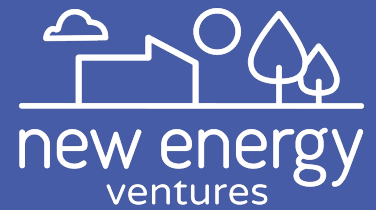


# Submission to “Amendment of the Market Ancillary Service Specification – DER and General Consultation”



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Australian Energy Market Operator  
Melbourne, Victoria

5 August 2021

Dear Sir/Madam,

Thank you for the opportunity to submit a response to the Australian Energy Market Operator's *Amendment of the Market Ancillary Service Specification – DER and general consultation*, 14 June 2021.

We are writing to you in our capacity as one of Australia's leading new energy management consultancies. New Energy Ventures (NEV) has extensive experience working with the deployment of batteries and creation of virtual power plants (VPPs). Our clients include some of the largest energy companies and new energy market participants in the country.

In all our work, there are technical, commercial and regulatory considerations and our role is to ensure all are considered appropriately. Our work commonly intersects with national energy regulation changes, including any changes to the network and retail exemption guidelines.

NEV has provided feedback to AEMO in a number of areas:

1. Measurement frequency



2. Location of metering
3. Request for clarification around acceptable frequency response rates

If the AEMO would like any clarification on our views, please do not hesitate to contact us at:  
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Yours faithfully,

James Allston  
Managing Director – New Energy Ventures



## Introduction

FCAS is an important revenue source for batteries and VPPs, making a third to a half of all revenue for batteries and up to 75% for VPPs. VPPs have also proven to be a significant source of contingency reserve. For example, last year [Energy Locals and Tesla's VPP achieved the milestone of registering 10 MW](#) into all six contingency FCAS markets through the VPP demonstration trials.

The industry engaged in good faith with AEMO with VPP Demonstration trials working on the basis that if the goals of the trials were met, changes would be made to the MASS making it easier for DER to participate in FCAS markets. Many in the industry have assumed (as we at New Energy Ventures did) that the changes to the MASS to facilitate the VPP demonstration trial would be at least partially adopted into the MASS. AEMO has stated that the goals of the VPP demonstration trial had been met. This is documented by multiple knowledge sharing reports released by AEMO.

Based on our work assisting businesses to set up VPPs, we think the decision by AEMO could have significant ramifications. This will be especially so for VPPs that have been developed on the basis of the VPP demonstration FCAS specification, but also for the existing batteries and VPPs that have been installed through the VPP demonstration trials and their customers.

## Addressing AEMO's concerns regarding meter frequency

We agree with AEMO's decision that 1 second measurement resolution is not sufficient. (So much so, we are curious as to why 1 second measurement was allowed during the VPP demonstration trial when desktop analysis will clearly demonstrate its deficiency).

That said, we question AEMO's decision not to proceed with a "compromise" of 100ms resolution metering. The Melbourne University analysis demonstrates that 100ms measurement results in low error risk. 100ms metering would also provide good alignment with AS4777.

If AEMO combine 100ms metering with an update to the trapezoid method in the Verification Tool (also considered by University of Melbourne), then it provides a near zero error risk for verification purposes.



# Addressing AEMO's concerns regarding site level metering

We agree that settlement needs to be done at a connection point level but the issues raised can be dealt with through a series of practical measures to allow for metering at a device level:

