22 March 2024

The Committee Secretary
Standing Committee on Climate Change, Energy, Environment and Water
PO Box 6021
Canberra ACT 2600

Via email: cceew@aph.gov.au

Dear Sir/Madam,

Inquiry into the transition to electric vehicles in Australia

Reference is made to your Committee's Inquiry into the transition to electric vehicles in Australia, following a referral of this matter by the Federal Minister for Climate Change and Energy (the Hon Chris Bowen MP) on 18 January 2024.

As the national peak body representing fuel wholesale and fuel retail businesses in Australia, ACAPMA has been working on this issue for nearly a decade. Over this time, we have sought to understand the nature of the challenge and the quantum (and timing) of associated infrastructure investment decisions, as our industry seeks to adapt national infrastructure to accommodate the growing number of EV's in Australia's national vehicle fleet.

The experience to date has been challenging to say the least, albeit that our overseas counterparts in the USA and the UK report similar experiences.

We therefore welcome the conduct of this inquiry and provide the attached submission for your consideration.

ACAPMA would welcome an opportunity to expand on these issues by providing additional verbal evidence as considered appropriate.

Should you require clarification of any of the material provided in this report in the meantime, please contact me on 0447 444 011 or by email via markm@acapma.com.au.

Yours sincerely,

Mark McKenzie
Chief Executive Officer

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Submission to Standing Committee on Climate Change, Energy, Environment and Water

Inquiry on EV Transition

March 2024

ACAPMA
The Voice of Petrol Convenience

ACAPMA
Australasian Convenience and Petroleum Marketers Association

1. Introduction

1.1 About ACAPMA

The Australasian Convenience and Petroleum Marketers Association (ACAPMA) is the national peak body representing the interests of the petroleum distribution/wholesaling and the petrol-convenience retail industry. These two industry sectors generated annual revenues of around $101B in FY23 and employed an estimated 61,000 Australians, working in around 4500 businesses.

ACAPMA is first and foremost an employer organisation that is formally recognised under Australian law as the *industrial advocate* for fuel marketing and fuel distribution businesses. First established in 1976, the Association started operations as the Australian Petroleum Agents and Distributors Association (APADA) and subsequently changed its name to ACAPMA in 2007. The name change was accompanied by a change in the Association's Constitution to incorporate national representation of fuel retailers.

Today, the Association directly represents 95% of fuel distributors/wholesalers in the country and directly and indirectly (via franchisees and distributor-owned retailers) around 5800 of the more than 8000 service stations (i.e. 72%) operating in Australia.

The scope of ACAPMA's membership extends from the 'refinery gate' through to the forecourt of Australia's national network of service stations and petrol convenience outlets – including fuel importation, fuel wholesalers, fuel distributors, fuel retailers, petroleum equipment suppliers, and petroleum service providers.

ACAPMA's member businesses range from Australian-owned subsidiaries of international companies to large Australian-owned businesses, to independently owned mid-cap Australian companies, and small *single retail site* family-owned businesses.

Given the diversity of our membership base, ACAPMA strives to assemble an aggregate *whole-of-industry* perspective on key public policy and market regulation - with a view to providing policymakers and regulators with meaningful industry insights that are directly relevant to issues under consideration.

Given the wide variance in the market propositions (and market presence) of individual market participants, ACAPMA's aggregate *whole-of-industry* perspective should not be taken as necessarily being wholly representative of the position of any individual fuel retailer.

It is therefore possible that one or more of ACAPMA's members may have an individual position on the matters being considered by this Inquiry that vary markedly from the one presented in this paper.

2. Strategic Context

ACAPMA has been working with its' international counterparts in the USA (National Association of Convenience Stores – NACS) and the UK (Petrol Retailers Association) to understand the nature of the early challenges that have been faced by fuel retailers in the transition to low carbon mobility over recent years. These insights have been highly instructive given that the EV markets in these economies are similar to the Australia transport energy market but are also significantly ahead of Australia with respect to the adoption of EV's.

This work suggests that it is unlikely that the Australian fleet – or indeed the global vehicle fleet - will transition to *full EV operation* within the next 20 years. Rather, Australia (and likely most Western Developed Economies) will likely pursue a raft of different *low carbon mobility technologies* to achieve Net Zero 2050 given the varied suitability to different transport mobility tasks (i.e. urban car travel, non-urban car travel, urban road freight, interstate road freight, non-road vehicle applications).

The need to accommodate this "portfolio" of low carbon technologies will fundamentally reshape the end-stream of the Australian fuel supply chain. It will require our industry to accommodate the following sources of low carbon mobility:

- Growth of Battery Electric Vehicles (BEVs) for light vehicle operation in Australia's capital cities
- Majority hybrid vehicle operation (i.e. Series Hybrid) in Regional and Rural Australia
- Utilisation of hydrogen fuel cell electric vehicles (FCEVs) and low carbon fuels (i.e. renewable diesel and synthetic diesel) for urban road freight
- Use of low carbon liquid fuels (renewable and synthetic diesel) for inter-regional and long-distance road freight operations, agricultural operations and mining operations

The above suggests that there will be significant and varied demand for industry investments in various forms of low carbon mobility. This fact, coupled with the added requirement to meet the Australian Government's objectives for traditional liquid fuel security, will dilute the quantum of investment available for investment in EV fast-charge infrastructure in the short to medium term.

In the meantime and noting that market adoption of BEVs in Australia is growing ahead of other forms of low carbon mobility, Australian fuel retailers have been investing in the provision of public *fast-charge* (>150kw) and *ultra-fast charge* (>250kw) infrastructure on service station forecourts across the country.

As at 31 December 2023, there were around 200 service station sites with fast charge and ultra-fast charge facilities. That said, this early experience with the provision of EV charging infrastructure has highlighted several multi-faceted challenges to the expansion of this EV charging infrastructure at service station in the short to medium term.

3. Guiding policy principles on low carbon mobility in Australia

While Australia's fuel distribution & wholesale businesses and Australia's fuel retail businesses are not directly *invested* in the manufacture of transport fuels (neither conventional nor future fuels), the industry recognises that it has an active role to play in supporting an **orderly transition to low carbon mobility** - under the umbrella of Australia's 'Net Zero by 2050' aspirations.

Achievement of this orderly transition will require industry and non-industry stakeholders to work cooperatively on a *comprehensive transition plan* that supports achievement of Australia's *Net Zero* objective, without creating undue economic and social harm. At a practical level, this means ensuring that Australia's net zero transition is advanced from sound engineering and economic principles to avoid undue adverse economic, environmental, and social consequences.

