

2018 Annual market performance review

The Reliability Panel has released its 2018 Annual market performance review

The Reliability Panel has released its report that sets out the findings of the Panel's annual review of market performance, for the period 2017/18. The Panel's findings include observations and commentary on the reliability, security and safety performance of the power system.

Reliability Panel

The Reliability Panel (Panel) is a specialist body established by the Australian Energy Market Commission (AEMC) in accordance with section 38 of the National Electricity Law (NEL) and the National Electricity Rules (NER). The Panel comprises members who represent a range of participants in the national electricity market (NEM), including consumer groups, generators, network businesses, retailers and the Australian Energy Market Operator (AEMO).

The NEL 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 2018 Annual market performance review

The NER require the Panel to conduct a review of the performance of certain aspects of the NEM at least once every financial year. The purpose of the review is to:

- provide stakeholders with consolidated key information related to the performance of the power system in a single publication
- help governments, policy makers and market institutions monitor the performance of the power system
- help identify the likely need for improvements to the various measures available for delivering reliability, security and safety.

In the terms of reference, the AEMC requested that the Panel review the performance of the market in terms of reliability, security and safety of the power system in 2017/18. In conducting this review, the Panel has only considered publicly available information as well as information obtained directly from relevant stakeholders and market participants.

Key findings

A number of key trends continued to play out during the period 2017/18. In particular, the generation mix continued to change, with significant new entry of variable, asynchronous generation. Increasing numbers of consumers are also installing behind the meter energy resources, like rooftop PV and battery storage. When coupled with the likely exit of older, thermal generation over the coming years, these trends will continue to create new challenges and opportunities for the secure and reliable operation of the NEM power system.

Security

Maintenance of power system security continues to be a key challenge for the NEM.

System performance as measured against relevant system security standards has continued to be problematic.

Frequency performance: In the period 2017/18, the Panel notes that the frequency performance of the system has continued to degrade. Some elements of the frequency operating standard (FOS) normal operation requirements were not met in both the mainland and in Tasmania during 2017/18.

On the mainland, the frequency of the power system remained within the normal operating frequency band more than 99 per cent of the time, for each month of the reporting period (as per the requirements of the FOS). However, there were 50 events where system frequency took longer than allowed in the FOS to be returned to the normal operating frequency band following a disturbance.

In Tasmania, frequency performance did not meet either of these FOS requirements for normal operation, with system frequency outside of the normal band for more than 99 per cent of the time for 11 months in 2017/18. Further, there were 295 events where frequency took longer than allowed in the FOS to be returned to the normal band.

System strength: System strength is a property of the power system that resists changes in voltages in response to a change in loading conditions. To maintain sufficient levels of system strength in South Australia, AEMO has been required to use a number of market interventions, including constraining off asynchronous generation like wind and solar generators, and issuing directions to operate synchronous generators, like gas and diesel generators.

These system strength interventions come at a significant cost to consumers. The amount of compensation paid out to generators is currently estimated to be approximately \$34 million per annum.¹ The issuance of directions also has flow on effects to overall price outcomes in the NEM. The estimated impact on wholesale market prices as a result of issuing directions for system strength as at September 2018 exceeded \$270 million.²

Voltage control: Another security issue that arose during the reporting period is voltage control in South Australia and Victoria. In those states a need was identified for additional reactive support to maintain transmission system voltages within operational limits during minimum demand periods.

While AEMO is progressing a regulatory investment test for transmission to address this issue in Victoria,³ it is currently managing over voltages with short term manual de-energisation of high voltage transmission lines, combined with directions to generators. In effect, this involves the switching off of large high voltage transmission lines to lower the system voltage but has the consequence of reducing the available pathways for energy to flow from generation to consumers. The extent of this manual switching has increased since the reporting period - in November 2018, AEMO had to de-energise three separate 500kV lines in Victoria for the first time in the history of the NEM.

These manual line switching interventions can come at a cost to consumers, by impacting on the ability of the transmission system to effectively transport energy within and between regions.

Reliability

Over the 2017/18 period, the reliability of electricity supply continued to be maintained with no unserved energy over the period. However, this was in part due to the activation of the Reliability and Emergency Reserve Trader (RERT) on two occasions to maintain the power system in a reliable operating state. Prior to 2017/18, the RERT had only been procured three times and had never been activated. Consumers bore a cost of \$51.99 million in 2017/18 for the activation of the RERT.⁴

¹ ElectraNet, *Addressing the system strength gap in SA*, February 2019, p. 20.

² Ibid.

³ AEMO, *Victorian reactive power support, regulatory investment test for transmission project specification consultation report*, May 2018.

⁴ AEMO, *RERT 2017-18 cost update*, 2018, p. 1. Available at: https://www.aemo.com.au/-/media/Files/Electricity/NEM/Security_and_Reliability/RERT-Update---cost-of-RERT-2017-18.pdf

Safety

The Panel is not aware of any incidents 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

In the context of these challenges, the Panel acknowledges the significant body of work completed and underway that is currently considering how to maintain the ongoing security and reliability of the NEM.

Given the trends indicated, the Panel considers it is imperative that work continues looking at identifying what the system needs to stay secure and reliable, and how the market can be incentivised to meet those needs.

AEMO's forward work program will involve technical consideration of the various system needs, specifically what services will be required in what timeframes, as well as developing strategies for the management of these issues.

The AEMC will also be progressing relevant work, including consideration of how security services may be procured in a coordinated manner by multiple parties as part of an improved access regime for the connection of generators to the power system, through the *Coordination of generation and transmission investment - access and charging review*.

The AEMC's investigation into *Intervention mechanisms and system strength* in the NEM will consider the effectiveness of the intervention framework in light of the increasing use of directions by AEMO to manage system security, and how related system strength frameworks could be improved to avoid the need for directions.

The AEMC will also consider the concept of system resilience, through the work it has underway, now that the AEMO and AER investigations into 28 September 2016 South Australian Black System event are largely complete.

The Panel intends to monitor and review how these work programs progress over the coming year with a view to recommending in the *2019 Annual market performance review* whether any further work remains to be done or if there are key issues that need to be addressed.

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