(ACN 154 893 857)

SwitchDin Pty Ltd
Level 1, Building B, 91 Parry Street,
Newcastle NSW 2302
T +61 421131550
E andrew.mears@switchdin.com

19 August 2022

Australian Energy Market Operator
GPO Box 2008
Melbourne VIC 3001
Submission by email to:
mass.consultation@aemo.com.au

Dear AEMO

RE: Very Fast FCAS Consultation - Stage 2

SwitchDin is an Australian energy software company that bridges the gap between energy companies, equipment manufacturers and energy end users to better integrate and manage energy resources on the grid. SwitchDin's technology enables our clients to build and operate vendor-neutral virtual power plants and microgrids, and to optimise performance across fleets of diverse assets. Founded in Newcastle NSW in 2014, SwitchDin now operates in all states of Australia with early successes in Europe and emerging opportunities in the Americas and Asia.

SwitchDin welcomes the opportunity to provide feedback on AEMO's draft determination on amendment of the Market Ancillary Service Specification (MASS) for the introduction of the new Very Fast FCAS markets. In this submission we outline our feedback on the draft determination and highlight potential implications of select new clauses for your consideration. We are more than happy to discuss these issues with you if required.

In general, we support the design of the new Very Fast FCAS markets. While meeting the requirement to achieve maximum response within 1 second and monitor power and frequency at 100mS will be a challenge for aggregators, we understand that this is necessary to deliver the level of service required. The issues raised in this submission are focussed on a number of new requirements included in the draft MASS that are not directly related to the introduction of the Very Fast FCAS markets and would have a significant impact on the ability of aggregators to participate in any of the contingency FCAS markets.

1. New Requirement to Scan Local Frequency at ≤ 50ms

6.2.2(d) *The control system of a Variable Controller or a Switching Controller, or a discrete combination of both, must scan for changes in Local Frequency at a rate of ≤50 ms and automatically cause the FCAS Facility to deliver the required amount of Raise Response or Lower Response*

The current MASS does not provide any requirement to monitor and respond to local frequency at a particular rate. In 2021 the *Amendment of the Market Ancillary Service Specification - DER and General Consultation* resulted in the introduction of lower resolution measurement requirements of frequency

and power for verification of Fast FCAS delivery in recognition of the significant cost and technical barriers that measurement at 50ms presented for participation of DER in the FCAS markets. Despite this, meeting the 200ms measurement requirement in a cost effective manner remains a significant challenge for aggregators of DER seeking to register for Fast FCAS, and will be a future challenge for registration for Very Fast FCAS (100ms measurement)..

Introducing a new requirement to scan and respond to local frequency at 50ms effectively negates the benefits gained in the 2021 consultation. While not clearly specified within the draft MASS, it is assumed that the same accuracy requirements would apply for scanning frequency as for measuring frequency. The challenge in meeting the 50 ms measurement requirements is not in the storage of measurement data, but in measuring at the required rate and specified accuracy without the need for using expensive, power quality grade meters at every household. Not only would introducing a scanning frequency of 50ms make registration for Fast FCAS much more challenging for DER, the scanning requirement appears to apply to all FCAS markets (Very Fast, Fast, Slow and Delayed) impacting the ability of DER to participate in any of the Contingency FCAS markets. This is in direct contradiction to the purpose and outcome of the 2021 MASS consultation which was "to determine whether and how to amend the MASS to facilitate the ongoing participation for DER in the FCAS markets".

Should a scanning rate for frequency be introduced, the separate measurement requirements for power and frequency may encourage separate metering devices to be used to record power flow and frequency. The device used to scan for frequency at 50ms would also likely record frequency at this point for verification purposes rather than measuring at two separate points. Guidance would therefore need to be provided on how measurements from separate devices should be time synchronised.

2. Control System to Reserve Headroom and Footroom for Contingency FCAS

6.2.2(e) The FCAS Facility used to deliver the required Contingency FCAS must have a control system to reserve the necessary headroom or footroom required for the delivery of frequency response whenever Contingency FCAS is enabled.

Additional clarity is required within the MASS on how the requirement to reserve headroom and footroom for contingency FCAS should be implemented by aggregators. As a contingency service it is critical that FCAS participants ensure that there is necessary headroom and footroom to deliver contingency FCAS into the relevant markets when enabled. However the way in which large assets can implement this is significantly different to how an aggregator can.

As an example, a large battery can easily reserve a portion of its capacity (MW and MWh) for use in contingency FCAS with the remainder available for arbitrage or any other service. In contrast, VPPs are a collection of hundreds to thousands of consumer owned behind-the-meter assets (currently batteries), and the "spare" capacity (kW and kWh) is aggregated to form contingency FCAS bids and responses. On a 24/7 basis these batteries are used locally to minimise grid consumption, which may include minimising cost by optimising against the retail tariff.

In forming contingency FCAS bids an aggregator needs to forecast availability taking into account factors such as likely state of charge and aggregated power, including the impact of charging and discharging in response to local generation/consumption on the available power response. This is not a straightforward task as at certain times in the day significantly less than the registered VPP capacity may be available to provide contingency FCAS leading to times where either Raise or Lower capacity is not available in sufficient quantity to form the minimum 1MW bid.

Currently VPP operators may participate in contingency FCAS markets (subject to registration) and may also choose to use the fleet to provide energy arbitrage. At a VPP level, using a control system or manual process to ensure that the same available capacity is not concurrently bid into contingency FCAS and used for energy arbitrage is possible. However, if the MASS requires a control system to physically reserve headroom and footroom (MW and MWh) then this becomes problematic for aggregators. Physical reservation of headroom and footroom is not possible at a VPP level and would need to be implemented at the asset level, through constraints on the power and energy able to be used locally by the asset owner. Not only would this negate the efficiencies of aggregation, it would result in a completely different customer experience, require alternative contractual arrangements and result in significant loss in value.

3. Certification of Measurement Equipment to IEC 61557-12

5.7.(a) The type of equipment capturing measurements of power and frequency must be certified to the sections of the IEC 61557-12 standard specified

While we agree that certification of measurement equipment is a reasonable proposal, it is unclear what the cost impact of requiring compliance to the relevant sections of IEC 61557-12 would be. We have reached out to two testing labs to get an indication of certification cost and input on the practicalities of testing equipment such as inverters to this standard but have not yet received a response. In taking a type-testing approach, guidance from AEMO is required on what would constitute a new "type" of device that would trigger the need for separate certification, for example whether testing a family of devices is sufficient or whether each separate model number requires certification as this will significantly alter the cost impact.

Individual laboratories can have different accreditations and the manner in which they test and report the results of the tests can vary. AEMO needs to clearly specify the requirements and acceptance criteria that apply to laboratories and test reports as well as who is responsible for governing this to ensure uniformity of compliance across the measurement devices.

We thank AEMO for the opportunity to provide feedback to this process.

Best regards,

Andrew Mears
Chief Executive Officer