Transport and Infrastructure Net Zero Consultation Roadmap

Take the survey

Department of Climate Change, Energy, Environment and Water

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Australasian Convenience & Petroleum Marketers Association

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Yes

5 First name
Mark

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McKenzie

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[redacted]

9 Who are you answering on behalf of?

Organisation

10 Organisation name

Australasian Convenience & Petroleum Marketers Association (ACAPMA)

11 What best describes you or your organisation?

Industry

12 What sector do you represent?

Energy

13 What state or territory do you live in?

New South Wales

14 Postcode

2000

15 What area best describes where you live?

City

16 1. Do you support the proposed guiding principles?

Not answered

17 1.1 Please add details to your response.

Not answered

18 2. Do you support the use of the avoid-shift-improve framework as a tool to identify opportunities for abatement?

Not answered

19 2.1 Please add details to your response.

Not answered

20 3. Do you agree the development of a national policy framework for active and public transport will support emissions reduction?

Not answered

21 3.1 Please add details to your response.

Not answered

22 4. What should be included in a national policy framework for active and public transport and how should it be developed?

Not answered

23 5. What additional actions by governments, communities, industry and other stakeholders need to be taken now and in the future to ensure the movement of people contributes to transport emissions reduction?

Not answered

24 6.1 What additional actions by governments, communities, industry and other stakeholders need to be taken now and in the future to ensure that the movement of goods contributes to transport emissions reduction?

Not answered

25 6.2. How would these actions address the identified challenges and opportunities for emissions reduction in the movement of goods?

Not answered

26 7. Do you agree with the proposed net zero pathway for light road vehicles?

Not answered

27 7.1 Please add details to your response.

Not answered

28 8. The Australian Government is currently developing an Australian New Vehicle Efficiency Standard and has already begun to implement actions in the National Electric Vehicle Strategy.8.1 What additional actions by governments, communities, industry and other stakeholders need to be taken now and in the future to reduce light vehicle emissions?

Not answered

29 8.2 How would these actions address the identified challenges and opportunities to reduce light vehicle emissions?

Not answered

30 9. Do you agree with the proposed net zero pathway for heavy road vehicles?

Not answered

31 9.1 Please add details to your response

Not answered

32 10. The proposed pathway for heavy road vehicles relies on a mix of battery electric, hydrogen fuel-cell and low carbon liquid fuels.Rank from 1 to 3, the order in which these should be prioritised for emissions reduction.

Not answered

33 10.1 Please add details to your response. Why did you rank them in that order?

Not answered

34 11. What role should low carbon liquid fuels play in the heavy vehicle

decarbonisation?

Not answered

35 12. What additional actions by governments, communities, industry and other stakeholders need to be taken now and in the future to reduce heavy vehicle emissions?

Not answered

36 13. Do you agree with the proposed net zero pathway for rail?

Not answered

37 13.1 Please add details to your response.

Not answered

38 14. The proposed pathway for rail relies on a mix of battery electric, hydrogen fuel-cell and low carbon liquid fuels.Rank from 1 to 3, the order in which these should be prioritised for emissions reduction.

Not answered

39 14.1 Please add details to your response. Why did you rank them in that order?

Not answered

40 15. What role should low carbon liquid fuels play in rail decarbonisation?

Not answered

41 16. What additional actions by governments, communities, industry and other stakeholders need to be taken now and in the future to reduce rail emissions?

Not answered

42 16.1 How would these actions address the identified challenges and

opportunities to reduce rail emissions?

Not answered

43 17. Do you agree with the proposed net zero pathway for maritime?

Not answered

44 17.1 Please add details to your response.

Not answered

45 18. The Australian Government is engaging in consultation as part of the development of the Maritime Emissions Reduction National Action Plan and those consultations will also inform the final Roadmap and Action Plan. 18.1 What additional actions by governments, communities, industry and other stakeholders need to be taken now and in the future to reduce maritime emissions?

Not answered

46 18.2 How would these actions address the identified challenges and opportunities to reduce maritime emissions?

Not answered

47 19. Do you agree with the proposed net zero pathway for aviation?

Not answered

48 19.1 Please add details to your response.

Not answered

49 20. The Australian Government has already engaged in consultation on aviation decarbonisation through the development of the Aviation White Paper and those consultations will also inform final Roadmap and Action Plan.

