Australian Energy Regulator (AER)

Sent via email: AERresets2024-29@aer.gov.au

19 January 2024

Dear AER team,

Response to AER Draft Decisions for Multiple Networks Revised Proposal for the 2024-29 Period

Tesla Motors Australia, Pty Ltd (Tesla) welcomes the opportunity to provide the Australian Energy Regulator (AER) with a combined response to the AER Draft Decisions for Ausgrid, Endeavour Energy, Essential Energy, Evoenergy, TasNetworks and Power and Water Corporation's Revised Regulatory Proposals for the 2024-29 Period. We appreciate the work being done by the AER and networks to adapt to a shifting energy landscape with significant uptake in Consumer Energy Resources (CER).

Tesla is a global leading manufacturer of all forms of home CER – battery storage, solar and EV charging, as well as electric vehicles. We are also a leading developer and operator of Virtual Power Plants (VPPs) with 26 MW of capacity currently registered with AEMO to provide frequency services.

Australia is world leading in the penetration of rooftop PV. In the first quarter of 2023, rooftop solar contributed more electricity to the grid than grid-scale solar, wind, hydro or gas[1]. The Australian Energy Market Operator (AEMO) Draft 2024 Integrated System Plan (ISP) Step Change scenario predicts a four-fold increase in rooftop solar capacity reaching 72 GW by 2050, and the use of consumer-owned batteries and VPPs to deliver 27 GW of flexible demand response for the NEM.

This transition creates emerging considerations for DNSPs to adapt to a shifting landscape, including the establishment of Dynamic Operating Envelopes (DOEs) and two-way export pricing to manage the increasing supply from rooftop

[1] AEMO Draft 2024 ISP Consultation (2023) https://aemo.com.au/-/media/files/stakeholder_consultation/consultations/nem-consultations/2023/draft-2024-isp-consultation/draft-2024-isp.pdf?la=en

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solar, coupled with falling minimum demand. Tesla is broadly supportive of network innovation to manage the risk of excess variable renewable energy, and Tesla's preferred use-case is to store energy for later use, and time-shift loads to charge during periods of high solar penetration rather than curtailing.

Tesla emphasizes the benefits that arise from a uniform approach to these innovations across jurisdictions, and thus recommends the AER to consider the following priorities in making the final determinations for the 2024-29 regulatory proposal across all the networks open for consultation:

1. **Dynamic Operating Envelopes:**

    a. DOEs believes that DOEs should currently be limited to export controls and exclude import and generation limits, until further work is done on understanding the network benefits and consumer risks associated with those additional controls (see also our response to the AER "Draft Interim Guidance Note on Export Limits" which provides additional context on our concerns on this point).

    b. AC coupled batteries should be excluded from DOEs. This position has now been established in South Australia and is based on a first principles assessment of batteries being primarily used for self-consumption purposes. The percentage of batteries that are set up to operate under a VPP type arrangement export in response to market price signals. This is demonstrably during evening peak periods and does not coincide with the periods where solar exports are being limited.

    c. DOEs should apply to energy exports only with exemptions given to the provision of short duration system security services provided by CER. This alignment should happen between AER and AEMO The capacity allocation methodology needs to be simple, transparent, and easily understood by customers (reference AER flexible exports submission).

    d. Networks should be required to share clear performance thresholds for the implementation of DOEs that are simple to understand by customers (i.e., the SAPN 95% max export limit model).

2. **Two-Way Pricing:**

    a. Tesla supports two-way pricing where customer benefits as well as costs are introduced - specifically customer credits for the network benefits achieved through time-shifting exports to the evening peak.

    b. NSPs should continue to explore solar sponge tariff arrangements with low or negative network tariffs during solar generation hours, to encourage more time shifting of flexible loads to this window.

3. **EV Charging:**

    a. Residential – Tesla notes that across all networks, the AER encouraged the creation of scheduled load tariffs to support the increasing uptake of residential EV charging. Tesla does not support scheduled and controlled load tariff structures for EV charging. TOU tariffs, and other price signals, are low-hanging fruit that have not yet been adequately explored as a mechanism to drive optimal customer charging

behaviour. Controlled load mandates have flow on impacts regarding whether customers are able to fully utilise home solar for self-consumption purposes, and will also impact on market responsive behaviour from smart EV charging (i.e., load-side FCAS response from EV charging infrastructure).

b. Public – Tesla supports information sharing on capacity constraints from networks and encourages volumetric based tariff designs in the early stages of public EV charging stations, due to their unique demand profiles.

4. Grid-Scale Battery Tariffs:

a. Tesla encourages deeper industry engagement before the introduction of grid-scale battery tariffs and proposes delaying the introduction of these tariff structures until the below issues are resolved with industry consultation and jurisdictional alignment.

b. From a first principles perspective, the AER and networks need to differentiate between the two types of HV batteries that may connect to the network:

   i. Sub 5MW batteries i.e., community storage assets. These are unscheduled and may be aggregated for market use purposes.

   ii. >5MW batteries which are required to be registered with AEMO as scheduled bidirectional units.

c. For the purposes of this consultation, we recommend that both LV and HV grid-scale battery tariffs should be limited to community-storage only with continued reviews on the economic implications of applying tariffs that have largely been informed by behind the meter experience, to stand-alone battery storage systems.

d. For scheduled bidirectional units, Tesla recommends that networks must take a level of equivalence in the approach to connection as of a transmission level, with systems being treated as generation rather than load. Requiring the cost recovery of DUOS on a 100MW battery connected at the distribution level, but not requiring additional TUOS cost recovery on a 100MW transmission connected battery will create a large operational cost disparity between the two projects. We acknowledge that there needs to be nuance here, but the proposed tariffs are not appropriate for assets scheduled in central dispatch. [2]

   i. Related to the point above, Tesla is concerned with Evoenergy's decision to begin charging grid-scale batteries with TUOS, which would inhibit any batteries from thus being built in ACT.

