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Standing Committee on Climate Change, Energy, Environment and Water
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To whom it may concern,

Climateworks Centre submission on the inquiry into the transition to electric vehicles

Climateworks Centre welcomes the opportunity to respond to the inquiry into the transition to electric vehicles. Climateworks bridges the gap between research and climate action, operating as an independent not-for-profit within Monash University. Climateworks develops specialist knowledge to accelerate emissions reduction, in line with the global 1.5°C temperature goal, across Australia, Southeast Asia and the Pacific.

The transport sector currently constitutes the third-highest share of Australia's greenhouse gas emissions. Government projections show that the transport sector will be the largest source of emissions by 2030. Projected emissions reductions come primarily from electric vehicle (EV) uptake and a vehicle efficiency standard for light vehicles (Department of Climate Change, Energy, the Environment and Water 2023).

The transition to EVs is therefore an important lever to decarbonise transport. With battery and plug-in hybrid EVs at 8.5 percent of sales in 2023 (Electric Vehicle Council 2024), Australia is not yet on track to meet existing, aggregated state and territory targets (equivalent to 46 per cent EV uptake by 2030). Recent Climateworks modelling shows that even higher EV uptakes are required – 56 per cent and 73 per cent respectively – to keep decarbonisation within bounds of the Paris Agreement's temperature goals of well below 2°C and 1.5°C (Climateworks Centre 2023d). Not meeting such uptake could put Australia's climate goals at risk.

Our 2022 report, *Accelerating EV uptake*, identified the lack of a vehicle efficiency standard as a major barrier to uptake. Without addressing supply, consumer demand cannot be met and EV uptake will be severely limited. There are also significant savings to be gained by increasing the share of EVs in the fleet. Raising national ambition on EV uptake could save approximately $20 billion in vehicle running costs and abate 24 $MtCO_2e$ of emissions by 2030 compared to Australia's current projected uptake (Climateworks Centre 2022).

The EV transition strategy should, therefore, first focus on unlocking supply by setting ambitious vehicle efficiency standards. These standards must be competitive globally, as manufacturers prioritise EVs for markets with strong standards. Vehicle efficiency standards complemented with a comprehensive policy package will further ensure a fast and smooth transition for individuals and businesses. Overall, coordinated and sustained policy support will help the EV market transition through its emergent stages into a well-established marketplace.

While rapid uptake of EVs will be critical, complementing this with other actions to reduce transport emissions will ensure Australia can reach its climate goals. In our 2023 report *Delivering freight decarbonisation*, Climateworks estimated that just under 40 per cent of transport emissions come

from freight, of which approximately 51 per cent is from short-haul freight.[1] This highlights another area of transport that also needs to decarbonise to achieve sufficient emissions reductions from the transport sector. Further, our upcoming report on transport decarbonisation scenarios will show that incorporating transport efficiency measures and mode shift, including rail freight, will be critical to initiate and keep transport emissions reduction on track.

The following is a summary of our responses to specific terms of reference in the submission:

- **The establishment of resources, systems and infrastructure required to support transition to EVs**

  Climateworks recommends a focus on increasing supply of EVs to the Australian market and building a comprehensive policy package that supports transition for individuals, businesses and the energy grid.

  Climateworks' recommendations under this term of reference also cover policies that optimise EV charging, discharging and infrastructure.

- **The impact of moving from internal combustion engine vehicles, including fuel excise loss, existing auto industry component manufacturers and the environment**

  Shifting from ICE vehicles to EVs can have a significant impact on reducing Australia's transport emissions. In 2021, passenger and light commercial vehicles made up 63 per cent of Australia's transport emissions (Department of Climate Change, Energy, the Environment and Water n.d.). In other words, even a transition to light-duty EVs only could reduce over half the emissions from transport.

- **The impact on electricity consumption and demand**

  EVs have the potential to become the largest resource for demand management, where the variable nature of renewable energy can be balanced by EVs returning electricity to the grid during periods of unexpectedly high demand. This means EVs can have an important role in the future electricity system.

  Climateworks recommendations explore the technical standards, frameworks and rules that are necessary to integrate EV charging with the grid.

- **Other recommendations**

  Climateworks also recommends deploying complementary policies to support a stable and fair transition to EVs in the long run. Important policies here are those that boost the second-hand market to enable more equitable access and transition to EVs.

[1]Climateworks' analysis categorises short-haul freight emissions as those associated with trips via LCVs and light–medium duty trucks that predominantly travel distances less than 300 kms.

ToR 1: The establishment of resources, systems and infrastructure required to support the transition to EVs

The transition to EVs will require the coordination of resources and policies that are integrated across vehicles, the energy system and the built environment. Our recommendations on the establishment of such resources, systems and infrastructure are in Table 1 below.

