Advance heavy road transport applications

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AUSTRALIAN HYDROGEN COUNCIL

Decarbonisation of Australia's transport sector is becoming increasingly urgent. Transport is Australia's second largest emitter, making up 19 per cent of current greenhouse emissions.

Of transport emissions in 2019, light vehicles were responsible for 62 per cent, and rigid and articulated trucks were responsible for 20 per cent emissions.[82]

Clean hydrogen can usefully decarbonise transport and can already compete as a fuel with existing liquid fuels. In work for the Clean Energy Finance Corporation, Advisian notes "the comparatively high cost of liquid fuels supporting the transportation sectors, yields a high relative competitiveness".[83] This is also consistent with CSIRO's National Hydrogen Roadmap.[84]

Transport applications also provide significant hydrogen offtake potential, which can help grow the hydrogen industry and have the advantages of having a public profile.

4.1 Hydrogen fuel cell vehicles play a vital role

Experts acknowledge that fuel cell electric vehicles (FCEVs) will work alongside battery electric vehicles (BEVs). As noted in the National Hydrogen Strategy, hydrogen fuel carries significantly more energy than the equivalent weight of batteries. This is particularly useful for buses and trucks that must travel long distances, or where battery weight compromises effective payload. It is also suitable for commercial use, where effective range and recharging/refuelling times affect the bottom line.[85]

FCEVs have advantages over BEVs for heavy (line haul) transport and can be expected to comprise the bulk of future trucks for road freight. This has been confirmed by Advisian for the Clean Energy Finance Corporation,[86] where the line haul vehicle sector is considered to have moderate dependence on hydrogen for decarbonisation, with a rating of 6 out of 10.

For smaller truck sizes and buses, the duty cycle/route associated with vehicle use will likely dictate which technology reflects a better investment. Advisian found that the return to base (often rigid truck) vehicle sector has a low dependence on hydrogen for decarbonisation (rating 4 out of 10), with BEVs likely to be "more important" and to potentially have a cost advantage for shorter routes.[87]

As an example, analysis for a US transit company on the most cost-effective approach for a particular bus route found that the 12-year lifecycle cost favoured FCEVs over BEVs.[88] The main reason for this was that the route in question was long enough to require coverage by 1.5 BEV buses but only 1 FCEV bus. The route required a fleet of 34 BEV buses (at US$60.5 million total cost of ownership)[89] compared with 20 FCEV buses to cover the same passenger outcomes (at a total cost of US$47.5 million).

Hydrogen provides benefit for lighter vehicles as well; these are in fact on our roads right now. An FCEV can be filled from a relatively familiar looking bowser in just a few minutes. This will allow users to operate FCEVs in a similar manner to how they currently operate an internal combustion engine vehicle. This is of benefit to those who prefer the current mode of refuelling, including people without off-street parking that allows for overnight recharging.

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53 Wood et al. (2021a), page 29.
54 Advisian (2021), page 43.
55 Bruce, Temminghoff, Hayward, Schmidt, Munnings, Palfreyman and Hartley (2018).
56 See California Fuel Cell Partnership (2021), page 9.
57 Advisian (2021), page 43. See also Shell (2021), page 10.
58 Ibid., page 55.
59 Foothill Transit (2020).
60 Covering capital costs of buses and refuelling infrastructure, 12 years of fuel and mid-life maintenance.

4.2 Diesel replacement is the first step

CSIRO[90] and other observers have noted that hydrogen has reached price parity with diesel, and so diesel presents a clear near-term opportunity for hydrogen sector development. Replacing diesel is also desirable from a public health perspective. This applies to all uses of diesel, including remote area power systems and trains.

Looking at road transport opportunities in diesel replacement, ABS data[91] in Table 3 shows that trucks and buses are predominantly fuelled by diesel. In 2020 there were over 600,000 diesel trucks (rigid and prime movers/ articulated) in circulation.

Vehicle type	Total fleet	Number of vehicles that use diesel	% of total that use diesel
Passenger vehicles	14,679,246	1,948,299	13%
Light commercial	3,407,014	2,340,494	69%
Rigid trucks (inner city deliveries, small volume freight)	535,513	515,871	96%
Articulated trucks (long haul, high volume freight)	105,139	104,009	99%
Buses	100,470	80,821	80%

Table 3: Diesel road vehicles in Australia in 2020, with source data from ABS (2020)

The need for road transport will only increase in future years – in fact we have estimated that future requirements in each category (across all current fuel types, based on past growth rates) might be close to double by 2050.