[2] Refer to the Gannawarra BESS Knowledge Sharing Report (2021) https://arena.gov.au/assets/2021/11/gannawarra-energy-storage-system-final-report.pdf , it was stated one of "the two major constraints on operations that GESS experiences…[is] the application of DUOS charges by Powercor" (p. 24)

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e. For community storage tariff design, Tesla does not support demand charges on imports during solar-generation periods.

We look forward to continuing to work with the AER and the networks on this important regulatory reform. For more information on any of the content included above, please contact Tesla for more information.

Sincerely,

Emma Fagan

Head of Energy Policy and Regulation

Tesla Energy

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The following provides a consolidated response to the following reviews:

1. Ausgrid - Determination 2024–29[3]
2. Endeavour Energy - Determination 2024–29[4]
3. Essential Energy - Determination 2024–29[5]
4. Evoenergy - Determination 2024–29[6]
5. Power and Water Corporation - Determination 2024–29[7]
6. TasNetworks - Determination 2024–29[8]

[3] https://www.aer.gov.au/industry/registers/determinations/ausgrid-determination-2024-29/draft-decision

[4] https://www.aer.gov.au/industry/registers/determinations/endeavour-energy-determination-2024-29/draft-decision

[5] https://www.aer.gov.au/industry/registers/determinations/essential-energy-determination-2024-29

[6] https://www.aer.gov.au/industry/registers/determinations/evoenergy-actewagl-determination-2024-29/draft-decision

[7] https://www.aer.gov.au/industry/registers/determinations/power-and-water-corporation-determination-2024-29/draft-decision

[8] https://www.aer.gov.au/industry/registers/determinations/tasnetworks-determination-2024-29/draft-decision

1) AUSGRID

Tesla acknowledges and responds to the following statements outlined in the Revised Tariff Structure Explanatory Statement shared by Ausgrid on 30 November 2023[9]:

	AUSGRID POSITION	***TESLA RESPONSE***
TWO-WAY PRICING	*Ausgrid is introducing opt-in two-way pricing (export rewards and charges) for residential and small business customers in July 2024, and making it the default assignment for new and existing residential and small business customers on time-of-use and demand network tariffs from July 2025. (p. 8)*	Tesla is supportive of the design of two-way pricing that ensures simplicity and transparency for customers with clearly communicable benefits that reward time-shifting behaviour change. We are happy to support continued design of these tariffs to demonstrate the value that residential storage systems can provide to the networks – particularly during evening peaks.
RESIDENTIAL TARIFF REFORM	*Removing the low season peak demand charge so that demand charges do not apply outside of the summer and winter periods. (p. 9)*	Tesla supports the removal of the low season peak demand charge.
RESIDENTIAL EV CHARGING	*Ausgrid is currently undertaking a flexible load tariff trial (for EVs) with at least 22 hours of supply availability per day. (p. 51)* *In future years we also intend to trial a tariff that allows EV charging from power poles. (p. 51)*	Tesla acknowledges that the AER requested networks explored flexible and controlled load tariffs. However, controlled loads impede customer flexibility, and may prevent optimising self-consumption behaviour. Tesla supports innovation in EV charging tariff design; however we believe that the low hanging fruit involves establishing the right price signals – through tariffs – to time shift charging to solar generation hours. Both solar soaker tariffs and two-way pricing could be used to

[9] https://www.aer.gov.au/system/files/2023-12/Ausgrid%20-%20Revised%20proposal%20-%20Att.%208.2%20-%20Our%20TSS%20Explanatory%20Statement%20for%202024-29%20-%2030%20Nov%202023%20-%20public.pdf

	Further tariff trials being considered include helping solar customers self-consume on controlled load tariffs (which is not currently possible) and testing critical peak pricing as an alternative. (p. 51)	set effective price signals for time-shifting EV charging behaviour (at home and at commercial premises) to coincide with solar generation hours. We are also concerned that in the longer term, pushing flexible load tariffs, or controlled load tariffs for EVs, that involve network control, will stifle innovation in the VPP sector for retailers and aggregators. Services like FCAS (load side response) will be impossible if there is a third-party network controller sitting between the EV charging device and the aggregator or retailer looking to use this system for market services (and provide value back to the customer). In addition, network control of charging will also stifle innovation in self-consumption methods, which would appear to be the opposite of the optimal state for the network as electrification trends continue. For instance, Tesla has developed 'Charge-On Solar', where customers can exclusively charge their EV from excess solar generation. Enabling simple EV charging from existing customer solar PV is dependent on having systems installed on the same circuit. Pushing EVSE onto a controlled load circuit would negate the effectiveness of such a tariff. As work on these forms of tariffs continue it will be critical that they remain opt-in, and that alternative tariff choices do not restrict these other forms of innovation[10].

[10] As an example, the recent Queensland Energy Connection Manual requires either that EVSE is installed on a controlled load tariff or applies a 20A nameplate limit to EVSE that is installed. As the vast majority of EVSE home charging equipment sold in Australia has a nameplate rating of above 20A, this is a false choice for customers, as really, they are given the choice to install on a controlled load tariff or are limited to charging through slower 10A charging equipment.

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PUBLIC EV CHARGING	*Public EV Charging: We are currently trialing a flexible load tariff for small business customers, which includes a critical peak price. (p. 16)*	Telsa has concerns with the use of flexible load tariffs (even with minimum 22-hour access) for public EV charging due to the customer impact. Allowing for NSPs to effectively reduce power to fast EV charging infrastructure for up to 2 hours a day is likely to result in a very poor customer experience. This is particularly so if the 2-hour window includes evening peak periods, when customers might need to charge their vehicle to return home after work, schooling, or recreational activities. Before this tariff moves away from a trial, we would suggest that additional guard-rails are needed, with additional consideration given to renters, people in apartments and others who will be more dependent on fast public charging infrastructure for their electric vehicles.