ACAPMA's response to this Inquiry was therefore informed by relevant elements of the Association's Public Policy Framework (see Our Public Policies – ACAPMA). These policies have been developed as a result of the abovementioned experience and are summarised below.

3.1 Low carbon policy and regulation must focus on performance (not specific technologies)

ACAPMA notes that there are numerous examples (both national and international) of governments imposing mandates of alternative fuels as a means of achieving environmental goals, only to repeal these measures on the grounds of the creation of significant adverse economic and social consequences. National and International experience with the introduction of mandates of first-generation biofuels in Europe, North America, and Australia at the turn of the century is a case in point.

ACAPMA believes that all Australian Governments should avoid setting low carbon mobility policy that amounts to picking technology "winners". Such an approach not only risks unintended consequences but may also result in shutting out non "favoured" fuels and technology that – because of the realisation of unseen breakthroughs – are capable of delivering environmental improvements earlier and at lower overall cost.

3.2 Government policies targeting low carbon mobility must support an economically viable and socially just transition to Net Zero 2050.

Articulation of a policy target without due consideration of how that target can be achieved in practice is not only disingenuous, but it will also likely result in unnecessary destruction of asset values and Australian businesses – with associated adverse impacts on employment.

It therefore follows that Australia's Net Zero Policy (including the implied low carbon mobility targets) is supported by a transition plan that is economically and technologically achievable. Wholesale reliance upon contested technological breakthroughs and future milestones for economic scale is not supported as a means of achieving Australia's Net Zero ambitions.

The transition to low carbon mobility must also take account of the likely different rates of consumer adoption of low carbon vehicles given the different socio-demographic profiles of Australian households, particularly given that the costs of adoption of low carbon mobility are significantly higher than conventional mobility.

3.3. Advanced (or early) investment in low carbon mobility infrastructure should be supported by public funding until such time as market demand supports wholesale private sector investment.

New investment in low carbon mobility infrastructure that is developed in advance of demand is typically uneconomic. It therefore follows that achievement of the public good associated with early provision of this infrastructure should be underpinned by proportionate investment in same by all Australian Governments.

Forced private sector investment ahead of demand for low carbon mobility will undoubtedly result in Australian fuel businesses being required to offset uneconomic investment costs by increasing the cost of conventional fuels for Australian businesses and households – an outcome that is considered economically unjust and socially inequitable.

3.4. Progress on low carbon mobility to support Net Zero 2050 should not come at the expense of Australia's national fuel security goals.

Australia's conventional fuel industry is critical to the national security of the country and will likely remain so until the majority of Australia's on-road and off-road vehicles transition to low carbon technologies and fuels.

Given the growing significance of geopolitical issues, government policy must balance required investment in low carbon mobility with the equally important requirement to continue investment in conventional fuel security. Such a balance requires due consideration of the scarcity of funding for new investment (in either conventional or future fuel infrastructure) and the likely reduced timeframes for realisation of a commercial return from new investment in conventional fuel import, storage, transport, and retail infrastructure.

3.5. Development of the low carbon mobility market should ensure competition neutrality.

Mobility costs are a significant cost input to the Australian economy. Traditionally, successive Australian governments have sought to ensure that these costs remain reasonable and affordable by ensuring that there is a strong competitive tension in the Australian fuel wholesale and fuel retail markets. These efforts extend to the provision of special powers of oversight of the fuel retail industry by the ACCC, as determined by successive Federal Treasurer's over the past two decades.

It therefore follows that, as all Australian Governments seek to promote growth of the low carbon mobility market, the design of government policies and funding programmes avoid inadvertently ceding a concentration of market power to specific enterprises and/or organisations. This is particularly pertinent with respect to the awarding of government grants (i.e. taxpayer funds) for new low carbon mobility infrastructure.

3.6. Fuel tax transition (to road user charges)

Fuel excise is a significant contributor to Federal Tax revenues and the quantum of annual collections will increasingly come under threat as the market penetration of untaxed low carbon mobility technologies accelerates. Within this context, ACAPMA is opposed to any change in rate of fuel tax - and/or the longstanding policy of indexation of conventional transport fuels – as a means of reducing the impact of falling revenues.

Given that any future change in taxation has the potential to distort the rate of market adoption of future fuels and/or discourage consumer adoption of higher capital costs low carbon mobility by increasing operational costs, ACAPMA believes that any decision to migrate from the current fuel tax regime to a road user charge should be implemented as early as practicable – and preferably before 2030.

4. Current issues and potential strategies for redress

ACAPMA supports an orderly transition to Net Zero emissions by 2050. We recognise the role that our industry must play in supporting the achievement of this national endeavour via the provision of low carbon mobility energy which includes, but is not limited to, public charging infrastructure for BEVs.

While some gains have been made with respect to this objective - including the provision of fast charging infrastructure at 200 of the 8027 service stations in Australia - there are significant barriers to the expansion of this infrastructure in the short to medium term.

A discussion of these issues, and recommendations on how they might reasonably be addressed, is presented below.

4.1. Absence of a technically and economically credible national trajectory for EV growth in Australia in the face of significant (and multi-faceted) market development challenges, leading to a reluctance amongst industry participants and consumers alike, to invest further in the EV transition currently.

As the world experience with EVs increases, several issues are emerging that raise significant questions about whether EV's are likely to be anything more than a *niche proposition* in the global car market. These issues go well beyond the traditionally cited issues of: (a) high relative capital cost of EVs (relative to conventional vehicles), (b) vehicle range anxiety, and (c) limitations in vehicle recharging infrastructure – all of which can be resolved by technology breakthroughs and strong levels of industry investment.

Rather, the experiences of EV adoption in markets with high relative penetration of EVs (i.e. Europe, UK, USA and China) suggests that there are numerous complex market barriers and supply chain issues to the growth of an EV market beyond the infancy stage. These issues, if left unaddressed, risk dramatic increases in consumer reluctance to adopt EVs and greatly deter necessary investment in EV production and related EV charging infrastructure – effectively creating an artificial ceiling in EV sales.

A summary of these issues is provided in the below sub-sections.

4.1.1 Uncertainty surrounding near term global production of EV's.

Given that Australia is a technology taker in respect of light vehicle technology (i.e. passenger cars and SUVs), Australia's ability to transition its' national light vehicle fleet from dominant traditional internal combustion engine (ICE) technology to battery electric technology is directly linked to vehicle technology developments and production decisions in the global automotive car industry.

An analysis of global car industry literature published in the past 18 months reveals that an increasing number of global car manufacturers have made strategic decisions to scale back production of new battery electric vehicles (BEVs), in the face of a declining rate of consumer demand.

