2025 consultation

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Via online submission: https://www.netzerocommission.nsw.gov.au/engagement-consultation/2025-consultation

09 July 2025

Dear Ms Meg McDonald,

RE: Residential Electrification Senate Inquiry – Submission on Terms of Reference

Tesla Motors Australia, Pty Ltd. (Tesla) welcomes the opportunity to provide the Net Zero Commission (the commission) with a response to its 2025 consultation paper.

Tesla's mission is to accelerate the world's transition to sustainable energy. As a global leader in electric vehicles and clean energy products, Tesla produces a vertically integrated suite of energy solutions – including Powerwall and Megapack – that enables homeowners, businesses, and utilities to manage renewable energy generation, storage and consumption. To date, Tesla has deployed over 62 GWh of residential and utility-scale energy storage across 40 countries. In Australia, Tesla has grown rapidly and now employs around 1,000 people across EV sales and service, charging infrastructure, and battery storage at all scales.

Tesla supports the commission's multi-sectoral approach to net-zero planning, and in particular has comments on the following questions:

- 2. What actions can the commission take to engage across the community to help drive the shifts needed for the net zero transition and for effective climate change mitigation and adaptation?
- 6. The speed of deployment of electricity generation and infrastructure is a key risk to emissions reduction targets. What more could be done to fast-track deployment?
- 9. What are likely to prove the most effective approaches to accelerate rapid decarbonisation across freight and passenger transport?
- 19. What additional measures could accelerate electrification and increase energy efficiency of new and existing buildings?
- 22. What should be included in a monitoring framework for NSW in the context of the transition to net zero, including any specific metrics and indicators?

Tesla looks forward to continued engagement with the commission and actively participating in ongoing discussions on the 2025 net zero strategy.

Kind regards,

Tesla Energy Policy Team

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2. What actions can the commission take to engage across the community to help drive the shifts needed for the net zero transition and for effective climate change mitigation and adaptation?

Local communities wield significant power in decarbonising sectors such as energy, transport, and heating, led by a shift towards all-electric lifestyles. Household energy use and personal transport together account for approximately a fifth of Australia's total GHG emissions[1], highlighting the important role communities can play in driving down emissions at scale.

Households that adopt efficient electric appliances, rooftop solar, household batteries, and EVs not only reduce emissions, but also stabilise the grid and reduce energy bills for all. In AEMO's ISP Step Change Scenario, the lowest cost energy mix involves a significant uptake in solar and residential storage across both orchestrated and non-orchestrated systems, to require 60.2 GW distributed solar and 24.4 GW CER storage in 2039-2040, and 85.7 GW distributed solar and 44.1 GW CER storage in 2049-50.[2]

The use of smart home batteries particularly compounds benefits, driving lower wholesale energy prices, and reducing the investment needed for transmission and distribution infrastructure and curtailment costs. Research by Energeia commissioned by the AEMC in 2024 calculates an estimated $45bn in benefits to 2050 from potential network benefits from increased and more efficient CER integration.[3]

However, we note that the home storage attachment rate in Australia is still lagging, relative to what AEMO is projecting in its latest 2024 ISP (where 65% of total storage capacity is expected to be behind the meter in 2050, which is a step change over current levels). Incentives, schemes and rebates remain vitally important to drive continued uptake of CER, particularly for batteries where upfront costs remain a key barrier for many households. In addition to the NSW Government's existing home battery discount and the Federal Government's new *Cheaper Home Batteries Program*, we welcome the NSW Government's recent announcement to double the incentive for residents who connect their home battery to a VPP, available to be claimed upfront.

Nevertheless, many households remain unaware of the benefits of home electrification and batteries, or of the growing number of rebates, subsidies, and incentives available to support the transition. Confusion about where to start, how to choose between different technologies and suppliers, how VPPs work and their benefits, and what the long-term cost savings might look like can all act as barriers. The complexity of navigating stackable incentives, understanding tariff impacts, and assessing return on investment often leaves even motivated households unsure how to proceed, limiting the reach and equity of these programs.