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2) ESSENTIAL ENERGY

Tesla acknowledges and responds to the following statements outlined in the Revised Tariff Structure Explanatory Statement shared by Essential Energy on 30 November 2023[11]:

	ESSENTIAL ENERGY POSITION	***TESLA RESPONSE***
DYNAMIC OPERATING ENVELOPES	*In exceptional circumstances a customer may be subject to an export constraint or dynamic control that may be set below 1.5 kW. (p. 18)*	Tesla is supportive of the design of dynamic exports that align with the approach taken by SA Power Networks. To fully support Essential Energy development of dynamic exports we would want to see: • Consistency in approach and design of the platform used. • Transparency to customers in how the flexible exports are presented, with a clear view to creating customer benefits (i.e., the SAPN model of enabling max export capability 95% of the year). • Simplicity in design. • Clear alignment with two-way pricing. Our complete views on the design of flexible exports are provided in response to the AER Draft Interim Guidance Note on Flexible Exports. For clarity, Tesla is only currently supportive of flexible exports rather than a broader application of dynamic operating envelopes that

[11] https://www.aer.gov.au/system/files/2023-12/Essential%20Energy%20-%209.02%20Revised%20Tariff%20Structure%20Explanatory%20Statement%20-%20Nov23%20-%20Public_0.pdf

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		includes import limits and generation controls. We do not believe that these additional controls have been justified.
TWO-WAY PRICING	*The Sun Soaker tariff export rebate has been set symmetrically based on the equivalent peak consumption charge. (p. 44)*	Tesla appreciates the simplicity that this structure brings consumers, but notes that other DNSPs offer a higher rebate-to-charge ratio. This is preferred as the export charge window is longer (five hours) vs the rebate period (three hours). We are happy to support continued design of these tariffs to demonstrate the value that residential storage systems can provide to the networks – particularly during evening
RESIDENTIAL EV CHARGING	*Any customer that connects an EV fast charger who has a smart meter will be assigned to our default cost reflective tariff. (p. 59)* *Offers secondary tariff for single phase EV charger where load is controlled remotely and must be under 25 Amps resistive capacity. (p .23)*	Tesla supports Essential's default tariff options for EV fast charging. Tesla does not support controlled load tariffs for EV charging. In particular we are concerned that controlled load EV charging requirements might reduce the ability for customers to charge directly from their rooftop solar PV. We further note that single phase EV charging is only a limited portion of residential EV chargers. As an alternative to trying to force EV charging equipment onto a controlled load tariff, we would suggest a fixed 32A limit. We also do not necessarily think that the AER should be approving ampage limits for specific types of loads within the Regulatory Determination process. This is a topic that should be addressed either through AS3000 or through state Service and Installation Rules.

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BATTERY TARIFFS	*Our low-voltage and high-voltage grid-scale two-way battery tariffs will apply to all new grid-scale batteries from 1 July 2024.* *Removing the rebate from the HV battery tariff in expectation that the scale of energy arbitrage opportunities in the evening peak will likely be sufficient to drive desired battery cycling behaviours without our other customers needed to subsidise those behaviour. (p. 42)* *Eligibility: New customers connected to the high-voltage distribution network who operate commercial scale batteries and or generation units with no co-located load behind their meter that is not ancillary to the operation of those batteries or generation units.* *(Tariff component details taken from Revised TSS p. 26.[12])*	To support the introduction of a new tariff structure, Tesla proposes a later start date with an opt-in period. For the tariff structure details, Tesla notes that all feedback is specifically for community-scale batteries, as we do not agree that such tariff structures are appropriate for scheduled-bidirectional units (>5MW batteries). Tesla proposes that rebates should apply to both HV and LV grid-scale batteries, as the scale of energy arbitrage opportunities remain constant, despite battery operation costs rising with the introduction of new tariffs. These risks reduce the incentive for large scale batteries to sit in Essential Energy's jurisdiction. This structure may result in significantly higher costs than – Tesla recommends reviewing if demand charges in kVA is the most appropriate default charge for community storage.

[12] https://www.aer.gov.au/system/files/2023-12/Essential%20Energy%20-%209.01%20Revised%20Tariff%20Structure%20Statement%20-%20Nov23%20-%20Public_1.pdf

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3) ENDEAVOUR ENERGY

Tesla acknowledges and responds to the following statements outlined in the Revised Tariff Structure Explanatory Statement shared Endeavour Energy on 30 November 2023[13]:

	ENDEAVOUR ENERGY POSITION	***TESLA RESPONSE***
TWO-WAY PRICING	*The export charge will apply to exported energy above 1,750 kWh pa. (p. 63)*	From a first principles perspective Tesla sees greater benefits in ultimately being able to use two-way pricing to create the right price signals for customers to use energy when it is least impactful on the network, and export energy when it is most beneficial to the network. To this end we think effective design of two-way tariffs requires customer credits as well as charges on export. We also think that this provides greater benefits to customers, and to the network, than giving customers a "free" amount of kWh that a solar export charge is not applied to.
RESIDENTIAL EV CHARGING	*Dynamic scheduled load tariffs designed to facilitate solar soaking and peak demand management using hot water and EV charging loads. (p. 72)*	We are supportive of tariff trials being explored to consider the best way to incentivise EV charging and using price signals to encourage smarter charging behaviour. One caveat to this point is that Tesla does not currently support dynamic imports for EV charging, managed by NSPs. Our position on this is explored at length in our response to the AER Draft Interim Guidance on Flexible exports, but we do not yet believe that the need