Much of this decline is occurring in markets that exhibited positive early experiences with EV adoption under the umbrella of government incentives for EV adoption. Subsequent decisions by national governments in these markets (i.e. USA, UK and Europe) to roll back these incentives (i.e. capital grants and special tax breaks for EV purchases) are deemed to have contributed to lower global demand in recent times.

Some of the more significant vehicle industry developments that have occurred because of the recently observed lowering of global demand for EVs, include:

- A decision by the Ford Motor Company to postpone a planned $US12 B electric vehicle production program citing a belief that despite government incentives, American consumers were unwilling to pay a premium for an EV (Ford will postpone about $12

billion in EV investment (cnbc.com). The company went on to state that the Company's EV Business Unit lost $US3.1B during the first three quarters of calendar year 2023 *(October 2023)*.

- A decision by the General Motors Corporation (GMC) to abandon its' planned build of 400,000 electric vehicles between 2022 and mid-2024, owing to declining consumer demand. (GM abandons plan to build 400,000 EVs by mid-2024 | Automotive Dive). The company stated that it would delay the production start of electric trucks (i.e. large utes) - including the Chevy Silverado EV and GMC Sierra EV- from 2024 until late 2025. It also stated that it was 'taking immediate steps' to enhance the profitability of its EV portfolio in the face of slowing near-term growth *(October 2023).*
- An announcement by Honda and GMC Honda, GM scrap $5 bln plan to co-develop cheaper EVs | Reuters that the two companies have agreed to shelve their partnership to develop affordable electric vehicles (October 2023).
- A statement by Tesla that it has delated construction of a new EV plant in Mexico (Tesla plant in Mexico later and larger than expected | electrive.com), citing 'soft demand' and likely increased costs in the country that would increase the purchase cost of new Tesla vehicle products by 18 to 20%.
- An announcement by the world's biggest car manufacturer (VW $2B Trinity EV plant up in the air (electrek.co), the Volkswagen Group, that it has delayed plans to build a new $2 billion EV factory in Germany by at least 2 years – and possibly the abandonment of the plans altogether (November 2022)

It is worth noting that while there appears to be a significant slow-down in some developed markets, annual growth in sales of EVs is not even across international markets. Monthly sales of EVs are growing strongly in China. Growth in EV vehicle sales is plateauing in the Europe/UK and falling in the USA. Conversely, Australian EV sales were strong in the first half of 2023 but slowed slightly in the second half of the year.

Notably, the markets where growth rates are slowing (i.e. Europe, UK and USA) are more mature than the Australian market. Some industry commentators suggest that the slowdown is due to a market saturation of the high wealth, socially aware segment of the national new car buyer market – and an unwillingness of all other consumer segments to pay the premium for EVs.

Given that global inflation pressures remain persistent - and that many developed economies are predicting flat growth throughout 2024 and into 2025 - it is hardly surprising that the world's EV manufacturers are recalibrating their previous forecasts of future EV sales in the face of this second factor.

The principal question for the Australian market - a national market that is largely insignificant in scale compared with the mega markets of Europe, the USA and China - is whether the world's global car markets will be inclined to make large volumes of EVs

available to such a small market in the face of a slowing in global investment in EV production.

4.1.2. Uncertainty surrounding growth in the supply of critical minerals need to support forecast dramatic increases in EV production – and increasing concern about the environmental impacts of associated mining processes.

Issues are also emerging with respect to the economics of the resources that are needed to support the planned growth of EVs to 2030 and beyond. The Global resources industry is reporting that the global price of Lithium and Nickel – key resources needed for electric vehicle batteries – is declining fast in the face of declining rates of annual growth in EV production and the subsequent surplus of these precious metals (Weaker-than-expected EV sales prompt Australia's biggest lithium miner to cut production | Energy | The Guardian).

In fact, the global price of these critical metals has fallen below the threshold needed to justify investment in new mining capacity. This, resource industry advocates suggest, will create a supply shortage in the medium to longer term that threatens the achievement of the dramatic increases in EV targets that have been set by many of the world's major economies.

4.1.3. Growing supply chain issues relating to supply of semi-conductors and other critical automotive components.

While many of the world's carmakers have restored production capacity to pre COVID-19 pandemic levels, shortages of critical components, such as semiconductors, have led to production delays and reduced supply of electric vehicles. These disruptions have not only impacted on the supply of new EVs but have also contributed to increased prices, further discouraging potential buyers of these higher cost vehicle products.

4.1.4. Lower second hand-sales values of EVs – compared with conventional vehicles – are resulting in negative whole-of-vehicle life (first life) economics for EV buyers.

As experience grows with respect to new EVs reaching the end of their *first life* and sold into the second-hand car market, consumer concerns are emerging with respect to the sub-optimal trade-in value of EVs – a factor that increases the overall cost of the vehicle to new vehicle purchasers.

The USA experience reveals that the value of EVs has fallen up to 10 times faster than conventionally powered vehicles. In Britain, there are growing reports of Britain's used car industry rejecting EV trade-ins altogether (US EVs lose 10 times value of ICE cars (goauto.com.au))

4.1.5. Withdrawal of temporary policy and regulatory incentives are failing to catalyse 'natural' market demand in developed markets, raising questions about the duration and sustainability of government incentives for EV adoption.

The success of the electric vehicle market in most developed economies to date has been driven by government policies, regulations, and cash incentives – effectively creating an 'artificial demand' that is wholly depended on government subsidies and incentives. With many of the World's developed economies falling on hard times, governments are pulling back on these incentives and sales demand has slowed as a result (Chancellor must end EV injustice and reintroduce consumer incentives, say businesses (fleetworld.co.uk)).

Even here in Australia, we have seen the governments of NSW and Victoria recently scrap EV subsidies. A successful court challenge to the Victorian Governments proposal to impose a road user tax for EVs has further added to this inconsistency.

While the current dynamism in policy and legislation is understandable, it is nonetheless creating an environment of investment uncertainty for EV manufacturers, financial uncertainty for new car buyers, and investment uncertainty for industries that are seeking to invest large sums of money in EV infrastructure.

4.1.6. EVs are facing increasing competition from other low carbon technologies that appear to have equal merit and likely lower market transition costs at scale.

A further critical issue that is emerging relates to an increasing level of *technology competition* within the global low carbon mobility market – that is, competition coming from other forms of low carbon mobility.

The recent rise of *strong* (or 'series') hybrid vehicles present a lower cost compromise between traditionally fueled vehicles and fully electric vehicles (Refer **Figure 1**). This option is increasingly being offered as a transitional step for new car buyers who are not yet ready to fully commit to electric vehicles but want to play their part in contributing to lower GHG emissions.

