19 August 2022

Attention: Amendment of the Market Ancillary Service Specification (MASS) – Very Fast FCAS
Australian Energy Market Operator (AEMO)
Via e-mail: mass.consultation@aemo.com.au

sonnen Australia Pty Ltd - Amendment of the Market Ancillary Service Specification (MASS) – Very Fast FCAS – Second stage consultation

Dear Mass Consultation team,

sonnen is at the forefront of innovative, well-engineered home energy storage systems and services empowering energy choice and contributing towards a healthier planet for local communities in markets including Australia, Germany, Great Britain, Italy and the USA. sonnen Australia is a registered Demand Response Services Provider – Ancillary Service Load (DRSP-ASL), and our Virtual Power Plant (VPP) provides Frequency Control Ancillary Services (FCAS) in New South Wales (NSW) and South Australia (SA).

Our VPP technology provides closed-loop predictable active power responses to fluctuations in power system frequency to meet the needs of contemporary power systems tasked with incorporating growing amounts of variable renewable generation resources and achieves this at an efficient low incremental cost by utilising residential Distributed Energy Resources (DER).

The 2022 Integrated System Plan acknowledges the significant and rapidly growing investment by homeowners in residential solar PV and storage systems as communities pivot to electrification to deliver emissions and cost reductions. Delivering an acceptable value proposition to sonnen's customers for their market participation in the renewable energy transition is dependent on market design elements that efficiently recognise the contribution of a range of technologies.

We are disappointed by the late introduction into the consultation of frequency response coordination concerns for FCAS Facilities providing existing Fast, Slow and Delaying contingency FCAS responses, and an apparent lack of critical review of the topic. sonnen would like to stress the importance of ensuring the MASS is focused on providing a framework to deliver technology agnostic and efficient market outcomes.

VPPs providing FCAS act as a 'stepping off point' for further integration into the National Electricity Market (NEM) for consumers, equipment manufacturers and aggregators. As VPP technology and commercial models mature the industry is building the necessary experience and infrastructure to participate more actively in a two-sided market as envisaged in AEMO's Scheduling-Lite work stream. AEMO has put this pathway in jeopardy by abandoning sound, functional and technology agnostic objectives (i.e. what outcome is required) in preference of specific technical control system design parameters (i.e. how to deliver).

VPPs do not behave like traditional large standalone FCAS Facilities, and due to the large number of individual resources in a cluster present significant opportunity for innovation in control algorithms, communications infrastructure, and metrology. When AEMO develop requirements that 'speak to directly specifying' how VPPs

should go about controlling their resources the opportunity to innovate is lost and the requirement is no longer technology agnostic.

Technology agnostic specifications must be clearly expressed in functional terms that describe ('abstract') the desired behaviours or responses, rather than the specifying the pathway to delivering a desired outcome. This is also sound 'systems engineering' and is critical to avoiding perverse outcomes where good/robust systems are eliminated in favour of worse performing but otherwise 'compliant' systems.

AEMO has abandoned the technology agnostic systems engineering approach by specifying that FCAS facilities (some of those only providing 5-minute responses) must 'scan' and initiate responses to power system frequency at a rate less than or equal to 50milliseconds (ms). Fast detection and initiation will not turn a lagging or poorly disciplined (open loop) active power response into a well-coordinated frequency versus active power response.

AEMO has access to a 'technical working group' that would have happily leveraged their significant industry experience to assist AEMO to develop functional requirements targeting the delivery of a well-coordinated frequency versus power response at least cost. AEMO has unnecessarily 'run the clock down' by proposing control system changes to FCAS Facilities offering Fast, Slow and Delayed services without accessing all available resources.

sonnen recommend focusing on the work to deploy the Very Fast FCAS market and abandon changes to control system specifications for Fast, Slow and Delayed FCAS to a future MASS update where AEMO can establish using an evidence-based approach:

- if there is a realistic risk of an uncoordinated active power frequency responses that materially degrade power system security
- what type of FCAS Facility responses (if any) present the greatest risk
- what desirable FCAS Facility response characteristics cost effectively address emerging and material risks to power system security
- how can these desirable characteristics be described and codified into the MASS in a technology agnostic manner

In this submission we provide further detail of our concerns and offer potential drafting improvements.

sonnen values a productive dialogue between industry participants and AEMO, and we are happy to discuss our responses in further detail.