1. Measurement location should be at the point at which the FCAS response is being provided:
  - If an aggregator is controlling all systems at a site as a single asset through a site level control, then the FCAS verification should occur at the site level.
  - If an aggregator is providing an FCAS response from a single device then the verification should be at the device level.
2. If losses exist between the device and the connection point, this can and should be addressed by measuring the losses and applying a discount factor to the energy dispatched. There is precedence for this approach with the use of Marginal Loss Factors (MLFs) in the broader National Electricity Market. Generators at the end of a long skinny line will only get paid for what reaches the market, not what is generated at the terminal or connection point thereby accounting for the losses. The same approach could be applied where the losses between the asset providing FCAS and the connection point of the site are applied as a discount to the volume of services. Alternatively, AEMO could propose a standard, conservative, value for this for small DER devices to avoid the overhead of measuring losses at every new FCAS installation.
3. If multiple participating devices at a site could present an issue, limit participation to either whole-of-site level **or** a *single* device. This at least gives some flexibility about how to meter for FCAS and for vendors to offer their services. Trying to solve for multiple participants behind-the-meter is pre-emptive and well beyond the current status of the market and should be considered in the future.
4. Regardless of where the device is in the system, it is electrically connected to part of the system. Once accounting for losses is configured (see point 1 above), an asset should be compensated for its services. Metering at a site level can mask a low-cost, high value contribution to FCAS where the participating asset is significantly smaller than the load of the site it's located within, especially in a C&I context.
5. Gaming the market can be dealt with through clear requirements and penalties that already exist. For example, AEMO [recently fined CS Energy \\$200,000](#) for being unable to deliver on its bids. Frankly, there is a strong incentive anyway to actively participate in rather than game the system if you have that much control of your load.



Not adopting asset level metering has been made unnecessarily more difficult than it needs to be and limits important innovation in VPPs. In the context of the [National Energy Objective](#), making it harder for VPPs to participate in the market is not a good outcome for consumers. Specifically:

- Allowances for asset level metering will bring more resource options into the mix. More supply with fixed demand ultimately means **reduced prices for FCAS and therefore prices in the grid**. VPPs have the advantage of not needing to recover all their costs through wholesale market and FCAS markets' participation as grid scale batteries do. Therefore they should be able to supply FCAS at much lower cost.
- Reliability of the grid is potentially impacted because we have services delivered by a small number of assets. The strength of VPPs is the diversification of their resources. **Diversification ultimately leads to more resilience and better security of supply.** (If you need a case study for grids without good diversification of resources, look no further than the recent history of blackouts in South Australia.)
- Quality and safety of supply should not be impacted if AEMO deals with losses as we outline above.

## Other matters – Request for clarification around acceptable frequency response rates (droop settings)

One area that the Draft Report has not addressed in sufficient detail is acceptable frequency response rates or droop settings. Many respondents to the MASS review raised this issue. AEMO stated that “Further work on allowable frequency response rates will be undertaken outside of this MASS Review”. We acknowledge this, but see this as an urgent item of attention for AEMO. NEV also suggests that AEMO consider whether it is appropriate to have items such as frequency response rates addressed in separate documentation to the MASS.

Throughout the VPP Demonstration trials, assets under 1MW in size were permitted to participate with a droop setting as low as 0.7, in effect allowing the complete capacity of a battery to be bid into contingency FCAS markets. In discussions with AEMO, NEV understands that the following is acceptable to AEMO:

- For BESS greater than 2.5MW in size, AEMO allows for a minimum droop setting of 1.7% corresponding to a frequency band of +/- 1Hz. With a standard ramp of 6 seconds, this corresponds to 41% of the total capacity of the battery. For example, if a participant wishes to participate with a 10MW BESS, only 4MW can be bid into the contingency FCAS markets.



- For BESS less than 2.5MW in size, AEMO will allow a droop setting as low as 0.7% corresponding to a frequency band of +/- 0.5Hz. This allows for up to 100% of the batteries capacity to be bid into the contingency FCAS market. AEMO will only lower the droop setting as much as is required to meet the 1MW bid threshold. For example, if a MASP proposes to bid a 1.5MW battery into the 6 second raise market, AEMO will allow for a droop setting of 1.0% corresponding to 66% of the battery capacity and 1MW.
- BESS less than 1MW in size may be aggregated and controlled together and be bid into the FCAS market as long as the minimum bid is 1MW. In this case, the droop setting for the individual BESS units can be a low as 0.7%.

The above is not documented clearly in the MASS or supporting documents such as [BESS requirements for contingency FCAS registration guide](#). NEV suggests that AEMO confirm the information, making it clearer for proponents to participate in the contingency FCAS markets.