For the Net Zero Commission to succeed in its mandate, it must play a more active role in public education. This means making the benefits of electrification clear, relatable, and accessible, and ensuring all communities are supported to make the switch. To maximise uptake, electrification incentives must be accompanied by a clear, coordinated public awareness campaign: one that not only explains what's available, but builds trust, showcases real household stories, and makes the electrification journey feel achievable and appealing. Marketing efforts should be culturally tailored, community-led where possible, and delivered across multiple channels.

6. The speed of deployment of electricity generation and infrastructure is a key risk to emissions reduction targets. What more could be done to fast-track deployment?

NSW has made commendable progress on its emissions reductions targets, particularly in the energy sector. The state's Electricity Infrastructure Roadmap incentive scheme has awarded and is developing significant generation and firming capacity through the LTESA scheme. Nonetheless, the challenges around preparing for coal-closures means that new capacity and infrastructure deployment must be accelerated to ensure there is appropriate entry before exit, which requires navigating a complex and multifaceted landscape of technical regulatory and strategic reform. The complexity of transmission planning, driven by the upcoming retirement

[1] DCCEEW, *Australia's National Greenhouse Accounts (2024), https://www.greenhouseaccounts.climatechange.gov.au/*
[2] AEMO, *2024 ISP generation and storage outlook (June 2024), https://aemo.com.au/-/media/files/major-publications/isp/2024/supporting-materials/2024-isp-generation-and-storage-outlook.zip?la=en*
[3] AEMC, *Energeia finds that CER flexibility could deliver $45B in benefits by 2050 (March 2025), https://www.aemc.gov.au/energeia-finds-cer-flexibility-could-deliver-45b-benefits-2050*

of coal-fired power stations and the integration of renewable energy zones (REZs), highlights the critical need to fast-track deployment to maintain grid reliability and affordability.

Consequently, Telsa welcomes the ongoing Transmission Planning Review[4] to reduce duplication and ensure coordination between entities involved in NSW transmission planning. In particular, Tesla sees an opportunity to review the procurement processes of essential system services to clarify responsibilities across multiple REZ operators, to ensure a fast and low-cost approach. Tesla emphasises the key responsibility of the System Strength Service Provider (SSSP) and inertia service providers in ensuring grid stability as NSW transitions to renewables. Tesla is strongly aligned with the Options Paper's characterisation that a major challenge for transmission planning includes 'limited incentives for TNSPs to undertake non-network projects and a potential bias towards capex over opex'. Tesla has continuously encouraged improvements to the transmission planning process that support non-network options (NNOs) that can be deployed faster and more flexibly than traditional network augmentation.

There is a real opportunity for NSW to be a thought leader in this space, and utilise the opportunity enabled by derogating from the NER to allow bespoke transmission investments (provided they are in the interests of NSW consumers and support grid efficiency and stability) that would otherwise be stymied by the RIT-T process. For example, non-network proponents have continually struggled to progress battery storage projects that can be partitioned to provide system services and provide better value to owners, operators and consumers, but when forced through a narrow RIT-T assessment appear economically unfavourably in comparison to single-use, lower value assets such as synchronous condensers, due to their lower upfront cost.

Furthermore, the price of synchronous condensers is not expected to decrease significantly. As an established and mature technology, there is limited scope for further cost reductions. In contrast, the cost of BESS is anticipated to decline considerably as advancements in energy storage technology and economies of scale reduce prices. This makes BESS an increasingly attractive option for providing grid services, including inertia.

9. What are likely to prove the most effective approaches to accelerate rapid decarbonisation across freight and passenger transport?

a) Public awareness of vehicle pollution

Vehicle pollution kills more Australians each year than vehicle accidents. An expert statement on the health impacts of vehicle pollution estimated that 11,105 Australians die early because of vehicle pollution each year[5]. This paper was endorsed by leading respiratory physicians as well as the Asthma Australia, Lung Foundation Australia, Cancer Council and many others.

