Part of Energy Queensland

9 June 2022

Mr Benn Barr
Chief Executive
Australian Energy Market Commission
GPO Box 2603
SYDNEY NSW 2000

Dear Mr Barr

Reliability Panel Review of the Frequency Operating Standard 2022

Energy Queensland Limited (Energy Queensland) welcomes the opportunity to provide a submission to the Australian Energy Market Commission (AEMC) in response to its Issues Paper for the 2022 Review of the Frequency Operating Standard, published on behalf of the Reliability Panel.

Energy Queensland acknowledges the significant transition underway in the energy sector and the need to ensure that the standards which govern the electricity system remain fit for purpose. This is particularly important in light of the changes in generation mix as well as the implementation of new regulatory measures in relation to frequency.

Energy Queensland broadly supports the approach taken by the Reliability Panel for the 2022 Review of the Frequency Operating Standard. Our feedback in relation to the consultation questions set out in the Issues Paper is limited to questions 3 and 4. These responses are provided below.

Question 3: Defining a system standard for Rate of Change of Frequency (RoCoF)

- *If the Panel chose to set a RoCoF standard, what factors should be taken into consideration?*

Energy Queensland suggests that the Reliability Panel should consider the interaction between the RoCoF standard, and effective operation of individual jurisdictional emergency frequency control schemes (i.e. under-frequency load shedding (UFLS)). If the RoCoF system limit is set too high, UFLS may not effectively operate to arrest a rapid fall in system frequency.

For example, in Queensland, traditional UFLS blocks are configured with a time delay, which increases with declining system frequency (e.g. Block Q13 is 48.1Hz, with 300ms time delay; and Block Q14 is 48.0Hz, with 500ms time delay). As such, the time taken for the load to be shed from the system is equal to the under-frequency element time delay plus the circuit breaker operating time.

If the network was to experience a large RoCoF event, these long clearing times (greater than 500ms) at low levels of system frequency could mean UFLS may not be as effective in arresting system frequency decline, increasing the risk of a system black outcome. An opportunity may exist for Distribution Network Service Providers (DSNPs) to establish a parallel emergency frequency control scheme by enabling RoCoF protection elements at the RoCoF system limit. This may help to arrest system frequency decline for non-credible contingency events by tripping selected loads when RoCoF is above the system limit.

- *Would the establishment of the RoCoF standard burden stakeholders with significant adherence costs?*

If a system limit for RoCoF was established, we note that significant work and modelling would be required within each region to understand how the emergency frequency control schemes (namely UFLS) interact with the RoCoF standard. This may require significant effort and investment from DNSPs to reconfigure existing UFLS schemes (where possible) and may require widespread upgrades and deployment of modern protection relays to meet the emergency frequency control schemes (UFLS and RoCoF) performance requirements.

Question 4: The frequency bands for credible contingency events

- *What are stakeholders' views on the appropriateness of the existing settings in the FOS for the recovery of the power system following credible contingency events?*

Energy Queensland supports maintaining the gap between the load change band (49.5Hz) and the frequency at which automatic under frequency load shedding commences (49.0z). Widening the load change band would reduce the safety margin that currently exists in the frequency operating standard for the mainland National Electricity Market. This safety margin helps to account for operational uncertainties and reduces the probability of an UFLS event occurring. It also reduces the quantity of load shed, and therefore unserved load, following a non-credible contingency event.

We note that this position is consistent with the Australian Energy Market Operator's advice to the Reliability Panel in the previous review of the frequency operating

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standard,[1] and aligns with Energy Queensland's position in our response to that review.[2]

Energy Queensland also supports maintaining 49.0Hz as the appropriate lower level for the network event bands and operational frequency tolerance band. In the Queensland region, the first UFLS block (Q1) is configured to commence at 49.0Hz. Any change to the lower bound of the network event band and operational frequency tolerance band would require significant effort and cost to re-balance the existing UFLS scheme in Queensland.

Should the AEMC require additional information or wish to discuss any aspect of this response, please contact me on 0438 021 254 or Peter Wall on 0436 423 112.

Yours sincerely

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[1] AEMO, 2019, Advice to Review of the frequency operating standard, stage 2, https://www.aemc.gov.au/sites/default/files/2018-12/AEMO%20advice%20-%20stage%20two.pdf
[2] Ergon Energy and Energex, 2019, Response to Review of the Frequency Operating Standard – Draft Report, https://www.aemc.gov.au/sites/default/files/2019-01/Energy%20Queensland_0.pdf

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