It is also worth noting that vehicles equipped with this technology are particularly suited for motorists living in regional and rural communities in Australia, where long average trip distances and limited EV charging infrastructure make a BEV impractical.

The availability of this 'middle ground' has diverted some potential EV buyers towards hybrids and are impacting the growth trajectory of pure electric vehicles in developed markets including Norway and the USA.

Technology competition from Hydrogen vehicles also looms large over the medium to long term. Global manufacturers like Toyota and Hyundai are already bringing small volumes of these vehicles to market.

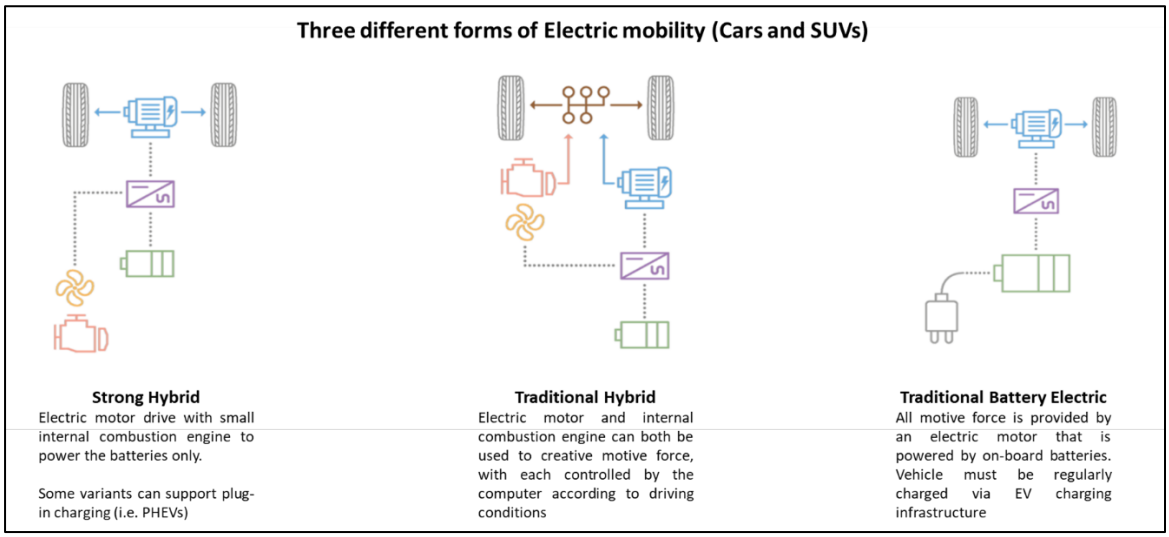

Figure 1: The emergence of strong hybrid drivetrains, as developed by leading global manufacturers like Toyota and Nissan, are likely to be the chosen technology for motorists who are not yet willing to make the switch to full battery electric vehicles (Diagram adapted from: Nissan e-POWER Cars - Advice and Benefits | Nissan Australia)

Competition for EVs is also emerging in relation to low carbon fuels following a decision taken by the European Parliament in March last year. This decision involved a concession to allow new internal combustion vehicles to be sold after 2035 within the EU- despite previous attempts to ban such vehicles from that date (Europe steps back from 2035 ICE ban (sae.org). Importantly, this permission was conditional on these vehicles being operated on *low carbon fuels* such as synthetic fuels (produced by blending Hydrogen with Carbon Dioxide) and advanced biofuels.

While low carbon fuels are very much in the developmental stage, and their ultimate economics and GHG emissions performance are uncertain, they represent an opportunity to deliver on Net Zero 2050 goals while still retaining internal combustion technology. The adoption of these fuels also facilitates the utilization of *existing* national fuel distribution and fuel retailing networks, thereby reducing the overall transition cost to the Australian economy.

Since the decision was taken, the global fuel industry has committed large sums of money to the near-term commercialization of these fuels. In Australia, there are developments underway in Geelong Victoria (Viva Energy) and Kwinana WA (BP Australia) to commission small scale production of these fuels.

The challenge of technology competition raises serious questions about the merits of the Australian government's current *EV centric* approach to the reduction of GHG emissions from the national vehicle fleet.

Recommendation 1:

The absence of an economically and technically credible transition plan for low carbon vehicle operation is creating significant investment uncertainty for consumers and industry alike. This consumer purchase and industry investment uncertainty is, in turn, considered to be the biggest barrier to a market scale transition to BEVs within the Australian light vehicle fleet – and is giving rise to a range of new market barriers.

It is recommended that the Australian government urgently develop a comprehensive plan for the transition of the nation's vehicle fleet to low carbon fleet operation (both heavy and light vehicles). Such a plan should incorporate an objective assessment of the role of all potential low carbon mobility technologies – not just BEVs – and advance a policy framework that supports same.

4.2. Failure of all Australian Governments to recognise the critical role of fast (and ultra-fast EV) charging infrastructure in generating the consumer confidence needed for widespread market adoption of EVs.

ACAPMA maintains that the role of the Australian Fuel retail industry will be to support rapid charging (both fast and ultra-fast charging), with most capital city motorists expected to charge their vehicles at home (i.e. estimated to be an average of 80%).

It is important to realise however, that such assessment does not mean that 80% of EV users will charge their vehicles at home 100% of the time.

Analysis of EV user patterns in larger international markets indicates that 100% of EV users will seek to use public *fast charge* (> 150kw) and *ultra-fast charge* (> 250kw) infrastructure during any given year. Consequently, the experiences of EV users in seeking access to, and utilisation of, this infrastructure will have a marked impact on their early experience with EVs (as evidenced by a growing level of negative social media commentary about EV Charging experiences during public holiday periods).

Overseas experience suggests that an average of 25% of EV Charging activity currently occurs at public fast charging sites (i.e. excluding offices and transport depots). The US Government predicts that this average will likely increase to an average of 30% as sales of EVs approach 50% of new vehicle sales (See **Figure 2**) due to greater numbers of high-density residents being unable to charge their vehicles easily at home.

Despite this, current Australian government grant programs supporting the early provision of EV charging infrastructure are inherently biased towards lower cost DC slow charge infrastructure provided in public locations (e.g. shopping centres, public carparks, offices, and transport depots).