Australia's most common cause of GP presentation in children under five is asthma and allergy. In 2012, Gasana et al. observed that children attending schools near high traffic density roads were exposed to higher levels of vehicle pollutants and had an associated increase in the incidence and prevalence of childhood asthma and wheeze.

Australian governments at all levels spend a great deal on infrastructure and public education to reduce the vehicle accident road toll; government advertising campaigns affirm that "zero is the only acceptable number" of road deaths. These efforts are laudable, and Tesla is proud that its vehicles have the highest Australasian New Car Assessment Program (ANCAP) scores yet recorded.

Deaths caused by vehicle pollution in respiratory wards are no less tragic and preventable than deaths caused by accidents on roads. It is time that governments at all levels treated them with the same gravity and urgency, utilising a clear, coordinated public awareness campaign on the health risks and public health costs of vehicle tailpipe emissions.

[4] https://www.energy.nsw.gov.au/nsw-plans-and-progress/regulation-and-policy/nsw-transmission-planning-review-2025
[5] https://www.unimelb.edu.au/__data/assets/pdf_file/0006/4498161/Expert-Position-Statement_Vehicle-emissions_FINAL.pdf

b) A national framework for autonomous vehicle regulation

Autonomous vehicles (AVs) are the next key step in the electric vehicle transition.

While Tesla and other companies are scaling EV production at unprecedented rates, a further step change in decarbonising transport is possible if we can significantly increase the utilisation of electric vehicles by moving toward autonomous vehicles.

AVs have the potential to significantly reduce emissions beyond the benefits of electrification alone. Most passenger vehicles are idle ~95% of the time. AVs could be utilised around the clock, significantly decreasing the cost per kilometre of travel in electric vehicles. In reducing the overall passenger transport fleet size, AVs serve to decrease embodied emissions from manufacturing, maintenance and disposal. Autonomous systems optimise driving behaviour – minimising hard braking, acceleration and congestion – to improve energy efficiency. In addition, AEVs can reduce idling and detours through smart routing, use vehicle-to-vehicle communication to reduce road congestion, unlocking further system-wide decarbonisation.

To support this transition, Australia urgently needs a consistent national framework for autonomous vehicle regulation. Such a framework must remain flexible and adaptive, recognising that autonomous hardware and software are evolving rapidly. Clear and harmonised rules across states and territories will provide certainty to innovators, accelerate investment, and align with national emissions and transport goals.

c) Unlocking Australia's EV Charging Infrastructure

Ensuring convenient and cost-effective charging is fundamental to support the uptake of EVs and directly address concerns of range-anxiety. Fast charging public infrastructure is critical for supporting longer-distance electromobility, and the charging needs of those (e.g. apartment dwellers) who lack adequate access to home-based chargers.

However, a lack of national coordination and delayed federal policy has stymied Australia from enjoying an overarching roadmap that can accelerate the rollout of public charging infrastructure. It is not simply a lack of funding – there are a combination of barriers (technical, regulatory, and commercial) that need to be overcome.

Tesla operates the largest network of EV chargers in Australia. In our experience, the most critical barrier to increasing fast-charging infrastructure in Australia is the amount of time it takes to obtain grid connection and transformer upgrades. For Tesla, Australia is the most difficult country in the region to install direct current (DC) fast chargers, with transformer upgrades and grid connections often taking over 1 year for utilities to complete, compared to just 6-8 weeks in other countries.

We recommend the NSW Government, along with DNSPs and charging infrastructure operators, develop a comprehensive plan for the rollout of a public charging network at scale.

If done well, Australia can harness the multi-billion investment opportunity to 2030, creating tens of thousands of new infrastructure jobs across planning, assessment, technical studies, technicians and construction for deployment and installation, as well as service for ongoing operation and maintenance. Conversely, failing to act will not only frustrate the ability for customers to charge their EVs conveniently and efficiently, it will slow the uptake of EVs and risk Australia's climate commitments by prolonging the use of high emission vehicles.