[13] https://www.aer.gov.au/system/files/2023-12/Endeavour%20Energy%20-%200.06%20Tariff%20Structure%20Explanitory%20Statement%20-%20November%202023%20-%20Public_0.pdf

		for dynamic import control has been adequately justified, and particularly why it should be applied only to specific loads. This concern is also based on the fact that the current AER position is to exclude **imports** from the Draft Interim Guidance on Flexible Exports. In the event that dynamic import tariffs become intrinsically linked with dynamic import control, it is critical that there are regulatory guard rails put onto the NSPs. We would have concerns with this tariff trial if it required complete network control of charge rates, but we are interested in working with Endeavour to determine the best price mechanisms to drive optimal charging behaviour.
BATTERY TARIFFS	*A site-specific, two-way grid connected battery tariff where the import side of the tariff is charged a seasonal TOU energy tariff, which has seasonal TOU energy consumption charges and a daily fixed charge. The export side of the tariff has a seasonal TOU energy reward (p. 68).*	For the tariff structure details, Tesla believes that more work needs to be done on the best tariff structure approach for HV connected batteries registered as scheduled bidirectional units with AEMO (>5MW). Applying existing tariff logic will not work for scheduled assets.

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4) EVOENERGY

4.1) TUOS Payment – Evoenergy

> *Evoenergy is proposing a symmetric arrangement where large-scale batteries also pay for incurred TUOS costs. This is because, unlike traditional embedded generators (such as solar and wind farms), large-scale batteries typically import and export electricity and can, therefore, increase or decrease Evoenergy's TUOS costs.*
>
> *Large-scale batteries respond to market price signals to optimise energy imports and exports and actively participate in the wholesale electricity market. This allows large-scale batteries to be highly responsive to price signals and contributes to improving network efficiency. Their relatively large size and active participation in energy markets mean that large-scale batteries can increase or decrease maximum transmission demand, thereby directly impacting Evoenergy's TUOS bill.*
>
> *Therefore, large-scale batteries will be charged based on their actual incurred or avoided TUOS costs as follows:*
>
> - *if the battery reduces maximum transmission demand, Evoenergy passes the TUOS saving to the battery via an avoided TUOS payment; and*
> - *if the battery increases maximum transmission demand, the battery is charged based on the incremental increase in TUOS payments made by Evoenergy.*

Tesla is highly concerned about Evoenergy's proposal regarding TUOS costs[14]:

Using a Regulatory Determination to suggest that utility scale battery should pay TUOS is significantly out of step with current industry best practice and would effectively end the development of any utility scale storage projects connecting to the Evoenergy network.

While the National Electricity Rules (NER) technically allows for TUOS charges to be applied, Tesla is not aware of a single transmission connected battery that currently pays those costs – all systems are exempt.

[14] Evoenergy Revised TSES (2023) https://www.aer.gov.au/system/files/2023-12/Evoenergy-Attachment%204%20Tariff%20Structure%20Statement-November%202023_1.pdf

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This issue was also explored at length in the Integrating Energy Storage Systems (IESS) Rule Change process led by the Australian Energy Market Commission (AEMC).

The Final Determination on this matter noted that the AEMC would consider the appropriate treatment of TUOS through a further Rule Change process (see relevant extract below). We are concerned that the Evoenergy position will put them in direct conflict with a future Rule Change on this topic:

> *"The Commission considers there are broader issues that would need to be considered in relation to prescribed TUOS charges and this rule change is not the appropriate avenue to address these substantial and complex issues. Further work is needed on how network prices are set for storage and other large flexible loads (e.g., hydrogen) to provide them with efficient operational and investment incentives to support the energy market as it transitions to more renewables. The Commission anticipates a separate rule change request from interested participants that would allow us to consider these issues in more depth."* ***Refer AEMC Rule Determination*** *– National Electricity Amendment (Integrating Energy Storage Systems into the NEM) Rule 2021 pg. vii*

In respect of the Evoenergy position on TUOS, Tesla would reiterate our points made to the AEMC in our response to the Draft Determination on the IESS Rule Change:

- The basis for allocating T/DUOS on market customers is to ensure that network service providers (NSPs) are adequately compensated for maintaining existing network infrastructure to ensure ongoing reliable and efficient supply of energy at all times – both peak and off-peak; as well as for investing in new infrastructure to meet projected increases in peak demand.

- From first principles, these charges should naturally fall to end-customers that are passively using the network to receive a service or benefit– i.e., traditional load customers. The NEM framework includes the principle that generators, who don't receive an equivalent service of firm access at the connection point itself, do not pay TUOS charges, instead providing connection payments for network services. This makes sense for grid-scale storage (or scheduled Integrated Resource Units (IRU)) as well, as a connecting storage unit (ultimately a supply-side asset), must negotiate with the NSP for a power transfer capability at the connection point and should therefore only pay the connection charge that relates to the cost of their connection to the network.

- In other words, T/DUOS charges should only apply to customers that drive network expenditure to meet increased load requirements (in exchange for firm access services).

- **Storage assets are not 'end-use consumers' and should therefore not be considered as load customers in this traditional sense. Storage systems are multi-functional assets – providing a range of different services – critical to enabling increasing integration of low-cost renewables and replacing system security services traditionally provided by the synchronous generation fleet.**

The AER should also note other key stakeholder views on this topic as articulated during the IESS Rule Change:

- AEMO:
    - *"Transmission use of system (TUOS) charges should not be charged for bi-directional assets."* [Refer AEMO response to the "IESS Rule Change initiation" pg. 2[15]]
    - *In its recently submitted draft Pricing Methodology for Prescribed Shared Transmission Services for the 2022-2027 period, AEMO (in its capacity as Victorian shared transmission network service provider) proposed the following approach to TUOS for Energy Storage systems:*
        - *"Subject to the NER and the exceptions below, AEMO will not determine a charge under this Pricing Methodology in respect of Connection Points at which Energy Storage Systems are directly connected, either in respect of supply (discharging), or consumption (charging). This will apply to arrangements where the Energy Storage System is co-located with a generating system and is located behind the generator's energy meter"* [Extract from AEMO's response to the IESS Draft Determination pg. 21][16]
- Transmission and distribution network positions:
    - AusNet: *"AusNet Services agrees with AEMO's proposal to exempt all energy storage systems from TUOS charges*" [refer pg. 14 of AusNet response to the IESS Rule Change Initiation][17]