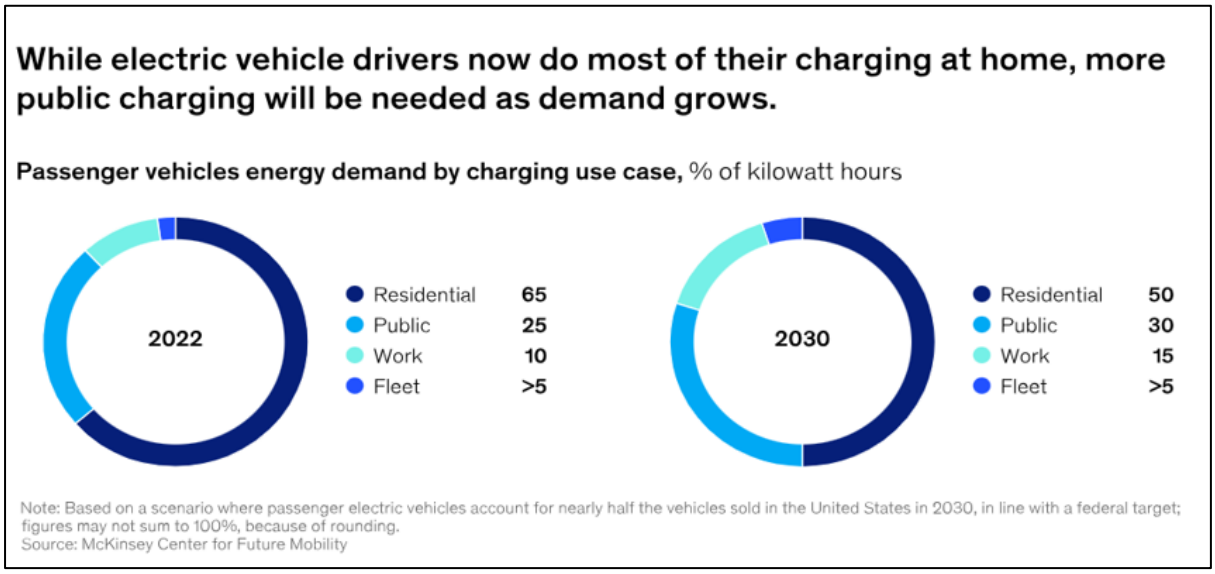

Figure 2: Public Charging infrastructure will likely account for 30% of total Kilowatt hours by 2030 in the USA – and Australia is likely to follow the same trajectory given the nature of the fleet, population density, and typical driving behaviours (Source: Can public EV fast-charging stations be profitable in the United States? | McKinsey)

The aim of these Grant Programs appears to be to put the most 'dots on the map' for every million dollars in grant funding awarded. Consequently, these programs currently penalise grant applicants seek to install higher cost fast charging infrastructure – the infrastructure that is actively sought by time-poor users of public EV Charging infrastructure.

ACAPMA maintains that Australia's service stations are best positioned to provide safe round-the-clock access to fast and ultra-fast charging infrastructure for Australia's EV Users. Australia's service stations are strategically positioned in every local community in the country and afford EV users the opportunity to utilise existing facilities (i.e. restrooms and small format retail stores and cafes) while charging their vehicles.

Providing fast charge infrastructure at service stations also affords constant supervision with respect to the safe use of high-powered charging infrastructure by EV users and ensures good stewardship of charging assets to maximise charger availability (i.e. quick detection and resolution of equipment faults).

While some gains have been made in the delivery of fast infrastructure to date within the national service station network, the low number of grants awarded have been given to the largest fuel retail businesses in the country.

Meanwhile, the large number of smaller businesses (which account for the operation of nearly 60% of the national network) have not been able to access funds to support investment in the early delivery of rapid charging infrastructure.

Recommendation 2:

All Australian Governments review existing EV Infrastructure grant programs to ensure that these programs place increased emphasis on the early provision of fast (>150kw) and ultra-fast (>250kw) EV charging infrastructure - with a bias towards installations at service stations given their suitability for safe use of high-powered EV charging infrastructure.

4.3. Significant national grid limitations leading to high CAPEX and sub-optimal OPEX from investment in rapid charging infrastructure at service stations.

ACAPMA has been working with all Australian Governments to increase policymaker awareness of the extreme economics of providing EV fast charging infrastructure at service stations - owing to the need for service station operators to pay electricity networks for the grid augmentation works to support the electricity draw needed to support rapid and ultra-rapid charging infrastructure.

Over the last four years, ACAPMA has worked with numerous member businesses located in Eastern Australia to assist with the preparation of grant applications for new fast charge installations at service stations located in metropolitan and large regional towns. Analysis of this data revealed that the cost for the provision of an initial two-plug EV charger at service stations in Australia were between $370k and $550k, as summarised in the Table A below (In some cases, however, the cost for a new installation of a single charger has been in excess of $700k).

Project item	Cost (Low range)	Cost (high range)
2 plug ultra-fast charger (> 250kw)	$70k	$70k
On-site works (Design, Civil works, and electrical works)	$80k	$80k
Grid augmentation costs (paid by service station owner to grid operator)	$220k	$400k
Total costs	**$370k**	**$550k**

Table A: Range of costs for installation of a two plug ultra-rapid charger at an Australian service station derived from a sample of Australian government grant applications from Australian Businesses since 2020.

An assessment of the high CAPEX and the relatively modest OPEX reveals an estimated payback of 17 years (based on 15% utilisation at 85c/kwh charging rate) – which is almost twice the accepted rate of payback on investment in the Australian fuel industry.

In other words, the investment is uneconomic and can largely only be justified in terms of intangible benefits (i.e. realisation of a knowledge dividend that can be used to move quickly if EV adoption accelerates or in terms of ESG/corporate reputational benefit).

While there are some sites that can install and operate high speed charging infrastructure without grid augmentation works, such an assessment cannot be readily determined and involves the business commissioning a consultant to investigate grid capacity in the vicinity of the site – a kind of blind 'lucky dip' for those service station businesses that are willing to consider early provision of public charging infrastructure for EV users.

Recommendation 3:

The Australian Energy Regulator (or suitable alternative body) undertake a comprehensive assessment of the ability of the Grid to support EV fast charge (>150kw) and ultra-fast (>250kw) charging infrastructure. Such an assessment should provide a national map of suitable locations for installation of fast charge infrastructure that is regularly updated and published to support future decisions on EV charging infrastructure investment – and targeted investment in grid augmentation works by electricity providers.

4.4. Lack of formal market structure, including poor stewardship of recharging infrastructure, strong variability and limited consumer visibility of EV charging costs, and high incidence of misleading market claims about the economic and environmental performance of EVs relative to conventional vehicles.