Not answered

50 20.1 What additional actions by governments, communities, industry and other stakeholders need to be taken now and in the future to reduce aviation emissions?

Not answered

51 21. Do you agree with the proposed net zero pathway for transport infrastructure?

Not answered

52 21.1 Please add details to your response.

Not answered

53 22. What additional actions by governments, communities, industry and other stakeholders need to be taken now and in the future to reduce transport infrastructure emissions and ensure that transport infrastructure is ready for and enables low-emission transport modes?

Not answered

54 22.1 How would these actions address the identified challenges and opportunities to reduce transport infrastructure emissions?

Not answered

55 23. What additional actions by governments, communities, industry and other stakeholders need to be taken now and in the future to ensure the energy mix is ready to support transport emissions reduction?

Not answered

56 24. How should the use of low carbon liquid fuels (LCLFs) be prioritised across different transport modes over time to achieve maximum abatement?

Not answered

57 25. What are the best ways for the Australian Government to work collaboratively with industry, business, governments and communities to implement the proposed pathways?

Not answered

58 25.1 What are good domestic or international examples of partnership and collaboration on transport and transport infrastructure emissions reduction that could inform the final Roadmap and Action Plan?

Not answered

59 25.2 What opportunities can Government leverage to show leadership in Australia and internationally?

Not answered

60 26. What measures and metrics should be used to evaluate the final Transport and Infrastructure Net Zero Roadmap and Action Plan?

Not answered

61 26.1 What other data and evidence could governments use and how could this offer further insights on the pace, scale and location of transport emissions reduction pathways?

Not answered

62 27. Do you have any feedback on the proposed review process?

Not answered

63 28. Do you have any further feedback on the Consultation Roadmap and proposed pathways?

Not answered

64 28.1 Is there anything missing? Are the sections appropriately integrated? Is the Roadmap appropriately ambitious?

Not answered

65 29. Is there any further information or documentation that you wish to be considered with your submission?

Not answered

66 Would you like to upload a document?

Yes

67 Have you removed any identifying information from your submission?

Yes

68 Upload a submission

ACAPMA_Submission_Transport_Net_Zero_Roadmap_Consultation_July_2024_.cb4e3655_Redacted.pdf

69 Upload a submission

Not answered

70 Upload supporting file

Not answered

71 Upload supporting file

Not answered

25 July 2024

The Secretary
Department of Infrastructure, Transport, Regional Development,
Communications and the Arts
GPO Box 594
CANBERRA ACT 2601

Via email: NetZero@infrastructure.gov.au

Dear Secretary,

Consultation on the Transport and Infrastructure Net Zero Roadmap

Reference is made to your Department's invitation to provide feedback on the development of the Transport & Infrastructure Net Zero Roadmap.

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 transition to net zero mobility in Australia – with a primary focus on road transport (i.e. passenger vehicles and freight vehicles).

Contrary to the representations of some, key businesses in our industry have invested early in the transition to low carbon mobility, but the realisation of commercial returns from that investment have been challenging. Our industry counterparts in the USA and the UK have reported similar experiences which can principally be attributed to the advancement of timelines that are either (a) economically unrealistic, and/or (b) technologically unachievable given the absence of suitable vehicle products.

We therefore welcome the conduct of this inquiry and provide the attached submission for your consideration. Should you require clarification of any of the material provided in this report in the meantime, please contact me on [redacted].

Yours sincerely,

[redacted]

Mark McKenzie
Chief Executive Officer

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Submission to Transport & Infrastructure Net Zero Consultation Roadmap

Association Submission

July 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 5700 of the approximately 8027 service stations (i.e. 71%) 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 for 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 Consultation was informed by relevant elements of the Association's Public Policy Framework (see Our Public Policies – ACAPMA). These policies have been developed from the aforementioned 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 – can deliver 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. Specific comments on the Consultation Roadmap

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 and the early development of two commercial Hydrogen refuelling stations in Eastern Australia for heavy vehicles - there are significant barriers to the transition to Net Zero within the Australian road transport sector.

Within this context, the following comments are provided in respect of the Consultation Roadmap for the achievement of Net Zero from the road transport sector in Australia.

