Public Transport Users Association

Submission to the inquiry into the transition to electric vehicles

Standing Committee on Climate Change, Energy, Environment and Water

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PUBLIC TRANSPORT
USERS ASSOCIATION

Introduction

The Public Transport Users Association (PTUA) welcomes the inquiry into the transition to electric vehicles, and appreciates this opportunity to contribute to it. The PTUA is a community-based organisation that advocates for a sustainable and equitable transport system with particular focus on improving public transport so that it is a more appealing and viable option for more people.

The PTUA believes that electric vehicles (EVs) are a vital component of what must be a multi-pronged approach to transport decarbonisation if it is to be successful (Brand, 2021; Lynskey et al., 2020; Milovanoff et al., 2020). We offer the following comments in response to the Inquiry's Terms of Reference.

Resources, systems and infrastructure

The availability of charging facilities is one of the leading factors affecting EV take-up and user satisfaction. Although the PTUA does not favour the use of taxpayer funds for the purchase of private motor vehicles, there is a stronger case for ensuring a comprehensive network of public charging stations around Australia so that households can have greater confidence in making EV purchases (Public Transport Users Association, 2018). Ubiquitous public charging facilities will go some way to relieving range anxiety that contributes to demand for larger and larger batteries that add to vehicle weight and cost. Public facilities also assist users of rental or share cars that do not generally have a need for charging facilities at home. We suggest the following principles to be applied in the provision of charging facilities:

- Avoid creating hazards or impediments to pedestrians and cyclists, such as cables on footpaths, narrowing of paths or cycle lanes, wheelchair-inaccessible crossings, etc;
- Favour sites that offer passive surveillance for user safety;
- Ensure consistent standards, open access and interoperability;
- Provide real time information about public charger availability (e.g. how many chargers at site, type/s, how many actually working, how many in use?), using open standards for integration with online maps and navigation applications.

Parking provision is already a significant component of the cost of construction. Requirements to provide vehicle charging facilities may add to these costs and further harm housing affordability. We believe this further strengthens the case for abolition of parking minimums. That said, we support provision of electric car charging facilities in such a way that it does not add to housing costs faced by non-users. The smaller space

and current requirements of electric bikes should not have such large cost implications, and we recommend that these be catered for in multi-dwelling developments.

However, if building standards for charging access are implemented, they should not prescribe built-in chargers over more versatile and less expensive standard power points into which chargers and other equipment can be plugged. This flexibility should still apply if wiring and connections for parking spaces are required to be above the standard 10 amps.

The electrification of public bus fleets will have large benefits for air quality, noise and neighbourhood amenity. However electric bus depots may create a significant load on local electricity distribution networks. We urge governments, public transport agencies and grid operators to collaborate to ensure bus depots can be sited in locations that support bus service operational efficiency while also having access to adequate and reliable electricity supply.

Impact of moving from ICEVs

The PTUA supports the transition to an electrified motor vehicle fleet and acknowledges the benefits that EVs offer relative to ICEVs in terms of exhaust emissions and, generally, their well-to-wheel greenhouse emissions (Challa et al., 2022). We further discuss the impact of EVs on the stationary energy sector in the *Electricity Consumption and Demand* section below, however in this section we address other environmental and social impacts of EVs and ICEVs.

Fuel excise

> "Fuel excise is a tax.
> Tax revenue is government income that is collected from individuals, corporate entities and some other sources. Payment of tax is compulsory, and importantly, there is no direct link between the payment made to the government and the provision of goods or services by the government to the payee. All tax revenue is paid into the Consolidated Revenue Fund" (Parliamentary Budget Office, 2022, p. 31)

Excise on fuel used by households and businesses not eligible for fuel tax credits (FTC) is a tax that flows into the consolidated revenue fund where it may be appropriated for use in a wide variety of programs approved by parliament. It is important to note that fuel excise is neither a road charge, nor does it cover all of the costs associated with road use (Parliamentary Budget Office, 2022; Public Transport Users Association, n.d.).

