

Review of the Frequency Operating Standard

Final determination published for stage two of the review of the frequency operating standard

The Reliability Panel has published a final determination for stage two of the review of the frequency operating standard that applies to power system frequency in the National Electricity Market (NEM).

Review of the frequency operating standard

The Reliability Panel (Panel) has completed its review of the Frequency operating standard that applies for Tasmania and for the mainland NEM. The Frequency operating standard defines the acceptable frequency range for different operating states or following contingency events that can occur within the power system, such as:

- Normal operating conditions, where generation and load are balanced.
- Credible contingency events, (including tripping of generation or load, or unplanned network outages).¹
- Emergency conditions related to non-credible contingency events (including loss of multiple generation or network elements, or the separation of a region or sub-network forming an electrical island)

This review commenced in March 2017 and was undertaken in two stages to accommodate interactions with related work programs.

Stage one of the review was completed in November 2017 and included changes to the Frequency operating standard in relation to

- The implementation of changes associated with the *Emergency frequency control schemes Rule 2017*, including setting a frequency band in the standard for protected events.
- Clarification and further guidance as to how AEMO operates the power system, particularly as this relates to managing different kinds of contingency events.

Between November 2017 and July 2018 the Panel suspended progress on stage two of the *Review of the Frequency operating standard* to allow the AEMC to progress its *Frequency control frameworks review* which considered the ongoing appropriateness of the frequency control arrangements in the NEM.

Following completion of the *Frequency control frameworks review*, the Panel recommenced **stage two** of the *Review of the Frequency operating standard* in August 2018. In Stage two of the review, the Panel has assessed and resolved the remaining issues identified in stage one of the review, except for the following issues that are being considered by the AEMC as part of its ongoing frequency control work program following on from the *Frequency control frameworks review*:

- The requirements in the Frequency operating standard for frequency performance during normal operation.
- Consideration of the inclusion in the Frequency operating standard of a standard for the rate of change of frequency in the power system.

¹ The AEMC Fact sheet: *What is a protected event?*, provides a description of contingency events. The fact sheet is available on the AEMC website: [here](#).

The FOS

The Panel has made a Frequency operating standard for Tasmania and for the mainland, which responds to a number of issues identified through stage one of this review. The revised standard takes effect on 1 January 2020 to allow for affected parties to make arrangements to adjust to the revised requirements. The revised standard differs from the current standard in the following ways:

The limit on the size of the largest generation event in the Tasmanian power system

The revised Frequency operating standard clarifies the scope of the existing limit on the size of the largest generation event that can occur in the Tasmanian power system. The Panel included the limit in the standard as part of its 2008 review. The existing limit is set at 144MW. AEMO is required to comply with the limit by constraining central dispatch such that the loss of generation that can occur as the result of a generation contingency event in Tasmania does not exceed 144MW. The limit is required to help AEMO maintain system security in Tasmania, noting the operational limitations of the Tasmanian power system, including a relative scarcity of fast raise contingency services.

The particular changes in the revised Frequency operating standard in relation to the limit on the size of the largest generation event in Tasmania are:

- The definition of a generation event now includes the disconnection of generation as the result of a credible contingency in relation to a dedicated connection asset providing connection of one or more generating system to the shared transmission network.
- Clarification that the limit for the largest generation event in the Tasmanian system applies for disconnection of generation based on an initially intact network, in the absence of network outages. This means that the limit does not apply in the event of planned network outages. AEMO has established operational procedures to manage the need for contingency FCAS at these times.

Improvements to the structure and consistency of the FOS

The Frequency operating standard has been restructured and consolidated to avoid duplication and improve the clarity of the obligations that it places on AEMO to manage the power system frequency.

This determination also includes a summary of the Panel's considerations in relation to:

- The settings in the standard that relate to contingency events.
- The limit in the standard on accumulated time error.

On the advice of AEMO, the Panel has maintained the existing settings in the Frequency operating standard in relation to these issues, noting that immediate priorities are:

- The joint AEMC-AEMO frequency control work plan published as part of the final report for the *Frequency control frameworks review*.
- The implementation of recommendations stemming from AEMO investigation of the separation event that occurred in the NEM on 25 August 2018, including measures to increase the provision of primary frequency control in the NEM.

The Panel notes the ongoing frequency control work program being undertaken by AEMO and the AEMC which may identify further opportunities to improve and refine the FOS through subsequent reviews.

For information contact:

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

AEMC Executive General Manager, **Suzanne Falvi** (02) 8296 7800

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

18 April 2019

The Panel has determined a revised Frequency operating standard for the NEM.

The revised standard takes effect on 1 January 2020.