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Australia

Ms Anna Collyer
Australian Energy Market Commission (AEMC)
Level 15, 60 Castlereagh St
Sydney NSW 2000

6 June 2024

Dear Ms Collyer,

RE: Tesla Submission to Transmission Access Reform – Consultation Paper

Tesla Motors Australia, Pty Ltd (Tesla) welcomes the opportunity to provide the Australian Energy Market Commission (AEMC) with a response to the Transmission Access Reform – Consultation Paper.

Tesla's mission is to accelerate the world's transition to sustainable energy. Tesla has the largest energy storage team in Australia (over 150 employees) and an unrivalled track record in successful deployments of large-scale batteries. Tesla has delivered and connected more Australian utility scale BESS projects than any other provider, including the globally acclaimed Hornsdale Power Reserve (HPR) in South Australia, the Victorian Big Battery, and Lumea's Wallgrove Battery in NSW among others. Most recently, Tesla was awarded a Long Duration Storage tender as part of the NSW LTESA for its 50 MW / 4000 MWh eight-hour Limondale battery.

We understand that the AEMC seeks to use the Transmission Access Reform (TAR) to ameliorate challenges of forecast congestion in the National Electricity Market (NEM) as increasing volumes of renewables are deployed as the grid transitions from centralised, thermal generation. We note the TAR seeks to tackle these concerns while ensuring better investment and operational efficiency than under status quo. While generally aligned with these underlying objectives, Tesla raises concern that the hybrid model, as currently proposed in the TAR, will not achieve these goals. Storage has and will continue to play a critical role in optimising, firming and enabling greater volumes of renewables to both connect be dispatched efficiently. We commend the AEMC's overarching work program that recognises this, seeking to further unlock the benefits that battery storage technologies can provide to this end (e.g. introducing the Integrating Resource Provider category, System Strength Frameworks, Fast Frequency Response markets etc). However, the TAR reforms appear to contradict these efforts and will introduce inadvertent new risks and challenges for investors, generators, consumers, and environmental outcomes – hindering new renewable deployment and consequently storage uptake in parallel.

These concerns are outlined as follows:

1. **The objectives of TAR are already largely being addressed through the merit criteria of state and federal programs, like the Capacity Investment Scheme (CIS) and Renewable Energy Zone access regimes, which are increasingly considering locational impacts.**

2. **The TAR is highly complex under any future detailed design pathway, which will undermine new renewable generation due to increasing investor risk and uncertainty.**
3. **The TAR's proposed treatment of congestion across existing and new generators is unjust and will lead to inefficient operational outcomes.**
4. **The TAR could lead to higher regional reference prices (RRP) and worse outcomes for consumers.**
5. **The proposed Priority Access (PA) model has negative emissions outcomes due to favouring legacy thermal generators and through delaying renewable deployment.**
6. **Tesla notes the proposed benefits of TAR for battery storage, but these benefits must be viewed within the wider context and impact on renewables arising from the proposal as whole.**
7. **The objectives of the TAR are better addressed through other AEMC workstreams, such as facilitating the uptake of hybrid projects.**

We look forward to engaging with AEMC to identify and support ongoing discussions about the appropriate responses to support renewable generation and storage uptake in an efficient and economical manner.

Kind regards,

Tesla Energy Policy Team
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The objectives of TAR are already largely being addressed through the merit criteria of state and federal programs, like the Capacity Investment Scheme (CIS) and Renewable Energy Zone access regimes, which are increasingly considering locational impacts.

The TAR builds upon the work of the Energy Security Board (ESB) and combines a congestion relief market (CRM) initiated by Edify, and a priority access (PA) model initiated by the CEIG. The hybrid model in the current TAR proposes to combine these two elements to manage access risk for generators and incentivise congestion relief while maintaining operational and investment efficiency.

However, Tesla notes that considerations of access risk and congestion are already being managed through federal and state programs that achieve these objectives with less complexity and risk. The Capacity Investment Scheme (CIS) will underwrite a total of 32 GW of variable renewable energy (VRE) and dispatchable capacity. Within its tender guidelines, the CIS outlines that the tender is seeking 'projects located in less constrained network locations'. Specifically in Merit Criterion 1, the CIS guidelines state it assesses:

1. *'Project's potential impact on network congestion and/or ability to provide additional system benefits. This includes the Project's effects on other projects connected or expecting to connect to the network prior to the Project';* and
2. *'Projects intending to locate with a connection that is not likely to lead to material curtailment and/or Congestion of the Project's own generation or the generation of nearby renewable projects'*[1]