A range of government programs require funding to mitigate the negative impacts of road use such as environmental programs addressing air and water pollution (including particulate matter from road and tyre wear), and health programs addressing road trauma and other health impacts of car-dominated travel patterns (Gössling et al., 2021; Public Transport Users Association, 2018).

It is also important to note that transport is largely a derived demand. For example, travel from home to the workplace is not undertaken for its own sake, but due to the need to access the workplace. The mode of travel used will depend on factors such as cost, convenience and travel time. In turn these factors reflect many decades of high levels of government expenditure on road provision on one hand and chronic underinvestment in public transport services and active transport infrastructure on the other (Kimpton et al., 2018; Reynolds, 2014). This imbalance in transport provision has resulted in a high mode share for private cars that does not indicate an inherent preference for private motor vehicle use in all circumstances, but rather it indicates rational behaviour in the face of limited viable options (Convery, 2024).

A larger role for active and public transport in meeting travel demand would result in lower negative impacts from transport and more affordable mobility options for many people, including people who are unable to drive (Gössling et al., 2021, 2022; Lalive et al., 2013). The ability of active and public transport to offer viable options for more people would be boosted by greater investment in related infrastructure and services.

In recognition of the fact that car travel is a derived demand with many negative externalities, revenue derived from fuel excise, or any replacement such as road user charging, should be made available to a broad suite of measures that address the derived demand for access to workplaces, services and other destinations (Litman, 2024a). Allocating funds in accordance with the sustainable transport hierarchy would provide more affordable and sustainable options to meet travel demand and address past imbalances in funding that favoured private motor vehicle travel (Litman, 2024b). Expanding the range of viable options for access would better meet the needs of people who are unable to drive, minimise the negative externalities of road use, and enable congestion to be more effectively managed.

In addition to the fiscal impact of the decline in fuel excise revenue, the decline of this revenue may further reduce the extent to which road use externalities are internalised through taxes and charges.[1] This strengthens the case for a form of replacement revenue that internalises road transport social costs and reduces the external costs borne by the rest of society. As discussed above, this revenue should be made available

1 Based on some valuations, the social costs of air pollution and greenhouse emissions from road transport are less than the amount of fuel excise that is collected. Assuming EVs eliminate all three of these (air pollution, GHG and excise), revenue would decline more than negative externalities. This would further increase the 'road deficit' – the extent to which social costs and government expenditure exceed taxes and charges on road users (Public Transport Users Association, n.d.).

to deliver sustainable and affordable access in line with the sustainable transport hierarchy.

Environmental and social impacts

Particles such as microplastics from tyre and road wear are major contributors to air and water pollution. Microplastics have been linked to a range of health issues such as cardiovascular disease and stroke (Marfella Raffaele et al., 2024). A trend towards increased vehicle weight from EV batteries and changes in fleet composition is contributing to additional road and tyre wear (Krantz, 2023), as well as increased risk of death or serious injury to other road users in a collision (Cheese, 2022).

We refer the Committee to pages 1-6 of our July 2018 Submission to the Select Committee on Electric Vehicles for further discussion of impacts of moving from ICEVs to EVs (Public Transport Users Association, 2018).

Opportunities for savings

Transport is one of the largest areas of expenditure for some households, with transport-related financial stress particularly acute in areas that are underserved by public transport (Gössling et al., 2022). These costs are not just restricted to fuel, but also include thousands of dollars each year on standing costs such as insurance and registration, as well as tolls and maintenance (Bureau of Infrastructure, Transport and Regional Economics (BITRE), 2017). Vehicle loan repayments can be particularly burdensome for low income households that are faced with “forced car ownership” due to the under-development of transport alternatives (Currie et al., 2018; Walks, 2018). Due to the transaction costs or penalties involved and the paucity of transport alternatives, households may often be reluctant to extricate themselves from contractual obligations for motor vehicle finance even when circumstances make payments less affordable (Settle, 2020). This can make car ownership a financial straightjacket that forces major sacrifices in other areas of household expenditure.

