Tesla Motors Australia, Pty. Ltd.
15 Blue Street
North Sydney NSW 2060
Australia

Ben Hiron
Australian Energy Market Commission
GPO Box 2603
Sydney NSW 2000

16/06/2022

RE: AEMC Primary Frequency Response Incentive Arrangements – Directions Paper (ERC0263)

Dear Ben,

Tesla Motors Australia, Pty Ltd (Tesla) welcomes the opportunity to provide a response to the AEMC's Primary Frequency Response (PFR) Incentive Arrangements Directions Paper.

Tesla recognises the ongoing need for arrangements to incentivise the provision of frequency stabilisation services in the national electricity market (NEM). As we have noted throughout this consultation process, battery storage has demonstrated a superior ability to provide a rapid and accurate response to frequency excursions, and as per the AEMC's own analysis, when normalised for plant size, battery storage systems have accumulated the highest PFR mileage across all forms of technology. This underpins their importance in providing ongoing frequency stability within the Normal Operating Frequency Band. As such, appropriate incentives that reward positive contributions to frequency will be critical to achieving a reliable, secure and low-emission future grid.

Given the accelerating transition from large synchronous plant to inverter-based resources (IBR), we strongly recommend AEMC design an enduring incentive framework that is both technology and scale neutral. Whilst some level of mandatory PFR makes sense, Tesla still considers more consideration needs to be given to:

(1) how IBR will be treated under the proposed arrangements (relative to thermal plant); and
(2) further detail on how AEMO will ensure the contribution factor procedure and metering obligations do not directly restrict DER from claiming payments (or avoiding residual cost allocations).

A summary of Tesla's views is detailed below and we welcome further discussion on any of the points raised.

Tesla looks forward to continued engagement with both AEMC and AEMO as it develops and consults on the frequency contribution factor procedure.

Sincerely,

Tesla Energy Policy Team
energypolicyau@tesla.com

1. **Clarity is required on how different technologies accrue payments/costs under proposed arrangements**

Tesla notes a targeted outcome of the proposed arrangements will be to drive requisite investment in frequency responsive technologies to replace the ageing thermal fleet ahead of its retirement and ensure a smooth and secure transition. As per the working group discussions, we understand there are relevant trade-offs between a 'target to target' vs AGC trajectory selection in terms of implementation complexity, speed and impact on how total vs incremental PFR is treated. Tesla remains open to both approaches, but notes the principles of technology and scale neutrality should be closely monitored such that if grid-scale or DER systems accrue the highest mileage under 'incremental PFR' and/or are responding accurately and quickly to AGC, they should be fairly compensated.

However, as we raised previously, the current cost allocation of regulation FCAS is disproportionately allocated to renewable plant. Whilst process improvements aligning sample and application periods, alongside increased transparency of AEMO's contribution factor methodology may provide some improvement, inherent forecasting challenges will still see renewables face relatively higher costs than warranted. Recovering the additional costs of frequency performance payments will therefore exacerbate this distortion, placing additional burden on renewables and further distort fair and efficient cost recovery amongst generators.

In principle, stand-alone battery storage would be a direct beneficiary of the double-sided incentive arrangement (PFR enablement would always drives a positive contribution factor), but it is not yet clear what flow-on impacts would arise from removing the ability for wind and solar operators to add storage to manage costs (i.e. negative contributions) at the portfolio level. In addition, the wider system impacts of renewable generators disproportionately facing higher costs (a wealth transfer from solar and wind to incumbent thermal plant) is misaligned with both the NEM's transition and (as per AEMO's ISP modelling) the NEO.

It would also be useful to understand if the AEMC is still exploring additional "FCAS style or other procurement arrangements to ensure that necessary volumes of PFR can be secured" (as recommended previously by GHD), or what future assessment points will be introduced to review the performance of the proposed arrangements and ensure the incentives are working as intended.

We remind the AEMC of Tesla's proposal to increase procurement of regulation FCAS volumes as an efficient complement to any PFR arrangements (or ahead of market-based PFR mechanisms) to ensure sufficient reserve is available whilst also maintain transparent price formation.

