



Jashan Singh

Australian Energy Market Commission

jashan.singh@aemc.gov.au

27 May 2021

Dear Jashan,

Re: AEMC Network Access and Pricing (ref: ERC0311 and RRC0039) – Draft Rule Determination – Tesla Response

Tesla Motors Australia Pty. Ltd ('Tesla') welcomes the opportunity to provide the Australian Energy Market Commission (AEMC) with a response on the Draft Rule Determination on the "National Electricity Amendment (Access, Pricing and Incentive Arrangements for Distributed Energy Resources) Rule 2021" ('Rule Change').

Tesla supports the work underway by the AEMC to assist with integrating higher penetrations of distributed energy resources (DER) through using pricing signals to encourage desirable behaviour from DER, and improving transparency and service obligations on distribution network service providers (DNSPs) with regards to export services.

Tesla's current concern is primarily around sequencing and the fact that detail will not be available until well after the rule change is finalised. It's difficult for industry to fully understand the full impacts of the Rule Change ahead of knowing this detail, and we would seek to manage any downside potential for virtual power plants (VPPs) as much as possible.

Our position is that export charges must only be permitted on an opt-in basis for assets installed ahead of the next round of Tariff Structure Statements (TSSs), with no mandatory re-assignment of existing assets such as virtual power plants (VPPs) and community batteries. It is in the interests of all network service providers to allow existing flexible assets connected to distribution networks to continue providing network support.

Additionally, it is critical that export pricing does not apply to DER provision of non-energy services to avoid introducing additional disincentives to the supply of critical system security measures. For example, export charges must not apply to voltage support, FCAS, fast frequency response and virtual inertia services – all of which VPPs such as Tesla's South Australia Virtual Power Plant (SAVPP) project are currently supplying or capable of doing so. We encourage the AEMC to work with industry to devise a pragmatic solution that maintains these price signals for active DER.

Summary response

General principles

Tesla is not opposed to the principles and solutions proposed in the Rule Change. We accept that there is an abundance of passive rooftop solar in the system and this needs to be managed preferably through a shift to more active DER. We provide in principle support for using pricing signals to achieve this outcome and shift excess daytime solar from the

middle of the day to evening peak periods. These price signals could be strengthened further than proposed under the Rule Change, with increased incentives for active DER to respond to both positive and negative price events.

This can be achieved through a four-quadrant approach to network service provider (NSP) tariff design. We support getting paid for exports during peak demand events, and when and there are no network constraints. This would also mean paying to export during periods when it's not needed, getting paid to charge when the grid needs it, and paying higher import charges during peak periods. This will be predominantly be achieved through the increased roll-out of smarter battery systems and virtual power plants (VPPs). It will be critical that this Rule Change does not negatively impact on VPPs.

Scope of the rule change

We understand that the AEMC is considering whether this should apply to all distribution connected storage assets – as such this would enable export pricing not just on behind the meter residential and commercial scale systems, but also for community storage and distribution connected multi-MW utility scale storage assets (stand-alone or co-located with renewables). Presumably this interpretation would also apply to distribution connected renewable solar farms.

Tesla does not support an interpretation of this rule change that would allow export pricing on stand-alone community assets or any utility scale renewable or storage assets. Community storage is an emerging sector and requires careful consideration in respect of tariff design, and any distribution connected utility scale asset needs to be treated equitably to a transmission connected utility scale asset.

Recommendations

In order to manage uncertainty and provide industry with confidence on future approaches to pricing we recommend:

- No retrospectivity in tariff changes unless done on an opt-in basis. This is particularly critical for VPPs, such as where a VPP has bank finance with expected returns. This reform adds potential future downside risks if retrospectively applied. We support an opt-in approach for new tariffs which gives VPP aggregators and financiers the option of building in these new tariff structures.
- The AEMC acknowledge principles for exempting system security and network support services for batteries and VPPs.
- Increased due diligence and reporting from the Australian Energy Regulator (AER). Given this is a significant change and may have dramatic impacts on customers (and potentially VPP aggregators), we expect increased rigour in the AER's assessment of tariff structure statements (TSS) – and the need for public consultation and improved transparency in reviewing these TSS.
- We also recommend that the AER release an annual report considering how each NSP is undertaking a four-quadrant approach to pricing. It will be helpful to analyse which NSPs are genuinely looking at supporting the shift from passive solar to active DER by looking at significantly reduced charging costs during certain periods and/or payments.

- Reform to the treatment of Distribution Use of System (DUOS) charges to harness the capabilities of community storage to address network supply issues through new Local Use of System charges which increase the cost-reflectivity of network tariffs and encourage adoption of community batteries.

To further discuss any of the content included in this response please contact Emma Fagan at efagan@tesla.com.

Kind Regards



Emma Fagan - Head of Energy Policy and Regulation

About Tesla

Tesla Motors Australia, Pty Ltd (Tesla) is a global leader in manufacturing electric vehicle and clean energy products. Tesla produces a unique set of energy solutions such as Powerwall and Megapack, enabling homeowners, businesses, and utilities to manage renewable energy generation, storage, and consumption. Our mission is to accelerate the world's transition to sustainable energy and globally Tesla has deployed more than 6.2GWh of residential and utility scale energy storage systems across 40 countries. In 2020 alone, Tesla deployed more than 3GWh of energy storage systems around the world.