4.1. The wholesale transition of the existing national light vehicle fleet to low carbon drivetrains by 2050 is not credible on technically nor economic grounds.

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 dependent 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. Significant national grid limitations leading to high CAPEX and sub-optimal OPEX from investments in fast and ultra-fast charging infrastructure.

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 more than $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.

4.1.7. 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.

4.2. The roadmap does not place sufficient emphasis on the likely role to be played by advanced hybrid electric technology and low carbon liquid fuels in reducing the emissions of the national light vehicle fleet.

The recent market 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.

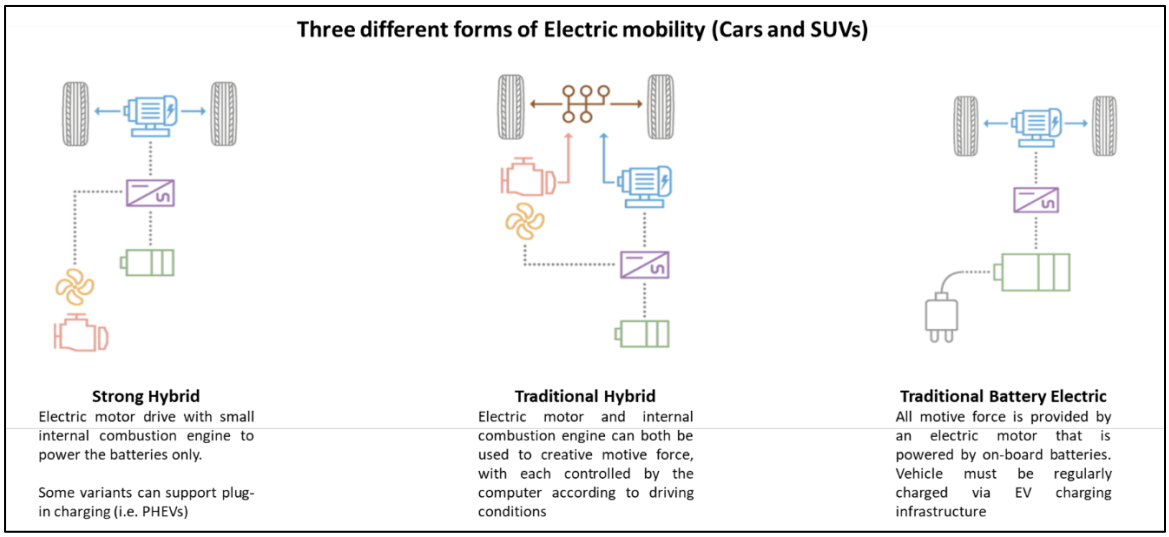

Figure 1: The emergence of strong hybrid drivetrains, as developed by leading global manufacturers like Toyota and Nissan, are likely to be the chosen technology for motorists who are not yet willing to make the switch to full battery electric vehicles (Diagram adapted from: Nissan e-POWER Cars - Advice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

Most importantly and given the high average age of the national light vehicle and heavy vehicle fleet, LCLFs provide an opportunity to reduce emissions from older internal combustion engine technology in a manner that is equitable on socio-economic grounds.

4.3. Current industry knowledge suggests that both BEV and FCEV technology are unlikely to be economically viable for heavy vehicle operation in Australia, suggesting that the delivery of Net Zero from the national heavy vehicle fleet will require transition to low carbon liquid fuels (e.g. renewable diesel) and ultimate adoption of *ultra*-low carbon liquid fuels (e.g. synthetic fuels

The roadmap suggests that Battery Electric and Hydrogen Fuel Cell will be the dominant mechanism for reduction of GHG emissions from the national heavy vehicle fleet, with LCLFs to play a minor supporting role where such technologies are not feasible.

Such an observation is not credible. Most stakeholders within the road transport industry openly acknowledge that Battery Electric drivetrains are unlikely to ever be viable for any heavy vehicle applications other than the operation of light vehicles deployed in urban delivery applications within Australia's capital cities. This amounts to around 18% of the operation of the national heavy duty vehicle fleet.

