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MASS Review Consultation Team

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Market Ancillary Service Specification Consultation – Issues Paper

AGL Energy (**AGL**) welcomes the opportunity to comment on the Australian Energy Market Operator's (**AEMO**) Issues Paper considering proposed amendments to the Market Ancillary Services Specification (**MASS**).

AGL is one of Australia's largest integrated energy companies and the largest ASX listed owner, operator, and developer of renewable generation. AGL is also a significant retailer of energy and telecommunications, providing solutions to around 4.2 million across Australia.

We are a registered provider of contingency and regulation FCAS and are also participating in AEMO's Virtual Power Plant (**VPP**) Demonstrations. We have drawn on our experience in addressing AEMO's consultation questions across both the Distributed Energy Resource (**DER**) participation and general MASS review. Our views are presented in the Appendix.

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

Yours sincerely,

Chris Streets

Senior Manager Wholesale Market Regulation

Appendix

DER participation

1. *Which option for the ongoing measurement requirements for DER described in Section 2.3 do you want AEMO to implement and why? Should any other options be considered?*

AGL supports implementing Option 2, which would embed the measurement requirements tested in the VPP Demonstrations into the MASS. VPPs are typically comprised of residential and C&I sites. At present, we do not consider it is appropriate to require all VPP sites to have a high speed FCAS meter installed, akin to those in place at grid scale generators.

It would take significant investment for VPP operators to meet the requirements of Option 1, measuring power flow and local frequency at intervals of 50ms or less at every site. The costs of implementing the necessary hardware and software to achieve measurement per Option 1, would likely outstrip any potential revenues that a VPP operator could earn through FCAS market participation.

4. *What is the difference in implementation costs, such as updating the communication links or installing additional equipment, for capturing data at a resolution of either 50ms or 1 second for every NMI for different VPP facility types? Do you consider the cost difference to be prohibitive for participating in the Contingency FCAS markets? Please provide examples or analysis if possible.*

We consider the implementation costs for capturing 50ms data at every site are prohibitively high at present, in part due to a lack of hardware vendors who can provide the necessary equipment. Until there are more hardware providers in the market, this will remain the case.

Additionally, the IT systems required to manage and process the significant amount of incoming data add both to the costs and technical complexity. Should DER providers be required to capture 50ms data at each site, we would need to think about where that data is stored and how often it is accessed and assessed, given the burden this would present.

5. *Do you think that either of the options presented will result in more or less competition in the Contingency FCAS markets?*

As our responses to questions one and four suggest, Option 2 is likely to result in more competition in contingency FCAS markets, as it would enable ongoing VPP participation once the AEMO Demonstrations conclude.

Option 1 could be construed as presenting a barrier to entry, given the very low number of vendors supplying suitable hardware, and the prohibitively high costs of meeting this level of measurement requirement.

6. *Are there any technical risks that you envisage if the Option 2 measurement requirements are allowed? How material do you consider those risks and how could they be efficiently mitigated?*

In the absence of high-speed data (measured at 20ms or 50ms), it can be difficult to identify when a technical issue is occurring in a particular site's frequency response provision. We also acknowledge that as more sites join VPPs, this concern grows.

We consider that with the current levels of DER in the market, this issue can be effectively managed in two ways.

Firstly, the MASS could require participants to undertake periodic testing. Participants in the VPP Demonstrations were required to conduct and pass step tests before being allowed to provide contingency FCAS. AEMO could mandate that relevant tests be conducted at biennial intervals or when significant changes are made to a system, such as firmware upgrades.

Secondly, the 1MW threshold AEMO proposes to apply, described on page 13 of the Issues Paper, provides an appropriate safeguard for the growing segment of C&I connections joining VPPs. If concern regarding this threshold increases in future, AEMO can revisit the MASS and potentially revise the threshold down if necessary.

8. *If Option 2 was adopted, should the changes to the measurement requirements of the MASS be limited to small-scale DER (under 1 MW per NMI), or should a different threshold apply, such as 5 MW? For example, what do you see as the risks and benefits of expanding these measurement requirements to other FCAS providers and in what circumstances might that be appropriate?*

AGL supports limiting the Option 2 measurement requirements to small-scale DER, under 1MW at the connection point. As stated in response to question 6, we consider this MW limit provides an appropriate safeguard against technical risks to the system and can be revisited in future as DER penetration increases. Conversely, applying a higher threshold, such as 5MW, diminishes risk mitigation.

