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Australian Energy Market Commission  
GPO Box 2603  
Sydney NSW 2000

16 February 2023

**RE: Unlocking CER benefits through flexible trading – Consultation Paper (ERC0346)**

Dear Jessica,

Tesla Motors Australia, Pty Ltd (Tesla) welcomes the opportunity to provide a response to the Australian Energy Market Commission (AEMC's) Consultation Paper on "Unlocking CER benefits through flexible trading". From Tesla's perspective, this Rule Change is very interesting and potentially offers significant benefits in creating market integration opportunities for distributed energy resources (DER), outside of the most common "consumer-owned asset" sector. Tesla has significant experience in developing and deploying virtual power plants (VPPs) in Australia over the last 5 years. Importantly, for the purposes of this consultation response, Tesla has experience in deploying two different VPP models:

1. Consumer-owned asset VPPs. The most common form of residential VPP in Australia currently where consumers own their own assets which are used by a third party (most commonly the customer retailer) to participate in markets; and
2. The South Australia VPP (SAVPP) which is a centrally owned and managed VPP. Under this model, Tesla owns all VPP assets and sells energy back to individual customers under a retail power purchase agreement (PPA) model.

Tesla views this Rule Change as one that could particularly help overcome some existing barriers and drive innovation in Model 2. Similarly, it may also help to drive new innovative models for electric vehicle (EV) charging and how that is retailed, particularly for charging located in commercial buildings. Our response below covers off on critical priorities to consider as this Rule Change, and where we see both opportunities, and potential challenges in it being implemented.

Overall, we are supportive, in principle, of more work being done on this Rule Change as it offers significant potential for new and innovative business models. The catch-22 for the AEMC in undertaking a cost-benefit analysis, is that industry rarely has capacity to fully scope out customers offerings and/ or commercial models that are not compliant with the current National Electricity Rules (NER), Therefore the full scope of the potential benefits, and innovation, that may be realised through this Rule Change process, will only be fully realised once the Rule Change is made.

Tesla is happy to provide support to the AEMC as well as our practical project insights, throughout the Rule Change process.

Sincerely,

Emma Fagan



Head of Energy Policy and Regulation - Tesla Energy

## Critical elements of the Rule Change

### Maintain customer optionality and do not mandate multiple meters for all DER installations

A key requirement in the progression of this rule change will be ensuring optionality for customers.

From a retail and market perspective, Australia has made significant progress over the last five years (since the introduction of the market ancillary services provider (MASP)) on creating a market framework that works well for aggregated DER. While Tesla remains committed to developing compelling VPP market offers that incentivise customers providing access to their DER, our view is firmly that this is opt-in for individual customers. All customers should have the choice as to whether they use their purchased DER for self-consumption purposes, or, if it is used in market, they are suitably remunerated for that service.

To this end, it will be important that this Rule Change does not result in any form of mandating multiple meters at consumer properties, as this adds cost and will only benefit customers in a narrow band of circumstances.

Tesla has experience with dealing with multiple meters at customer properties – all of our SAVPP customers have two revenue grade meters installed, as it is a regulatory requirement that any PPA arrangements are metered separately through a revenue grade meter. There are identifiable costs and complexities associated with this requirement, specifically:

- Installation costs are higher
- Customers (or aggregators) are required to pay two sets of meter fees annually
- There may be some additional installation complexities where the customer does not have sufficient space to install a second meter.

Our priority is that all DER customers maintain a single meter, with a choice to either opt-in to a second meter at the point of install where they have identified a desire to work with multiple parties behind the connection point; or retrospectively add a second meter as market offers evolve.

Our metering experience and views are as follows:

- One meter only needed for self-consumption
- One meter only needed for VPP participation with a single FRMP (i.e., a customer has signed up for a VPP through their existing retailer).
- Two meters required if:
  - A customer has a retail PPA offer in place with their existing FRMP; or
  - A customer is looking to access alternative benefits from their DER and work with a third-party aggregator, as is the intent of this Rule Change.

Tesla has not seen any regulatory barriers to retrospectively installing a second revenue grade meter at a site if a customer initially installs one meter and then decides to work with a third-party aggregator in the future. It may result in a slightly higher cost than installing both meters at the time the DER is installed, however it will still be significantly cheaper than having an unused second revenue grade meter in place. We also assume that if this Rule Change is successful, it will drive new business models that may include alternative metering options i.e., systems with NMI

pattern approved meters in built, or metering costs baked into product offer. So, it will not necessarily result in the customer incurring more costs at a future point in time.

## Improving the ability to add a second connection point

Tesla considers that the low-hanging fruit of this Rule Change process is establishing clearer mandates for allowing a second connection point at sites. While this is unlikely to result in significant adoption of second connection points at a standard residential premise, it has significant benefits for the rapid deployment of EV charging equipment.

A major barrier to the effective install and connection of fast EV charging at many locations is that for the most suitable public charging sites (e.g., at prominent retail and commercial locations), there is a single connection point, often managed by an embedded network operator.