While Hydrogen Fuel Cell Electric Vehicles (FCEVs) were initially considered to provide the solution for reducing GHG emissions from the remaining 82% of national heavy duty vehicle fleet operation, this assumption is no being openly challenged on both technical and economic grounds. Specifically, the logistical challenge of developing national hydrogen refuelling infrastructure and transporting this fuel around the country continent of Australia is proving unrealistic.

In addition, the high cost of electricity is proving to be a significant challenge with respect to the delivery of Green Hydrogen at a price point that is competitive with conventional diesel operations. To be price competitive with conventional diesel, hydrogen would need to be delivered to vehicle at around $7.00 per kg. Currently, the 'delivered to vehicle' cost is over $17 per kg and is unlikely to ever be brought in line with the $7/kg target.

It therefore follows that even if the current capital cost premium of FCEVs was to be reduced to a point of equivalence with conventional ICE technologies, the OPEX premium of hydrogen would be too high for adoption of these vehicles on commercial grounds – therefore requiring the imposition of significant road user taxes to increase the cost of these vehicles and increase the cost of national road freight.

Given the above discussion, low carbon liquid fuels are expected to be the dominant mechanism for the delivery of GHG emissions from the road freight sector in Australia.

4.4. The current roadmap fails to address the issue associated with the retention of high number of older vehicles in the national vehicle fleet, particularly the national truck fleet. The historic slow rate of fleet renewal is likely to create a major challenge to the realisation of net zero 2050 that relies heavily on the adoption of new technology vehicles within the road transport sector - unless fleet renewal strategies are also embraced.

The potential community benefits of legislated vehicle emission standards introduced by the Commonwealth over the last 20 years have been undermined by the continued use of older trucks, which remain a substantial source of air pollution.

In fact, the average age of Australia's national truck fleet is amongst the oldest of all OECD countries. The average age of Australia's truck fleet is around 14.8 years. In contrast, trucks in the European Union average 14.2 years, with some countries having significantly newer fleets, such as Austria (6.6 years) and Denmark (7.5 years). Other countries like the United States and Canada also have newer fleets, averaging around 6.7 and 9.2 years, respectively.

Analysis of forecasts of the national truck fleet composition to 2030 prepared by the Truck Industry Council (TIC) of Australia suggest that the national fleet will likely increase from 690,000 trucks to more than 850,000 trucks in 2030. While these new vehicles will operate at ADR80/04 emission levels (i.e. delivering a GHG emissions reduction of around 5% relative to ADR80/03 vehicles), the total emissions of the fleet are expected to grow due to the retention of high numbers of older trucks.

It is understood that TIC has forecast that around 20% of the 2030 national truck fleet will comprise vehicles that are more than 27 years old, including:

- 31,600 light rigid trucks
- 105,504 heavy rigid trucks
- 19,900 articulated trucks
- 6,500 non-freight trucks

In addition, a further 13% of the 2030 national truck fleet is forecast to be between 16 and 27 years old, including:

- 25,500 light rigid trucks
- 65,255 heavy rigid trucks
- 20,163 articulated trucks
- 3,856 non-freight trucks

The findings of the TIC analysis suggest that any strategy based on the replacement of the current incumbent ICE technology with low carbon drivetrains (i.e. BEVs and FCEVs) is likely to be undermined by the continued use of old technology vehicles. Specifically, the total number of trucks older than 25 years of age will increase by 92,400 trucks (or 49%) to an estimated 278,400 trucks between 2020 and 2030 – the majority of which are operating in and around the Nation’s capital cities.

It therefore follows that the roadmap will likely need to place greater emphasis on the reduction of emissions from these older technology vehicles using low carbon liquid fuels – and/or the introduction of incentives for the accelerated renewal of the national truck fleet.

4.5. The strategy for light vehicles appears to be premised on the assumption that the new low carbon technology vehicles will reach the point of economic substitution with conventional technologies in the near term. Such an assumption is highly contestable, suggesting that it would be prudent to consider potential economy wide measures (i.e. differential taxation) to engineer economic equivalence.

The roadmap for technology adoption within both the light vehicle population and the heavy vehicle population appears to be premised on an assumption that low carbon drivetrain technologies are likely to reach a point of cost equivalence with incumbent ICE technologies – or at least the cost of ownership of these vehicles will reach a point of cost equivalence with higher CAPEX offset by lower OPEX over the life of the vehicle.

