

Anna Collyer
Chair
Energy Security Board
Lodged via: info@esb.org.au

28/01/2022

RE: Energy Security Board – Transmission Access Reform – Project Initiation Paper

Dear Anna,

Tesla Motors Australia, Pty Ltd (Tesla) welcomes the opportunity to provide the Energy Security Board (ESB) with feedback on its Transmission Access Reform – Project Initiation Paper. We commend the ongoing effort that the ESB is undertaking to design a fit for purpose access regime, including the detailed stakeholder consultation undertaken to date.

As AEMO's latest modelling has indicated, there is an optimal pathway to an Australian future that is predominantly reliant on renewable energy and storage, and the ESB has a unique opportunity to ensure its transmission access rule change is focused on enabling this future through clear, transparent, and market-based signals that support greater investment certainty. Accordingly, our feedback on the proposed Congestion Management Model (CMM) is summarised as follows:

- 1. Tesla supports the multiple reforms that are prioritising and accelerating transmission investment, however more focus must be given to addressing barriers preventing non-network options**
- 2. Any ESB access reform must recognise the flexibility of battery storage – and ensure the right incentives and rewards are included as a central element to scheme design**
- 3. Edify's Congestion Relief Market (CRM) presents a better alternative to CMM – with more direct links to drive congestion solutions through dispatch. Tesla supports the CRM as a preferred model.**

Further detail on each of these points is provided in the response that follows.

Sincerely,

Tesla Energy Policy Team

1. More focus must be given to addressing barriers preventing non-network options progressing

As outlined in the Initiation Paper, both the actionable ISP and REZ development reforms are critical for streamlining investment in new transmission infrastructure at scale, with resultant generation investment highly interdependent on the outcomes of any access design process. However, as outlined by the AEMC's recent Transmission Investment and Planning Review, there remain a series of barriers preventing non-network options from being equitably assessed through these network planning frameworks (as well as the RIT-T), which will continue to hamper efficient investment and locational decisions for storage¹.

Before (or at the latest in parallel to) access schemes being introduced, the ESB can accelerate network investment under revised network investment frameworks (e.g. NSW's New Efficiency Test), which can remove distortionary barriers to assets that would otherwise unlock greater network efficiency almost immediately - including deployment of grid-forming battery storage to address system strength, alongside market reforms (e.g. TransGrid's system strength rule change) to help solve priority connection and constraint issues. This also addresses the 'chicken and egg' issue, with state governments effectively supporting transmission network operators to build out the network to unlock committed generation – with generators in return receiving REZ benefits (MLF stability, streamlined connection, access to shared storage etc.).

In contrast, if designed poorly or if too complex, attempts to restrict access through medium-term REZ-linked options can result in transmission under-utilisation, dampen investment in renewables and storage, and create asymmetries across REZs and states. A major benefit of the NEM is its uniformity of rules and administrative arrangements. Tesla supports the ESB pursuing a coherent and consistent approach across the NEM where possible, including a consistent approach to access across both REZ and shared network projects.

2. Access schemes must ensure the right incentives and rewards are embedded for battery storage

As the ESB rightly identifies, battery storage will be critical to maximising efficiency of the network and supporting a high renewables energy system. Accordingly, a key focus of any access regime should be to ensure adequate investment signals are given to storage proponents, through clear and direct incentives that reward the dynamic and flexible characteristics of storage assets whilst avoiding imposing any additional penalties or barriers.

The ESB must ensure the design of an access scheme is flexible enough to recognise storage for the multiple roles it can provide. Storage should be exempt from any generator access requirements (acquiring rights, rebates, or paying compensation) – as this will only hamper investment and distort locational signals further. Storage plays multiple roles in addition to time-shifting energy services (providing system strength, inertia, MLF management & voltage support), has flexible and fast deployment, and enables additional connections, all whilst mitigating congestion. Mandating that standard generator congestion charges apply bluntly to all new storage assets risks unfairly disincentivising storage projects to locate within REZs, could severely undermine their business case, and will limit flexibility and provision of essential system services.

An effective access regime will recognise the benefit of storage as a generator, load, system service and network provider, and avoid introducing additional barriers or disincentives to uptake. In market dispatch, a large share of storage participation is in ancillary and system services – so careful consideration is needed to avoid solving thermal capacity congestion issues whilst creating system security issues (or not rewarding for their resolution). Care must be taken to overcome existing investment barriers without introducing more in REZs – e.g. potential costs from access rights, low capacity thresholds, or additional operating restrictions – otherwise storage projects will simply locate

¹ See Tesla submission to AEMC review: <https://www.aemc.gov.au/sites/default/files/2021-11/EPR0087%20-%20initiation%20-%20submission%20-Tesla.pdf>

elsewhere in the shared network (given their much greater deployment flexibility and relatively streamlined network connection).