The high costs of owning and operating cars has contributed to growing interest in “car-lite” lifestyles that minimise the number of cars owned in favour of active and public transport (Convery, 2024; Visontay, 2023). Large savings can be made by households by combining bikes - particularly cargo bikes and/or electric bikes - with public transport and avoiding the standing costs of car ownership (Nello-Deakin & Brömmelstroet, 2021). For example, household savings in the region of $1,000 per month are plausible from

reducing the number of cars that a household owns and using active transport, such as electric bikes, and public transport for some journeys instead (Bowen, 2024).

While conventional bicycles may not be perceived as a viable option for some people, electric bikes make cycling a more accessible method of transport by reducing the difficulties posed by distance, terrain or fitness (Rérat, 2021). This has made ebikes a compelling option in areas where a conventional bike may be perceived as requiring too much effort (Lowans et al., 2023; Plazier et al., 2017). Electric bikes also make riding a viable option for many journeys within regional cities and towns due to the smaller geographic size of regional centres compared to major cities (Handy et al., 2012). The ebike-rail combination also enhances affordable mobility in areas with poor local public transport services such as outer suburban areas. The much lower acquisition cost of an ebike compared to a car has helped ebike sales to outpace those of electric cars around the world, despite the availability of electric car purchase incentives in many jurisdictions that in some cases equate to the entire purchase price of an ebike (Hawkins, 2019; Toll, 2022; Visontay, 2023).

Recommendations:

Opportunities for transport cost savings could be made available to more people by government action on the following fronts:

- Expanding the coverage and connectivity of safe cycling routes to increase the actual and perceived safety of using eBikes;
- Expanding the temporal and spatial coverage of electrified public transport services including frequent and direct electric buses to enable travel by electric vehicle without the high upfront and standing costs of a car.

Electricity consumption and demand

The transition to EVs will increasingly mean that the stationary energy and transport sectors must be considered in tandem when considering energy consumption and greenhouse emissions. The impact of this transition on electricity consumption over time will depend upon the rate of EV uptake, the types of EVs that are adopted and their usage (Graham & Havas, 2021). Energy consumption by EVs varies significantly by weight, with American “pick-up” style vehicles consuming two orders of magnitude more energy than electric bicycles (Weiss et al., 2020). This highlights the value of encouraging smaller, lighter electric vehicles such as eBikes and small passenger cars over SUVs and light commercial vehicles for predominantly passenger transport (Huether, 2022).

For EV owners that also have small-scale rooftop solar there is sometimes a tendency for them to think of energy used by their EV as cost-free and emissions-free and to not consider broader interactions with the electricity grid (Martin, 2022; Nauze, 2019). However energy consumed by a prosumer's[2] EV is energy that is not exported to the grid where it could have displaced energy from highly polluting and/or expensive sources. For example, EV energy use requiring subsequent recharging during the day when gas peaking plants are in operation will result in reduced displacement of gas-fired generation. This gas-fired generation that was not displaced produces emissions at the applicable emissions intensity of the plant/s involved and will likely be one of the more expensive contributors to grid supply at that time. Similarly, recharging at nighttime will likely result in increased coal-fired electricity consumption and associated emissions (Martin, 2022).

The effect of increased electricity consumption for transport can also be witnessed at a larger scale. Norway's electricity production is almost entirely based upon renewable energy sources which allows its growing EV fleet to be charged with zero-emissions electricity. However Norway is also a significant exporter of electricity to neighbouring countries, and domestic electricity consumption to power EVs means that less zero-emissions electricity is exported to elsewhere in northern Europe where it could have displaced an equivalent amount of fossil fuel-fired electricity (Martin, 2022; Milne et al., 2022).

These household scale and international scale examples show that the emissions intensity of the grid's marginal electricity producer is relevant when considering the climate benefits of EVs, even when the vehicle is ostensibly charged by potentially-local renewable energy (Martin, 2022). While this emissions intensity may be lower than the equivalent travel by ICEV, it highlights that energy and systems efficiency, and not just electrification, are important for decarbonisation (Huether, 2023). For example, recharging an electric bike after 20km of travel will allow much more carbon-intensive generation to be displaced by renewables than if an electric SUV is recharged after 20km of travel (Hiel, 2024). Furthermore, 20km of travel on existing public transport services will not require any additional charging and the full amount of renewable generation will be available to displace carbon-intensive generation. Therefore we stress the importance of pursuing an efficient multimodal transport system rather than just efficient cars (Litman, 2005).