Such an assumption is highly contestable. It appears to presume that the relative costs of operation will not change between competing technologies despite increasing demand for electricity within the transport sector (i.e. upward price pressure) and decreased demand for conventional fuels leading to abundance (i.e. downward price pressure).

4.5.1. Prospects of cost equivalence of low carbon drivetrains with conventional ICE drivetrains in the national light vehicle fleet.

International experience has shown that electric vehicle operation is approaching equivalence with conventionally fuelled vehicles (refer to section 4.1 of this paper).

Consequently, the achievement of cost equivalence to promote fuel switching behaviour will require the CAPEX of these new technology vehicles to decrease dramatically in the near term – or require the provision of significant financial incentives to offset the current capital price premium.

4.5.2. Prospects of cost equivalence of low carbon drivetrains with conventional ICE drivetrains in the national heavy vehicle fleet.

In terms of heavy vehicles, it is highly unlikely that the capital cost of low carbon drivetrains will reach price equivalence before 2040 given that these products are currently only being delivered in small production volumes at high-cost premiums relative to conventional drivetrains.

Within this context, ACAPMA notes work commissioned the Truck Industry Council last year that sought to compare the energy costs of operation of low carbon drivetrains with conventional drivetrains (*Energy Switching in the Australian Truck Industry*, November 2023).

Analysis of the findings of this work revealed that the energy switching costs (i.e. excluding any capital cost premium for the vehicle) are likely to be a significant barrier to the market adoption of low carbon drivetrain trucks in the deeply cost-sensitive road freight sector for at least a decade. A review of this work gives rise to the following observations:

- The *energy switching costs* associated with a switch to lower carbon diesel fuel blends are between 10% and 30% higher than diesel operation.
- The costs of switching to BEV operation varies from between between 25% to 65% higher (for 'trickle charge' operation) and between 70% and 125% higher (for fast-charge operation) than diesel operation.
- The costs of switching to an FCEV are typically 50% higher than diesel operation for <u>all</u> segments of the national truck fleet. The annual energy cost of an FCEV is higher than *trickle charge* operation of BEV light rigid trucks, but lower than trickle charge operation for both heavy rigid trucks and prime movers. Compared with fast-charge operation, the energy cost of Hydrogen FCEV operation is between 20% lower (for light rigid trucks) and 75% lower (for prime movers) than BEV operation.
- The energy switching costs for all energy sources analysed – and across all four fleet segments (refer to Figures 2 through Figure 5 below) – are likely to be a material barrier to market adoption over the next decade. This assessment is made even before consideration of any capital cost premium associated with the purchase of a new BEV or FCEV truck is applied.