[15] https://www.aemc.gov.au/sites/default/files/2019-09/ERC0280%20Rule%20change%20request%20pending.pdf
[16] https://www.aemc.gov.au/sites/default/files/documents/a39._aemo.pdf
[17] https://www.aemc.gov.au/sites/default/files/documents/ausnet_services_3.pdf

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- Transgrid: "*TransGrid supports the AEMC and AEMO's proposed approach in which a scheduled ESS should be treated comparably to a generation asset and not pay Transmission Use of System (TUoS) charges."* [Refer pg. 2 of TransGrid's response to the IESS Rule Change Initiation][18]

- Energy Networks Australia: *"TNSPs are not of the view that they have discretion in the matter. Having arrived at a regulatory arrangement that supports bona fide storage being treated as generation for the purposes of TUOS it must be consistently applied."* [Refer pg. 12 of Energy Network Australia's response to the IESS Rule Change Initiation][19]

The Evoenergy position will not only create fractures across the NEM in respect of how TUOS is applied, it also seems to undermine Energy Network Australia's point on it being settled practice across Australia.

We would also point the AER some additional points on this issue:

- All ISP scenarios require significant additional utility scale storage to be built between now and 2030 to create the lowest cost energy generation mix. The Step Change scenario, accepted as the most likely base case, will require an additional ~8GW of utility scale storage (shallow and medium duration) to be built between now and 2030/31. Applying additional costs to the deployment to the deployment and operation of utility scale batteries will disincentivise the build of lowest cost dispatchable generation and result in a sub-optimal mix of capacity from an economic perspective.

- Related to the point above, the most likely way that these costs will be managed will be through increasing the floor price of bids into the capacity investment scheme (CIS) to make sure that utility scale batteries deployed in the ACT will be adequately covered against the higher costs compared to other forms of generation.

- Summarising all points above, end-use customers will effectively be **triple** charged TUOS costs on all utility scale batteries installed on the Evoenergy transmission network:

    1. TUOS applied to all MWh stored in a battery for later export. Costs added to wholesale price of energy exported to enable cost recovery.

[18] https://www.aemc.gov.au/sites/default/files/documents/transgrid_0.pdf

[19] https://www.aemc.gov.au/sites/default/files/documents/energy_networks_australia_3.pdf

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2. TUOS applied to the same MWh then consumed by every end-use customer.

3. Increased costs to the CIS as developers hedge risk against higher operational prices (including TUOS), recovered through customer tax.

Noting that the AER is currently seeing the impacts and issues associated with applying the Retailer Reliability Obligation (RRO) currently, we would caution against approval of any NSP regulatory position that either disincentivises the uptake of utility scale storage, or affects the usual operation of a battery (particularly in respect of providing critical grid services). This position will inevitably need to be changed as soon as the full impacts of applying TUOS to utility scale batteries are considered by an affected project.

4.2) Other Feedback on Evoenergy

Regarding the remaining details of Evoenergy's revised proposal, Tesla acknowledges and responds to the following statements outlined in the Revised Tariff Structure Explanatory Statement shared on 30th November 2023[20]:

	EVOENERGY POSITION	***TESLA RESPONSE***
DYNAMIC OPERATING ENVELOPES	*"Shaped operating envelope" trial to end Jan 2024 (Project Converge)*[21]	Tesla has concerns that the model being proposed by Evoenergy differs significantly from what is being considered in other states. Tesla is supportive of the design of dynamic exports that align with the approach taken by SA Power Networks. To fully support Evoenergy's development of dynamic exports we would want to see:

[20] https://www.aer.gov.au/system/files/2023-12/Evoenergy-Appendix%204.1%20Tariff%20Structure%20Explanatory%20Statement-November%202023_1.pdf
[21] https://www.evoenergy.com.au/emerging-technology/initiatives

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		• Consistency in approach and design of the platform used. • Transparency to customers in how the flexible exports are presented, with a clear view to creating customer benefits (i.e. the SAPN model of enabling max export capability 95% of the year). • Simplicity in design. • Clear alignment with two-way pricing. Our complete views on the design of flexible exports is provided in response to the AER Draft Interim Guidance Note on Flexible Exports. For clarity, Tesla is only currently supportive of flexible exports rather than a broader application of dynamic operating envelopes that includes import limits and generation controls. We do not believe that these additional controls have been justified.
RESIDENTIAL TARIFF REFORM	*Adopting an off-peak demand charge between 9pm and 9am and a higher seasonal peak demand charge during winter and lower peak demand charge in other months. (p. 13)*	Tesla does not support the addition of an off-peak demand charge, as this disincentivises time-shifting behaviour changes from customers in relation to activities like EV charging. Demand charges for residential customers have historically been very unpopular and poorly received.