Looking at trucks only, this could mean 200,000 articulated trucks on the roads. Given the articulated truck category is considered to have a moderate dependence on hydrogen for decarbonisation, we can see this as possible minimum case for hydrogen planning in road transport.

For the rigid truck category, even if BEVs will be better for most duty cycles/routes, a smaller share of one million future rigid trucks as FCEVs is still a significant volume.

61 Bruce et al. (2018).
62 Australian Bureau of Statistics (2020).

4.3 Barriers to hydrogen in transport

In general, transport operators and vehicle manufacturers see the carbon reduction potential in using hydrogen, but many cannot yet see the business case. This is for a combination of reasons, including:

- **No refuelling infrastructure:** the demand for FCEVs will not grow until an adequate refuelling network exists; however, investment in refuelling infrastructure is difficult to justify for the private sector in the absence of a significant vehicle fleet to use it. Development of refuelling infrastructure and vehicle supply thus need to largely occur in tandem, with flexibility built into planning.
- **Insufficient market demand to draw through vehicle supply:** vehicle manufacturers report that they are waiting for more certainty of demand to produce vehicles at scale.[92] The lack of demand certainty is largely a result of a lack of clear policy around emissions or fuel efficiency standards, with some automakers reported as saying that this is why they do not send their lowest emission vehicles to Australia.[93] The fact that we are a right-hand drive market is unrelated, but this further amplifies the problem of low supply; we rely on technology designed for the UK and Japan to develop first.
- **No market data about the full lifecycle cost of a hydrogen vehicle:** it is difficult for procurement agencies and fleet operators to know how to consider total costs of ownership (or return on investment) given the industry is still in development and that vehicles have long lives. Adoption may be slow (under 5 per cent in 2030) until early commercial pilots provide commercial operators with strong validation of a fully commercial product and business model.
- **No second-hand market:** first owners want to be able to resell vehicles at good prices.[94] This is an issue even today with diesel vehicles as there is no ready local disposal route for right-hand drive vehicles in the region.
- **Costly inconsistency with overseas vehicle standards:** Australia imports over 90 per cent of its medium trucks from Japan, and around two thirds of heavy trucks from Japan or Europe. However, Australian design standards are different from all overseas markets: Australian trucks cannot be wider than 2.5m, which is misaligned with Europe (2.55m) and North America (2.6m). Vehicles based on EU or US market designs are around 60 per cent of new heavy trucks, and the cost to redesign for our market is estimated at A$15-$30 million a year.[95] Future BEV and FCEV trucks will be even more costly/ difficult to redesign. We note that the Australian Government is currently addressing this issue.[96]

BEVs face some of the same challenges, but the need for public refuelling infrastructure for FCEVs is greater than recharging for BEVs, and BEVs have had a head start on vehicle supply.

A further challenge is how vehicle availability and lifecycles align (or misalign) with procurement processes. While fleet procurement allows purchase in bulk – thus enhancing the business case for vehicle purchasers – this is also a challenge.

For example, buses are a promising segment for strong adoption, with centralised fleets owned by public agencies. However, procurement occurs only periodically, near the end of the operational lifetime of an existing fleet, which is typically 15-20 years. Contracts for these extended timeframes still tend to value lowest cost, which advantages existing diesel vehicles and locks them in for years. There are also sometimes many contracts, which adds unwanted complexity; for example, Queensland has 18 contracts for regional buses only, and NSW has 15 contracts for its bus network.

These issues do not encourage private sector operators to take on the risk of new technologies.

63 This is regularly reported to AHC, see also Shell (2021), page 7.
64 Wood et al. (2021a), page 17.
65 Shell (2021), page 7.
66 Department of Infrastructure, Transport, Regional Development and Communications (2021), page 5.
67 Ibid.

4.4 Recommendations

There is a need for clear public policy support for FCEVs.

First, the transport sector is complex, with:

- many vehicle types used over different uses, duty cycles and routes;
- many different owners, stakeholders and contractual parties,[97] each with their own purchasing criteria and timeframes; and
- long lived equipment (including vehicles); and
- significant infrastructure requirements.