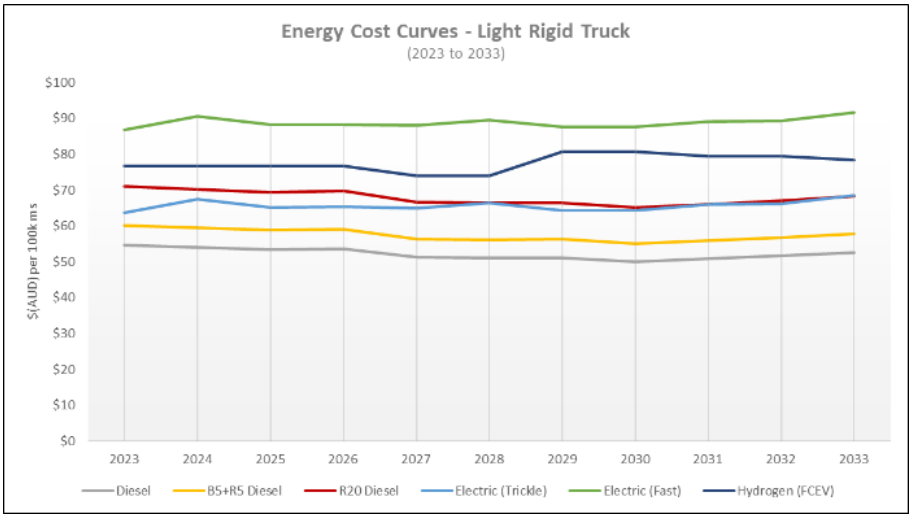

***Figure 2**. Energy Cost Curves for Light Rigid Trucks.*

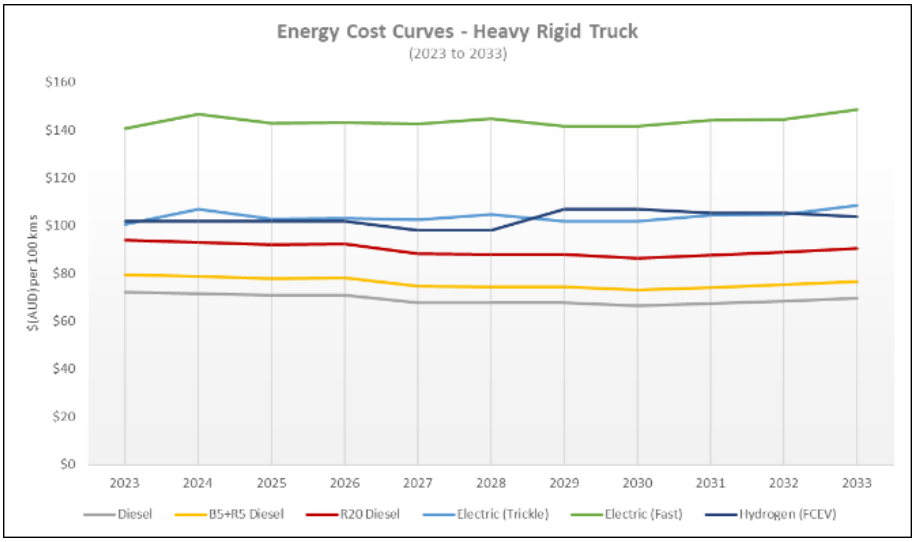

***Figure 3**. Energy Cost Curves for Heavy Rigid Trucks.*

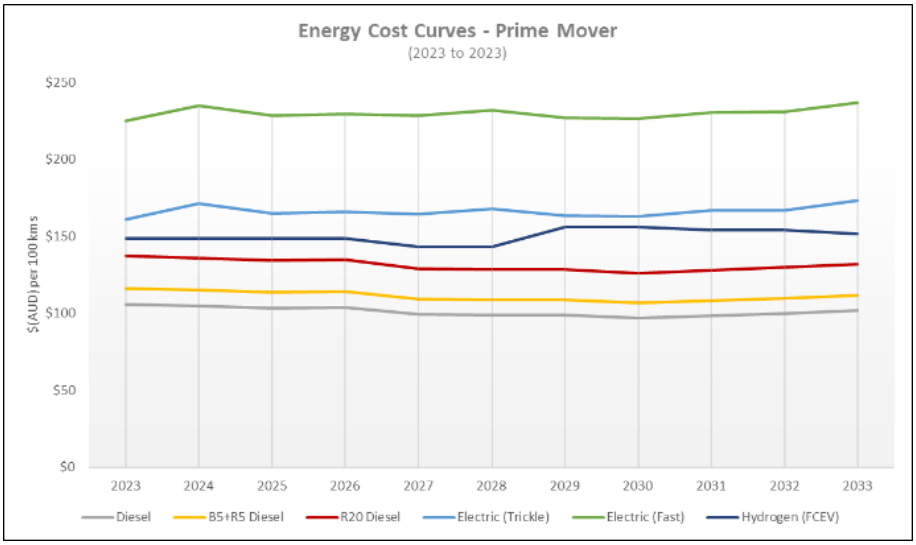

***Figure 4**. Energy Cost Curves for Prime Movers.*

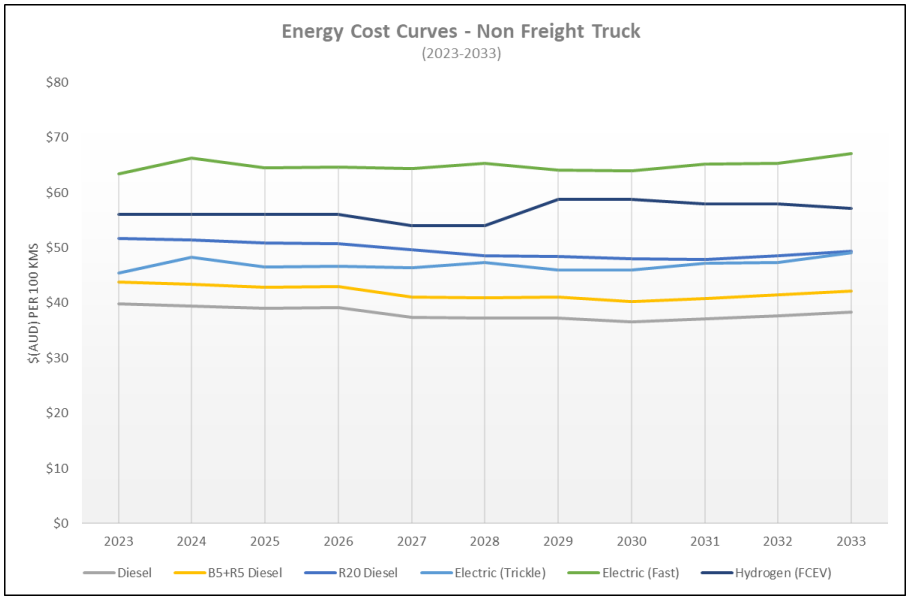

***Figure 5**. Energy Cost Curves for Non-Freight Trucks*

Given the above analysis, it is suggested that there will be a need to explore mechanisms for incentivising the market adoption of both low Carbon Liquid Fuels and low carbon drivetrains within the Australian Truck Fleet.

4.6. Delivery of Net Zero by 2050 will require an early decision in respect of the of the transition of fuel excise to a road user charge, to avoid the creation of substantial issues of social injustice.

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 considering 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. It therefore follows that the users of EV are enjoying a tax holiday that cannot be justified on environmental grounds and is driving economic inequity amongst the nation's vehicle owners.

4.7. The Consultation Roadmap appears silent on key issues associated with an orderly transition to low carbon mobility, particularly in terms of; (a) maintenance of good levels of liquid fuel security through the transition, (b) fuel taxation, (c) social equity issues for low wealth households, and (d) risks of competition distortion within the Australian road freight industry.

ACAPMA believes that the Consultation Roadmap is largely technology focussed and fails to take account of significant national aspirations and key public policy imperatives associated with the transition of the transport sector to low carbon mobility. While these issues are not specific to direct participants in the sector, they are material to the transition and risk non-achievement of Australia's Net Zero 2050 emissions if they are not addressed.

A brief description of these issues is provided below.

4.7.1. Balancing Australia's liquid fuel security aspirations with Net Zero Transport.