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	Residential battery (027) being trialled in current regulatory period, expecting no customer volumes on this tariff in 2023/24 given customer and retailer feedback. (outlined p10[22])	This tariff is not likely to be taken up by customers, and Tesla challenges both the seasonal maximum demand charge (not present in comparative two-way pricing tariff structures as in SAPN), and the critical peak export rebate (given charges are multiple and daily, and the rebate is only offered six times pa with no details on the value).
RESIDENTIAL EV CHARGING	*Evoenergy will offer its two existing controlled load tariffs to EV owners on an opt-in basis. (p. 10)*	Tesla acknowledges that the AER requested networks explored flexible and controlled load tariffs. However, controlled loads impede customer flexibility, and prevent smart devices like Tesla's Powerwall and 'charge on solar' from optimising due to the EV charger placed on a secondary circuit. Tesla supports the use of TOU tariffs with low overnight rates to support behaviour-shifting.
PUBLIC EV CHARGING	*Considering a tariff trial for EV charging stations to promote efficiency on the network. The structure of this trial tariff will be finalised following further analysis. Prior to commencing the tariff trial, Evoenergy will engage further with EV public charging proponents. (p. 8)*	Tesla looks forward to engaging with Evoenergy on their tariff design.

[22] While the details of this tariff are not mentioned in the regulatory proposal, it is a continuation of the residential battery tariff throughout the TSES and TSS. Details here: https://www.evoenergy.com.au/-/media/evoenergy/documents/electricity/evoenergy-statement-of-tariff-classes-and-tarrifs-2023-24.pdf?la=en&hash=CEBF6FCB06C86B962E7F2D446471DCA610A3C18C

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BATTERY TARIFFS	*Introducing new tariffs for both large-scale LV and HV commercial batteries, with peak and off-peak periods depending on location (residential vs commercial) that has export charges and rebates.* *The structure of these tariffs will be identical, except for the application of different charging windows depending on whether the connection is in a predominantly residential or commercial area (as determined by Evoenergy). Further, the price level of each tariff will differ depending on whether the battery is connected to the LV or HV network.(p. 18)*	To support the introduction of a new tariff structure, Tesla proposes a later start date with an opt-in period. For the tariff structure details, Tesla notes that all feedback is specifically for community-scale batteries, as we do not agree that such tariff structures are appropriate for scheduled-bidirectional units. Within the components of the tariff structure for community-scale batteries, Tesla challenges the billing period within the seasonal peak demand charge. Large-scale batteries that are typically located in commercial areas are recommended to have the same peak demand window between 5pm and 8pm instead of 7am and 5pm. This is due to large scale batteries recharging in the middle of the day to 'soak' excess solar generation due to this being the cheapest time of the day. Placing a peak demand charge in this high-solar window sends a price signal that contradicts efficient behaviour that supports the grid.

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5) TASNETWORKS

Tesla acknowledges and responds to the following statements outlined in the Revised Tariff Structure Explanatory Statement shared TasNetworks on 30 November 2023[23]:

	TASNETWORKS POSITION	***TESLA RESPONSE***
RESIDENTIAL TARIFF REFORM	*Proposes a TOU DER tariff with a secondary peak in the morning from 7am – 10am. (p. 45)* *Removing peak demand charging (kVA charge) for small customers (<750 MWh pa). (p. 38)*	Tesla is encouraged by the extensive consideration for residential batteries by TasNetworks, and supports the introduction of a second peak window, although would recommend considering shortening the duration of the evening peak. Supportive of the simplification and streamlining of tariffs.
RESIDENTIAL EV CHARGING	*TasNetworks does not consider that a controlled load tariff for EV charging represents a better solution than uncontrolled time of use network tariffs. (p. 54)*	Tesla is aligned with TasNetworks' position and is impressed by the extensive research and data analysis conducted to support this statement within the TSES.
COMMUNITY BATTERY TRIALS	*Community battery pilots as an innovative alternative to network augmentation to improve reliability in remote areas. (Outlined in the Combined Proposal Overview p. 20[24])*	Tesla encourages network exploration into the benefits of storage assets to support reliability in regional and remote areas.

[23] https://www.aer.gov.au/system/files/2023-12/TasNetworks-Revised%20Proposal-Tariff%20Structure%20Explanatory%20Statement-Nov%202023-Public.pdf
[24] https://www.aer.gov.au/system/files/TasNetworks-Combined%20Proposal%20Overview-Jan%2023-Public.pdf

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6) POWER AND WATER CORPORATION

Tesla acknowledges and responds to the following statements outlined in the Revised Tariff Structure Explanatory Statement shared by Power and Water Corporation on 30 November 2023[25]:

	POWER AND WATER CORPORATION POSITION	***TESLA RESPONSE***
DYNAMIC OPERATING ENVELOPES	*We will apply dynamic operating envelopes (DOEs) to curtail solar exports at times of minimum demand but allow customers to export at all other times in the year (p. 64)*	Tesla is supportive of the design of dynamic exports that align with the approach taken by SA Power Networks. To fully support Essential Energy development of dynamic exports we would want to see: • Consistency in approach and design of the platform used. • Transparency to customers in how the flexible exports are presented, with a clear view to creating customer benefits (i.e. the SAPN model of enabling max export capability 95% of the year). • Simplicity in design. • Clear alignment with two-way pricing. Our complete views on the design of flexible exports is provided in response to the AER Draft Interim Guidance Note on Flexible Exports. For clarity, Tesla is only currently supportive of flexible exports rather than a broader application of dynamic operating envelopes that includes import limits and generation controls. We do not believe that these additional controls have been justified.

