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Australia

Mr Ben Hiron
Australian Energy Market Commission
PO Box A2449
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Lodged online

03/06/2021

RE: Fast Frequency Response Draft Determination

Dear Ben,

Tesla Motors Australia, Pty Ltd (Tesla) welcomes the opportunity to provide a submission to the AEMC's draft determination consultation on Fast Frequency Response (FFR).
Tesla remains committed to working with market bodies to improve power system security and reliability outcomes in the National Electricity Market (NEM) in a manner that is efficient for consumers, timely for ongoing secure system operations, and sustainable over the long-term. We note the real and immediate need for action to improve the current system frequency control frameworks in the NEM and agree with the AEMC and AEMO position that system frequency has been deteriorating over recent years and needs rapid rectification. Over the same period, battery storage has been demonstrating its value in managing frequency stability and restoration - providing premium contingency and regulation frequency services since the introduction of Hornsdale Power Reserve in 2017.

As highlighted consistently throughout our engagement on the AEMC's frequency work program, **Tesla recommends FFR should be progressed as a matter of urgency and be given a 12-month implementation timeframe (i.e. market start by mid-July 2022).**

With near unanimous support, thorough consultations already undertaken, immediate cost benefits to be realised for consumers, immediate system security and reliability benefits, and alignment with the future direction of market reforms (i.e. essential system services workstream under the Energy Security Board's Post-2025 agenda), it is critical that these FFR changes do not proceed along exceedingly drawn-out implementation timeframes.

Whilst we recognise the critical system changes that need to be made by AEMO, we do not support the current high-level estimates of implementation being "in the order of three years". The AEMO provide 4 elements to this extended implementation:

1. communication engineering (telemetry, data requirements);
2. scheduling development engineering (incl. FCAS constraints);
3. NEMDE and IT system changes; and
4. Industry consultation.

However, most of the work across each of these areas would typically be expected to be completed well within a 12-month timeframe.
Some rationale for our recommendation is provided in further detail below:

- **Reform Acceleration:** FFR was first formerly proposed in the AEMC's Frequency Control Frameworks Review report of July 2017. If implementation is only finalised by 2024, then it will have taken 7 years to progress a reform that has consistently received clear industry support. This is clearly not keeping pace with the energy transition underway and is decoupled from AEMO's own identified need
  - We note AEMO's direction to ElectraNet to procure FFR in South Australia as another clear indication that FFR is required well ahead of 2024
  - Developers of battery projects are generally concerned about the need and speed of implementing market reforms to better recognise the value of services. As we noted in our response to the potential delay of 5MS, long and drawn out timeframes advantage incumbents whilst prolonging uncertainty for new technologies such as battery storage, even following successful demonstration of its ability to deliver outstanding outcomes for Australia's energy consumers upon immediate deployment
- **Extensive consultation:** There is already a strong consensus of stakeholder support as documented by the AEMC throughout this consultation, and therefore further consultation on technical specifications can be short and targeted to expert technical and operational staff through existing Working Groups and feedback mechanisms
  - We understand from rule 8.9 of the NER that an expedited MASS review process would require around 34 weeks (8 months) to complete development and consultation, which aligns with a 12-month implementation timeframe provided other system changes can occur concurrently
  - One important item for clarification is to ensure the MASS defines FFR as both a response to actual frequency deviation (as opposed to inertia response which seeks to respond to rate of change of frequency), as well as a frequency ramp that recognises the full rated capacity of batteries with their maximum droop settings (1.7%).
- **Low market participant risk:** As an extension of existing FCAS structures, Generator changes and engineering works for market participants is likely to be minimal (e.g. battery storage firmware updates can be configured rapidly to respond to the proposed sub 2 second markets and ensure active response to frequency deviations)
  - We acknowledge AEMO's concerns on shorter implementation timeframes potentially truncating studies that could lead to more conservative application of dispatch constraints. However, even if AEMO is unable to run these studies in parallel to system changes, there will always be a risk of conservatism when translating desktop studies to real world dispatch (i.e. new markets will likely evolve over-time and learn by doing irrespective of the length of time given for implementation)

- To address some of this risk, we suggest AEMO conduct an early market sounding exercise ahead of the full MASS review to get market participant views on FFR specification requirements and constraints. AEMO can also refine their internal reviews across the implementation options and associated risks and include as part of the market sounding to allow an evidence based response from potential providers of the service. This should further expedite the timeframes and mitigate issues.

