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6 August 2021

Australian Energy Market Operator
GPO Box 2008
Melbourne VIC 3001

Lodged via email

Dear Board Members,

Re: Amendment of the Market Ancillary Service Specification – DER consultation – Draft determination

Simply Energy welcomes the opportunity to provide feedback on the draft determination for the market ancillary service specification (MASS) in relation to distributed energy resources (DER).

Simply Energy is a leading energy retailer with approximately 750,000 customer accounts across Victoria, New South Wales, South Australia, Queensland and Western Australia. As a consumer-centric retailer, Simply Energy supports the development of effective regulation to facilitate competition and positive consumer outcomes in the market.

Since March 2018, Simply Energy has also been leading VPPx, which is an ARENA funded project to build the first virtual power plant (VPP) that integrates with a distributed energy market platform. Simply Energy is collaborating on this project with several partners, including technology vendor GreenSync and distribution network service provider SA Power Networks. Simply Energy's VPPx is also enrolled in the Australian Energy Market Operator's (AEMO) VPP Demonstrations program.

Innovative business models, such as VPPs, will play a critical role in supporting the transition to an energy system with increased dependence on renewable energy. AEMO's VPP Demonstrations program produced several knowledge sharing reports that demonstrated the capability of VPPs to provide fast frequency control ancillary services (FCAS) accurately and without any negative system security issues.

Simply Energy is concerned that AEMO's draft determination does not sufficiently leverage the experience and opportunity of the VPP Demonstrations program and has not adequately considered the costs to consumers that would result from the proposed changes to the MASS, particularly in relation to the costs of retrofitting the existing VPP fleet to continue participating in fast FCAS markets. Without a proper consideration of the costs, AEMO cannot claim that its proposal will promote the national electricity objective (NEO).

Simply Energy makes the following observations and recommendations:

- AEMO should have used the VPP Demonstrations to test the identified system security concerns prior to publishing the draft determination.
- We urge AEMO to extend the end-date of the VPP Demonstrations program until 30 June 2023 to test whether there are alternative solutions to address system security concerns.

- VPP products will likely be uneconomical under the proposed requirement to provide high speed data samples of 50 milliseconds to participate in fast FCAS markets. AEMO should instead require data samples of less than or equal to 200 milliseconds.
- AEMO should grandfather the current FCAS specification for the fleets registered under the VPP Demonstrations program.
- The VPP Demonstrations showed that measurement at the asset level alongside the grid power flow metering was sufficient to demonstrate that the FCAS response was having a positive effect on the grid. Setting the point of measurement at the connection point would likely limit competition and fleet diversity as well as limiting the number of potential ancillary services that can be provided at each connection point.

Further detail is provided in the attachment to this letter.

Simply Energy welcomes further discussion in relation to this submission. To arrange a discussion or if you have any questions please contact Matthew Giampiccolo, Senior Regulatory Adviser, at matthew.giampiccolo@simplyenergy.com.au.

Yours sincerely

James Barton
General Manager, Regulation
Simply Energy

Attachment – Detailed feedback on AEMO's draft determination

AEMO should use the VPP Demonstrations to test system security issues

As a participant in AEMO's VPP Demonstrations program, Simply Energy is disappointed that it was not given fair notice of AEMO's altered position and the significant changes being proposed for the participants of the demonstrations. The draft determination would impose significant costs on participants of the demonstrations and would likely remove the future value for existing VPP customers. If AEMO had shared these concerns and risks with Simply Energy earlier, it is unlikely that we would have invested significant resources into expanding the VPPx fleet. For example, as AEMO provided participants with a dispensation from the existing 50 millisecond (ms) measurement resolution requirement, we would have expected AEMO to conduct some analysis on the impacts of this dispensation.

