

Review of the Frequency Operating Standard

Draft determination published for stage one of the review of the frequency operating standards

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

The review of the frequency operating standard

The Reliability Panel (Panel) is undertaking a review of the FOS that applies for Tasmania and for the mainland NEM. The FOS defines the acceptable frequency range for different operating states or following 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)

Staged approach to the review

The Panel is undertaking this review in two stages. This staged approach reflects the various ongoing reviews of market and regulatory arrangements that are likely to have an impact on the Panel's assessment of the FOS.

Stage one is addressing primarily technical issues and market framework changes stemming from the new emergency frequency control scheme rule, including the inclusion of the new protected event contingency category in the FOS.²

Stage two will consider the settings of the frequency bands and time requirements for maintenance and restoration of system frequency. Stage two will commence at a later date when the *Frequency control frameworks review* and other related work programs are further progressed.

The Panel has published a draft determination which sets out the Panel's considerations in relation to the draft FOS for stage one of the review as well as presenting the Panel's initial thoughts in relation to issues to be considered through stage two of the review.

¹ The AEMC Fact sheet: *What is a protected event?*, provides a description of contingency events. The fact sheet is available at:

<http://www.aemc.gov.au/getattachment/e5a68389-611d-4e15-b89b-41ee5a74c3c5/Fact-sheet.aspx>

² AEMC, *Emergency Frequency Control Schemes*, final determination, March 2017.

See: <http://www.aemc.gov.au/Rule-Changes/Emergency-frequency-control-schemes-for-excess-gen>

Stakeholders are invited to comment on the Draft FOS for stage one of the review.

Submissions are due by 10 October 2017.

Stage one draft determination

The FOS is proposed to be amended in a number of key ways:

- *The inclusion of a FOS for protected events* - The draft FOS states that following a protected event, the frequency should remain within the emergency frequency excursion tolerance limits.
- *A revised requirement relating to multiple contingency events* - The revised requirement requires AEMO use reasonable endeavours to stabilise and restore the power system following non-credible contingency event and multiple contingency events that are not protected events.
- *A revised definition of 'generation event'* – The revised definition includes the sudden, unexpected and significant change in output from one or more generating systems of 50MW or more within a 30 second period.
- *The revision of the definitions in the FOS relating to island operation* - The revised definition maintains the key elements of the existing definition of an island with the addition of a new requirement, that an island must be at least the equal to or greater than an inertia sub-network.
- *A revised limit for accumulated time error in the mainland* – The limit for accumulated time error that applies for the mainland is increased from 5 to 15 seconds. The limit of accumulated time error in the draft FOS for Tasmania remains at 15 seconds.

The Panel invites stakeholder submissions on the Draft FOS by 10 October 2017.

Issues for consideration through Stage two

The requirement for a maximum accumulated time error

The Tasmanian and mainland NEM FOS currently require that any accumulation of time error related to the power system frequency be maintained below a limit set in the FOS. This requirement dates back to a time when clocks that were synchronised with the system frequency were more common and it was necessary to limit the accumulated time error to maintain accurate time keeping. While some consumer appliances still use the power system frequency to keep time, the cost and system security implications of maintaining this requirement may exceed the cost of removing or relaxing it.

The Panel's initial consideration is that there may be a case for the complete removal of the accumulated time error limit. However, there is some possibility that the removal of this time error limit could have unforeseen impacts on large and small consumers. In order to limit the risk, the Panel has decided to initially relax the accumulated time error limit, with a view to the potential for full removal, once consultation has been undertaken with a wider range of consumers.

Settings in the FOS for normal operation

In considering how the FOS applies to normal operation during stage two of the review, the Panel may consider:

- Whether the current boundaries for the normal operating frequency band and the normal operating excursion frequency band are set appropriately, with a particular focus on whether this may deliver improved system security outcomes and what impacts it may have on regulating FCAS costs.
- Whether the current stabilisation and recovery times remain appropriate.
- Whether, in the absence of a contingency event, it remains appropriate to maintain the power system frequency within the normal operating frequency band for 99% of the time and allow excursions within the normal operating frequency excursion band for 1% of the time.

Issues relating to the management of credible contingency events

In considering how the FOS applies to the management of credible contingency events during stage two of the review, the Panel may consider:

- Whether the current boundaries of the operating frequency tolerance band are appropriately set to effectively manage the impact of credible contingency events while efficiently allocating contingency FCAS services to the performance of this task.

Stakeholders are invited to comment on the Panel's initial considerations for stage two of the review.

Submissions are due by 10 October 2017.

- Whether it is appropriate for separate frequency bands to apply for load, generation and network events on the mainland, or whether the operational frequency tolerance band should apply for all single contingencies, as is the case in Tasmania.
- Whether the thresholds for load and generation events are appropriately set in the FOS for the mainland and for Tasmania.
- Whether the existing upper limit on the size of a generation event in Tasmania of 144MW continues to be appropriate and whether this limit should be extended to cover network events in Tasmania, as requested by TasNetworks.

The Panel invites stakeholder submissions on the initial consideration of issues for stage two of the review by 10 October 2017.

Revised terms of reference

On 12 September 2017, the AEMC provided a revised Terms of Reference to the Panel for the review of the FOS. The revised terms of reference extend the completion date for the review to 31 July 2018 to account for the in depth assessment of issues associated with stage two. This is in line with recommendation 2.3 from the Finkel Panel report, *Independent Review into the Future Security of the National Electricity Market – Blueprint for the Future*, which recommends that by mid-2018 AEMO and the AEMC consider the costs and benefits of tightening the frequency operating standard.³

Timeline

The timetable below indicates the planned dates for key milestones associated with the review of the FOS:

Milestone	Date
Stage one Draft Determination	12 September 2017
Close of submissions – stage one Draft Determination	10 October 2017
Stage one Final Determination	7 November 2017
Stage two Draft Determination	April 2018
Stage two Final Determination	July 2018

For information contact:

AEMC Director, **Christian Zuur** (02) 8296 7883

AEMC Executive General Manager, **Suzanne Falvi** (02) 8296 7883

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

12 September 2017

³ Finkel Panel, June 2017, *Independent Review into the Future Security of the National Electricity Market – Blueprint for the Future*, pp.21,61.