4.4.1. Price variability for home-based charging.

Unlike fuel prices which tend to be relatively consistent across different State/Territory markets (albeit with some small variation across individual Australian States and Territories), the cost of home charging varies significantly between individual states and Territories due to the fragmented nature of the Australian national electricity market (See **Figure 3**)

State	Origin Go Variable rate (c/kWh)	Charge cost (60kWh battery)
SA	43.62	$26.17
QLD	28.85	$17.31
NSW*	34.71	$20.83
ACT	19.88	$11.93
VIC*	25.65	$15.39
**average across all distribution zones in NSW and VIC*		

Figure 3: Example of analysis of variation in ***home based charging*** costs across different geographic markets based on retail tariffs levied by Origin Energy (Source: How much does it cost to charge an electric car in Australia? | Drive)

In fact, the cost of home-based charging can vary by as much as 120% between the lowest market (ACT) and the highest price market (SA).

The continuation of such disparity gives rise to an obvious geographic inequity for EV owners across Australia. It is strong suggested that this inequity should be addressed by the harmonisation of a tariff for home-based EV charging.

4.4.2. Lack of market structure and price transparency when compared with conventional fuel market.

The variability in EV charging costs gets even more complex when you consider public fast charging and ultra-fast charging costs, as shown in **Figures 4** through **Figure 6** below.

Chargebay	Free for 50kW chargers
WeVolt	15–45c/kWh (50kW – prices subject to change depending on idle fees)
Chargefox	25–65c/kWh (up to 50kW – prices subject to change depending on location, on/off-peak time)
Saascharge International GmbH	29–33c/kWh (50kW – price subject to change depending on transaction fees)
Everty	0–35c/kWh (25kW – price subject to change depending on location) Free for 30kW chargers
Exploren	35–40c/kWh (up to 40kW)
Evie Networks	40c/kWh (up to 25kW) 58c/kWh (50kW)
Jolt	Free for the first 7kWh 44–49c/kWh (up to 50kW – prices subject to change depending on location, idle fees)
Elanga	50c/kWh (50kW)
NRMA	54c/kWh for members (50kW) 60c/kWh for non-members (50kW)
ChargeStar	0–64c/kWh (50kW – prices subject to change depending on location)
AmpCharge	69c/kWh (50kW)

Figure 4: Example of analysis of variation in ***public DC Charging (up to 50Kw)*** *costs* (Source: How much does it cost to charge an electric car in Australia? | Drive). Typically delivers 300km range after 60-minute charge.

OTR	50–65c/kWh (150kW – price subject to change depending on/off-peak time, idle and reservation fee)
NRMA	54c/kWh for members (150kW) 60c/kWh for non-members (150kW)
BP Pulse	60c/kWh (150kW)
Chargefox	59–68c/kWh (150kW – prices subject to change depending on location, on/off-peak time)
Evie Network	68c/kWh (150kW)
AmpCharge	69c/kWh (150kW – prices subject to change depending on location)

Figure 5: Example of analysis of variation in ***public DC Charging (150Kw)*** costs (Source: How much does it cost to charge an electric car in Australia? | Drive). Typically delivers 300km range after 20-minute charge.

Chargefox	60c/kWh (350kW)
Evie Network	73c/kWh (350kW)

Figure 6: Example of analysis of variation in ***public DC Charging (350Kw)*** costs (Source: How much does it cost to charge an electric car in Australia? | Drive). Typically delivers 300km range after 10-minute charge.

It is worth noting that, unlike the Australian State/Territory laws that require transparency of traditional fuel prices (most stipulating real-time reporting), the same rules do not apply to EV charging services.

Any move to widespread market adoption of EVs will mean that EV charging costs will have the same national economic impact as petrol prices. It is therefore suggested that there is a need to ensure these prices are highly transparent to consumers and monitored by the ACCC - in the same manner as currently occurs for petrol prices in Australia.

To do anything less, would be to put consumers of EV Charging services users at a significant information/choice disadvantage relative to traditional fuel consumers.

4.4.3. Poor consumer availability of recharging infrastructure (up-time) when compared with availability of traditional refuelling infrastructure – leading to reduced consumer confidence (Can be rectified by more assets located at service stations).

A quick review of social media around Christmas and Easter Holiday periods in recent years has revealed significant challenges with the availability and reliability of EV chargers. This information is readily promoted within the community and acts as a deterrent to early adoption of EVs.

To some extent, this issue is understandable given that the early first-generation technology has quickly become outdated and unreliable - and the growth in the number of public

charging infrastructure has not kept pace with the growth in EVs (largely due to the high costs of providing this infrastructure relative to a small level of demand for services).

But the issue of placement of public charging is a significant determinant of the average up-time of EV charging infrastructure. Where public charging is installed in isolated areas such as rest stops and public places where their operation is unsupervised, for example, average **up-time** is demonstrably low given a lack of active stewardship of the asset.

Conversely, where infrastructure is installed at service stations that are manned around the clock, the average up-time is high (Why are EV chargers unreliable? (whichcar.com.au)).

It is therefore suggested that public acceptance of EVs could be significantly enhanced by seeking to incentivise investment in public fast charging infrastructure at service stations.

4.4.4. Claims of comparative costs (BEVs vs ICE) are inflated at best and misleading at worst.

Conventional wisdom holds that EVs are more expensive to buy and less expensive to operate than ICEs. An examination of the experience in EV markets that are significantly ahead of Australia reveal that the consumer reality is more complex, with the economic outcomes for consumers varying according to the baseline cost of fuel, the degree of utilisation of higher cost fast charging services and the trade-in value of the vehicle at the end of first life (see w29093.pdf (nber.org)).

Within this context, many of the published market claims being advanced by EV advocates about the benefits of EV ownership over conventional vehicles in Australia are misinformed – at worst, they are openly deceptive and in contravention of key provisions of the Australian Consumer Act (2010).

Examples of this issue are commonplace, with a specific example recently appearing in *The Driven* publication) that purports to answer the question of whether average EV Charging costs are higher than the costs of fuelling a car by petrol. One of the tables presented in this article is reproduced below (See **Figure 7**) by way of an example of the contestable information that is being provided in the market.

Interrogation of the fine print of this analysis (i.e. the assumptions) reveals two very odd assumptions that appear to unreasonably prejudice the analysis, namely:

a) The analysis utilises the average energy consumption of the top ten bestselling EVs in Australia in 2003 (See note 1) and then compares the energy use of these vehicles with the national fleet average for the Australian light vehicle fleet (See note 6). Comparing the latest EV technology with a national fleet average derived from comparison of all vehicles on register (i.e. small cars, medium cars, large cars, and SUVs) is simply invalid. A more reasoned analysis would have sought to compare the top ten bestselling petrol-powered passenger cars in 2023, which would have yielded a more valid average consumption rate of 8.5 litre/100km.

