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Primary Frequency Response Requirements

AGL Energy (**AGL**) welcomes the opportunity to comment on the Australian Energy Market Operator's (**AEMO**) Interim Primary Frequency Response Requirements (**PFRR**).

The PFRR, when implemented, will give effect to the Australian Energy Market Commission's (**AEMC**) final rule made on 26 March 2020, to introduce a mandatory primary frequency response (**PFR**) obligation on scheduled and semi-scheduled generators, unless exempted by AEMO.

Primary frequency response parameters

Clause 4.4.2A of the final rule states that the PFRR must include a requirement that relevant generators will provide PFR, and must do so within a maximum allowable deadband, which cannot be narrower than the National Electricity Rules (**NER**) prescribed control band of 49.985Hz to 50.015Hz (**PCB**).

The AEMC's final rule has given AEMO flexibility to allow generators provide PFR at a wider deadband than the PCB, however the drafting of the PFRR V1.2 does not explicitly support or give effect to this flexibility. We understand from the meetings AEMO hosted in April 2020, that the intention is to preclude narrower deadbands than the PCB, but not necessarily wider deadbands.

As detailed in our submission to the AEMC's draft determination, much thermal plant in the National Electricity Market (**NEM**) was constructed and designed with PFR at +/- 0.025Hz, while other plant control systems can only be set to two decimal places and therefore cannot measure PFR to three decimal places. In short, a significant amount of plant will be simply unable to meet a +/- 0.015Hz deadband without significant investment. In AGL's view, for plant that cannot easily meet the PCB, it is better to have these generators contributing at other levels (for example, +/- 0.025Hz or +/- 0.02Hz) than not at all, and the PFRR should reflect that this could be an acceptable outcome for some generators under the variation provisions.

Regarding the droop and response time parameters, AGL is concerned that the measurement of this remains tied to P_{MAX}. The PFRR state that "[T]he response time is measured from when the *frequency* crosses the limit of the Affected GS' Deadband until *active power* reaches a 5 % change based on P_{MAX}." For generators that have multiple generating units under one dispatchable unit identifier (**DUID**), such measurement would not be appropriate, nor would it be appropriate for hydro generators whose maximum output level depends on storage dam levels.

This issue was discussed at length during the April meetings where AEMO acknowledged that generators enabled for PFRR are expected to respond in line with plant capability, including any limitations, at the time

of the frequency disturbance. In AGL's experience, incremental droop responses are unlikely to meet the 5% parameter at all times due issues such as non-linear unit response, process conditions, or the load range/magnitude of the frequency deviation, which all affect the P/ P_{MAX} portion of the droop calculation. We consider the PFRR should provide further detail on how such limitations will be treated when assessing generators' compliance with the droop and response time requirements.

Exemptions and variations

AEMO has outlined a number of principles it will have regard to when considering applications for exemption or variation to the PFR parameters. In our view, these principles appear more targeted towards exemption.

We propose the inclusion of a principle focused on variation, articulating that existing generators should provide PFR with fixed droop and deadbands *within their design limits*, while remaining as close as practical to AEMO's nominated parameters. In our view, it is appropriate to acknowledge that current generator control systems were established in good faith to comply with the regulatory requirements of the day and the shift to mandatory PFR should respect existing investments.

For example, AGL's submission to the AEMC's draft determination highlighted that the Australian Standard for Droop has historically been set at 4%, and many generators would be configured to comply with this historical setting. Accordingly, it's likely these generators would seek a variation to AEMO's 5% Droop parameter.

Section 7.3 of the PFRR implies that generators can seek to vary any of the PFR parameters by referencing the form in Appendix E. AGL considers it would be helpful to expressly state that variation of individual PFR parameters is possible where necessary.

Stability tests

Section 8.1 states that "Any change to a *control system* or primary plant will require at a minimum a step response stability test as specified in section **Error! Reference source not found.**, or where a step test might not be possible, an alternative test to demonstrate stability following changes to meet the PFRR." In our view, this wording should be amended to clearly state that it applies to changes to control systems or primary plant *with respect to frequency control*, so as to remain in scope of the final rule and not attempt to capture additional matters.

Section 8.1 refers to 'material changes' to DCS, or to governor or plant load controller deadbands, and beyond. The concept of 'material changes' is highly subjective in the absence of detailed guidance. We consider this section requires further explanation from AEMO and may even benefit from practical examples of material versus immaterial changes, to guide generators on how AEMO will determine which category changes will fall into, and the subsequent level of testing required.

Section 8.2 of the PFRR provides that stability can be demonstrated through a step response stability test or actual response to a power system disturbance. The final rule provides that the procedure to alter a generating system in clause 5.3.9 of the NER does not apply to modifications made by a generator in order to comply with the PFR requirements applicable to that generator.

AGL strongly supports the exclusion of clause 5.3.9. We do remain concerned that AEMO may trigger other related elements of the NER when a generator makes modifications to implement PFR. Given the potential costs and regulatory burden involved with certain NER mechanisms, the PFRR should provide detailed guidance on when AEMO is likely to:

- seek changes to generator performance standards;

- seek to apply the settings change process in S5.2.2; or
- require a generator to undertake some form of modelling outside the provisions of clause 5.3.9.

Finally, where the changes necessary for a generator to implement PFR would have triggered the clause 5.3.9 process, it would be useful for the PFRR to clarify AEMO's expectations regarding implementation.

If you have any queries about this submission, please contact Liz Gharghori on (03) 8633 6723 or lgharghori@agl.com.au.

Yours sincerely,

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