8 May 2020

Paul Johnson
Principal Stakeholder Engagement Advisor
Australian Energy Market Operator

Submitted via email: pfr@aemo.com.au

Dear Mr Johnson

Interim Primary Frequency Response Requirements

Stanwell appreciates the opportunity to provide feedback on the Australian Energy Market Operator's (AEMO's) Interim Primary Frequency Response Requirements (PFRR).

Stanwell recognises the need for effective frequency control in the National Electricity Market (NEM) and considers Primary Frequency Response (PFR) a valuable contributor to maintaining a secure and reliable power system. Stanwell supports continued consideration of longer-term incentive-based proposals, in alignment with the Frequency Control Frameworks Review which was jointly agreed by AEMO and the Australian Energy Market Commission's (AEMC).

We have participated in the AEMO led workshops on the draft PFRR during April 2020 and acknowledge AEMO's consideration of the feedback about some concerns with the draft requirements provided during the workshops. Stanwell was pleased with AEMO's confirmation at the workshops that the requirements will apply consistently across all generation technologies, consistent with the intent to share the burden as widely as possible given the uncompensated nature of the obligation.

Several concerns that Stanwell had with the draft PFRR were addressed in the workshops and commitments made by AEMO to incorporate appropriate changes to the next version of the PFRR. This submission does not readdress those matters considered and incorporated into the revised PFRR. However, there are still some outstanding issues and areas that Stanwell would like clarified. Stanwell's concerns are detailed below, along with suggestions on how they could be addressed in a revised PFRR.

1. Clause 3.4 – Response Time

Typically, under droop action, active power response is proportional to frequency deviation, and consequently the time taken to achieve a 5 per cent change in output will depend on the size of the stimulus applied. A future response may not achieve a 5 per cent change in active power in 10 seconds as required under the clause if the stimulus is small or gradual. Stanwell is concerned that this may result in technical non-compliance with the PFRR.

Stanwell suggests that either there is an acknowledgement in the PFRR that active power response is proportional to frequency deviation, or that the step size be stipulated as 0.5Hz.

2. Clause 4.3 – Continuity of Response

Whilst we understand that the intent of this clause is that PFR is to ordinarily be enabled, it needs to be acknowledged that there are a variety of conditions, (for thermal boiler plant in particular) under which frequency control mode may need to be temporarily disabled. Such conditions can include, but are not limited to the following (some of which are typically handled by bidding the plant inflexible):

- boiler protection actions;
- boiler run backs caused by loss of various boiler auxiliaries;
- plant testing;
- mill trips; and
- low load operation.

Under such circumstances, the control mode will be automatically or manually switched out of frequency response. Whilst this is an infrequent occurrence, it would add little value to communicate to AEMO every time. This could result in unnecessary administrative burden on generating and AEMO operations staff.

Stanwell suggests this should be included as a standing variation in the PFRR for particular plant types (perhaps under a new clause 7.6). Doing so would alleviate the requirement for replication of such criteria under clause 7.1.5 by multiple individual applicants.

3. Clause 7.1.3 – Stability

This clause currently requires that "*the Affected Generator must provide evidence of test results or other technical information, **including evidence from the OEM**, to demonstrate the unstable operation.*"

The current COVID-19 restrictions may limit the ability of Original Equipment Manufacturers (OEMs) to provide evidence on unstable operation, which could result in a delay of generators submitting their self-assessment.

This issue could be addressed by allowing the assessment to be conducted by a consulting engineering firm as alternative to the OEM, an amendment we understand AEMO are already considering.

4. Clause 8.1 Stability Tests – General

Stanwell would like clarification as to whether R2 model validation testing would be required if changes to response limiters are considered material in the context of this clause. If this is the case, Stanwell considers this is an unnecessarily onerous testing requirement due to the expensive and involved R2 processes.

Stanwell suggests that the clause be amended to specifically exclude limiter changes along with dead bands. Stanwell also suggests that the clause (or 6.3.2) be made clearer to remove any confusion that post implementation testing at the PFRP as approved under 6.3.2 is required.

5. Clause 9.1 Compliance - Ability to Operate in Frequency Response Mode and Sustain PFR

As discussed in our commentary on clause 4.3 above, there are several known conditions that should be accommodated in addition to those already referenced in 9.1.

Stanwell suggests that a reference be added to clause 9.1 to capture the standing exemptions, which we proposed to be added as clause 7.6 above.

6. Appendix A Section 3 – Results of Self-Assessment

It is currently not clear if self-assessment is intended to capture existing capabilities, settings and configurations or what is predicted that the plant will achieve in the future if it is modified to deliver PFRR as much as physically possible. A misinterpretation of this requirement could result in incorrect information being supplied to AEMO as part of the self-assessment.

Stanwell is seeking clarification on what information AEMO is seeking in this section (in the context of subsequent sections) and suggests that the wording be amended so there is no confusion on the part of generators as to what is to be provided.

7. Interaction between PFR and existing frequency control arrangements

Stanwell's large units currently receive AGC targets which include both energy and regulating FCAS instructions where applicable. From the AEMO forums, Stanwell understands that under the PFRR a frequency response value is to be determined locally (e.g. via droop) and added to (or subtracted from) this AGC target in order to meet the combined energy, regulating FCAS and PFR obligations. While this is like some current arrangements for contingency FCAS, it is not clear whether such an approach will support system control in all circumstances.

Specifically, where AEMO is attempting to correct accumulated time error it typically introduces a frequency bias to the calculation of AGC targets for units providing regulating FCAS. That is, if the system needs to "catch up" after a period of low frequency, AEMO set AGC targets to deliberately run the system fast (above 50Hz) and this is delivered by higher AGC targets for regulating raise providers and no response from other units. Individual units' PFR droop response is typically calculated off a static 50Hz, meaning that with narrow dead bands mandated across the system, the higher AGC targets for the few regulating raise providers that are trying to physically run the system faster than 50Hz are likely to be offset by locally derived PFR droop signals from the many PFR enabled generators if frequency exceeds 50.015Hz. This would appear to limit AEMO's ability to correct time error using regulation FCAS.

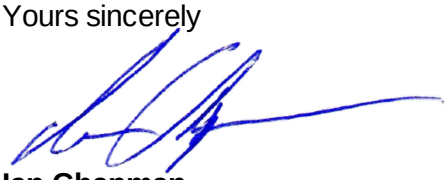
8. Opportunity to collect system data on PFR volume and frequency distribution

Stanwell strongly supports AEMO's proposal to implement the first tranche of generators through a managed transition process in order to minimise the risk of unexpected or unstable operation. Stanwell further suggests that this process represents the last reasonable opportunity to gather information on the relationship between the amount of plant enabled for PFR and the resultant effect on distribution of frequency – information that is likely to be required for the development of a long term market signal as envisaged by the AEMC.

Having generating systems turn on PFR and narrow their dead bands progressively should provide a significant dataset, albeit one where enabled plant may not be providing PFR in all circumstances due to lack of headroom or foot room. Once generators are enabled for PFR under the current rules there appears to be no mechanism to reduce provision in order to investigate the impact on frequency control, however the Tasmanian trial and overseas experience points to tight frequency control being achievable without PFR provision from all generators.

Again, Stanwell appreciates the opportunity to provide our feedback on the draft PFRR and welcomes the opportunity to further discuss the matters outlined in this submission. Please contact Ian Chapman on (07) 3228 4139.

Yours sincerely



Ian Chapman
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