When we combine these characteristics with the fact that vehicle design and production is an expensive and multi-year process (usually more than seven years for a commercial vehicle), we can see that transitioning transport to BEVs and FCEVs will require coordination and planning if we are to get to scale.

Amplifying this need is the cost of not acting. The Grattan Institute has shown that slow uptake of zero emissions trucks could mean most of the fleet still uses diesel in 2050.[98] Further, the Truck Industry Council notes that almost 42 per cent of the nation's truck fleet above 4.5t gross vehicle mass (GVM)[99] was manufactured before 2003 when basic, or no, exhaust emission regulation existed.[100]

This is clearly problematic given that trucks represent around 4 per cent of total Australian carbon emissions (based on 2019/2020 data).

4.4.1 Fund key transport projects in the national interest

Given the urgent need to tackle decarbonising transport, and the important role of hydrogen within this task, it is vital that the Australian Government helps to close the investment gap for hydrogen in transport applications.

There are also knowledge gaps which affect the investment gap. As noted by Advisian,[101] manufacturers need to provide supply to create fleet sizes that justify the (unclear) potential infrastructure spend, and purchasers need proof of fuel consumption and operational cost benefits over the life of a vehicle (also currently unclear).

Further, it is important to obtain data about vehicle performance and other issues in Australian conditions:

The heavy vehicle sector in Australia is subject to subtly different influences compared to other countries around the world. The key differences that might influence our selection and rate of uptake of low emission vehicles are:

- *relatively long vehicle life;*
- *less rail competition;*
- *exposure to hot, low humidity environments for sustained periods;*
- *minimal exposure to freezing / salt laden conditions; and*
- *long stringy power grid with limited capacity to accommodate heavy electrical demand variation.*[102]

68 Shell (2021, page 18) notes that globally there are around three million companies in road freight. "Many of them are small or very small businesses, making the sector highly fragmented and competitive with low profit margins. These companies are responsible for transporting almost 22 trillion tonne-kilometres of cargo each year. In other words, it is roughly equivalent to a large truck with 20 tonnes of cargo travelling around the equator 30 million times".
69 This is based on trucks being retired due to age only. Wood et al. (2021a, page 31) provide an example where sales of zero-emissions trucks reach 1 cent by 2030, 50 per cent by 2040 and 100 per cent by 2050, without any policy to cause diesel trucks to retire early.
70 These are heavy trucks, which around 30 per cent of all rigid and articulated trucks (calculated from Bureau of Infrastructure, Transport and Regional Economics, 2019, page 18).
71 Truck Industry Council (2019), page 11.
72 Advisian (2021), page 52.
73 Ibid., page 50.

This means that there needs to be a range of vehicle trials in Australia to both help close the investment gap by getting projects established, and to provide the necessary data for subsequent investment. This would appear to be best achieved with a few significant projects that:

- provide for heavy transport (line haul) in the first instance, with room to scale up;
- also facilitate lighter transport, with room to scale up; and
- are sited in major freight corridors and connected to ports via hubs.

In its work for the National Hydrogen Strategy in 2019, Aurecon[103] recommended that trials should be more than A$5 million, and that investment within the A$20-$100 million range would allow for a 'substantial-enough' size of fleet.

Aurecon provided analysis of a range of different trial options, including cars, buses, materials handling and different sized trucks. Of the 13 options, Aurecon positively ranked the following:

- a trial of around 9 buses (said to be a medium sized fleet) for metropolitan routes (3.8/5);
- an integrated pilot of a larger 35 vehicle bus fleet for 'park and ride' use across three commuter suburbs, with three refuelling stations (3.5/5);
- an integrated pilot for road freight, trialling around 90 vehicles (3.2/5).[104]

Using a combination of Aurecon's suggested fleet sizes for bus and truck trials, industry estimates, and assuming costs based on total cost of ownership estimates from Advisian, we suggest some preliminary costings in Table 4 below. The costs are total cost of ownership across 12 years and include access to refuelling infrastructure, and operations and maintenance.[105] We have rounded up some of the Aurecon fleet numbers to the nearest 20, to match the Advisian figure of 20 vehicles per refuelling station.