Charging Network	cents/kWh	Annual 'fuel' cost[1,2]		
		100%	10% DC, 90% AC[4]	10% DC, 90% AC[8]
Chargefox network				
- Fast (to 50kW)	45c	$698	$446	$184
- Ultrafast (over 50kW)	60c	$930	$470	$207
Evie network				
- Fast (to 50kW)	50c	$775	$454	$192
- Superfast (over 50kW to 150 kW)	60c	$930	$470	$207
- Ultrafast (over 150kW to 350 kW)	65c	$1008	$477	$215
Tesla Supercharger				
For Teslas:				
- Pre 2017 Teslas	Free	$0	$377	$114
- Post 2017 Teslas	69c	$1070	$484	$221
- Non-Teslas:	82c	$1271	$504	$241
Ampol – AmpCharge	69c	$1070	$484	$221
BP Pulse[5]	55c[5]	$853	$462	$200
Home (AC): peak[3]	42c	$651	N/A	N/A
Home (AC): off peak[4]	27c	$418	N/A	N/A
Home (AC): WA super off-peak[8]	8.2c	$127	N/A	N/A
Petrol[6,7]:	$2.15/litre	**$2,386[3]**	N/A	N/A

Assumptions:

1. 15.5 kWh/100 km BEV usage. This is an average (non-weighted) value of WLTP consumption of the top ten best-selling BEV in Australia for 2023.
2. 10,000km per year (Equates to 1,566 kWh of electricity or 1,110 litres of fuel per 10,000 km).
3. Using a peak electricity tariff of 42c/kWh. (Average of default offer prices in Victoria)
4. Using an off-peak electricity tariff of 27c/kWh. (Average of default offer prices in Victoria)
5. BP Pulse are rolling out variable pricing of 60c/kWh 7am to 10pm, 50c for 10pm to 7am.
6. Using 11.1 litres/100km (2020 ABS average fuel consumption of new passenger vehicles sold in Australia. Note: this is the latest figure. The ABS discontinued collection of this data after 2020).
7. Using a current average Australian petrol price of $2.15/litre
8. When using WA super off-peak electricity rate of 8.2c/kWh.

Figure 7: Example of highly contestable information pertaining to the economics of EVs (Source: Does EV charging cost more than running a petrol car? (thedriven.io))

b) The fuel price cited (of $2.15/litre) is a 'spot' fuel price at the top of the Victorian petrol price cycle, whereas such an analysis might more reasonably have utilised the national average fuel price in 2023 of $1.92cpl (See Weekly Petrol Prices Report - 17 March 2024.pdf (aip.com.au))

Reworking the results of the comparative analysis reveals that the cost of operating an equivalent petrol-powered car reduces from the apparently inflated $2,386 figure cited in the article to $1632 per year. The resultant reduction in the annual energy saving in vehicle energy costs between a petrol vehicle and an EV charged at home (peak tariffs) reduces from $1735 per year to $981 which means that would take more than 20 years to pay off the average $20k premium for a new EV (compared with an equivalent petrol vehicle), instead of the 11 years that is originally cited.

It is strongly suggested that there is a need to ensure a market discipline with respect to market claims about the economic and environmental performance of BEVs, in the same way that is applied to conventional vehicle fuelled vehicles.

Recommendation 4:

The ACCC be directed to conduct the following investigations with a view to providing advice to government about how to improve the operation of the EV market in Australia:

(a) a comprehensive review of the nature and operation of the EV charging market, with a particular focus on (a) market structures and market transparency of public EV charging services (i.e. both subscribed based and pay as you go services).

(b) an investigation of the veracity of market claims about the economic and environmental benefit of EVs relative to conventional vehicles under the relevant provisions of the Australian Consumer Act (2010) and new ACCC 'Greenwashing' Guidance.

4.5. Uncertainty surrounding timing of excise transition and increasing motorist inequity of same.

In early December 2024, the Federal and State/Territory Treasurers met in Queensland to discuss a range of taxation and fiscal issues. One of these issues involved consideration of the implications of the recent High Court decision in *Vanderstock & Anor v State of Victoria* – which determined that the Victorian Government's proposed imposition of a road user charge on EVs was unconstitutional.

It is understood that the Treasurers agreed to establish a working group that would develop options in response to the implications of the decision on sources of state revenue, to provide security and certainty in relation to revenue arrangements. It is further understood that there was agreement that the Commonwealth, States and Territories would work together on long-term options for zero emission vehicles user charging in light of the *Vanderstock* decision – albeit that no guidance was provided in respect of the timing of this work.

ACAPMA notes that the risk of further Australian States taking unilateral action to ensure equity in motorist contributions towards maintenance of the national road network – that is, to support the implicit objective of the current fuel excise arrangements – remains prescient.

Such a risk could potentially result in individual States/Territories pursuing different mechanisms for tax collection from motorists that introduces increased complexity in the future collection of fuel excise – and corresponding taxes from EV users – with consequent challenges for retailers of conventional fuels and EV charging services.

ACAPMA maintains that there is an urgent need to consider the future of the fuel excise for the reasons outlined in Australian Productivity Commission Report No. 84 entitled: *Shifting the Dial (5 year Productivity Review)* Inquiry Report - Shifting the Dial: 5 year productivity review - Productivity Review (pc.gov.au).

While EV advocates are likely to continue to advocate for a delayed introduction of road use charges for EVs because of the *claimed* public dividend associated with delivery of lower GHG emissions, such assertions are manifestly unsound given the majority of electricity currently used by EVs in all Australia States/Territories is generated by coal (i.e. average of 73% coal fired) leading to significant Scope 2 emissions (Australian National Greenhouse Accounts Factors (dcceew.gov.au)) – unless charging directly from a solar system or utilising 'green' electricity tariffs.

Recommendation 5:

The Australian Government immediately investigate alternatives to the existing fuel excise system to ensure a fair and equitable taxation system where all Australian road users (heavy and light) contribute to the maintenance of the national road network, regardless of the drive-train technology that is utilised.

Such a system should be nationally consistent, easy to understand for motorists, and easier to administer for the providers of mobility energy (i.e. conventional fuels, renewable fuels, electricity charging, and hydrogen refuelling).

5. Summary (and Recommendations)

While Australia's fuel distribution, fuel wholesale businesses and fuel retail businesses are not directly *invested* in the manufacture of transport fuels (neither conventional nor future fuels), the industry recognises that it has an active role to play in supporting an **orderly transition to low carbon mobility -** under the umbrella of Australia's 'Net Zero by 2050' aspirations.