[25] https://www.aer.gov.au/system/files/2023-12/PWC%20-%20Revised%20proposal%20-%207.2%20-%20Tariff%20Structure%20Explanatory%20Statement%20-%2030%20Nov%2023%20-%20PUBLIC.pdf

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TWO-WAY PRICING	*We propose to take a staged approach to introducing two-way pricing and will undertake further engagement with retailers and the government to develop and test innovative tariffs through opt-in trials. (p. 6)*	Tesla is supportive of the design of two-way pricing that ensures simplicity and transparency for customers with clearly communicable benefits that reward time-shifting behaviour change. We are happy to support continued design of these tariffs to demonstrate the value that residential storage systems can provide to the networks – particularly during evening peaks.
RESIDENTIAL TARIFF REFORM	*Reducing the peak window by 15 hours per week and introducing a low and medium energy period for energy consumption.* *Introducing an 'on' and 'off' maximum demand seasons, in conjunction with a reduction in the peak charging window by five hours per week.* *Removing the seasonal demand (kVA) charge for smart metered customers consuming less than 750 MWh pa. (p. 33)*	Tesla is supportive of all of the proposed changes.
RESIDENTIAL EV CHARGING	*We will also use the DOE project (discussed above) to optimise network usage with respect to EV charging - trialling EV tariffs that encourage customers to charge (or discharge) their EVs at certain times of day. (p. 59)*	Tesla does not agree with PWC's approach of using DOEs, specifically import limits, to moderate residential EV charging. It supports tariff design that encourages customer behaviour change, such as TOU pricing, vs-controlled loads that regulate charging windows instead.

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PUBLIC EV CHARGING	*Setting standards for smart charging. (p. 59)* *Identifying optimal locations for public charging stations.(p. 59)*	Tesla is highly concerned by DNSPs creating local standards for smart charging, given that current best practice is to align to international standards and governance. Misalignment between jurisdictions will inhibit EV uptake and create risks due to not being set by global leaders in EV charging technical regulators, as is the current case. Tesla supports DNSPs sharing information (either publicly or within industry) on network capacity considerations for public charging, similar to the Essential Energy capacity map. However, DNSPs should not be able to restrict charging locations, as this will once again slow uptake.
BATTERY TARIFFS	*Conducting trials on how pricing for the behaviours of grid-scale batteries that can either drive up or help avoid our costs and help encourage efficient deployment of these batteries across our networks. p. 65*	Tesla encourages network innovation to accelerate storage uptake to provide stability and systems strength to the grid. However, battery tariff design should be considered specifically for community-scale batteries, as we do not agree that such tariff structures are appropriate for scheduled-bidirectional units.
COMMUNITY BATTERY TRIALS	*Piloting distribution battery storage in Alice Springs and Darwin-Katherine networks ($2M ARENA funding)* *(From Regulatory Proposal p. 51[26])*	Tesla encourages network exploration into the benefits of storage assets to support reliability in regional and remote areas.

[26] https://www.powerwater.com.au/__data/assets/pdf_file/0025/156931/Regulatory-Proposal-for-the-2024-29-regulatory-period.pdf

Appendix A – General Tesla feedback on key topics

The following provides a summary overview of our positioning on key topics considered in all of the DNSP Regulatory Determinations.

1. DYNAMIC OPERATING ENVELOPES

1.1 DOEs should be limited to export controls

Tesla is only currently supportive of flexible export arrangements and is not supportive of a scope expansion to import and generation limits until further work is done on understanding the network benefits and consumer risks associated with those additional controls.

There are several challenges associated with the implementation of import and generation limits that are yet to be resolved, including how the calculation for capacity limits for imports is applied, considering loads that will be controlled vs those which will not, how they will be implemented, and if this will be applied at a site or device level. These points are explored in more detail in our response the AER Interim Draft Guidance on Flexible Exports.

In addition, the position that has currently been taken by the AER within the Interim Draft Guidance on Flexible Exports is to explicitly exclude flexible imports from the regulatory framework being developed. This creates serious risk in that any development of import limits would be effectively ungoverned. We also believe that an appropriate regulatory framework and NSP guard rails need to be developed ahead of import controls being introduced.

1.2 AC coupled batteries should be excluded from DOEs

There is already a precedent for these exemptions, as the South Australian Technical Regulator grants an exemption for AC Coupled Battery Energy Storage Systems (9.7.2.; 10.4.2.)[27] in respect of CSIP-Aus compliance and export limiting.

1.3 Capacity allocation and performance thresholds

The methodology for setting capacity allocation and performance thresholds needs to be simple and customer centric. As outlined in Tesla's parallel submission to the AER's Draft Interim Guidance on Flexible Exports, we detail the need for capacity allocation to not just be transparent, but also easily understood by customers. In the same submission, we recommend that networks include the specified performance thresholds that customers can receive in the connection agreement itself.

[27] SA Gov Technical Regulator Guideline (2023) 2022D066388-Technical-Regulator-Guidelines-Distributed-Energy-Resources-Version-1.5-1.pdf (energymining.sa.gov.au)

Tesla recommends SAPN's approach to implementing performance thresholds[28] as an example of how performance thresholds can be effectively communicated to customers. This approach, in which customers have a fixed service level threshold, provides most customers a guaranteed service level of 95% which equals max. (10kW) export 95% of the sunshine hours.

2. TWO-WAY PRICING

2.1 Ensuring customer benefits

Tesla is only supportive of two-way pricing where customer benefits as well as costs are introduced - specifically customer credits for the network benefits achieved through time-shifting exports to the evening peak.

We also think that there are significant additional benefits that can be gained by considering two-way pricing as a tool for shifting customer energy use behaviour; rather than being purely used for network cost-recovery, and we are supportive of NSPs continuing to innovate on this topic.

3. EV CHARGING TARIFFS

3.1. Residential EV Charging

Tesla notes that the AER explicitly requested that networks further explore tariff innovation in their revised proposals, including flexible and controlled loads that target EV charging.