Vehicle	Approximate fleet size	Indicative cost (2021)
Light truck (50,000 km/yr)[106]	Medium – 10	A$6.3 million
	Large – 40	A$25.2 million
Bus (100,000 km/yr)[107]	Medium – 10	A$12 million
	Large – 40	A$44 million
Heavy truck (200,000 km/yr)[108]	Medium – 20	A$38.4 million
	Large – 100	A$192 million

Table 4: Indicative total costs of ownership for near term FCEV fleets

74 Aurecon (2019), page 10.
75 These hypothetical projects were considered to highly satisfy most or all of the criteria Aurecon set out for success, as did a mining truck trial and a large passenger fleet trial.
76 A refuelling station costs around US$1.9 million (Department of Energy, 2020, page 2).
77 Using Advisian's assumptions for light trucks, which result in a total cost of ownership of A$1.08 for a vehicle travelling 50,000 km/year.
107 We note an Australian bus would usually travel 80,000 to 100,000 km a year, for a bus that is out all day. A whole of fleet average is closer to 55,000 km/yr. Bus costs are also higher than for trucks, given extra requirements for passenger fit outs; for example, the hydrogen city bus which sold to Auckland transport in 2021 was NZ$1,175,000.
108 Using Advisian's assumptions for heavy trucks, which result in a total cost of ownership of A$0.8 for a vehicle travelling 200,000 km/year.

The figures in Table 4 are dependent on a range of assumptions, but they provide a useful indication of the quantum of investment required. For example, we can see that a heavy truck trial for a medium sized fleet could be around A$40 million, and a much larger fleet may be closer to A$200 million.

Looking at a selection of global truck trials, we can see these figures are not unreasonable. Table 5 shows four examples, with a range of sizes and announced costs. While it is not possible at this stage to realistically compare costs (we don't know the basis for the overseas costings) we can see that the indicative costs above fall within the parameters of what has already been announced to date.

Project	Description	Proponents	Announced cost
Shore-to-Store (S2S) project[109] USA	Announced June 2021, a 12-month demonstration of 10 FCEV heavy duty (Class 8) trucks and two refuelling stations, also including two battery-electric yard tractors, and two battery-electric forklifts. Designed to assess the operational and technical feasibility of the vehicles in a heavy-duty setting, as well as to expand infrastructure to support hydrogen throughout California. Vehicles' duty cycles will consist of local pickup and delivery and drayage near the Port of Los Angeles and short regional haul applications.	Port of Los Angeles with more than a dozen public and private sector partners	**US$82.5 million (A$112 million)** The California Air Resources Board (CARB) grant of US$41.1 million. Project partners are contributing the remaining US$41.4 million in financial and in-kind support.
HECTOR (Hydrogen Waste Collection Vehicles in North West Europe)[110]	EU-funded project that deploys and tests seven fuel cell garbage trucks in seven cities across North West Europe. Range from container trucks to front arm loading trucks, both left- and right-hand drive. Approved in January 2019 and will run for 4 years. Pilot sites will cover a wide range of operational contexts but normal operating conditions. Some trucks are in city centres, others in rural areas. Some collect municipal waste on a fixed schedule, others collect industrial waste on a flexible schedule. Using existing hydrogen refuelling infrastructure and ideally green hydrogen.	Coordinated by the European association HyER (Hydrogen Fuel Cells and Electro-Mobility in European Regions) Aberdeen City Council Municipality of Groningen SUEZ recycling and recovery Netherlands	**€9.28 million (A$14.9 million)** The EU is funding €5.57 million of this.
Fast-Track Fuel Cell Truck project[111] USA	Deploy five plug-in hybrid fuel cell-electric heavy duty (Class 8) trucks in Southern California, from 2018 to 2020. Designed to validate the commercial viability of heavy duty zero-emissions fuel cell-electric hybrid trucks operating in demanding, real-world applications. Trucks supported by charging and mobile hydrogen fuelling infrastructure at the Port of Los Angeles and in the San Diego region. The vehicles will be fuelled onsite from mobile tube-trailer and at public hydrogen stations.	TransPower, TTSI, Frontier Energy, Center for Sustainable Energy, Cummins (Hydrogenics), Loop Energy, Peterbilt Motors and OneH2.	**US$6.2 million (A$8.5 million)** California Air Resources Board (CARB): US$5,081,478 Matching funds: UD$1,139,950