The benefits of additional regulation FCAS (even under lower utilisation rates) is most evident under system stress events. For example, during a supply-side event, where energy prices rise to the market price cap, generators will rationally be seeking to operate at maximum capacity and therefore be unable to provide any frequency raise services. Even for plant that is curtailed or have short-term over-rating capability, they will likely face both technical and regulatory barriers to operating above their nominal site ratings.

As a separate point of clarification, our understanding from the Directions Paper is that any errors, distortions, or deviations caused by the 4-sec AGC lag would be exempt from penalties under the proposed contribution factors, and note that AEMO will be required to allow for on-site frequency measurements, as explained in the paper:

> *"This change clarifies that the measurement of unit performance is based on the impact on power system frequency, and not directly on the need for regulation services. While the two are closely aligned, the need for regulation service includes consideration of the function and control objectives for AEMO's AGC system, which may not be transparent, and need not be transparent to market participant"*

We strongly support this clarification / would welcome further confirmation from the AEMC on this point, as it would provide industry additional transparency and remove other 'black-box' issues that participants faced from the previous proposal.

2. **Frequency services should be 'scale-agnostic' – i.e. expanding PFR cost recovery to non-scheduled participants should coincide with opening regulation FCAS market access to VPPs**

Regarding the draft decision to allocate a share of costs to non-scheduled generators (even without appropriate metering) - Tesla recommends this principle apply not just to costs but extends to FCAS service provision, where VPPs are provided access to the non-AGC component of regulation FCAS markets (i.e. are effectively recognised and compensated for providing valuable PFR under a target to target approach). We stress this should be done in a way that maintains flexibility for non-scheduled participants, so values regulation FCAS without enforcing expensive metering, SCADA or comms infrastructure, or unnecessarily imposing dispatch obligations on VPPs.

This would be a simple and equitable update to implement, incentivise more VPPs to have tighter deadband settings, and would reflect the NEM's evolution towards higher proportions of distributed resources, and ensure aggregated DER is appropriately (and fairly) incentivised to actively contribute to frequency stability within the normal operating frequency band on an ongoing basis.

Similar to more regulation FCAS helping to drive investment in utility-scale storage, opening up this value stream access to non-scheduled participants would strengthen investment signals for VPP models, supporting the long-term system security outcomes at the distribution level. Further, recognising the fast and flexible two-way charge and discharge profile of storage, this approach would simultaneously help to mitigate minimum operational demand risks, ensuring load-side frequency response capability is widespread and not simply reliant on ex-post responses to major system contingencies.

However, there are still challenges for non-scheduled plant opting for individual contribution factors:

> *"The frequency performance payments arrangements would provide an incentive for non-scheduled plant to opt to obtain appropriate metering to allow for the individual contribution to the aggregate deviation in frequency of the power system to be assessed. Market participants who opt to do this would not be part of the residual component of plant that does not have appropriate metering. Instead, they will receive an individual contribution factor that reflects their individual plant behaviour. The frequency performance payments process will also incentivise the provision of self-forecast information from these market participants. This will support the improvement in the accuracy of the information provided as an input to market dispatch and aligns with the objectives for the ESB DER integration and flexible demand pathway"*

Tesla supports the principle but cautions that the AEMC and AEMO must recognise that whilst DER is technically capable of providing frequency stabilisation services (similar to utility-scale batteries), one key distinction is that metering costs and requirements are a threshold commercial issue. So whilst SCADA costs may be insignificant in the development of large-scale generators, for aggregated fleets of DER, metering requirements will need to be tailored to ensure they do not inadvertently continue to be barriers to entry for DER that may otherwise provide positive contributions to frequency stabilisation.

One precedent is how VPPs have trialled having one high-speed meter per jurisdiction to enable participation in energy and contingency FCAS markets (part of AEMO's demonstration trials), which acknowledged that requiring high-spec meters or SCADA telemetry at each and every DER site across the fleet would add enormous costs and be unworkable for aggregators. We encourage AEMC to work closely with AEMO and point to the recently concluded MASS consultation that took into consideration these data verification, metering and measurement issues to determine a workable pathway forward.

On a related point, we support the AEMC's revised position not to allocate the full cost of *regulation services not used* to 'the residual component' but remain concerned that the barrier to move from residual to active PFR contributor would still remain high, as discussed above.