Tesla Motors Australia, Pty. Ltd.
Level 14, 15 Blue Street
North Sydney 2060 NSW
Australia

Australian Energy Market Operator
530 Collins Street
Melbourne VIC 3000

via email: 2024_security_consultations@aemo.com.au

23 October 2024

RE: Draft Inertia Requirements Methodology Determination

Dear AEMO,

Tesla Motors Australia, Pty Ltd (Tesla) welcomes the opportunity to provide a response to the Amendments to the Inertia Requirements Methodology consultation (the Methodology).

Tesla's mission is to accelerate the transition to sustainable energy. A key aspect of this will be using smart, grid-forming inverters to support increased penetration of variable renewable energy (VRE) in the grid. We believe that battery energy storage system (BESS) assets, particularly Tesla Megapacks operating with our virtual machine mode (VMM) technology, will be integral to providing a scaled, cost-effective system strength solution in all Australian jurisdictions.

Tesla is encouraged by AEMO's progression on the Inertia Requirements Methodology process, and in particular, is pleased to see AEMO's adoption of Option 1 (b) – Quantifying synthetic inertia using the swing equation – 'indirect approach' to quantify synthetic inertia as part of the approvals process. However, Tesla does not fully endorse the inclusion of "active phase jump power" whereby AEMO draws on Test 7 of the Voluntary Simulation Test Framework for GFI. Although active phase jump power is a sign of grid-forming inverters providing inertia, there are more targeted ways to measure and quantify inertia from grid forming inverters as outlined previously in AEMO's consultation.

Regarding the broader discussion on the increasing penetration of GFM resources, Tesla welcomes AEMO's engagement with industry actors and OEMs to gain further data and insight. While Tesla notes that AEMO will consider the feedback from a proponent who proposes data for synthetic inertia within a 2-second window, Tesla notes that this is not a standard methodology from best-practice power system theory nor international papers, and therefore disagrees with the suggested methodology for the % of total energy injected as it is not linked to any applicable meaning.

Furthermore, Tesla raises concern with suggestions on the testing of inertial responses under a range of different RoCoFs. Tesla agrees that TNSPs are the best suited actors to define performance requirements but does not believe that this includes the design. As more and more emerging technologies are able to provide synthetic inertia and system services, there is no material reason why these technologies should be implemented to mimic the dynamic of legacy technologies, rather than a performance-based assessment.

Tesla notes that there is no relation between the provision of fault current and the provision of inertia, and therefore is not relevant for the scope of AEMO's inertia methodology. Similarly, regarding post fault behaviour, Tesla has not observed significant Active Power disturbance. Tesla welcomes AEMO's position that there is no clear reason why virtual impedance should not be allowed, as is commonly used in power-systems globally.

Finally, Tesla does not see any limitations for GFI BESS to provide inertia during simultaneous voltage and frequency disturbances, as any voltage disturbances are a local issue, so multiple GFI can provide services to simultaneously tackle both issues if this hypothetical situation were to ever occur. Similarly, if there was a voltage fault near a synchronous machine, the same situation would occur unless inertia was defined through a non-standard definition.

Tesla looks forward to continued engagement and actively participating in ongoing discussions.

Kind regards,

Tesla Energy Policy Team

energypolicyau@tesla.com