In the evolving landscape of global energy, balancing Australia's liquid fuel security obligations with the ambitious goal of transitioning to net zero emissions for the national vehicle fleet has never been more critical. The geopolitical dynamics surrounding energy supplies, driven by conflicts, trade disputes, and shifting alliances, underscore the vulnerability of Australia's reliance on imported liquid fuels. These geopolitical uncertainties threaten the stability and affordability of fuel supplies, making it imperative for Australia to fortify its energy security.

Amidst this backdrop, the Australian government and industry are grappling with the urgent need to decarbonize the transport sector, which is a significant contributor to national greenhouse gas emissions. The dual challenge lies in ensuring a reliable and resilient fuel supply for passenger and freight vehicles while aggressively pursuing policies and innovations that support the transition to cleaner energy sources.

Australia's commitment to net zero emissions necessitates a transformative approach to its vehicle fleet. Electrification, increased adoption of hydrogen fuel cells, and the integration of advanced biofuels are pivotal strategies. However, these advancements must be harmonized with measures to secure liquid fuel supplies. This includes maintaining strategic fuel reserves, diversifying import sources, and investing in domestic refining capabilities to buffer against global supply shocks.

Moreover, fostering robust public and private sector collaboration is essential. This involves incentivizing investments in renewable energy infrastructure, enhancing grid capacity to support electric vehicles, and creating policy frameworks that encourage the uptake of low-emission technologies. Such efforts will not only bolster energy security but also drive economic growth, innovation, and environmental sustainability.

In conclusion, the interplay between fuel security and emissions reduction is a delicate yet vital balancing act. As Australia navigates the complexities of the global energy system, a

strategic, integrated approach will be key to achieving both energy resilience and a sustainable, low-carbon future for its national vehicle fleet.