The participants of the demonstrations invested significantly in their trials with the understanding that the trials would assess the suitability of different approaches and inform the consideration of any changes to regulatory frameworks. Before publishing the draft determination, AEMO should have leveraged the VPP Demonstrations to test the concerns raised in submissions. This also would have provided trial participants, who invested in the demonstrations in good faith, with an opportunity to develop an evidence-based case on how the current trial fleets could continue to provide FCAS accurately and without compromising system security. At this late stage, it is challenging to provide data-based evidence to refute the highlighted system security concerns.

AEMO has suggested that there would be no adverse impacts on power system security if trial participants continue to provide FCAS for the next two years with the existing fleets.[1] In that context, it is not clear why AEMO is proposing to rush through amendments to the MASS rather than extending the current trials to test the significance of the issues raised through this consultation. The discussion at the public forum on 23 June 2021 highlighted that many issues are not yet settled, and additional consultation and testing is required before any decision is made on amendments to the MASS. Simply Energy is concerned that AEMO's draft determination has been overly influenced by technology providers with vested interests, who have not been involved in the demonstrations and the outcomes from the trials.

To ensure that an appropriately balanced approach is taken, Simply Energy recommends that AEMO extend the end-date of the VPP Demonstrations program until 30 June 2023 to test whether there are alternative solutions to address any system security concerns. In the meantime, AEMO should pause the DER component of the MASS review and proceed solely with the proposed improvements to the readability and usability of the MASS.

[1] AEMO 2021, Market Ancillary Services Specification Consultation – Draft Determination, June, p.72.

If implemented, the draft MASS would undermine the future development of VPPs

To support the Australian energy system's transition to an increased dependence on renewable energy, it is critical that DER are effectively integrated into the National Electricity Market (NEM). The VPP Demonstrations program has been successful in showing that aggregating DER to provide coordinated services to the energy system can benefit all electricity consumers. AEMO noted that the capabilities shown through the VPP Demonstrations 'represent foundational building blocks to enable AEMO to operate the power system with high levels of DER'[2]. In its knowledge sharing reports, AEMO noted that consumers would likely benefit from the coordination of DER through VPPs in two ways:[3]

- Consumers who own VPP assets would earn value from delivering grid services
- All other electricity consumers would benefit from a more efficient power system.

Through the demonstrations, AEMO identified the value that VPPs can provide in relation to operational visibility and forecastability.[4] The demonstrations also evidenced that VPPs have the capability to respond to both contingency FCAS events and energy market price signals.[5]

Simply Energy is concerned that the draft MASS will significantly reduce the commercial viability of VPPs and will undermine the future development of this business model. While VPPs are still in their infancy, they have already demonstrated the value of DER aggregation to consumers and the energy system. AEMO CEO Daniel Westerman recently recognised that 'aggregating rooftop solar and local batteries into virtual power plants can be financially beneficial for homeowners, and can also provide important grid services.'[6]

In its current form, the draft MASS does not appear to align with AEMO's vision for the future of the Australian energy market. While AEMO states that it seeks to increase the diversity of energy sources to deliver reliable and affordable energy for consumers[7], the draft MASS will instead reduce diversity by increasing the barriers for new energy sources to enter the market. These barriers are discussed in further detail in the remainder of this submission. Simply Energy does not consider that the draft MASS provides appropriate market incentives or proportionate regulation for VPPs or other DER services in their infancy.

Simply Energy considers that the continued development of VPPs is in line with the NEO as VPPs can provide lower energy prices for consumers, additional value for consumers from their battery storage systems, and increased reliability and security of the electricity grid. Simply Energy urges AEMO to reconsider the draft MASS and instead take an approach that balances any imposed costs against the significant consumer and energy system benefits of innovative DER business models.

