

Clare Stark
Australian Energy Market Commission
GPO Box 2603
Sydney NSW 2000

17/11/2022

RE: AEMC Operational Security Mechanism – Draft Determination (ERC0290)

Dear Clare,

Tesla Motors Australia, Pty Ltd (Tesla) welcomes the opportunity to provide a response to the AEMC's Operational Security Mechanism (OSM) Draft Determination.

Tesla's mission is to accelerate the transition to sustainable energy. Within this objective, Tesla is committed to working with all market bodies to improve power system security and reliability outcomes in the NEM in a manner that is efficient for consumers, timely for system operations, and sustainable over the long-term. Accordingly, for all new system security market considerations, we recommend AEMC seek to structure any new mechanism in a way that enhances the integration of new, low-emission, secure, low-cost energy technologies (and avoid any unnecessary additional payments to high-emission, high cost, high risk ageing thermal plant).

We recognise the real and immediate need for action to improve the current system service frameworks in the NEM and in particular improve transparency of the directions and back-stop processes. At the same time, battery storage alongside other network service assets has proven particularly valuable in managing system security issues and providing premium stability, voltage and frequency services, as demonstrated in multiple power system security and islanding events and the downward trend in SA directions. We also note the focus on network investment from governments, the expected benefits of system strength frameworks commencing, and ongoing work to unblock the pathway for grid-forming inverters through the connections and access standards processes. As such, it is essential that new OSM proposals are fully justified, and if progressed do not directly incentivise out-dated assets at the expense of procuring services from the critical pipeline of future storage and network asset projects.

For system service provision in the operational timeframe, engineering methods must be updated to reflect the pace of innovation that is already occurring as our energy system transitions and ensure new technologies that can provide equivalent services (e.g. grid-forming inverters providing virtual inertia and system strength) are not locked out of procurement based on out-dated system configurations reliant on historical experience. Tesla is keen to work closely with the AEMC and support AEMO engineers to ensure the technical capabilities of battery storage is well understood. We commend the prior Advanced Inverter white paper and suggest a Final Determination on OSM is made in concert with findings from the Reactive Current rule change. The following note summarises our key points of feedback on the draft determination and we welcome further discussion on any points raised.

Sincerely,

Emma Fagan



Head of Energy Policy and Regulation

Tesla Energy

Summary of Tesla Feedback on OSM Draft Determination:

1. From the outset of the rule change process, we understand a consistent and clear consensus of feedback has focused on a **preference for market-based structures over non-market**, and for greater transparency around AEMO's directions process. The draft determination appears at odds with this feedback and aside from ex-post reviews by AER does not appear to improve visibility or transparency for consumers or participants.
2. Accordingly, we support the CEC's response and its call for **further justification being required** – given:
 - a. The latest AEMO data shows power system security directions have been in decline since Q4 2021 and this downward trend is expected to continue as more network services from batteries and other system security assets come online;
 - b. The system strength frameworks are expected to further bolster the power systems operational stability; and
 - c. There will be a clear cost / benefit trade-off for participants. For example the introduction of OSM as described would add complexity to battery bidding algorithms - another change on top of FFR, IESS, PFR - to co-optimize across energy, FCAS and 'ahead' OSM; plus introduces timeframe horizon differences as no longer all 'real-time' markets.
3. Tesla acknowledges the criticality of maintaining system stability. This is fundamental to delivering a reliable supply of energy to all consumers. However, this **must be consistent with decarbonisation of the power system** – noting this objective will soon be legislated into the NEO and will therefore dictate the suitability of reforms relative to their ability to reduce emissions. The current design of OSM appears misaligned with this objective as it would provide additional payments to fossil plant whilst failing to adequately incentivise investment in zero emission plant – particularly if AEMO progresses down its initial 'familiar system configuration combinations' approach.
 - a. AEMO has a clear vision to achieve 100% instantaneous renewable energy by 2025. Successfully achieving this vision under a secure operating state will therefore be contingent on inverter-based provision of all system services, initially on an interval-by-interval basis, but ultimately to cover demand ongoing.
 - b. AEMC must consider both the individual and collective impact of the OSM rule change proposals against a broader assessment of what potential market design features will be necessary to stimulate the requisite levels of private investment in a low-carbon future. It would be a hindrance to the energy transition (and ultimately add risk to the secure, reliable and low-cost supply outcomes) to introduce new markets or mechanisms that only cater to existing synchronous plant under the misguided objective to "ensure thermal plant will not prematurely exit". This would only serve as an expensive opportunity cost that would increase the barriers for new entrants (that can provide equivalent or better quality of service), and care must be taken to ensure any potential payments are sufficient (in aggregate with other sources) to drive investment in new capacity.
4. Current biases to 'known' system configurations precludes many of the efficiencies that arise from multi-use assets such as battery storage being realised. The status quo process for procuring non-market services is neither transparent nor efficient. The underlying decision-making process remains unclear – with unilateral operational control requirements enabling AEMO to direct/intervene as needed, overlapping with pre-dispatch scheduling and commitment requirements and even longer-term planning time horizons – all creating unnecessary uncertainty for market participants. This is underpinned by an understandable approach to risk aversion from system and network operators, where familiar processes and technologies are naturally favoured given the asymmetric cost to benefit outcomes if something goes wrong. However, the energy transition is inevitable and accelerating, and therefore new technologies, methodologies and processes are a necessary condition of achieving a 100% renewable future securely.