109 Port of Los Angeles (2021).
110 Interreg North-West Europe (n.d.).
111 California Air Resources Board (2020).

Project	Description	Proponents	Announced cost
H2Haul[112] Europe	Develop and deploy 16 zero-emission long-haul heavy-duty fuel cell trucks at four sites (Belgium, France, Germany and Switzerland). Began in 2019 and will run for five years. Intent is to drive the fuel cell trucks for more than one million kilometres during normal commercial operations, also to develop the business case for the further deployment of heavy-duty fuel cell trucks. Also new high-capacity hydrogen refuelling stations.	15 industry partners	**€12 million from FCH JU[113] (A$19.2 million)**

Table 5: Trial FCEV truck projects

There is also the question of location, and whether there are better refuelling station options for various transportation corridors. In work for the National Hydrogen Strategy, the Bureau of Infrastructure, Transport and Regional Economics (BITRE)[114] recommends locations for consideration for initial hydrogen refuelling station deployment to service the Sydney, Melbourne and Brisbane inter-capital freight corridors (both directions). Table 6 provides some detail about these routes and freight volumes.

Recommended freight corridor	Distance	Tonnes in 2013-14	Trips per day (2013-14)
Sydney–Melbourne	850 km	8.7 million tonnes	1200
Sydney–Brisbane	917 km	4.1 million tonnes	556
Melbourne–Brisbane	1776 km	1.6 million tonnes	220

Table 6: BITRE freight corridor recommendations, with key facts

BITRE notes that the overlap in the key urban freight centres involved in inter-capital freight will allow refuelling infrastructure to be used for multiple routes, including refuelling for port-based hydrogen-fuelled freight vehicle operations (potentially a back to base application).

112 H2Haul (n.d.)
113 It is not clear if this is total or only the FCH JU contribution. See Ruf, Baum, Zorn, Menzel and Rehberger (2020), page 32.
114 Bureau of Infrastructure, Transport and Regional Economics (2019), pages 4-5.

Recommendation 6: Trial heavy transport

We recommend that the Australian Government funds:

- At least two heavy vehicle trials of large fleets, at a minimum amount of A$200 million each, focussed on heavily-trafficked truck routes (e.g. Sydney-Melbourne).
- At least three larger trials for lighter trucks for logistics near hydrogen centres, at A$25 million each.
- At least two larger trials for bus routes near hydrogen centres, at A$45 million each for 40 buses (or a combination of smaller and larger, at A$12 million per small trial for 10 buses).

Funding would be drawn from the Net Zero Fund and should be aligned with funding from state/territory governments. Some of this work might be funded by the Future Fuels Fund, which we note has just under A$50 million available after the first BEV round.[115]

Processes to commence these projects should start as soon as possible given that they will take time to implement; beyond the contracting process (which may take a year) there will be time required to procure the vehicles in sufficient numbers.

Use of funding to replace diesel should also extend to other means of transport – such as trains and ferries – as the business cases and demand for these evolve.

We note that in its work for the National Hydrogen Strategy, Aurecon[116] also suggested that there was merit in an integrated pilot 'Hydrogen Demonstration Zone' of 3km with 375 passenger fleet vehicles and eight refuelling stations (3.5/5). This concept could have a place within a hydrogen hub, as discussed in Chapter 2.

4.4.2 Incentivise FCEV uptake through policy settings

Governments can provide the right signals by setting targets and reducing barriers to vehicle purchasing. They can help create the demand that will draw through private investment in vehicles and infrastructure. This will give certainty to manufacturers and investors in the early stages.

Policy settings that will create demand for FCEVs will need to value the public benefit of clean hydrogen relative to incumbent fuels. This needs to be undertaken as part of a well-considered and articulated economy-wide approach.

Set vehicle emissions standards

Carbon emissions standards for all vehicle types should be a priority to encourage the market. Enforceable standards will send the right economic messages to vehicle manufacturers about the value of lower emissions vehicles in Australia and improve their internal business cases for sending vehicles here. The standards to be employed will need to be consistent with low-emission vehicles that are being mass-produced for larger markets.

It is also worth investigating a low carbon fuel standard that sets carbon intensity benchmarks for fuels, taking into account the emissions for lifecycle of the fuel.