Furthermore, individual states are also identifying and addressing congestion through their own planning initiatives. This month, Victoria launched the 'Victorian Access Regime' to address new generation capacity within each REZ to '"substantially reduce" the risk that new Renewable Energy Zone (REZ) projects will be subject to curtailment of their output'.[2] Similarly in New South Wales, section 29 of the Electricity Infrastructure Investment Act 2020 empowers the infrastructure planner to prohibit connections within a REZ.[3] In Queensland, Powerlink is currently consulting on REZ design and development considerations, exploring the potential for 'within the REZ a level of curtailment could 'planned' for i.e. aiming for a given curtailment envelope'.[4]

The introduction of such schemes demonstrate that states are actively considering and consulting with industry on REZ design that best suits that jurisdiction's mix of characteristics and requirements. In the current open-access model of the NEM, investors are able to make their own judgements on whether the location of their site and potential curtailment and/or congestion are significant enough decision-making factors in their investments. The designing of REZs and access rights are an effective locational signal in such judgments.

[1] Page 31. https://aemoservices.com.au/-/media/services/files/cis/cis-gen-nem/cis-tender-1-nem-generation-guidelines.pdf?la=en
[2] Victoria caps access for solar and wind in new renewable zones, to avoid curtailment and buoy investors | RenewEconomy
[3] ELECTRICITY INFRASTRUCTURE INVESTMENT ACT 2020 - SECT 29 Orders prohibiting connection to network infrastructure (austlii.edu.au)
[4] Queensland REZ design and development considerations (powerlink.com.au)

Tesla believes that these complementary state and federal planning initiatives to manage congestion provide a more streamlined process to managing congestion, providing greater certainty and clarity for investors, with significantly lower costs than implementing the TAR.

The TAR is highly complex under any future detailed design pathway, which will undermine new renewable generation due to increasing investor risk and uncertainty.

Tesla echoes the views put forward by industry groups and associations like the Clean Energy Council (CEC) and the Clean Energy Investor Group (CEIG) that as TAR currently stands, investors will be less willing to engage in renewable energy projects due to higher uncertainty and complexity in requirements and operations. The implications of the priority access model in particular pose the greatest risk and concern for renewable proponents and investors.

As mentioned by the CEIG, there are material design challenges that still need to be addressed, including understanding the scope of the impact of TAR on contracting and PPA markets given the risk to long-term price predictability or disruption of existing contracts, including clause 21 Locational Marginal Pricing (LMP) within LTESA agreements[5], leading to significant costs to the industry for renegotiation of complex agreements.

The TAR's proposed treatment of congestion across existing and new generators is unjust and will lead to inefficient operational outcomes.

Tesla believes that the constraints under the PA model will expose new generators to extended periods of constrained output to zero levels, and that when evaluating marginal curtailment of generators relative to average curtailment, the consequences of the PA lead to poor outcomes and stranded assets. Tesla believes this curtailment risk to be significant enough to disincentive investment, especially given ongoing challenges around delays for new and vital transmission infrastructure.

Research carried out by Professor Simshauser suggests that the PA model will lead Queensland to require seven REZs (relative to five under the current open-access market design) to achieve its 80% renewable objective.[6] Tesla notes that given the significant challenges the industry is facing with its existing pipeline of transmission build out, increasing the network required to connect additional REZs will lead to significant costs resulting in increasing TUOS charges, as well as further delays to getting VRE generators online given historical transmission delays leading to bottlenecks in the transition.

Additionally, the NEMDE prototyping reveals several challenges with the PA model which needs extensive further investigation outcomes. Results showed that AEMO's testing led to 30% of all cases and 62% of the one of the two data sets showing an unexpected dispatch change and a lack of

[5] https://aemoservices.com.au/-/media/services/files/tender-round-4/tender-round-4-generation-ltesa-november-2023.pdf?la=en
[6] Non-Firm vs Priority Access: On the Long Run Average and Marginal Costs of Renewables in Australia by Paul Simshauser, David Newbery :: SSRN

predictability for the size of change in dispatch for generators.[7] This uncertainty of outcomes under the prototyping compounds the challenges facing new and existing generators under the TAR.

The TAR could lead to higher regional reference prices (RRP) and worse outcomes for consumers.

In addition to posing challenges to investors and generators, Tesla is concerned that the TAR has adverse outcomes for consumers through increasing the RRP. Modelling by CSIRO in their annual GenCost report consistently demonstrate that 'renewables (solar and wind + firming) remains the lowest cost new build electricity technology'.[8] However, under the TAR, Simshauser suggests that the output from VRE will decrease by 30%. Indeed, the AEMC's cost-benefit analysis recognises that TAR will lead to lower levels of VRE deployment, reducing generation investment by between $2.1bn to $5.7bn.[9]

Simshauser's research affirms that implementation of the PA model will reduce consumer welfare for a '~1,500MW REZ by A$169 million per annum' as the LRMC of solar increases from $65/MWh to $91/MWh, with similar values for wind.[10] AEMO's prototyping for the PA model saw less efficient dispatch causing increase in RRPs, as 31% of cases showed a >5% rise in at least one NEM region. 13% of cases showed a >25% rise in at least one region.[11]

The proposed Priority Access (PA) model has negative emissions outcomes due to favouring legacy thermal generators and through delaying renewable deployment.

