

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

28/10/2021

**RE: AEMC Primary Frequency Response Incentive Arrangements – Draft Determination (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 Draft Determination.

Tesla recognises the real and immediate need for action to improve the current frequency issues in the national electricity market (NEM) and are acutely aware that NEM frequency has been deteriorating over recent years. At the same time, battery storage has demonstrated a superior ability to provide a rapid and accurate response to frequency excursions. In addition, 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, underpinning their importance in providing ongoing frequency stability within the Normal Operating Frequency Band. From Tesla's perspective, enabling the efficient integration of energy storage into the NEM will be critical to achieving reliable, secure and low-emission future grid.

Given the inevitable (and accelerating) transition from large synchronous plant to inverter-based resources, we strongly recommend AEMC design an enduring frequency incentive framework that is efficient and technology neutral today, as well as fit for purpose for tomorrow's energy system. Whilst some level of mandatory PFR makes sense, Tesla does not view a double-sided causer pays performance incentive scheme as satisfying this criterion.

A summary of Tesla's views on the draft determination is detailed below:

**1. Tesla supports continuation of wide-spread, narrow band PFR**

- Tesla supports the AEMC proposal to make mandatory PFR enduring, without also mandating head/foot room at the plant level. However, this design will require other forms of incentives: (A) to ensure sufficient secondary frequency reserve is available to support PFR during system stress events; and (B) 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 (see point 3 below).
- As a minor point of clarification, we suggest AEMC confirm that any errors, distortions, or deviations caused by the 4-sec AGC lag are exempt from penalties under causer pays factors.

## 2. We do not support double sided causer pays as the preferred incentive mechanism

- The current cost allocation of regulation FCAS is disproportionately allocated to renewable plant<sup>1</sup>. 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.
- Double sided causer pays is also unlikely to be a strong enough signal to bring forward the level of investment in new capacity required – acting instead mainly as an uplift to incumbent plant. Yet as AEMO and AEMC both note, as renewables increase, FCAS requirements will increase. But as thermal plant retires, there will be a scarcity of reserves which have primary droop control. As such, the AEMC should focus on introducing incentive mechanisms that support investment in new resources with the capabilities to complement the increasing penetration of renewables. As GHD's advice highlights, double-sided causer pays is likely only to act as an interim 'band-aid' solution that will need additional "FCAS style or other procurement arrangements to ensure that necessary volumes of PFR can be secured".
- It is important to note that battery storage can provide a 'premium' FCAS response – with greater speed and accuracy than other technologies. This would allow it to be a direct beneficiary of a double-sided causer pays regime (PFR enablement would always drives a positive contribution factor), as well as see indirect benefits from wind and solar further incentivised to add storage to manage cause pays liabilities at the portfolio level. However, 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 Tesla's mission to accelerate the transition to sustainable energy, and therefore we support alternative incentive mechanisms as outlined below.

## 3. Instead, Tesla recommends increased procurement of regulation FCAS volumes

- Procuring increased volumes of regulation FCAS is the most efficient approach for providing frequency reserve and (unlike double-sided causer pays) incentivises increased frequency support over the long term in a way that is less discriminatory to renewables (i.e. avoiding the direct wealth transfer distortions).
- The potential for additional regulation FCAS revenue (in a notably shallow market that is already being damped by MPFR) will strengthen commercial drivers and incentivise new flexible plant to enter the market, based on clear price signals. An approach that leverages existing regulation FCAS markets would therefore support the principles of resource efficiency, maintain transparent price formation, clearly specify procurement volumes, and ensure comparable treatment between all resources on an equitable basis. Relatedly, we support increased transparency on AEMO's efforts to regionalize regulation FCAS<sup>2</sup>.
- 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.

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<sup>1</sup> See Cornwall Insight August 2020 Note: [www.cornwall-insight.com.au/wp-content/uploads/2020/08/AU-COTW-Issue-46.pdf](http://www.cornwall-insight.com.au/wp-content/uploads/2020/08/AU-COTW-Issue-46.pdf)

<sup>2</sup> <https://aemo.com.au/energy-systems/electricity/national-electricity-market-nem/system-operations/ancillary-services/regionalisation-of-fcas>

- A proven and well understood market for regulation FCAS already exists, and through higher prices, will drive the investment signals needed to incentivise both efficient operation of existing plant, and timely entry of new plant. Strong investment signals are necessary to ensure reliability and stability through the NEM's fleet transition. Further, regulation FCAS prices provide a much more transparent source of revenue and therefore supports investment certainty (being forecastable, even if FCAS prices are not completely predictable) than the proposal for double sided causer pays with multiple scaling factors, with revenue volumes largely reliant on AEMO procurement errors (increasing investment uncertainty). Leveraging regulation FCAS would also avoid the complex and protracted process required to design and then implement an equivalent PFR market in the near future.
- We note this increased volume / low utilisation is similar to the ancillary service approach taken in the Californian CAISO market, one of the leading markets for new storage deployments globally. Whilst there is no single driver of this outcome, a confluence of ambitious policy directives (storage procurement targets), financial incentives (investment tax credits), and market value streams (spinning reserves, resource adequacy payments, ancillary services, energy arbitrage) have already supported over 8GWh of storage projects. Procurement of regulation and spinning reserve are market based and transparent, and complement the operation of renewable and storage technologies, rather than impose additional costs.<sup>3</sup>

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

- We note the draft decision to allocate a share of regulation 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). We stress this should be done in a way that maintains flexibility for non-scheduled participants, so values regulation FCAS without enforcing expensive metering or comms infrastructure, or unnecessarily imposing dispatch obligations on VPPs.
- This would be a simple and equitable update to implement, complementing the expansion of regulation FCAS as proposed above, and would reflect the NEM's evolution towards higher proportions of distributed resources, and ensure DER is appropriately (and fairly) incentivised to actively contribute to frequency stability 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.

Sincerely,

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<sup>3</sup> <http://www.caiso.com/Documents/Section8-AncillaryServices-asof-Feb15-2021.pdf>