- a. **The short term risk remains that 'system configurations' as defined by AEMO become long-term lock-in of familiar coal and gas plants and syncons;** and don't move to consider BESS or IBR until coal retires (even with transparency - there is no incentive for AEMO to take 'risk' moving to new technologies - see black start contracts as example).
 - b. New procurement methods must provide industry with clear governance, accountability, and transparency on detailed design, contract / dispatch decision criteria, constraints, and price volume calculations used in procurement. If system operators are provided with greater flexibility, it should be coupled with higher scrutiny and transparency requirements to ensure principles of efficiency, neutrality etc are upheld.
 - c. System services (and market reform more generally) must use future proofed terminology rather than relying on prevailing and outdated assumptions that only synchronous generators can provide specific services, as inferred by the original rule change proposals. This should also include removing existing barriers contained in the NER – e.g. inertia being defined as 'synchronously coupled' which prevents equivalent service provision from (non-synchronously coupled) grid-forming inverter based resources. Participation should appropriately **reflect the capacity of all resources to contribute to system services**, noting this may include procuring new services from existing plant, or may incentivise innovation and bring forward power system contributions from future technologies. Innovation will flourish when design principles focus on achieving outcomes, rather than mandating specific short-term requirements.
5. We note from the worked examples that **grid-forming BESS should/would be eligible – but it remains unclear** how intent will align with practice (e.g. poor precedent of reactive current barriers remaining in rules despite years of acknowledgement from AEMC / AEMO et al that connection process should not bias against inverter based resources that can provide synthetic synchronous services). In the best-case scenario, the OSM is the lever that will fill the incentive gap to ensure developers are motivated to progress grid-forming rather than grid-following inverters (i.e. to overcome the additional cost, risk, timeframes through connection processes) with the hope to get additional ESS payments over and above energy & FCAS. However, as above, the power sits with AEMO engineers to accredit grid-forming BESS and not lock it out – which is not a bankable metric.
- a. Synthetic, digital or 'virtual inertia' is a current prime example where technological advancement is demonstrating the ability of equivalent service provision through non-traditional assets. These developments should be encouraged – and ideally be rewarded through payment mechanisms that recognise premium service provision, capturing characteristics such as accuracy, speed etc. through suitable performance or enablement values.
6. It remains ambiguous **how OSM will interact or complements state-based progress of REZs** that are targeting secure mix of technologies and network services at a regional level; in response to rapid retirement of coal - e.g. as referenced above and in detail in the CEC response, we note SA no longer has high frequency of interventions but AEMC still appears to be using it as a justification for OSM. AEMC should be aware of what that trend will look like 5, 10, 15 years from now once REZ, system strength, PFR and other reforms are in place. We also note the existing TNSP obligations on procuring system strength/ inertia – it would not be efficient to double up or have AEMO undermining those NSP procurement approaches.
- a. We suggest it would seem far more sensible if specific inertia or system strength requirements were built into REZ schemes, and/or a nationally consistent firming mechanism to address any shortfalls (structured as an additional incentive rather than a condition of connection so it remains scale neutral).