The Advanced VPP Grid Integration Project in South Australia, led by SA Power Networks (SAPN) in partnership with Tesla and CSIRO, has demonstrated how integrations between aggregators and DNSP's could successfully be used to increase the level of exports from 5MW up to 6-8MW during solar hours without compromising network quality of supply during periods of network congestion or unexpected events. In this project, benefits obtained from exporting were shared equally across all participants, eliminating, or significantly reducing complexity for customers. This appears to be the first demonstration of DNSP-supplied dynamic operating envelopes by a large-scale VPP during real world trading in the NEM. Such projects also rely on there being full access to the value stack

[2] AEMO 2020, AEMO Virtual Power Plant Demonstration – Knowledge Sharing Report #2, July, p.6

[3] AEMO 2020, AEMO Virtual Power Plant Demonstration – Knowledge Sharing Report #1, March, p.5.

[4] AEMO 2021, AEMO Virtual Power Plant Demonstrations – Knowledge Sharing Report #3, February, p.14.

[5] AEMO 2020, AEMO Virtual Power Plant Demonstration – Knowledge Sharing Report #2, July, p.6

[6] AEMO 2021, AEMO CEO Daniel Westerman's CEDA keynote address: 'A view from the control room', 14 July, accessed at: https://aemo.com.au/en/newsroom/news-updates/the-view-from-the-control-room

[7] AEMO 2021, AEMO CEO Daniel Westerman's CEDA keynote address: 'A view from the control room', 14 July.

or NEM Wholesale Energy and Contingency FCAS services whilst utilising standard battery systems. VPPs, such as the one referenced in the SAPN project, may see customers depart the VPP at the end of their initial benefit period if they are faced with significantly lower financial benefits (either directly by non-participation in the fast FCAS markets or by the cost of a retrofit metering solution needing to be factored into their offer). Should customers choose to depart the VPP, the DNSP is likely to lose visibility, provide virtual inertia, voltage support and the ability to offer additional customer value via increased site export limits.

A measurement time resolution of 50 milliseconds is uneconomical for VPPs

Simply Energy continues to support Option 2 from AEMO's issues paper, which would allow a measurement time resolution at intervals of less than one second across all NMIs. As noted in our submission to the issues paper, the VPPx would be uneconomical if required to provide high speed data samples of less than or equal to 50ms for fast FCAS response. Simply Energy maintains its view that aggregated one second resolution from the fleet should be sufficient for response verification.

As noted in the previous section, Simply Energy would prefer that AEMO pause the DER component of the MASS review while it further investigates the identified measurement errors. However, if AEMO is committed to making a final determination on an increased measurement resolution, Simply Energy urges AEMO to amend the MASS to include a 200ms resolution. This appears to be a reasonable compromise, as the University of Melbourne analysis shows that potential errors would be minimal if this was adopted. This approach would also be lower cost for industry and consumers than the implementation of a 50ms resolution, which is not currently achievable with commercially available units and is unlikely to be commercially viable in the coming years.

For the existing VPP fleet, Simply Energy urges AEMO to grandfather the current requirements rather than penalising the existing registered fleets by imposing a 20 per cent discount on fast FCAS provision and transitioning the VPP Demonstrations participants to the new MASS requirements on 1 July 2023. This approach would recognise the significant investments that have already been made by participants in the VPP Demonstrations and would reflect the minimal risk to system security that is posed by the small size of the existing fleet.

These recommendations are discussed in further detail in the below sections.

The identified measurement errors at one second resolutions can be mitigated through additional testing

Simply Energy understands AEMO's concerns that measurement errors could lead to an over-delivery of fast FCAS to the grid during frequency disturbances. However, when deciding on the appropriate mitigation for these risks, AEMO should have undertaken an assessment of the costs and benefits of different measurement time resolutions. Simply Energy is concerned that AEMO has taken an overly cautious approach to the risks of measurement errors, which will have detrimental impacts on the emerging VPP market.

AEMO's own assessment of the University of Melbourne analysis suggests that any measurement errors from a one second resolution are not insurmountable. In particular, AEMO identified that changing its verification methodology to a 'universal window' approach 'is shown to reduce the average over-estimation bias to around 0% for 200 ms data samples and a maximum of 3% for 1 s data samples.'[8] Simply Energy considers that the overall error for VPPs, where aggregation can be used, would be significantly lower than demonstrated through the statistical analysis.