Yours faithfully,

Alister Alford
Director, Wholesale and Flexibility Markets
sonnen Australia Pty Ltd

Summary of sonnen's responses to proposed amendments to the Market Ancillary Services Specification (MASS)

Draft MASS Provision	Response type	sonnen Response
3. Description of each type of FCAS Table 3 Description of each FCAS Fast Lower Service definition Slow Raise Service definition Slow Lower Service definition Delayed Raise Service definition Delayed Lower Service definition	Minor amendment for clarity	For the avoidance of doubt regarding the applicability of batteries for the provision of contingency FCAS. *Recommendation* sonnen recommend adding "Rapid change in charging or discharging from batteries." consistent with the Fast Raise Service definition to the description of all other contingency services.
5.6 Data retention	Minor amendment for clarity	For the avoidance of doubt clearly establish the 'classes' and 'applicability' of data to be retained. *Recommendation* Modify provision to restrict data retention to "only data and other measurements required to demonstrate compliance with the National Electricity Rules (NER) and MASS".
5.7. Certification of FCAS metering equipment type Table 6. Application of IEC 61557-12 type tests	Comment	sonnen has yet to fully evaluate the potential compliance of our existing products with the proposed application of IEC 61557-12. It is plausible that existing installed batteries may not meet some of the proposed requirements.

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5.8. Reporting requirements	Comment	NER 3.11.2 (h) and (i) currently establish an obligation on Participants to report on responses to frequency events, and compliance with standard test procedures. It is unclear what part of the NER establishes a broader obligation on participants for ongoing reporting on matters not related to responses to frequency events or standard test procedures. sonnen would appreciate a response from AEMO that demonstrates the proposed reporting framework is consistent with the NER. sonnen notes there is no limitation on the reasonableness or the frequency of the additional reporting requirements. Reporting on large pools of aggregated assets can involve significant data retrieval and processing effort.
5.8.1 Request for report	Minor amendment to address scope	For the avoidance of doubt Participants should only be required to report on compliance to 'relevant' MASS requirements. *Recommendation* sonnen recommend replacing "demonstrating compliance with <u>any</u> aspect of the MASS" with "demonstrating compliance with <u>any relevant</u> aspect of the MASS".
6.2.2.(d) Control System Requirements – 'scan rate'	Strong Objection	For the provision of Fast, Slow and Delayed contingency services sonnen strongly reject the proposed requirement to scan for Local Frequency and initiate a control response at a rate ≤50ms. Based on the current MASS requirements AEMO have not presented evidence of material 'uncoordinated frequency responses' or demonstrated that the proposed requirement would cost effectively deliver material improvements to power system security. The proposed approach does little to guarantee a 'coordinated' frequency vs active power response because it fails to functionally describe the 'whole of system' performance of a FCAS Facility.

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		Fast detection and initiation will not turn a lagging or poorly disciplined (open loop) power response into a well-coordinated frequency versus active power response. Fast detection and initiation will not eliminate competing control actions from other FCAS Facility control elements such as setpoint controllers. AEMO's proposed changes risk stranding otherwise very effective and well controlled FCAS resources that utilise a slower scan rate.
6.2.2.(e) Control System Requirements – 'reserved headroom or footroom'	Strong Objection, potential inconsistency with NER 3.8.7A(k) for Ancillary Service Loads.	sonnen strongly object to the proposed requirement for ASL FCAS Facilities to 'reserve' or 'set aside' headroom or footroom. The proposed requirement is more restrictive than the NER 3.8.7A requirement of 'capability' to respond, and 'blocking actions' cannot be practically implemented for large aggregations of domestic loads. As currently drafted, to 'reserve' headroom or footroom, the 'autonomous' or 'self-consumption' behaviour of domestic batteries would need to be blocked and replaced with fixed power settings whenever FCAS is enabled. A similar approach to 'freeze' the behaviour of other loads would be required for other distributed technologies. A 'reserve' is unnecessary for large aggregations where the cluster behaviour ('capability') over a 5-minute trading cycle is well understood and FCAS delivery is disciplined by a closed loop control system to adjust any deviations from the required frequency droop characteristic. Highly distributed resources naturally provide 'portfolio diversity'. Furthermore, short term uncertainty in the 'capability' of distributed resources is less likely to result in a material under-delivery compared to the failure or protection actions of a single large generator. sonnen notes generation plant protection systems that deploy 'runback' schemes potentially

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		erode the reserve of heatroom or footroom necessary for the delivery of a FCAS response. *Recommendation* If AEMO is concerned that participants plant/facility control and market systems maybe issuing commands to FCAS Facilities that 'conflict' with the 'capability' to deliver a FCAS response, then sonnen recommend this provision be redrafted to address 'conflicts' with the enabled Contingency FCAS resource. This approach would be technology agnostic and readily applied to standalone and distributed resources.