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Australian Energy Market Operator
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5 August 2021

Subject: Amendment of the Market Ancillary Service Specification – DER & General Consultation Draft Report and Determination

Thank you for the opportunity to comment on the published Draft Determination of the Market Ancillary Service Specification (MASS) Version 6.2 arising from the Market Ancillary Service Specification (MASS) Consultation that concluded in March 2021.

We support the report's findings and the draft determination to retain the MASS specification as it currently stands. This support is based on the knowledge that the measurement of power flow and local frequency at intervals of 50ms or less at every site (NMI) can be achieved cost effectively, and from our experience that net metering (connection point metering per NMI) is necessary to support mixed DER sites.

Further, we support the conclusions drawn in both AEMO's engineering analysis, and the independent engineering analysis carried out by the University of Melbourne.

This response is a joint response on behalf of both Rheem Australia Pty Ltd (RAPL) and Combined Energy Technologies Pty Ltd (CET), as we are technology partners in the DER market. Our views and recommendations detailed in this response relate specifically to the emergent control and orchestration of mixed DER sites, and importantly their participation in the Contingency FCAS market.

As the largest Australian manufacturer of water heaters, Rheem markets a wide range of solar, heat pump, high efficiency gas and electric water heater models to the domestic water heating market. Our brands include Rheem, Solahart, Vulcan and Aquamax. Additionally, we are now the number three supplier of photo voltaic (PV) systems in the country via our Solahart channel. Over the last three years we have also commenced the manufacturing and installation of smart electric water heaters, controlled remotely by our technology partner, CET.

Combined Energy Technologies (CET) is an Australian technology company specialising in energy management for residential, commercial, and micro grid systems. CET has extensive experience in the integration and orchestration of systems with multiple DER devices including the integration of solar PV, batteries, water heating, electric vehicle chargers, pool pumps and A/C for the benefit of the homeowner, retailer and the grid.

Today Rheem has products in over 4 million Australian homes. Together, Rheem and CET are already actively participating in the emerging DER market with thousands of online, mixed, orchestrated DER sites (Solar PV, batteries, smart water heaters, HVAC, pool pumps, EV chargers, other loads) across the NEM and the WEM. Over the past 8 years we have identified and resolved many issues (at live field sites) around how mixed, smart DER sites can be orchestrated to achieve the best financial outcomes for consumers, whilst providing a foundation for grid support services such as Contingency FCAS.

This position has given us a unique insight into the development and potential for the emerging new energy market. It is our belief that whilst batteries will be an essential component of the future grid, the cost of these devices will limit the speed of their uptake. We therefore would encourage the market operator to look beyond storage batteries and to support the uptake of affordable, equitable, smart DER solutions that will enable ubiquitous consumer participation in grid services. By doing so AEMO would increase the opportunity for consumer participation in the future energy market, not just by those that can afford batteries and solar PV, but also across a far greater socio-economic spectrum.

If the energy market is to be truly democratised, it is extremely important that any changes to market rules and associated technical specifications for participation in grid services (such as FCAS) are made with the consumer at the centre of the solution. This will ensure that current and future investment in smart DER by households continues to be made. Fundamental to this approach will be that new rules do not favour a particular technology, technology class, or technology manufacturer, and that technology neutrality is not impeded by barriers to entry in creating or modifying energy market rules.

Our specific responses to the Draft Determination are underpinned by this approach. Our experience and recommendations are supported by empirical data from an existing fleet of thousands of NEM consumer sites of mixed DER. The data from these sites support our technical, architectural and commercial conclusions which are in alignment with the principles of the National Electricity Objective (NEO).

In summary we have not changed our views from our previous submission and support the DER related recommendations in the Draft Determination, in particular:

<u>That current measurement specification requirements should remain unchanged</u>

> Whilst we are aware that any decision to leave measurement specification requirements in place may have a commercial impact on some market participants, consideration should also be given to those participants that have invested in metering solutions that are compliant with the current MASS. Rheem/CET believes that, if there is negligible cost imposition in the procurement of MASS compliant metering, then it is appropriate for AEMO to reject any relaxation of the current MASS specifications.
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> We additionally support the University of Melbourne report's findings that it is prudent to avoid diluting the metering specification, as this may erode the potential value of FCAS services provided by DER as it reaches scale.

That there is no significant cost impediment to requiring power metering capable of measuring power flow and local frequency at intervals of 50ms or less at every site (NMI)

CET have a MASS compliant meter (6 Channels, 3 CT's supplied + option for an extra 3 CT's) available at a wholesale price of AU$385 (ex GST). We hope to reduce this cost in Q1 2022 when the impact of global Integrated Circuit production shortages is addressed. As a result, we do not believe that there are impediments to maintaining the current specifications to measure power flow and local frequency at intervals of 50ms or less at every site NMI - i.e. at the site connection point.

We are open to commercial discussions with any party that is having difficulties designing or procuring cost effective MASS compliant metering solutions. To this end CET has recently (3rd August) contacted the Clean Energy Council with details of their low cost meter, with an offer to supply any members interested in purchasing the same.

Rheem/CET are also aware that other Australian companies have similar cost-effective power metering technologies available that comply with the current requirement to measure power flow and local frequency at intervals of 50ms or less at every site NMI.

That net metering (connection point metering per NMI) must be a requirement of the MASS for DER participation in the delivery of Contingency FCAS to support mixed DER sites

We support AEMO's position to retain NMI level metering i.e. to measure the grid connection point net active power response. This aligns with our March submission that Net metering (connection point metering per NMI) must be a requirement of the MASS for DER participation in the delivery of Contingency FCAS to support mixed DER sites.

This approach to NMI level metering also has broad industry support, e.g. the ESB Post 2025 review in respect to DER site level interoperability and the ARENA sponsored DEIP interoperability forum.

As we are aware that the requirement for NMI level metering may create issues for some Demonstration VPP fleet owners, Rheem/CET is happy to offer to help them to make their fleets compliant, at a relatively low cost and with reasonable commercial terms.

We also refer to the June 23rd AEMO consultation which included the following "question on notice":

"Noting that the measurement location concerns primarily seem to be around more than one device providing FCAS at the same location, is AEMO willing to consider further optionality where device or grid flow data is allowed (with grid flow data required for sites with more than 1 FCAS enabled device, and all other sites having the option)?"

The underlying assumption behind this question is that FCAS services will only be provided by household batteries. It ignores the even greater contribution that other household DER could have in the delivery of FCAS services. Our field experience with household DER has shown that separately orchestrated DER can conflict during an event response if not coordinated from a whole of home perspective. This conflict has resulted in both inferior financial outcomes for the householder, and an FCAS response that is nullified by the device conflict.

To underline the proposition that DER other than batteries could provide FCAS services, Rheem/CET posits that smart water heating could quickly become the dominant grid interactive DER resource given that water heating is ubiquitous in nature, and that storage water heaters represent a low-cost method for storing energy. Importantly, water heaters represent an affordable entry point for consumers wishing to participate in the monetisation of demand management. Based on cost alone, we believe that the deployment of smart water heating could rapidly accelerate and far exceed that of storage batteries in coming years.

As this submission has been prepared using the expertise of a number of Rheem and CET personnel, I would ask that any enquiries related to the submission are directed in the first instance to myself. I will then co-ordinate follow up responses to your enquiries or further meetings with the appropriate personnel within our organisations.

Yours Sincerely

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