The University of Melbourne analysis suggests that the risks associated with one second metering intervals could be mitigated through some additional testing and analysis of different verification methodologies. Simply Energy considers that there is a clear benefit in undertaking that additional testing before any decision is made on measurement time resolutions in the MASS.

Simply Energy is also aware that other jurisdictions, such as the UK's National Grid, have taken the approach of stipulating a higher frequency of measurement for the initial testing/demonstration phase for DER intending to join the Fast Frequency Response market whilst post-event verification

[8] AEMO 2021, Amendment of the Market Ancillary Service Specification – DER and General Consultation: Draft report and determination, June, p. 16.

is conducted using only one second data. AEMO could adopt a similar approach and include pre-defined laboratory testing regimes for DER models/categories to determine whether the response is satisfactory.

Imposing a 50ms resolution requirement would not appear to address system security concerns

It is not clear how AEMO would address the identified system security issues by restricting VPP participation in fast FCAS markets (through the 50ms measurement requirement) while allowing continued VPP participation in slow and delayed FCAS markets. This approach fails to address that battery systems within VPPs will typically use the same local frequency droop curve settings regardless of the market that they are participating in. This means that any system security concerns that existed prior would continue to exist even if those batteries only participated in the slow and delayed FCAS markets.

Simply Energy considers that the choice of measurement resolution is largely separate to the system security concerns identified. AEMO has not sufficiently explained how the choice of measurement resolution used for dispatch and settlement would address unexpected disconnection due to a local network fault or the responses of DER inverters to system disturbances.

AEMO identified that there are risks associated with large-scale, rapid injection or withdrawal from batteries that exceed DNSP limits. This does not appear to be an issue that is confined to VPPs and could be fully addressed through changes in the measurement resolution. For example, batteries outside of VPPs may be coordinated in response to technical requirements and price signals. DNSPs will need to manage these risks regardless of any requirements imposed on VPPs through the MASS. For that reason, any technical issues related to DER integration should be dealt with separately to the MASS review.

As previously stated, AEMO should extend the end-date of the VPP Demonstrations program until 30 June 2023. This would enable AEMO to investigate the materiality of any risks that were not tested through the initial VPP Demonstrations.

The technology to achieve faster measurement times are not currently economical

While some stakeholders have informed AEMO that a 50ms resolution will be achievable in the short-term with upcoming hardware, Simply Energy's view is that high-speed measurement resolutions will not be commercially viable in the short-term.

Simply Energy has investigated the estimated costs of high-speed metering alternatives to determine whether there are viable options to retrofit our VPP fleet. [Note: confidential information has been removed]

If AEMO is unwilling to permit a one second measurement resolution, Simply Energy considers that a sensible compromise would be to allow a 200ms resolution for fast FCAS verification. Simply Energy has been advised by its current suppliers that a 200ms resolution is feasible with some adjustments to existing inverters with minimal impacts on costs.

[Note: confidential information has been removed]

The costs of retrofitting sites would be prohibitive and would erode customer value

[Note: confidential information has been removed]

With regard to our existing VPP fleet, Simply Energy is concerned that AEMO has not fully considered the impact of its proposals on current VPP customers. The VPP Demonstration trial participants have invested significant amounts directly into the demonstrations and application

programming interfaces (API) based on the current trial specifications. [Note: confidential information has been removed]

It is also worth highlighting that the proposed approach to FCAS metering would likely impact Simply Energy's ability to re-contract with customers once their initial benefit period has lapsed. [Note: confidential information has been removed]

The proposed discounting factor on fast FCAS does not appear to be justified

Simply Energy does not support the proposal for AEMO to apply a discount to the quantity of fast FCAS measured at all connection points in a trial participant's fleet until 30 June 2023. The proposal to apply a discount to address measurement errors does not appear to align with AEMO's suggestion that the current VPP fleet does not impact the overall provision of FCAS in the market and the security of the system.