General MASS issues

9. *Does the proposed reformat of the MASS (see Attachment 1) make for improved readability and understanding? What other improvements in the form and drafting of the MASS could be beneficial? If you consider the reformatted MASS may have materially changed the substantive meaning of the MASS v6.0, please also bring this to our attention.*

AGL supports the proposed reformat of the MASS, including removal of repetitive service descriptions.

10. *Clarification of FOS references – please provide any feedback on the proposal to clarify that FOS terms relate to Table A.1 of the FOS, and any other terms that have ambiguous values.*

AGL supports the proposal to specifically reference Table A.1 of the Frequency Operating Standard (**FOS**).

11. *Frequency responsiveness of FCAS:*

    a. *What would be involved in ensuring that non-frequency responsive facilities:*

        i. *Respond only when enabled in the relevant FCAS market(s)?*

        ii. *Do not deliver significantly more than market enablement (for example, >50%)?*

    Do any alternative options exist to manage over-delivery?

Ensuring that non-frequency responsive facilities do not overdeliver adds complexity for participants, particularly if using blocked controls. Facilities are generally responsive to their bid/offer amount, but to prevent over-delivery, participant systems would need to be aligned with the MW level of enablement. This would require an automated software solution, linking a participant's systems with AEMO's and adjusting the MW amount every five minutes, as necessary.

Requiring non-responsive facilities to have these capabilities could be a positive signal to vendors to develop more variable controllers for the market.

To better manage potential over-delivery, we suggest that AEMO determine a hard limit of what constitutes 'significant over-delivery', so that participants can build systems around this limit.

b. *Please provide feedback on the proposed revised trigger ranges for switching controllers set out in Table 1 and Table 2 of section 3.3.*

AGL's preference is that switched controllers are not part of frequency control within the NOFB. On this basis, we support the narrower trigger ranges, which remain outside the NOFB.

c. *Please provide feedback on the proposal in section 3.3 to require proportional controllers to set deadbands no wider than ±0.1 Hz.*

The Issues Paper provides that "[t]he FOS states that AEMO should restore frequency to be within the NOFB, not its edge." We disagree with AEMO's view that the edges of the NOFB are outside of the NOFB.

Proceeding with this change to the MASS will require settings changes for all FCAS providers, along with reworking FCAS registration amounts for these units so that the registered MW amount does not exceed a unit's response capability. The FCAS trapeziums, that co-optimise energy MW with FCAS MW will also require recalibration.

The costs to generators of a change to +/-0.10Hz will be significant, not dissimilar to the costs incurred by generators in implement mandatory Primary Frequency Response (**PFR**) settings. The difference is that mandatory PFR, including the deadband setting, went through an AEMC rule change process, while AEMO's proposal to rework contingency FCAS settings will not be subject to the same level of scrutiny.

We anticipate market distortion on a number of fronts arising from this change. Firstly, generators would be providing additional MW to the system within the NOFB, which is not the purpose of FCAS markets. A future PFR market, which the AEMC is currently considering, could be eroded as an overlap in frequency deadbands between frequency response services could distort price signals in the separate markets for these services.

In addition, we would anticipate increased costs to generators for providing contingency FCAS, due to increased cycling at smaller frequency excursions. These costs would ultimately be passed through to customers through higher wholesale prices. Alternatively, to avoid incurring additional costs, proportional controllers would simply disable frequency response when not enabled for FCAS. This would be of detriment to the power system, which currently benefits from this 'free' frequency control.

Finally, in the absence of a decision from the Reliability Panel narrowing the contingency band from the existing +/-0.15Hz, we firmly disagree with the proposal to require proportional controllers to set contingency FCAS deadbands at +/-0.10Hz.