Key amongst these is the recommendation to set an ambitious vehicle efficiency standard to increase the supply of EVs. Our submission to the DITRDCA consultation on New Vehicle Efficiency Standard recommends setting the standard to provide emissions reduction from new vehicles, closest to the reduction required in our 1.5 degree-aligned scenario (Climateworks Centre 2024). Further, it is recommended that the targets on both passenger and light commercial vehicles reach 0 $gmCO_2$/km by 2035 for all new light vehicles. This gives fifteen years for the remaining internal combustion engine (ICE) vehicles to transition out of the fleet, providing adequate time to achieve a fully electrified vehicle fleet that will support a cost-effective path to net zero by or before 2050.

Table 1: Resources, systems and infrastructure required to support the transition

Recommendations to support the transition to EVs		Impact on
Vehicle efficiency standards	A vehicle efficiency standard is the most effective way to increase the supply of EVs in Australia and support the transition (Climateworks Centre 2023b). With vehicle efficiency standards prevalent elsewhere in the world, Australian consumers currently receive a limited choice of fuel-efficient and zero-emission vehicles. Climateworks recommends setting an ambitious New Vehicle Efficiency Standard (NVES) with the standard reaching 0 $gmCO_2$/km by 2035 for all new light vehicles. This allows 15 years for remaining ICE vehicles to transition out of the fleet. At minimum, the NVES should be aligned with national emissions reduction targets and EV uptake targets. In our recent submission to the Department of Infrastructure, Transport, Regional Development, Communications and the Arts, we recommended that the Government implement option “C”- the most ambitious option that is closest to the reduction required in our 1.5 degree-aligned scenario (Climateworks Centre 2024).	Unlocking supply of EVs under the light-duty vehicles category (passenger and light commercial vehicles)
	Climateworks further recommends that the Government evaluate options for increasing uptake of low- and zero-emissions freight vehicles, including setting sales targets and/or vehicle efficiency standards.	Unlocking supply of EVs under the medium-heavy duty vehicles category
Financial and non-financial incentives	Climateworks recommends introducing additional financial incentives that support EV uptake and reduce ICE vehicle demand. Examples include reducing duties and charges such as stamp duties and providing tax incentives for EVs. The latter to be targeted at businesses and fleet managers and for low-income buyers. Examples can also include lower, emissions-based tolls and road user charges on heavy vehicles.	Supports the transition of individuals and businesses to EV

	Climateworks also recommends designing incentives with self-funding mechanisms. These reduce the tax-burden of transitioning to EVs –for example by using charges on higher emissions vehicles to fund financial incentives on EVs – and are more self-sustaining than schemes that simply provide direct subsidies to EVs.	
	Climateworks also recommends using non-financial incentives, particularly for freight vehicles, to help reduce the total cost of ownership and improve operator margins through the transition to EV and zero-emission trucks (Climateworks Centre 2023c). Examples include preferential access to road networks, loading and unloading zones, and markets for zero-emissions medium–heavy duty vehicles.	Supports the transition of businesses to EV, including heavy vehicles
Standardised data and information	Climateworks recommends that the Government lead data collection on sales and emissions from vehicles – with mandatory, reliable and consistent reporting from manufacturers and importers. Access to robust and transparent data on sales and emissions across all vehicle classes is needed to ensure accurate reporting and emissions tracking. Particularly for the NVES, this would include data on passenger and light commercial vehicle classes.	Supports the transition of individuals and businesses to EV
Optimised charging and discharge and charging infrastructure	Climateworks recommends encouraging charging at times of peak renewable energy supply to make integrating EVs into the electricity system more effective. This can also be planned and coordinated across EV-ready buildings and parking infrastructure. EV's can also offer the largest demand-side resource for load flexibility or demand management i.e. balancing renewable energy variability with emergency processes for discharging EV batteries to the grid (Australian Renewable Energy Agency 2022).	Supports the smooth transition of the energy grid system
	Climateworks recommends providing charging infrastructure guidelines and tools to accelerate placement of charging infrastructure nationally. This includes both general planning frameworks as well as updates to local and state planning schemes. Support for charging infrastructure plans includes coordinating a national EV charging network that ensures equitable access to charging infrastructure across all urban, regional and remote communities. Planning processes should also ensure adequate grid infrastructure upgrades that support large-scale charging stations and provide guidance for remediation and reuse of existing service stations. We also recommend that state and local planning regulations streamline approvals for installing EV charging stations within residential and commercial properties. State and local planning requirements for EV charging in new buildings and developments should also be informed by user behaviour and optimal locations.	Supports the transition of individuals and businesses to EV

ToR 2: the impact of moving from internal combustion engine vehicles, including fuel excise loss, existing auto industry component manufacturers and the environment

Shifting from ICE vehicles to EVs can have a significant impact on reducing Australia's transport emissions. In 2021, passenger and light commercial vehicles made up 63 per cent of Australia's transport emissions (Department of Climate Change, Energy, the Environment and Water n.d.). In other words, a transition to EVs even within just the light-duty vehicle classes, could reduce more than half of transport emissions.