[Note: confidential information has been removed]

While not applying a discount may result in trial participants slightly over-recovering revenues for FCAS provision, Simply Energy considers that any additional revenue is overshadowed by the forgone investments and APIs associated with the demonstrations that will arise under AEMO's proposals. Ultimately, any discount factor would reduce the viability of providing new customers with VPP offers and the continued benefits for existing VPP customers at the conclusion of their current benefit period.

If AEMO is committed to applying a discount, it should be based on average error values rather than the maximum errors. The University of Melbourne analysis suggests that the average error for a measurement resolution of one second is 15 per cent and the average error for a measurement resolution time of 200ms is 2.8 per cent.[9] As AEMO is proposing to apply discount factors to ranges of measurement resolutions, the actual discounts applied should reflect the outcome within the range. For example, the discount applied for a measurement resolution that falls between 200ms and one second could be set at 8.9 per cent (that is, the midpoint between 15 per cent and 2.8 per cent).

The existing VPP fleet should be grandfathered under the VPP Demonstrations FCAS specification

Simply Energy does not support the proposed transition of the VPP Demonstrations participants to the new MASS requirements on 1 July 2023.

AEMO stated that 'the impact of FCAS provision by existing VPP Demonstrations participants in accordance with the VPP Demonstrations FCAS Specification will not adversely affect power system security as the total capacity will be capped at 30MW'.[10] As the VPP fleet is prevented from increasing the amount of FCAS offered to the market, Simply Energy considers that the fleet will not pose a risk to system security over time.

Simply Energy recommends, in recognition of the significant investments that have already been made by participants in the VPP Demonstrations, that the VPP Demonstrations FCAS Specification be preserved for existing participants. Simply Energy considers that it would be poor regulatory practice to change the rules governing investments that have already been made, especially where the benefits of doing so are not commensurate with the costs. Grandfathering the requirements that existed at the time of these investments would give 'early adopters' of VPP products a degree of certainty over what could be offered to them on renewal of their contracts with a market participant. This would also set the right tone for AEMO's future market trials.

[9] AEMO 2021, Market Ancillary Services Specification Consultation – Draft Determination, June, p.16.
[10] AEMO 2021, Market Ancillary Services Specification Consultation – Draft Determination, June, p.72.

The MASS should permit measurement at the asset level

In the draft determination, AEMO considered that power measurement at, or close to, a relevant connection point would be more accurate than measurement at the asset or inverter level.

While Simply Energy considers that asset level metering should be sufficient to validate an appropriate response, connection point data could also be provided to provide certainty that the device response was positive. The VPP Demonstrations showed that measurement at the asset level alongside the grid power flow metering was sufficient to show that the FCAS response was having a positive effect on the grid.[11] With these findings, it is not clear why this power measurement cannot continue under the amended MASS.

Setting the point of measurement at the connection point would likely limit the number of potential ancillary services that can be provided at each connection point. Simply Energy supports multiple parties and types of DER being able to provide FCAS behind the meter, as this would promote both competition and diversity in the market. Simply Energy urges AEMO to ensure that its amendments to the MASS do not preclude future innovations, including allowing multiple parties to provide services behind-the-meter. This approach would ensure that customers' can continue to choose how they derive benefits from their DER investments

AEMO should re-evaluate market fee structures

Simply Energy is concerned that AEMO's proposed fee structure for adjusting registrations could become a financial burden. If fees are payable to AEMO each time a NMI (or a group of NMI's) rolls in or rolls out, rather than only when the MW registration of the DUID changes, then this could become a further barrier to entry. Simply Energy urges AEMO to re-evaluate the underlying processes and fee structure to ensure that it presents the most economic approach for both participants and the market operator.

[11] AEMO 2021, Market Ancillary Service Specification Consultation – Issues Paper, January, pp.10-11.