Address tax settings

Tax settings can be amended to improve the business case for vehicle owners and operators. Examples include:

- Tax breaks or instant asset write-off on the purchase of hydrogen powered trucks, buses and

115 Taylor (2021).
116 Aurecon (2019), page 50.

trains.[117] For example, the California Hybrid and Zero Emission Truck and Bus Voucher Incentive Project (HVIP) is a point-of-sale price reduction in the purchase cost of clean medium and heavy duty trucks. This is as much as US$120,000 for electric prime movers.[118]

- Scrapping import duties on zero emissions vehicles (ZEVs), potentially saving consumers about 5 per cent of the upfront vehicle cost. These duties were originally created to protect Australian auto manufacturing and are no longer needed.[119]
- Exemption from luxury car tax, and for the states, removing the motor vehicle stamp duty for all zero-emissions vehicles, which would reduce the cost of new EVs in several states by 4-6.5 per cent, and help to stimulate the second-hand market for zero-emissions vehicles.[120]

Set vehicle targets

Governments can also set vehicle targets. There is some precedent for this: both NSW and Victoria have announced targets for 50 per cent ZEVs by 2030, but they have not yet established a means of enforcement. AHC supports a 50 per cent zero emissions vehicle target for fleets of cars, buses and ancillary vehicles for 2030. This would include privately operated public transport fleets and government owned logistics providers.

The Grattan Institute[121] suggests that ZEV sales targets are an alternative to the (more effective) policy of vehicle emissions standards. Grattan notes that this approach would need to be combined with a form of tradeable credit scheme (similar to the Large-scale Renewable Energy Target), to provide for vehicle manufacturers who cannot meet the target to be able to purchase credits from those who exceed it.

Support coordinated procurement processes

Commercial and government fleets provide opportunities for FCEVs to establish a foothold. Many fleets operate on a ‘back to base’ basis and will require a single point refuelling station to be developed rather than rely on having access to refuelling infrastructure at several locations. Further, the purchasing power of fleet operators who buy multiple vehicles in a single transaction will help grow the penetration of FCEVs faster than individual purchasers.

It is therefore important that procurement processes provide for ZEVs, and also that they allow for changes during the contract for innovations and cost recovery for operators.

Ideally, procurement processes would also be consistent across contracts in providing for zero emissions vehicle outcomes. At the least there could be a role for the Australian Government to provide information to the market about the various contract durations and renewal periods.

It is also important to value the multiple lives for FCEVs. Several AHC members have imported right hand drive FCEVs into Australia or are in a position to immediately manufacture them to client specification if required. However, potential operators have expressed a reluctance to adopt FCEVs due to the risk of them not being able to sell into a second hand market.

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117 The Truck Industry Council (2019, page 4) suggests the following:
(1) A 30% depreciation allowance that offsets the costs associated with the purchase of a new Australian Design Rules (ADR) 80/03 diesel only truck and a 50% depreciation allowance that offsets the costs associated with the purchase of a new alternatively fuelled and powered truck for pre-ADR 70/00 (i.e. pre-1996) operators; or
(2) A 15% depreciation allowance that offsets the costs associated with the purchase of a new ADR 80/03 diesel only truck and a 25% depreciation allowance that offsets the costs associated with the purchase of a new alternatively fuelled and powered truck for ADR 70/00 and later (post-1996) operators.
(3) Acknowledging that some operators will not be in a position to purchase new vehicles, the government could consider providing a 15% depreciation allowance towards the purchase of used ADR 80/02 and ADR 80/03 emissions controlled trucks.

118 California HVIP (n.d.).

119 Wood et al. (2021a, page 19) notes “Import duties were intended to protect Australian auto manufacturing. With the decline of that industry, they are no longer fit-for-purpose, and are increasingly being removed via free trade agreements. Vehicles from countries including Japan, Korea, and the US already attract zero import duty due to free trade agreements”.

120 Ibid.

121 Ibid., page 24.

We suggest that fleet operators be incentivised to make their refuelling infrastructure available to secondary users of FCEVs (in a way which does not impede their commercial operations) as a means of ensuring that a market for old fleet stock can develop.

Recommendation 7: Incentivise markets in FCEVs

We recommend that the Australian Government:

- Sets carbon emissions standards for all vehicle types.
- Provides tax offsets for vehicle purchases and removes taxes that inhibit purchasing.
- Sets a 50 per cent ZEV target for fleets of cars, buses and ancillary vehicles for 2030. This would include privately operated public transport fleets and government owned logistics providers.
- Supports ZEV fleet procurement across state/territory and the federal government, with information sharing and guidance on relevant matters, such as available operators, manufacturers and optimal contractual measures for the evolving markets.

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