability, security and safety performance of the power system during 2018/19.

Reliability Panel

The Reliability Panel (the Panel) is a specialist body within the Australian Energy Market Commission (AEMC). The Panel is comprised of members who represent a range of participants in the national electricity market, including consumer groups, generators, network businesses, retailers and the AEMO. It is chaired by an AEMC Commissioner.

The National Electricity Law sets out the key responsibilities of the Panel. These include:

- monitoring, reviewing and reporting on the safety, security and reliability of the national electricity system
- providing advice in relation to the safety, security and reliability of the national electricity system, at the request of the AEMC.

Purpose of the 2019 Annual market performance review

The NER require the Panel to conduct a review of the performance of certain aspects of the national electricity market at least once every financial year.

This review was conducted under standing Terms of reference issued by the AEMC and covered the period from 1 July 2018 to 30 June 2019.

The purpose of the review is to:

- provide stakeholders with consolidated information and expert commentary about the performance of the power system in a single publication
- highlight emerging trends to help inform the policy and investment decisions of governments, policy makers, market institutions and market participants
- identify options to improve the frameworks or mechanisms used to deliver reliability, security and safety.

Most of the data included in this report is already publicly available. The value of this report comes from the Panel, with its diverse membership, collating and interpreting the data to make sense of what is happening across the power system and market.

This year, the Panel has also developed a data portal so stakeholders can use key datasets more easily.

Key findings

In this year's AMPR, the Panel assessed the security, reliability and safety performance of the NEM and found that security and reliability are both more challenging to deliver given the broader changes underway.

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The NEM faces multiple emerging and persistent challenges. These challenges are diverse in their technical and economic complexity, and who they affect. As a result, these challenges are impacting upon reliability and security outcomes in the NEM.

The challenges can be attributed to a confluence of factors that is changing how we think about power system management. Most notably, this change arises from the transition that is currently underway to a low emissions future.

Reliability

A reliable power system requires an adequate supply of capacity to meet demand and with a buffer available to respond to shocks, a reliable transmission and distribution network, and the system being in a secure operating state.

This year the Panel found that reliability performance of the NEM has been satisfactory during 2018/19. However, intervention mechanisms are increasingly being relied upon to support reliable delivery of electricity to customers.

Key reliability outcomes included:

- The reliability standard was not breached in any region although there was instructed load shedding (i.e. unserved energy) in Victoria and South Australia.
- There was one major reliability event across 24 and 25 January 2019. Two key elements of the reliability framework were used to respond and deal effectively with this:
    - AEMO had to call on emergency reserves (i.e. reserves procured through the reliability and emergency reserve trader (RERT)). This is the second year in a row the RERT has been used to maintain a reliable power system. The price of the reserves procured through the RERT decreased compared to last year.
    - AEMO issued instructions for load to be shed on both 24 and 25 January 2019. The load shedding was necessary to keep the power system secure.
- The number of lack of reserve notices issued by AEMO was lower than in previous years. Of the notices issued, the majority were in summer when demand levels are typically higher. The majority of forecast lack of reserve conditions did not eventuate, which likely indicates participants in the market responding to forecast tight supply/demand conditions.
- Centrally determined forecasts of demand and intermittent generation output, which are a key components of the reliability framework, were as accurate as they were in past years. Given the growth of intermittent generation, it is important that these forecasts remain accurate.

The Panel also assessed network performance as this is a key part of delivering reliable supply to consumers. The Panel observed that:

- Interconnectors are becoming an increasingly important component of reliability given they can be used strategically to enable competitive sharing of resources across regions, and allow the market to deliver the technological requirements for the evolving power system.
- Priority transmission projects are progressing as planned to support the large amounts of new generation connecting in coming years, as well as to increase connection between the regions. Continued investment in transmission infrastructure is needed into the future. Market bodies and ESB are working together to put in place the regulatory framework to support this.

The Panel is concerned by this increasing reliance on interventions. Using emergency tools means the market is not delivering sufficient capacity to meet demand and indicates a need for new investment that can be relied upon at times when consumers need it.

To maintain reliable supply into the future, the Panel's view is that focus should be given to:

- adapting our approach to delivering reliable supply to changing power system conditions and community expectations
- improving coordination and total system thinking to reduce total system costs and maximise total system benefits
- fostering regulatory and policy certainty wherever possible to underpin new investment.

Security

Power system security involves maintaining power system equipment within its allowable ratings, maintaining the power system as a whole in a stable condition, within defined technical limits, and returning the power system to operate within normal conditions following a disturbance.

In 2018/19 the Panel found that power system security also continues to be a challenge to maintain as we transition towards a lower emissions electricity sector and a generation fleet with different technical characteristics compared to what the power system was originally designed around.

At the same time, the number and range of weather events such as prolonged extreme temperatures, cyclones and bushfires continue to increase as a result of climate change and this contributed to the challenge of maintaining the secure operation of the power system.

Key security outcomes include:

- There were four incidents in 2018/19 where the power system was not in a secure operating state for more than 30 minutes.
- The use of directions to manage system strength in South Australia has increased. As a result, the cost of the interventions also increased. This is expected to continue until the system strength shortfall is addressed by synchronous condensers expected to come online by the end of 2020.
- The distribution of frequency during normal operation in the NEM has continued to flatten in the reporting period. This means there may be a higher risk of frequency leaving the normal operating band. The AEMC is currently progressing rule changes to improve frequency control in the NEM.
- There was a small increase in total frequency control ancillary services (FCAS) costs in 2018/19 when compared to 2017/18. The increase in FCAS prices over the past five years coupled with technological developments, have driven new types of FCAS providers to enter the market. These new entrants demonstrate that new technologies and business models will have an increasingly important role in maintaining system security.
- Emergency managements and special protection schemes are an increasingly important part of power system operation. In 2018/19, there was a significant increase in the installation of protection schemes, particularly protection schemes to address system strength concerns.

Transitioning to a low emissions electricity sector means the NEM will continue to be at the global forefront of addressing these security issues to integrate renewable energy. To address the power system security challenges identified in the 2019 review, the Panel notes we need to:

- clearly articulate the type and level of system services required
- incentivise investment in system services using different approaches to valuing and procuring them where appropriate
- leverage the opportunities associated with new technologies as we transition.

Safety

The Panel's safety role for the purposes of this report relates primarily to the operation of assets and equipment within their technical limits.

The Panel is not aware of any incidents during the 2018/19 reporting period where AEMO's management of power system security has resulted in a safety issue with respect to maintaining the system within relevant standards and technical limits.

Work underway

The Panel acknowledges the significant body of work underway considering the ongoing security and reliability of the NEM. Immediate challenges are being addressed through urgent work streams, which can include interim solutions being put in place while a longer-term solution is developed.

The work current underway to address security and reliability challenges includes:

- The AEMC's work program to value and procure enough of the technical services required to keep the power system secure
- Market body and the Energy Security Board's (ESB) actions to coordinate investment in new generation and transmission infrastructure
- The ESB's interim advice on reliability and security as part of its post-2025 market design advice.

The Panel intends to monitor and review how these, and other reform projects progress over the coming year, with a view to highlighting key issues that need to be addressed or recommending whether any further work remains to be done, in the 2020 AMPR.

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