Road pricing has long been discussed in Australia as a tool to manage congestion (Grattan Institute 2017, 2019). Road (or congestion) pricing has been successfully used in several countries (for e.g. London congestion price) and can offer an alternative to fuel excise pricing. If carefully designed, a use-based price can not only recoup the cost of road use in place of fuel excise, it can help to manage urban congestion and support low-emissions transport alternatives. In the London case study, funding generated through the scheme has been used to improve public transport and zero-emissions public transport fleet (The Conversation 2018). In Australia, focusing on congestion pricing may be important as EVs, which are inexpensive to drive, may lead to increased car travel. Some of the funds generated can be used to offer low-emissions transport choices for communities needing low-cost, accessible options. This could include, for example, improving public transport options in underserved regional and suburban areas. This would provide more Australians with zero-emissions transport options that work for them and improve liveability and productivity in urban areas.

ToR 4: the impact on electricity consumption and demand

The variable nature of renewable energy can be balanced with storage, additional geographically distributed renewable energy infrastructure, and demand management. The lowest cost amongst these is demand management and EVs can offer the largest demand-side resource for load flexibility (Australian Renewable Energy Agency 2022). This means EVs may have an important role in the future electricity system.

To integrate EV charging with the electricity system, Climateworks recommends the following policy, regulation and market development:

- **Learn from frameworks that made solar energy a success in Australia**. Particular focus should be given to introducing frameworks that build consumer demand and provide fair and equitable access. In particular, consider frameworks that address equitable access for renters in urban areas and also for communities in remote/regional areas. Examples include the Victorian Solar for Apartments program and the Queensland Decarbonising Remote Communities program *(Department of Energy, Environment and Climate Action n.d., n.d.; Queensland Government 2023)*.
- **Develop Vehicle-to-Grid (V2G) frameworks**. As EVs become more prevalent, the government should coordinate across transport and energy sectors. This would mean ensuring that not only can energy demand be served most effectively, but also the most is made of the potential for EVs to act as distributed energy storage. These can be built on learnings from the ARENA project on V2G and the South Australian experience with a bi-directional inverter (Australian Renewable Energy Agency 7 July 2020; Gouras n.d.).
- **Develop technical standards**. This includes technical standards governance, standards for new devices, rules for emergency calls on EV batteries, and rules for communicating price signals to encourage coincident charging with excess solar supply (Climateworks Centre 28 September 2023; Energy Security Board 2021).
- **Develop rules for both private and public chargers.** This includes publishing example contracts between customers and EV charger installers, and between customers and their Distributed Network Service Provider (AER Consumer Reference Group 2022).

ToR 7: any other relevant matters

An Australia-wide and coordinated approach to policy development will support a stable and growing EV market and help prevent perverse outcomes across varying state and territory policies.

As stated previously, a vehicle efficiency standard is the most efficient policy solution to stimulate the EV market. There are also complementary policies that can work alongside a vehicle efficiency standard to stimulate second-hand EV supply and provide more affordable options to all households (Climateworks Centre 2023b). As highlighted in our report *Accelerating EV uptake*, examples of such policies include those that:

- boost low-cost second-hand EVs imports by easing import restrictions and designing supportive conditions for parallel EV imports to Australia
- encourage all fleets – both from government and the corporate sector – to set ambitious EV targets, helping expand the second-hand market with EVs at a more accessible price-point.
- set clear national sales targets for the EV transition to provide industry and consumers with certainty that the future of vehicles is zero-emissions.

Australia can learn from its own history of effectively establishing new technology markets. Australian household solar panel uptake was underpinned by supportive policy, including standards and financial incentives such as feed-in tariffs and certificate schemes. As the market was established, government support phased out to allow it to operate independently (Grattan Institute 2015). Similarly, achieving current EV targets, and lifting Australia's ambition to a higher target, is possible with the right national policies in place.

At the same time, it should also be noted that a transition to EVs should be viewed as one of a suite of policies that will be needed to reduce emissions from the transport sector and meet Australia's national emissions reduction targets. Decarbonising transport cost-effectively also requires policies that enable shifting to low-carbon-intensity modes of transport (such as freight-on-rail, public transport, walking and cycling) and policies that support transport demand management, efficient transport networks and operations, and environmentally sustainable fuels and technologies during the transition period (Climateworks Centre 2023a).

Consequently, Climateworks has undertaken modelling of different transport decarbonisation scenarios. This forthcoming work looks at different pathways for transport decarbonisation, highlighting the importance of diversifying solutions beyond EVs, and we would welcome the opportunity to present our findings to you.

Thank you for taking the time to consider our submission.

Yours sincerely,

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