Achievement of this orderly transition will require all stakeholders to work cooperatively on a comprehensive transition plan that supports achievement of Australia's *Net Zero* objective without creating negative economic and social consequences for the community at large. At a practical level, this means ensuring that Australia's Net Zero transition is founded in sound engineering and economic principles to avoid undue economic, environmental, and social harm.

Within this context, ACAPMA has been working with its' international counterparts in the USA and the UK to better understand the nature of the early challenges that have been faced by fuel retailers in the transition to low carbon mobility over recent years.

These insights have been highly instructive given that the EV markets in these economies are similar in nature to Australia's market but are significantly ahead of Australia in terms of experience with the adoption of EV's.

ACAPMA's work suggests that it is unlikely that the Australian fleet – or indeed the global vehicle fleet - will transition to *full EV operation* within the next 20 years.

Rather, Australia (like all other Western Developed Economies) will likely pursue a raft of different *low carbon mobility technologies* to achieve Net Zero 2050 given the varied suitability to different transport mobility tasks (i.e. urban car travel, non-urban car travel, urban road freight, interstate road freight, non-road vehicle applications).

The need to accommodate this "portfolio" of low carbon technologies will fundamentally reshape the end-stream of the Australian fuel supply chain. It will require our industry to accommodate the following sources of low carbon mobility:

- Growth of Battery Electric Vehicles (BEVs) for light vehicle operation in Australia's capital cities
- Majority hybrid vehicle operation (i.e. Series Hybrid) in Regional and Rural Australia
- Utilisation of hydrogen fuel cell electric vehicles (FCEVs) and low carbon fuels (i.e. renewable diesel and synthetic diesel) for urban road freight
- Use of low carbon liquid fuels (renewable and synthetic diesel) for inter-regional and long-distance road freight operations, agricultural operations and mining operations

The above analysis suggests that there will be significant and varied demand for industry investments in various forms of low carbon mobility.

Nonetheless, ACAPMA and a majority of its' member businesses, recognise the role that our industry must play in supporting the provision of low carbon mobility energy which includes, but is not limited to, the provision of public fast charging infrastructure for BEVs.

While some gains have been made with respect to this objective - including the provision of fast charging infrastructure at 200 of the 8027 service stations in Australia - there remain some very significant barriers to the expansion of this infrastructure in the short to medium term. These issues include market uncertainty, market failures, and structural challenges that can be summarised as follows:

a) Absence of a technically and economically credible national trajectory for EV growth in Australia in the face of significant (and multi-faceted) market development challenges, leading to a reluctance amongst industry participants and consumers alike, to invest further in the EV transition currently.

b) Failure of all Australian Governments to recognise the critical role of fast (and ultra-fast EV) charging infrastructure in generating the consumer confidence needed for widespread market adoption of EVs.

c) Significant national grid limitations leading to high CAPEX and sub-optimal OPEX from investment in rapid charging infrastructure at service stations.

d) Lack of formal market structure, including poor stewardship of recharging infrastructure, strong variability and limited consumer visibility of EV charging costs, and high incidence of misleading market claims about the economic and environmental performance of EVs relative to conventional vehicles.

e) Uncertainty surrounding timing of excise transition and increasing motorist inequity of same.

ACAPMA believes that the above issues are significant in barriers and, if left unaddressed, threaten the loss of early market momentum and destruction of the value of early infrastructure investment.

To that end, ACAPMA urges the Committee to consider the following recommendations in respect of the future EV transition in Australia:

***Recommendation 1*: Development of a market credible National EV Transition Plan to reduce industry investment uncertainty.**

The absence of an economically and technically credible transition plan for low carbon vehicle operation is creating significant investment uncertainty for consumers and industry alike. This consumer purchase and industry investment uncertainty is, in turn, considered to be the biggest barrier to a market scale transition to BEVs within the Australian light vehicle fleet – and is giving rise to a range of new market barriers.

It is recommended that the Australian government urgently develop a comprehensive plan for the transition of the nation's vehicle fleet to low carbon fleet operation (both heavy and light vehicles). Such a plan should incorporate an objective assessment of the role of all potential low carbon mobility technologies – not just BEVs – and advance a policy framework that supports same.

***Recommendation 2*: Increase funding assistance for Fast and Ultra-fast Charging Infrastructure via the modification of existing government grant programs.**

All Australian Governments review existing EV Infrastructure grant programs to ensure that these programs place increased emphasis on the early provision of fast (>150kw) and ultra-fast (>250kw) EV charging infrastructure - with a bias towards installations at service stations given their suitability for safe use of high-powered EV charging infrastructure.

***Recommendation 3*: Undertake and publish a comprehensive assessment of the nature of the opportunities to connect fast and ultra-fast charging infrastructure to the national electricity grid, including classification of relative connection costs (i.e. low cost, medium cost, and high cost) by specific location.**

The Australian Energy Regulator (or suitable alternative body) undertake a comprehensive assessment of the ability of the Grid to support EV fast charge (>150kw) and ultra-fast (>250kw) charging infrastructure. Such an assessment should provide a national map of suitable locations for installation of fast charge infrastructure that is regularly updated and published to support future decisions on EV charging infrastructure investment – and targeted investment in grid augmentation works by electricity providers.

***Recommendation 4*: Investigate deficiencies in current market structure and price visibility, commensurate with the characteristics of the traditional fuels market with a view to instilling greater levels of consumer confidence and encouraging greater levels of early industry investment in necessary public charging infrastructure for EVs.**

The ACCC be directed to conduct the following investigations with a view to providing advice to government about how to improve the operation of the EV market in Australia, with respect to:

- the nature and operation of the EV charging market, with a particular focus on (a) market structures and market transparency of public EV charging services (i.e. both subscribed based and pay as you go services).

- the veracity (or otherwise) of market claims about the economic and environmental benefit of EVs relative to conventional vehicles under the relevant provisions of the Australian Consumer Act (2010) and new ACCC 'Greenwashing' Guidance.

***Recommendation 5*: Immediately investigate and implement alternatives to the current fuel excise regime.**

The Australian Government immediately investigate alternatives to the existing fuel excise system to ensure a fair and equitable taxation system where all Australian road users (heavy and light) contribute to the maintenance of the national road network, regardless of the drive-train technology that is utilised.

Such a system should be nationally consistent, easy to understand for motorists, and easier to administer for the providers of mobility energy (i.e. conventional fuels, renewable fuels, electricity charging, and hydrogen refuelling).

6. Further Information

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