An area where EVs may assist with decarbonisation of the stationary energy sector is through vehicle-to-grid (V2G) technologies. V2G has potential to provide additional supply at times of high demand that might otherwise be met with fossil fuel peakers, along with balancing services (Jones et al., 2021). The value of V2G technologies obviously depends on the timing and duration of grid connection. An EV that is driven to a large carpark and left unconnected during the day before being driven home to be

2 A prosumer is someone who both produces and consumes energy. For example, this may be production from rooftop solar PV and consumption from the grid respectively.

connected to the grid in the evening and overnight will be reliant on charging when grid demand is high and/or solar contribution is low. In contrast, a vehicle that can be left plugged in during the day while its owner travels by active and/or public transport can use the “duck curve” to its advantage and be available for discharge during the evening peak. Even a vehicle that has been able to charge during the day but is then driven during the evening peak will make less of a contribution to meeting grid demand than a vehicle that is parked and plugged in at that time.

Extending this point further, having the battery connected to the grid at all times maximises its contribution to absorbing excess energy and releasing it in cases of high load or unscheduled supply disruptions. Furthermore, where weight minimisation and energy density are not as crucial as they are in light duty BEVs, battery chemistry can reflect greater focus on cost and environmental and human rights concerns (Dehghani-Sanij et al., 2019; Duehnen et al., 2020; Sharma & Manthiram, 2020).

Opportunities in manufacturing and the automotive value chain

While there seems little prospect of a return of mass-production passenger car manufacturing in Australia (Hogan, 2020), there are stronger prospects for more specialised manufacturing operations (Feszczuk, 2022; Packham, 2022; Spence, 2021). The electrification of Australia’s bus fleet is a substantial procurement task that will require ambitious scaling up of capacity (Rabe, 2021). We encourage Australian governments to collaborate with public transport rolling stock and fleet manufacturers to ensure their workforce needs can be met, and there is sufficient certainty around the future pipeline of orders so that investment decisions can be made with confidence.

Impact of limited EV supply

Since the departure of the last mass-market vehicle manufacturers in the 2010s, the passenger vehicle market in Australia has been almost entirely import-dependent. Although it could once have been argued that incentives for vehicle ownership and use were helping to support employment in a substantial Australian industry, this is no longer the case.

Policy measures around motor vehicle purchase will primarily determine the type and nature of vehicles imported to Australia, and the input needs for energy and

maintenance requisites when vehicles are operated in Australia. There is a positive role therefore for industry policy measures that incentivise the importation of EVs where these directly displace the importation of ICEVs.

The fleet energy efficiency standards currently in development are a positive development in this direction and help align Australia with best practice in other OECD jurisdictions. It must be ensured however that the purpose of these standards is not undermined by over-generous saving provisions or carve-outs for entire categories of vehicles that contribute substantially to carbon emissions. In particular we are opposed to the reclassification from the 'passenger' to 'light commercial' vehicle category of models that notwithstanding their cargo capacity are primarily used for passenger transport. This has the consequence of perpetuating the high-emissions status quo and impeding the development of Australian mass markets for electric vehicles with bona fide trade and commercial applications.

Favourable treatment for larger "light" vehicles may also reinforce manufacturers' tendencies towards marketing higher-margin vehicles at the expense of offering more affordable vehicles in the Australian market (European Federation for Transport and Environment, 2024). Taxation and other regulatory settings should ensure that heavier vehicles are not favoured over lighter vehicles (Doctors for the Environment Australia, 2024), and that private motor vehicles are not favoured over active and public transport[3].

3 For example, employee benefits in the form of private use of electric cars are not subject to Fringe Benefits Tax, whereas equivalent exemptions are not currently available for public transport or for bicycles whether conventional or electric.

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