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LIGHT THE WAY

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Reliability Panel
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Dear Panel Members

Lodged electronically: www.aemc.gov.au (REL0065)

AEMC Reliability Panel, Review of the Frequency Operating Standard, Stage One Draft Determination, 12 September 2017

EnergyAustralia is one of Australia's largest energy companies with over 2.6 million electricity and gas accounts in NSW, Victoria, Queensland, South Australia, and the Australian Capital Territory. We also own and operate a multi-billion dollar energy generation portfolio across Australia, including coal, gas, and wind assets with control of over 4,500MW of generation in the National Electricity Market.

EnergyAustralia welcomes the ongoing opportunity to engage in the Review of the Frequency Operating Standard (FOS). We note that this submission relates to both the Stage One Draft Determination (Draft Determination) and issues for consideration in Stage Two. We broadly support the positions taken by the Commission in the Draft Determination, noting that further consideration of these positions is required in Stage Two.

Stage One Draft Determination

Protected Events

EnergyAustralia has broad support for the proposed treatment of protected events. As we stated in our previous submission, the FOS that applies to a protected event should seek to be as close to the appropriate non-credible contingency definition as possible. We consider that setting the bounds at those prescribed by the *extreme frequency excursion limit* is appropriate. However, we do note that the specific limits will be considered in more detail under Stage Two of this Review. As part of that assessment, we would urge the AEMC to explore the appropriateness of the lower bounds of the *extreme frequency excursion limit*.

Currently the lower bound of this limit is set at 47Hz on the mainland. Stage Two should consider the risks inherent in allowing the frequency to drop to this level, even under certain extreme conditions. The ability for some generating units to continue to operate

under 48Hz has been raised in a previous review of the FOS[1], with some generating units having performance standards that allow them to trip below that frequency. Given the purpose of these limits is to set parameters under which a cascade failure can be avoided, it needs to be clarified whether allowing the frequency to drop below 48Hz achieves this and whether the use of emergency frequency control schemes (EFCS) should be aimed at ensuring the frequency does not deviate below 48Hz. The Panel should consider the potential outcomes from increasing the *extreme frequency excursion limit* lower bound to 48Hz, if a frequency below this limit is likely to significantly increase the risk of cascade failure.

Definition of 'generation event'

We support further examination of the proposed definition a 'generation event' under Stage Two. We have some concerns that the 50MW threshold under proposed definition is potentially too low when used in conjunction with the 30 second period over which it would be measured. We understand the concerns raised by AEMO with regards to the unexpected and rapid variation of output of some variable renewable energy sources, particularly large scale solar PV. However, Stage Two should provide more detail on the increased likelihood of a 'generation event' occurring under the revised definition, and what implications that has for the market.

Stage Two Issues

Accumulated time error

EnergyAustralia supports the proposed exploration of the impact of removing or relaxing the limits relating to accumulated time error under Stage Two. Of key consideration will be any potential public safety issues that could be raised through variation to the limit. Identification of which critical services or infrastructure could rely on accurate clocks supported through this mechanism should occur prior to any relaxation of this standard. Ensuring that proactive engagement with hospitals and other health practitioners, telecommunication providers, public transport and other operators of critical public services is undertaken should be a key aim of this stage. Such engagement is required to avoid serious unintended consequences.

However, we also note that correction of accumulated time errors would be less of an issue were tighter frequency control to be introduced into the NEM. This is covered further below.

Settings in the FOS for Normal Operation

We consider that the principal objective of this review is to conduct a thorough examination of what constitutes good frequency control within the NEM. As we stated in our previous submission, this includes assessing the benefits of the tighter distribution of frequency seen in previous years, particularly prior to 2016. The review should look at why the current broader distribution is occurring, what potential impacts it is likely to have on the market and what role the FOS has in driving any required change to this distribution.

[1] http://www.aemc.gov.au/getattachment/abc0c011-3663-4d7c-a133-98cd82fdb53f/Final-Report.aspx

One issue with the focus on operating band limits is that this does not provide a means for addressing the frequency distribution issues currently observed. We have concerns that while the frequency remains within the normal operating band for over 99% of the time, much of this time the frequency remains at the extremities of that band. The effects of this can be critical in managing power system security for two related reasons. Depending on the generation mix and network conditions, contingencies are more likely to occur where the frequency is already at the extremities of the normal operating band. In addition, there can be a decreased ability for FCAS to arrest frequency deviations from contingencies that occur where the frequency is at these extremities.

We support an assessment being conducted to determine whether it is appropriate for the frequency to spend 1% of the year, or 87 hours, in the frequency excursion band. This is particularly the case when the frequency is spending a decreasing amount of time tightly centred on 50Hz. Due to the current flatter distribution, it may be that reducing the allowable time for the frequency to be outside the normal operating band would be an appropriate response. This should include assessing in the absence of a contingency, whether the frequency is required to be within the normal operating bands at all times.

Given the much flatter distribution of frequency across the normal operating band, there is also a question of how much time is it appropriate for the frequency to be at the extremities of the normal operating band. Whether the frequency is just within the normal operating band at 49.86Hz or just outside the normal operating band 48.84Hz is potentially less critical than examining whether the frequency is spending a disproportionate amount of time 0.1Hz or more away from 50Hz. The Panel should investigate whether there are appropriate mechanisms to target a preferred distribution of the frequency within the normal operating band. This would include how such a distribution curve could be set and then met by generators. It would also need to be considered what cost this would impose on the market.

If a preferred distribution cannot be determined and managed effectively through the FOS and frequency control frameworks, then the Panel should consider the benefits in tightening the normal operating band to reduce the severity of deviation from 50Hz under normal operating conditions. As part of this consideration, the cost of a narrower operating band should also be assessed.

We support an assessment of what constitutes best practice in other markets, with similar generation mixes, in other countries. Such an examination should not relate solely to the specific frequency operating bands used, but what other mechanisms may exist to maintain good frequency control. Where possible, review of the distribution of frequency within those operating bands would allow for a level of comparison that could assist in assessing the efficacy of the frequency control frameworks in use.

Broader consideration of the physical control of frequency through generator operation is proposed to be undertaken by the AEMC as part of a separate Frequency Control Frameworks Review (FCFR). Any assessment of the FOS will need to be informed by the FCFR to ensure that the FOS and the mechanisms proposed to meet it are consistent with each other. Coordination will be required to establish whether greater primary frequency control, new frequency control mechanisms (such as Fast Frequency Response) and the proposed Generator Technical Standards are balanced to provide good frequency control at least cost to consumers.

We look forward to providing further input into this Review as it progresses. If you would like to discuss this submission, please contact Chris Streets on (03) 8628 1393 or at chris.streets@energyaustralia.com.au.

Regards

Melinda Green

Industry Regulation Leader