In Australia, Tesla is leading both utility scale and virtual power plant (VPP) developments and playing a key role in the transition to higher penetrations of renewable energy. We have deployed more than 200MW of utility scale assets to date since 2017, with an additional 350MW of Tesla Megapacks to be deployed in 2021 – including the 300MW/450MWh Victorian Big Battery which will be the largest battery storage system in the Southern Hemisphere and will be critical to supporting Victoria's energy reliability while helping to achieve Victoria's 50% Renewable Energy Target (RET).

Tesla is also a leader in delivering high quality VPPs. The South Australia VPP (delivered by Tesla and Energy Locals) currently has 16MW registered to provide all six contingency frequency services – and has been providing high quality frequency response services for almost two years.

Tesla currently employs more than 140 people in Australia to undertake the full range of the development and deployment of utility scale energy storage and VPP work. Our permanent employees provide end-to-end development of all Tesla's local energy projects including Business Development, Engineering, Project Management, Project Deployment, Software Development, Market Integration, Service & Operations.

Detailed response

Concerns with the proposed Rule

Tesla's understanding is that all DER connected to distribution networks would be captured under the proposed Rule. It is critical that the final Rule does not allow for mandatory reassignment of existing assets on to new tariff structures.

The alternative scenario would present a serious risk for VPP assets with pre-existing bank finance commitments such as Tesla's South Australia Virtual Power Plant (SAVPP), and would threaten the future bankability of VPPs – given the uncertainty around the future cost implications.

The AEMC states that the introduction of export charges will be optional. However Tesla understands this choice will sit with network service providers. It is important that the AEMC, and by extension network service providers do not present consumers and VPP aggregators with a false dichotomy. If aggregators are faced with a 'choice' between paying export charges and an alternative, suboptimal tariff design with obtrusively high network charges, this would effectively force adoption of export charges.

If VPP operators are required to pay export charges from the date of new tariff structure statements (TSSs), this may create significant disruption for both VPP operators and their customers benefiting from participation in VPPs in the NEM. With appropriate tariffs offered it is likely that VPP operators will benefit from these changes and opt-in, however the point remains that this should be a choice, and VPP operators (and all other customers) should not be retrospectively forced into new tariffs.

Additionally, export charges would fundamentally alter the economics of providing system security and network support services from VPPs. For example, Tesla's South Australia Virtual Power Plant (SAVPP) has been registered with AEMO to provide contingency FCAS since 2019, and with funding from South Australia's Grid Scale Storage Fund (GSSF) is currently trialling the provision of reactive power voltage support, virtual inertia and fast frequency response services. Each of these services require exports from assets connected to distribution networks, and thus would be subject to export charges under this proposed Rule. Export charges would dampen existing price signals to DER to provide these critical services at a time when they should be strengthened in order to address emerging system security and reliability risks. Any reform that dampens these signals has failed in its objectives.

Scope of rule change – community and distribution connected utility scale batteries

As noted above, Tesla does not support a scope interpretation of this Rule Change which would allow for export pricing to be applied to either community storage or distribution connected utility-scale storage or renewable assets.

The AEMC notes in its Draft Determination that community storage will play an increasing role in addressing network supply issues. Importantly, community batteries can strengthen networks' DER hosting capacity while removing some of the equity barriers associated with DER uptake through virtual storage programs, as demonstrated through Western Australia's PowerBank trials¹. They can also improve power quality through voltage support and provide valuable backup supply in outage-prone areas. We do not believe that community storage should be captured under this Rule Change, and we believe that a separate review on appropriate tariff arrangements for community storage is necessary – more information on this is included below.

Tesla also does not support the application of this Rule Change to any utility scale distribution connected renewable or battery asset. This creates significant inequities between transmission and distribution connected assets. Tesla has repeatedly pointed out the need for equitable treatment in DUOS and TUOS pricing in our responses to the

¹ <https://www.westernpower.com.au/our-energy-evolution/projects-and-trials/powerbank-community-battery-storage/>

“Integrating Energy Storage” Rule Change process (see extract below), and the same principles apply to export pricing:

“Providing a clear and transparent regulatory position on network usage arrangements – including clarifying that energy storage assets should be exempt from paying transmission use of system (TOUS) charges. Tesla believes that this exemption should also be applied equally for distribution use of system (DUOS) as the exact same rationale should apply to a scheduled 25MW energy storage system connected at the transmission and distribution levels.”²

Including utility scale systems within the scope of this Rule Change would reduce flexibility in asset location and broader system planning. As an example, none of the ACT’s planned 250MW of battery storage would be able to be located within the ACT and connected to the distribution network, as including export pricing would make the economics for these projects infeasible.