For these 'single' sites many DNSPs do not allow (or make it very difficult – e.g., requiring land sub-division and new title holds) to create second connection points. In practice, this means for many potential public charger sites:

- The embedded network operator is typically subject to standard commercial network tariffs – subsequently passed through to all customers (e.g., shop tenants) sitting behind the single connection point.
- Fast chargers are (by definition) high powered (100 - 350kW+) which leads to significant increased electricity network charges being incurred, acting as a direct deterrent for any potential host of the fast-charging infrastructure.
- Many potential landlords have already negotiated minimum components for their 'contracted maximum demand' (CMD) rates and are understandably reluctant to re-open CMD thresholds when this would increase cost passthroughs for tenants (typically estimated at up to \$100,000AUD p.a. for 6 charging post sites). These costs would be in addition to kWh usage rates (with peak/off-peak and REC components) flowing through a single connection and requiring sub-metering to apportion fair costs between charging stations and other users.
- This is now commonly leading to advocacy by major tenants against the proposal to install fast chargers. As one potential customer noted: "Our primary concern is how the potential risk to the capacity charges that we could incur in 2023 could impact the average cost of power and in turn the profit we generate through the embedded network".

Additionally, where upgrades of existing assets are required, this will necessitate a site-wide shut-down for day(s) to safely upgrade connection assets, creating another barrier for potential landlords due to the expected loss of trade for tenants. We understand a key driver for some DNSPs to maintain single connection points is related to fire safety requirements – creating a simple, single circuit breaker switch point to ensure electricity supply can be interrupted if required.

However, the application of this requirement is inconsistent across DNSPs and does not recognise the ability to create single 'parent' interruption points across multiple 'child' connection points – as used by utilities installing chargers overseas. This means fire safety services can continue to trip a main breaker in the event of an emergency and have all lines of supply to a site trip off as needed. For many Australian proposals, this is at best adding cost, complexity, and time for fast chargers to be installed and at worst stalling their progress completely. As an alternative, we recommend:

- All DNSPs allow the use of second connection points (i.e., 2 NMLs per site) where isn't compromised to clearly segregate EV charging infrastructure from existing electricity users. This could be done either virtually

or physically and ensure metering and connection design to maintain a single breaker for safe supply interruption requirements.

Note that these points are explored in more detail in our submission to the National Electric Vehicle Strategy Consultation which can be found here - <https://consult.dcceew.gov.au/national-electric-vehicle-strategy/submission/view/471>

## **New sub-metering or multi metering arrangements**

### **Existing regulatory framework and use of consumer assets**

As noted by the AEMC, the current market rules already allow for aggregation of customer owned DER in several ways.

Rule 3.8.3(a1) of the NER allows market customers (i.e., retailers) or demand response service providers to aggregate load for the purpose of providing ancillary services. Rule 3.8.3(a2) also enables demand response service providers to aggregate demand response units for the purpose of participating in central dispatch of wholesale energy.

However, we note that small customer NMs, such as residential NMs are not eligible to be classified or aggregated as wholesale demand response units<sup>1</sup>. As such, under the existing Rules the following options exist for residential customers in respect of deriving market value from their DER:

- Customers can work with their existing retailer, who can optimise their system for both ancillary services and in response to energy prices; or
- Customers can work with a third-party aggregator who can optimise their system for ancillary services.

Until small, residential NMs are eligible to be considered as appropriate for wholesale demand response units, the only option for residential customers to derive *energy* market value from their home DER is through their retailer acting as the financially response market participant (FRMP)

The AEMC also notes the potential for customers to install a second connection point, which would enable DER to be aggregated under the Small Generator Aggregator (SGA) framework. We do not consider this a feasible option for residential customers. For starters unless an NSP allows for a virtual connection point, there will be significant costs incurred with adding a second connection point, including potential trenching costs.

As a second point, the current NER allows a level of discretion for the NSPs in whether they allow for a second connection point or not. In practice Tesla has observed a great deal of variance as to whether second connection points are allowed. This experience has been most closely observed with the connection of EV charging infrastructure.

The SGA framework has traditionally been used for larger commercial DER assets and does not appear to have much application for residential systems.

### **Impact of existing regulatory framework – customer owned VPPs**

#### Barriers associated with a single connection point

This lack of ability for customers to work with third party aggregators has not a significant impact on the market development of VPPs for customer owned assets in Australia. Solar Quotes notes 19<sup>2</sup> available VPP offers for

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<sup>1</sup> <https://aemo.com.au/en/initiatives/trials-and-initiatives/wholesale-demand-response-mechanism/wdr-participant-toolbox/wdr-drsp>

<sup>2</sup> <https://www.solarquotes.com.au/battery-storage/vpp-comparison/>

customers, some jurisdictional but most available across the NEM. Many retailers including AGL, Origin and Energy Australia have their own VPP offer for customers.