Furthermore, developing kerbside charging infrastructure is an important avenue in supporting EV uptake, especially for the 1 in 3 drivers across NSW who do not have access to off-street parking. Tesla welcomes the NSW Government's recent announcement to expand kerbside EV charging infrastructure through competitive grants and supports further funding rounds. By supporting an open and competitive market, this approach encourages innovation, lowers costs for consumers, and accelerates the rollout of accessible charging infrastructure.

It is also worth noting that the majority of EV charging is done at drivers' homes or workplaces with Level 2 chargers. Access to off-street charging is one of the most important enablers of EV adoption, and one of the key equity challenges of EVs, because Australians who are less socio-economically advantaged are less likely to own their homes, have off-street parking, or be able to access workplace charging.

Here Government also has a critical role to accelerate EV charging infrastructure in private settings by ensuring National Construction Code provisions on EV readiness are integrated into state level instruments, creating programs for EV charging retrofits in apartment complexes, requiring standardised approaches by DNSPs on installation requirements for home charging, and providing training for electricians on EV charger installation. This coordinated approach will also be vital in combating misinformation related to EVs and fire risk that is unnecessary adding delays and costs to EV charging infrastructure.

The advantage of improving access to 'behind the meter' charging is the direct ability to utilise rooftop solar and become part of the optimisation of distributed energy resources (DER). All EV charging that occurs at lower AC levels can leverage 'free' excess solar energy and spare network capacity, providing grid reliability and system security benefits by avoiding low operational demand risks that are already being faced in states with high solar uptake (i.e. WA and SA) and further optimising the grid transition towards and above 82% renewable energy. Whilst some DNSPs are beginning to adapt existing tariffs or even create bespoke 'EV tariffs', more work is needed to ensure fair and transparent costs for actual usage and embed appropriate incentives to control/shift load via a national guide to time-of-use tariffs that incentivise this type of off-peak / high solar charging.

19. What additional measures could accelerate electrification and increase energy efficiency of new and existing buildings?

Home batteries, such as Tesla's Powerwall, offer a powerful combination of energy security, bill savings, and new revenue opportunities for households. As more families electrify their homes and vehicles, batteries will play an increasingly vital role in managing household energy use and supporting a reliable, decarbonised energy system. Please refer to our response in Question 2, referring to enhanced public awareness on the household benefits of home batteries and of the NSW government's incentives for installing a home battery.

More broadly, energy efficiency is fast becoming a key driver of property value in Australia, with growing consumer demand for homes that are cheaper to run and more comfortable to live in. Research by the Domain Group shows that in the ACT, where energy ratings are mandatory when selling a home, homes with a 6-star rating or above sold for more than 11% higher on average ($94,000), with energy efficient apartments commanding a 18% premium. Over 72% of ACT listings include energy efficiency keywords[6]. This suggests that clear, trusted energy performance information can directly influence buyer behaviour and reward highly efficient homes.

To accelerate electrification and battery uptake in NSW, a supportive market environment that motivates homeowners and landlords to learn about energy performance and enables them to undertake upgrades should be established. Tesla supports the ongoing establishment of Government's Home Energy Ratings Disclosure Framework, and encourages progression towards a home energy rating disclosure scheme in NSW.

Additionally, we recommend that to maximise the benefits of the Social Housing Energy Performance Initiative (SHEPI), the NSW Government should expand the program to include battery storage alongside solar installations. While rooftop solar can significantly reduce energy bills, the addition of storage ensures that solar energy generated during the day can be used during peak evening hours, when energy demand and costs are often highest. This is particularly important for social housing tenants, many of whom may have limited capacity to shift their energy use. By enabling greater self-consumption of solar energy, storage can deliver deeper bill savings, improve energy resilience in extreme climates, and further reduce strain on the grid. Including storage as a standard upgrade option would help future-proof these homes and ensure equitable access to the full benefits of clean energy.