Controlled Loads

Controlled loads have traditionally been used to manage simple, on-or-off devices like hot water systems and pool heaters during periods of peak and minimum demand. They are less suitable for vehicle charging as people often need to charge their vehicles on-demand and outside of regular usage patterns. Given that EV charging proponents like Tesla can support optimising charging around tariffs, the benefits of controlled loads could be implemented by correctly configuring the customers charging software with TOU tariffs that encourage the behaviour, while retaining the customer's ability to charge whenever they need. Traditional controlled loads were an archaic form of optimisation which controlled thousands of devices identically, with no regard to each device's unique situation. Smart devices like Tesla's Powerwall, VPPs, and scheduled car

[28] SAPN Energy Transition Focussed Conversation (2023) https://ehq-production-australia.s3.ap-southeast-2.amazonaws.com/4f745914c05ddd17e885ad2cf206dca503b05314/original/1669776424/e507120f95f386e1a7b26a1110657eda_SAPN_220130_People_Panel_Recommendation_-_Energy_Transition_-_221130.pdf

chargers now optimize usage based on site specific behaviour and offer flexibility to the user – generally through aps that can set charging behaviour through the car directly or through a customer EV charger.

Placing our home chargers onto controlled load circuits would significantly impede our ability to do this as we won't know when power will be available.

'Flexible' Loads

Networks were encouraged by the AER to also explore flexible loads, that allow charging to be ramped down in response to extreme network events, but still give customers control most of the time. As per our points on import limits made above, we believe there is still more work to be done on the appropriate customer incentives that should be introduced to better incentivise these "flexible loads". We also think there are other price signals that have not yet been explored in detail and would similarly drive more optimal customer behaviour – such as two-way pricing with payments for charging during the middle of the day, or TOU tariffs. Wholesale energy market price signals provide the same driver.

Load shedding in response to legitimate grid emergency events is also something that should be designed by AEMO and not considered within the general BAU scope of the Regulatory Determination process.

Recommendations

There is still a use-case for controlled loads for hot-water systems, but for smart devices the same behaviour can be achieved with effective configuration. Given these considerations, controlled loads must not be a mandatory. If implemented, they must be on an opt-in basis to maintain user flexibility.

Tesla supports network innovation to support uplifts in residential EV charging. It recommends trialing the creation of a TOU tariff with steep pricing and no demand charge to incentivize charging during periods of low energy consumption. Charging should be incentivised during nighttime with ultra-low c/kWh rates. Networks should ensure the duration of this window must be long enough to let an EV fully charge (a Tesla takes minimum 8 – 10 hours), as well as providing the opportunity for a range of charging times to avoid creating a second peak and enabling customer flexibility.

Tesla encourages DNSPs to consider the work done by the Electric Vehicle Council in 2022, exploring residential tariff design for EV charging[29], supporting and quantifying the findings of TOU tariffs for EV charging.

[29] EVC (2022) https://www.linkedin.com/pulse/residential-tariffs-ev-charging-what-does-good-tariff-ross-de-rango

3.2. Public EV Charging

Networks are currently beginning to explore unique tariff structures for public EV charging stations. Networks recognise 'that the utilisation of EV charging stations is too low to support them contributing to residual costs commensurate with that made by other customers with similar demand characteristics' and should 'rethink our large-scale commercial tariffs to better accommodate connections with highly uncertain load during their initial uptake of EVs'.[30] When utilisation of charging stations is low (common in rural/regional superchargers for long-distance travel), demand charges can drive 90% of the bill, destroying the business case for operators.

As aligned with global best practice, Tesla recommends that DNSPs consider trialing volumetric 'energy-only' (i.e., demand charge free rate for X years) applicable to all public DC fast charging stations, similar to the US:

UTILITY	EV CHARGING RATE DESIGN
SOUTHERN CALIFORNIA EDISON, CA	Approved demand-charge free rate for all non-residential DCFC load for a five-year period, followed by the phase-in of a modest demand charge over the following five years. Time-of-use (TOU) volumetric energy charges increased to recover costs previously recovered in the demand charge.[31]
EVERSOURCE, CT	Approved demand-charge free rate for all DCFC charging load with increase in volumetric energy charge to recover costs previously recovered in the demand charge. No limit on term of rate offering.[32]
NV ENERGY, NV	Approved DCFC rate with a ten-year transitional demand charge (2019-2028).[33]
CON EDISON, NY	Approved economic development rate for DCFC, that includes a bill discount for seven years.[34]
PACIFIC POWER, OR	Approved rate beginning with a demand charge discount of 90%, phasing in at 10% per year until the demand charge is restored at 100%. Volumetric energy charges are adjusted to recover costs previously recovered in demand charges.[35]
PECO, PA	Approved five-year pilot rate in which the customer receives a fixed demand credit, initially equal to 50% of the combined maximum nameplate capacity rating for all DCFCs connected to the service to the customer's billed distribution demand.[36]

[30] Endeavour Energy Revised TSES (2023) https://www.aer.gov.au/system/files/2023-12/Endeavour%20Energy%20-%200.06%20Tariff%20Structure%20Explanitory%20Statement%20-%20November%202023%20-%20Public_0.pdf

[31] https://www.sce.com/business/rates/electric-car-business-rates/business/rates/electric-car-business-rates

[32] http://www.dpuc.state.ct.us/dockcurr.nsf/8e6fc37a54110e3e852576190052b64d/78a25b4e83776981852583b50057c9d1/$FILE/171046RE01-030619.pdf

[33] https://www.nvenergy.com/account-services/energy-pricing-plans/electric-vehicle/standard-rates-business

[34] https://www.coned.com/en/commercial-industrial/economic-development/business-incentive-rate

[35] https://www.pacificpower.net/content/dam/pacific_power/doc/About_Us/Rates_Regulation/Oregon/Approved_Tariffs/Rate_Schedules/Public_DC_Fast_Charger_Optional_Transitional_Rate_Delivery_Service.pdf

[36] https://www.peco.com/SiteCollectionDocuments/ThirdPartyEV.pdf

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NATIONAL GRID, RI, MA	Approved five-year demand charge discount that starts at 100% and declines to 66% discount in year four and a 33% discount in year five.[37]

[37] https://www.nationalgridus.com/media/pdfs/billing-payments/tariffs/ri/dcfc-disc-pilot-provision-(09-01-18).pdf