13. *Regulation FCAS requirements:*

a. *Are the requirements and proposed settings listed in section 3.5 adequate and achievable? In particular, can PFR (separate to other plant targets) be determined readily and communicated to AEMO?*

- Telemetered data rate – The proposal that data from each regulating facility be updated at least every 4 seconds with no more than 8 seconds data latency is not achievable by DER or smaller stations. These smaller regulation FCAS providers are unlikely to have control systems that can operate to these requirements. Upgrading these systems would likely require significant cost.
    - Maximum and Minimum limit duration (seconds) – AEMO proposes that within the telemetered data requirements, battery-based facilities indicate how long a maximum and minimum AGC control limit can be sustained based on the battery state of charge. We would need to review this proposal further, but our initial view is that this requirement would be difficult to meet for DER battery facilities.
- AGC controllable – We have no concerns with the proposed requirement that a regulating facility must demonstrate its response to AGC-issued control requests as either setpoint targets or as raise/lower controls.
- Minimum bid size – AEMO's proposal for minimum bid sizes of 2MW for batteries and 5-10MW for thermals appears intended to manage the accuracy of plant output measurements, and we understand this concern. We also consider that this could potentially reduce overall regulation FCAS supply, while increasing costs for providers.
- Max control response delay (CRD) – We support the proposed requirement for a maximum CRD value of 150 seconds.
- Minimum ramp rate – We suggest that a minimum three-minute ramp rate requires much more thought and analysis. This change would require recalculation of regulation FCAS capability NEM-wide, which is a significant task for generators. Our initial observation is that a three-minute ramp rate would artificially limit the regulation FCAS capabilities of some generators but may broaden the pool of enabled providers.

b. *Would a 1-year phase-in period for existing Regulation FCAS providers be satisfactory?*

One-year would not be sufficient for all existing regulation FCAS providers to meet the revised requirements. Smaller participants may be able to meet this timeframe, but those with larger portfolios, like AGL, would have difficulty rolling out the changes fleetwide within a year.

The bar AEMO is proposing to set for regulation FCAS is high and participants will need to assess whether it is possible for their plant to meet the requirements, and whether the costs of doing so are worth it. Should a generator proceed with implementation, verification and testing will be required before they can be enabled in the market.

Noting further proposed changes around contingency FCAS and the ongoing AEMC reforms around PFR and Fast Frequency Response (**FFR**), we would anticipate a drop-off in regulation FCAS providers with a one-year lead in time.

c. *Do Consulted Persons believe that a 2-year Regulation FCAS testing cycle strike the right balance of stringency and reasonableness?*

Our view is that regulation FCAS is being 'tested' every four seconds because issues will become apparent in real time. Accordingly, we consider that AEMO should have the ability to challenge instances of poor or unexpected performance at any point, as is presently the case with contingency FCAS.

Based on the current FCAS market structure, our suggestion would be for a four-year testing cycle for technology types that are able to test their response, noting that some cannot. Should the AEMC chose to implement PFR procurement through a 'primary regulating service', which would downgrade regulation FCAS to a secondary service, any testing regime should take account of this changed market structure.

d. *Clarification of requirements for Delayed FCAS – please consider the implications from your perspective of clarifying that Delayed FCAS controls may be of a switched type only (rather than also proportional), and, whether other factors in addition to those outlined in section 3.6 need to be considered.*

Our view is that delayed FCAS is an area that needs more investigation, and we propose further discussion of this within a technical working group.

Preliminarily, we consider that limiting delayed FCAS providers to switched type only will likely decrease the existing supply pool significantly. We appreciate that it can be difficult to coordinate switched and proportional controllers, which may encourage AEMO to limit delayed FCAS to one type.

However, in our view, switched controllers, in this context, raise power system security concerns. Enabling switched controllers for delayed FCAS can lead to system instability when these providers over- or undershoot and cause unexpected frequency outcomes. Conversely, proportional controllers that are set to maintain a very tight deadband, close to 50Hz, could better provide delayed FCAS without such system stability risks.

Ultimately, we think there needs to be detailed consideration of potential adverse power system security outcomes that could arise from this proposal prior to changing the MASS.

14. *Regarding issues associated with the pending FFR rule change canvassed in section 3.7 and any other rule changes of concern, AEMO wishes to hear from Consulted Persons on the following issues, which would be used to help scope future changes to the MASS:*

    a. *What MASS issues they consider should be addressed in subsequent reviews, including if possible, provide reasoning as to why these issues are important.*

    b. *How any other desirable changes to the MASS could be managed in the context of ongoing rule changes.*

At present, the MASS excludes inertia from a unit's contingency response. The FFR rule change being considered by the AEMC is in part, targeted at managing low power system inertia, in the absence of a specific inertia market or similar. Should the FFR rule be made, we support corresponding changes to the MASS to value and price inertial response as part of contingency FCAS services.

As stated in response to Question 11(c), AEMO should not make changes to the MASS that would cause deadbands of different frequency response services to overlap, as this would distort the price signals for those services.