[6] Domain Group, *Green Homes Go Mainstream: Energy Efficiency now a Top Priority for Australians* (May 2025), https://www.domain.com.au/group/media-releases/green-homes-go-mainstream-energy-efficiency-now-a-top-priority-for-australians/

22. What should be included in a monitoring framework for NSW in the context of the transition to net zero, including any specific metrics and indicators?

Reliable public data on vehicle sales.

Australia still does not have a trustworthy and transparent public source of data on vehicle sales and vehicle CO_2. The nation stands almost alone in not having a free, public, granular account of vehicle sales and registrations – a reliable public dataset regarding trends in vehicle size, price, and features. All of these should be collated and published in the interests of good policy making and economic analysis.

The National Exchange of Vehicle and Driver Information System (NEVDIS) dataset is notoriously patchy and incomplete. The VFACTs database administered by the Federal Chamber of Automotive Industries does not include accurate data about vehicle CO_2, drawing sharp criticism from the National Transport Commission, which has been unable to provide accurate and continuous data to inform policy development. VFACTs simply is not a reliable source of data.

For comparison, consider New Zealand's Ministry of Transport fleet statistics reporting. This includes weekly low emissions vehicle reports and comprehensive statistics about new vehicle sales and the existing vehicle fleet. Like Australia, Canada has state and territory registration authorities with various data collection practices but has aggregated these into a national reporting framework.

The Commission should advocate that the Federal Government simply mandate that all OEMs make a monthly report of their delivery data publicly available online. Alternatively, OEMs could report monthly data to the Department of Transport or the Clean Energy Regulator for compilation and publication as a simple dataset in CSV or JSON format.

The eight principles for open data by the Open Government Working Group also provide a checklist that could inform the government's approach.

1. *Complete*: in this case that means including raw CO_2 data before any additional credits are applied and publishing granular information on the impact of any multiplier or technology credits.
2. *Primary*: data as it is collected with the highest possible level of granularity. In this case that would include marque, model, variant, vehicle category, homologation segment, drivetrain type, fuel economy, and CO_2/km.
3. *Timely*: made available as quickly as possible. In this case that would ideally mean data is collected monthly from OEMs and published within one week after being provided back to OEMs for checks.
4. *Accessible*: available to the widest range of users for the widest range of purposes.
5. *Machine processable*: reasonably structured to allow automated processing.
6. *Non-discriminatory*: data is available to anyone, with no requirement of registration.
7. *Non-proprietary*: available in a format over which no entity has exclusive control.
8. *License-free*: not subject to copyright, patent, or trademark regulation.

Accurately measuring health impacts of vehicle and other pollution.

The long-term impact of vehicle air pollution on health should be closely studied and aggressively mitigated. As a starting point, it is important that vehicle pollution deaths and illnesses are adequately measured. It has been 20 years since BITRE released a detailed report on health impacts of transport emissions in Australia.

There is a serious dearth of quality data collected to measure the overall impact of transport pollution, let alone provide granular insights that would allow policy makers to effectively target and iterate interventions. If road accident data was not collected in sufficient detail to accurately estimate how many Australians died or were injured in accidents, policy makers and public health officials would be justly outraged; the same response is justified for pollution data.

Tesla recommends the Commission fund an expansion of particulate and noxious pollution monitors to better quantify vehicle and other pollution around NSW. Health and Air Pollution New Zealand (HAPINZ 3.0) is a thorough and internationally peer reviewed framework for evaluating the effects of air pollution on human health across New Zealand and the resulting social costs.

Tesla recommends that NSW investigate adapting the HAPINZ 3.0 framework for use in Australia. Furthermore, Tesla recommends that the NSW government publish an annual estimated vehicle pollution road toll alongside regular reports on health impacts of anthropogenic air pollution.