The Victorian REZ Development Plan provides a useful comparison framework that positions storage as an enabler for renewable connections, rather than treating it as additional generation capacity. With this lens, it is critical that storage is exempt from any restrictive capacity threshold requirements or obligations to purchase access rights (or compensate generators who have) if a CMM type model is progressed.

Whilst Tesla is generally supportive of the broader AEMC approach to create new market signals and ultimately unbundle and value services (provided non-network and asynchronous solutions are afforded an equal playing field to incumbent technologies), there does not appear to be strong and direct signal for storage as the CMM is currently conceptualized. Rewards should not just be the avoidance (or rebate) of penalties to slightly lower charging costs (noting storage is already increasingly being paid to charge and the prevalence of negative price events will only increase). Instead, an effective model should directly and proportionately incentivise and compensate for the provision of congestion relief services (see comments on Edify model below).

3. Tesla supports Edify's CRM Model as a preferred alternative to CMM

Tesla recommends the ESB prioritise Edify's proposed 'Congestion Relief Market' (CRM) model² as an elegant real-time solution that includes new constraint equations and relevant adaptations to NEMDE to directly incentivise congestion relief providers (e.g. battery storage) to be dispatched. Notably the CRM avoids the inefficient approach of the ESB's CMM that proposes to 'smear' congestion costs and rebates across all participants through out-of-market constructs. Another key benefit is the ability for the CRM to immediately solve for congestion on the shared network in an efficient and transparent way, whereas introducing CMM tied to REZ areas is insufficient and does not address non-REZ located generators contribution to network congestion (i.e. free-rider issues). Finally, we are unsure of the equity of introducing a CMM type scheme that automatically rebates incumbent generators at the expense of potentially more competitive new entrants.

Beyond the well-articulated benefits in Edify's ESB submission, we provide the following additional points for consideration:

- As a flexible and multi-use asset, battery storage benefits greatly from dynamic and granular price signals with which to optimise power and energy for each interval. Having a spot market that values locational constraint relief is likely to be much more transparent (on volumes and price) and essentially can form another component to the value stack of storage. In practice, this would drive deployment of stand-alone storage and/or co-located storage at renewable sites located in heavily congested nodes of the NEM.
- We note that a NEM wide approach such as CRM can be easily integrated into the jurisdictionally based REZ schemes (e.g. congestion relief payments can be layered onto NSW, Queensland and Victoria's proposed REZ models, despite the different approaches being progressed for REZ access) without the complexity that double access and rebate rights may have if the CMM is progressed (and subsequent imposts on capital costs for investors due to the additional complexity).

² https://web.archive.org/au/awa/20211005080356mp_/https://energyministers.gov.au/sites/prod.energycouncil/files/publications/documents/28.%20Edify%20Energy%20Response%20to%20P2025%20Market%20Design%20Consultation%20Paper_0.pdf

- Despite AEMO’s historic reluctance to ‘open up NEMDE’, we recognise the benefits will outweigh the costs, and in our view the ultimate clean-ness of the design as a pure market mechanism warrants dispatch engine changes.
- Inherent in the design of a CRM is the level of control given to AEMO (and network system providers) to correctly formularise constraint equations and determine congestion relief contribution coefficients fairly. A key risk in practice would be of a conservative bias against new technologies (such as grid-forming inverters) in place of familiar technology (such as synchronous condensers). The ESB may need to explore guard-rails to ensure decision makers remove these biases and consult with industry to accurately reflect the capabilities of new technologies and services.
- Importantly the CRM recognises the value of not just thermal capacity constraint relief, but system stability and system strength related constraint relief – relying on new studies to underpin related constraint equations. As noted in Edify’s ESB submission, the CRM “incentivises and enables generators that are facing significant levels of curtailment to unlock lost generation by either purchasing services to store it, or by purchasing proportional levels of power system stability improvements to release it.”

As a broader, and more general point for storage (noting the framework barriers identified above), Tesla recommends the ESB continues to progress a unified framework to assist jurisdictional coordination of central storage assets that would de-risk entire REZ schemes by incentivising scale efficient storage deployment in the near-term. This will help to address existing barriers and ensure delivery of location specific services (e.g. system strength and SIPS N-1 protection) that cannot be easily or efficiently provided from other assets on the shared network. Centralised grid-forming battery storage could also streamline the connections process by delivering system strength, inertia, and other services in a coordinated way, allowing transmission network operators and AEMO to progress necessary grid studies in advance of connection – this will further incentivise generation projects to locate within REZs and could progress ahead of an NEMDE changes required to embed the CRM model proposal.