Tesla brings attention to the implied favourable treatment of legacy thermal generators within the PA model (i.e., given priority access due to connection date across all four proposed design models). As suggested by the CEIG, Tesla supports the position that thermal generators should be excluded from the scheme, or have emissions intensity based differential treatment. Furthermore, Tesla highlights the higher emissions risk from the TAR due to the potential delay and decrease of total VRE uptake as a consequence of the reform.

While the AEMC's CBA evaluated and quantified the potential NPV benefit of $1.55bn from reduction of CO2 emissions from more efficient dispatch within the CRM, it is not evaluated whether this benefit will overcome the potential increases to emissions from the PA design and risk of delay in VRE

[7] www.aemc.gov.au/sites/default/files/2024-04/Transmission%20access%20reform%20-%20Consultation%20paper%20-%20April%202024.pdf
[8] GenCost: cost of building Australia's future electricity needs - CSIRO
[9] https://www.aemc.gov.au/sites/default/files/2024-04/Transmission%20access%20reform%20-%20Consultation%20paper%20-%20April%202024.pdf
[10] Non-Firm vs Priority Access: On the Long Run Average and Marginal Costs of Renewables in Australia by Paul Simshauser, David Newbery :: SSRN
[11] https://www.aemc.gov.au/sites/default/files/2024-04/Transmission%20access%20reform%20-%20Consultation%20paper%20-%20April%202024.pdf

deployment. Such a trade-off poses a risk to the AEMC's objectives of reform contributing to emissions reductions targets.

Tesla notes the proposed benefits of TAR for battery storage, but these benefits must be viewed within the wider context and impact on renewables arising from the proposal as whole.

The AEMC outlines that currently storage is not rewarded for congestion-alleviating behaviour and that 'through the CRM, batteries (among other storage assets and scheduled load) located in constrained areas will be able to buy energy for prices below the regional price…. [to] increase their potential intra-day price spread and subsequent profit.'[12]

Tesla appreciates the AEMC's recognition of the benefits that batteries can provide for addressing congestion, and for exploring how to further incentivise such behaviour to support the grid. However, it is not clear how much incremental net benefit would arise from the TAR relative to storage already responding to both price and locational signals in a future, highly renewable grid with low (near zero or even negative) average daily wholesale energy prices to charge from at the RRN.

Tesla remains supportive in principle of the original CRM model as proposed by Edify, particularly if the scope is limited exclusively to dispatch under 'system normal conditions', given the additional complexity that emerges if the scope expands to contingency event conditions – which represent a significant part of the business case for new battery projects in particular, and the potential de-prioritisation of their dispatch in such events represents a very material risk.

More generally, further technical work needs to be completed to understand and justify the consequences between the intersection of being a potentially lower-prioritised asset in the PA model and having contracted system strength services requirements.

The objectives of the TAR are better addressed through other AEMC workstreams, such as facilitating the uptake of hybrid projects.

The NEM has no shortage of regulatory reforms and policy interventions underway. Tesla notes there are a variety of other workstreams that can achieve the same broad objectives of the TAR that will be lower cost and faster to implement, with greater degrees of industry alignment.

For instance, Tesla congratulates the AEMC on the recent go-live of the new Integrated Resource Provider (IRP) category of market participant as part of the Integrating energy storage systems into the NEM (IESS) rule change, to facilitate the enablement of hybrid projects for solar, wind and storage. Hybrid projects and the IRP category provide an alternative solution to alleviating network connection through behind-the-meter colocation of solar, wind and storage, improving issues of curtailment before they enter the grid, and thus not requiring the additional transmission build out and

[12] https://www.aemc.gov.au/sites/default/files/2024-04/Transmission%20access%20reform%20-%20Consultation%20paper%20-%20April%202024.pdf

increase in uncertainty and costs as outlined above. Tesla looks forward to continuing to work with the market bodies to further enable hybrid projects, simplify connection pathways and GPS negotiations.

Other relevant AEMC projects to address these goals include a greater exploration of non-network solutions that can further mitigate the impacts of traditional network build out whilst directly addressing congestion risks in, around and to REZs, as well as NUOS exemptions that recognise storage is not a traditional end-load customer, but provides a suite of energy, system and network benefits including anti-correlated dispatch patterns that will directly ameliorate network congestion arising from increasing renewables.