The existing rules are suitable for these customer owned VPPs. In our experience, the average residential customer is looking for simplicity and is not necessarily interested in contracting with multiple parties. As such we do not see significant barriers arising from a single connection point. We note, however, that this is just our experience in the market and there may be third party aggregators who have had a substantially different experience.

### Benefits of multiple connection points

To further explore the potential benefits of multiple connection points for traditional customer owned asset VPPs, it would be helpful for the AEMC and AEMO to articulate the following:

- What additional value has AEMO modelled for managing active DER behind a second connection point, rather than the primary connection point.
- How closely linked is the Flexible Trading Rule Change to the proposed Scheduled Lite Rule Change work that AEMO is currently working on? If DER is only able to access improved wholesale energy market benefits (through active bidding), participate in the regulation FCAS markets and access primary frequency incentives if they are managed through a separate meter, then this will substantially change the value equation. We would suggest that this is explored in more detail.

If the introduction of multiple connection points is not tied to future market access and is being proposed simply to provide customers with more choice, then the key thing to be worked out is whether existing meters have switching components. Customer owned VPPs work best when the VPP operator is able to optimise for both customer load and for market services. If DER is installed behind a separate meter, then there is a risk that the DER is locked into being fully market facing, which would require the customer to arbitrage value across their DER aggregator contract and their existing retailer contract.

Tesla has undertaken some limited research into meters that have switching components and have found that they are either expensive or are operationally restricted. Those meters that are restricted in operation are only able to switch from serving customer load to exporting for market purposes once a day – which reduces the value that comes with constant optimisation of VPPs under traditional operation.

Noting our limited expertise in this area, it would be good for the AEMC to explore the technical viability of current metering solutions in more detail.

## **Impact of existing regulatory framework – centrally managed VPPs**

### Barriers associated with a single connection point

While there may be limited benefits of the Flexible Trading Arrangements rule change for traditional residential customers who own their own DER, the far more interesting application of the Rule Change is how it might benefit non-traditional VPP models. To our knowledge, the Tesla SAVPP is the only residential VPP in the country where assets are centrally owned and managed. This indicates that there are more barriers to deploying this model than there are in deploying a customer owned asset VPP.

In Tesla's experience the main risk associated with a single connection point is the stranded asset risk. As noted above in the overview of the current market framework, the only way to optimise DER for both energy and FCAS purposes under the existing rules is through the customer retailer. However, the risk of customer churn disincentivizes retailers (or third parties) from owning those assets. If a customer churns to another retailer, then those

assets become stranded. This stranded asset risk is also an impediment to centrally owned VPPs attracting debt or equity financing.

#### Benefits of multiple connection points

Under a centrally owned VPP scenario the addition of multiple connection or access points allows the owner of DER to turn those systems market facing in the event of customer churn. The loss of customer revenue streams does not render the systems fully stranded as market revenues can still be accessed.

As a second use case, enabling a second connection point can create more flexibility for commercial and industrial customers who are locked into long-term retail arrangements but are looking to install DER and more actively participate in the market. A recent example is the NSW school PPA<sup>3</sup> which has been announced by the NSW Government. They have stated their intentions to work with third parties on VPP models but have an existing retail arrangement in place at all sites. Without the ability to manage market access through a separate connection point, VPP arrangements are very challenging.

To address these barriers, Tesla's views of the different potential new models presented by the AEMC are as follows:

- Parallel metering:
  - This would solve the stranded asset risk issue in a centrally owned VPP model as the second connection point would be able to be turned market facing if the customer churns retailer/ financially responsible market participant (FRMP) at the primary connection point, without needing to establish an official second connection point (which may require physical trenching and significant cost, or may not be allowed at all depending on the network).
  - As noted above the main issue to resolve will be as to whether the meter enables both self-consumption and market benefits. Under this model we would primarily see the second connection point as a dummy point until the point of customer churn. If they have to operate fully separately from the outset it may impact on the value.
  - As above, it would be good to explore the linkages with this Rule Change and the Scheduled Lite Rule Change to fully understand the impacts.
- Subtractive metering:
  - This model looks like it would work effectively for behind the meter PPAs where there is an existing long-term commercial retail agreement in place, similar to the NSW school model mentioned above.
- Multi-element metering:
  - This does not really appear to be a feasible option as it will be challenging for multiple FRMPs to use a single meter.

#### **Additional benefits – commercial EV charging**

The retail arrangements for EV charging in commercial buildings is still a relatively new and emerging area. A major reform in this area is the updated National Construction Code which mandates all commercial carparks be EV ready. This new version of the NCC comes into force in March 2023 and has the potential to significantly increase the number of EV chargers that are installed in residential and commercial buildings.

As this sector continues to grow, having in-built flexibility in partitioning out EV charging load from the rest of the commercial or apartment building provides huge opportunity for emerging retail and customer models, providing greater competition in the provision of EV charging services and benefits to the consumer.

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<sup>3</sup> <https://reneweconomy.com.au/nsw-plans-massive-solar-and-battery-virtual-power-plant-across-22000-public-schools/>