- **Prioritising 'no-regrets' system change:** NEMDE and IT system changes can also be prioritised with appropriate budget and resources. Any additional cost that may arise through speeding up these changes should be viewed against the counterfactual costs of not having an FFR market (e.g. procuring more FCAS volumes or having higher system security risks)
  - Given the proposed FFR mechanism maintains co-optimisation and effectively mimics much of the structures of the existing 'fast-response' 6-second FCAS market, we envisage AEMO does not need to make significant wholesale changes to IT or dispatch systems. This is particularly the case if three raise/lower contingency markets remain (i.e. FFR replaces R6 and the 'fast' and 'slow' markets are combined.
  - Without pre-supposing AEMO's prioritisation of work programs underway, FFR still appears a relatively low-cost, high reward reform that can have substantial flow on impacts across both operational and investment time frames (see next point)
  - AEMO has demonstrated its ability to move quickly when addressing organisational priorities. The expedited implementation of mandatory primary frequency response is one recent example
- **Strengthening investment signals**: The NEM currently provides mixed signals for investors looking to develop storage projects, highlighting a significant gap in meeting AEMO's forecast levels of storage deployment by 2030 (i.e. up to 19GW by 2040 as projected in the 2020 ISP 'step change' scenario, which is already being outrun)
  - New markets such as FFR are crucial to contribute to both reliability and system security outcomes in the short term, and to drive affordability and efficiency outcomes for consumers over the longer term
  - The AEMC must consider both the individual and collective impact of prolonging implementation against a broader assessment of what potential market and investment risks are arising over the same timeframe
  - Improved price signals that reward fast, flexible and dispatchable assets (e.g. battery storage and demand response) is required to drive efficient investment. This will immediately flow through to greater reliability, system security, and lower emissions and costs for consumers
  - Strengthening investment signals for new flexible capacity will also serve to mitigate the risk of early or disorderly thermal coal closures, and help ensure new plant (providing frequency as well as other essential system services such as system strength, inertia, and voltage control) is deployed ahead of old generators exiting.

A related issue for the introduction of FFR (and extension of mandatory PFR) is ensuring procurement arrangements for contingency and regulation FCAS are updated so all frequency services act in a complementary manner and minimise the risk of having insufficient headroom for raise services, as PFR does not mandate that headroom is available. With potentially a total of 8 contingency and 2 regulation FCAS markets, it follows additional volumes and incentives for FCAS buffer will be required to ensure headroom is reserved – otherwise during times of coincident high prices and system stress, generators will already be operating at full dispatch and PFR and FCAS will see insufficient response. To avoid this, additional dynamic procurement of FCAS Regulation will provide a market signal to co-optimise energy and FCAS to ensure PFR headroom remains. This procurement of additional FCAS Regulation would however require a lower utilisation of the service via AGC, to remain as an effective reserve similar to other ISOs such as California and ERCOT. FCAS Contingency FFR/Raise could also be a mechanism for this, however it would need to be limited to fast-acting proportional controllers with the energy immediately available, and avoiding switched responses and slower control systems. For battery storage, this will also require that full contingency registration commensurate with rated capacity is enabled.

Tesla looks forward to continued engagement on these items. Should you have any queries on the above points please reach out to Josef Tadich at jtadich@tesla.com.

Sincerely,

Emma Fagan

Head of Energy Policy and Regulation
Tesla Energy