Tesla Recommendations

Four-quadrant tariff design

Tesla supports a first principles approach to tariff design, with tariffs designed in such a way as to encourage desirable behaviour from flexible assets to reduce total system costs, and to benefit the system where possible. As a VPP operator, we see the most effective signals for new investment in active DER through positive cashflows. Negative cashflows such as through newly introduced export charges would have the opposite effect.

We propose a four-quadrant approach to pricing, as seen in Table 1 below that rewards charging during periods of congestion and exports during peak periods, while discouraging imports during peak periods and exports during congested hours. This will provide the necessary signals to encourage investment in active DER technology such as smart battery energy storage systems and VPPs that can respond to dynamic price signals and provide additional support to the system through market participation and providing essential system services.

Customer cashflows	10am - 4pm	4pm - 9pm
Positive	Paid for imports	Paid for exports
Negative	Charged for exports	Charged for imports

Table 1: Four-quadrant tariff pricing to encourage asset flexibility

Maintaining incentives for essential system services provision from active DER

Tesla recommends the AEMC recognise the principle that export charges do not unnecessarily and unfairly disincentivise DER assets from providing system security and network support services. We suggest the AEMC work with industry to implement a solution that is pragmatic and strikes the right balance between cost reflectivity and

² Tesla response to AEMC “Integrating Energy Storage into the NEM” Consultation Paper.

maintaining and/or strengthening signals for active DER. Tesla is more than happy to assist the AEMC in the design and implementation of a solution to ensure it is fair and reasonable and achieves the desired outcomes.

Increased transparency

Tesla recommends the AEMC mandate increased transparency requirements for NSPs through detailed analysis and comparisons of how NSPs are managing the transition to four-quadrant pricing. This would be best achieved through:

- Increased rigour in the AER's assessment of tariff structure statements (TSSs), and
- New requirements on the AER to assess how each NSP is progressing on introducing four-quadrant pricing. We recommend an annual AER report with analysis on the following:
 - whether NSPs are increasing total charges (through increases on imports and exports), or how they are tracking in terms of incentivising the transition from passive solar to active DER.
 - The tangible impacts of export pricing on improving customer access.
 - Review of whether the cost vs. access balance has been appropriately achieved.
- We also support the introduction of a consistent approach to transparency and consulting on TSS from the NSPs. At the moment consultation with industry differs from network to network. With the introduction of export pricing this becomes far more critical and should be a focus area of the AER.

These transparency reforms will be crucial in allowing VPP operators, retailers and consumers to track and compare NSPs' progress against these reforms.

For industry, it will be helpful to analyse which NSPs are purely increasing their total charges – export and import – and genuinely looking at supporting the shift from passive solar to active DER by looking at significantly reduced charging costs during certain periods and/or offering payments. This clear and consistent comparison methodology will incentivise NSPs to compete, ensuring they are providing the clearest signals to investors looking to deploy active DER projects across various network coverage areas.

Community storage pricing reform

Currently there are several regulatory barriers that if addressed now would enable community storage to be deployed in time to address the growing voltage management issues across distribution networks. For example, NSPs must apply full Distribution Use of System (DUOS) charges on imports and exports. DUOS charges on energy flows at the community battery level and on consumer imports amount to 'double charging' whereby customers utilising virtual storage programs are effectively paying twice for the same energy. These charges are not cost-reflective, as community storage assets improve network reliability and performance, rather than harm.

If delayed further, more drastic and inequitable measures to address network congestion will likely be used with increased frequency, such as solar curtailment and the imposition of zero-export limits – both of which are problematic and highly contentious amongst consumers.

We recommend the AEMC leverage this Rule Change to introduce pricing reform specifically aimed at community storage through more equitable Local Use of System charges. The cost of delivering energy locally, such between an

energy exporter and a nearby community battery is significantly cheaper compared to transport on the wider distribution network. Local Use of System charges, as described in the Total Environment Centre's original Rule Change request³ would allow DUOS charges to be more cost reflective by encouraging community batteries to be charged by locally generated energy, as opposed to transporting energy through sub-transmission and high-voltage transmission networks.

As outlined in research by the Australian National University, the current DUOS charges for locally transported energy create cost inefficiencies, and there is opportunity for reform to better encourage local use of system through community storage:

*"...if the local transport cost was equal to the remote transport cost, this would be a major financial disincentive for the community energy storage to be used for local energy transfer, and the community energy storage would rather favour energy exchange with the wider network i.e. simple grid energy arbitrage. This is a major impediment to the viability of the use of local energy storage for customer demand management, and may be argued to be a perverse disincentive given that the community energy storage is acting only to time shift the energy that customers have generated with their own rooftop solar systems for use later in the evening – a service that can potentially also improve network conditions."*⁴

This reform would reduce unnecessary network costs through encouraging more efficient use of the system, removing 'double charging' for end consumers and unlock the potential of community batteries to provide valuable network support.

³ <https://www.aemc.gov.au/sites/default/files/2020-07/ERC0309%20Rule%20change%20request%20pending.PDF>

⁴ <https://arena.gov.au/assets/2020/08/community-batteries-cost-benefit-analysis.pdf>