4.7.2. Transitioning the annual tax take from the national vehicle fleet away from fuel tax without significant loss of revenue for maintenance of the national road network.

As Australia accelerates the transition to low-carbon drivetrains, including electric and hydrogen vehicles, a critical policy challenge is emerging with respect to the future of the current the vehicle taxation system.

Traditionally, fuel excise has been a substantial revenue stream for the government, funding the maintenance and development of the national road network. However, as the national vehicle fleet increasingly adopts low-emission technologies, fuel excise revenues are set to decline, necessitating a shift to alternative taxation mechanisms.

The current fuel excise system, which taxes petrol and diesel consumption, inherently links vehicle usage to road maintenance funding. With the rise of electric and hydrogen vehicles, this link is weakening. As these vehicles become more prevalent, a new taxation model must be developed to ensure that the necessary revenue for road infrastructure is maintained without stifling the adoption of cleaner technologies.

Several potential alternatives exist, such as road user charges (RUC), which tax drivers based on the distance travelled rather than the fuel consumed. This system can more accurately reflect road usage and wear and tear, ensuring that all vehicle owners contribute fairly to the maintenance of the infrastructure they use. Implementing a comprehensive RUC system requires sophisticated tracking and billing technology, alongside robust privacy safeguards to gain public acceptance.

Vehicle registration fees could also be restructured to reflect vehicle type, weight, and environmental impact, ensuring that larger and heavier vehicles, which cause more road damage, contribute proportionately to road maintenance costs. These fees can be designed to incentivize the adoption of low-emission vehicles while still capturing necessary revenues.

Transitioning to a new vehicle taxation system involves significant policy and logistical challenges, including public consultation, legislative changes, and the deployment of new technologies. However, it is essential to approach this transition strategically to avoid revenue shortfalls that could compromise road maintenance and safety.

In short, as Australia moves towards a greener vehicle fleet, reimagining the vehicle taxation framework is imperative. By adopting a balanced and forward-thinking approach, the government can secure the necessary funds for road infrastructure while promoting the transition to low-carbon transportation. This will ensure sustainable mobility for future generations, aligning economic, environmental, and social goals.

4.7.3. Ensuring that the transition to low carbon mobility vehicles does not create social inequity issues for Australian households or decrease competition in the Australian Road Freight sector.

The transition to Net Zero road transport in 2050 brings additional challenges that are not sufficiently addressed in the Consultation Roadmap in terms of (a)ensuring this transition is equitable and inclusive, especially for low-wealth households and (b) does not unduly reduce the competitive position of small to medium road freight enterprises operating in the national road freight sector.

For low-wealth households, the primary challenge lies in the affordability of electric and hydrogen vehicles. While these vehicles promise lower operating costs and environmental benefits, their higher upfront costs can be prohibitive. Without targeted interventions, there is a risk that the benefits of clean technology will remain accessible only to higher-income households, exacerbating existing social inequities.

Government incentives and subsidies play a crucial role in bridging this gap. Initiatives such as rebates, tax incentives, and low-interest financing options can make electric and hydrogen vehicles more affordable for low-wealth households. Additionally, expanding the availability of second-hand clean vehicles and investing in widespread, affordable charging infrastructure can further democratize access to these technologies.

In the road freight sector, the cost of transitioning to cleaner technology trucks poses a significant hurdle for smaller enterprises. Large corporations may have the financial capacity to invest in electric and hydrogen fleets, but smaller companies could struggle with the higher costs of these vehicles. This financial strain risks consolidating market competition, as smaller players might be driven out, leading to a less competitive and more monopolized market.

To address this, targeted support for small and medium-sized enterprises (SMEs) is essential. This could include grants, low-interest loans, and leasing options specifically designed to help SMEs invest in cleaner technology. Additionally, collaborative programs where small enterprises can pool resources to purchase and share clean technology trucks could mitigate costs.

Government policies must also focus on creating a level playing field in the freight sector. This could involve regulatory measures that ensure fair competition and prevent market monopolization by larger players who can more easily absorb the costs of new technologies. Supporting research and development to reduce the costs of clean technology trucks and encouraging public-private partnerships can also drive down expenses and facilitate broader adoption.

4. Summary

Australia's fuel distribution, fuel wholesale businesses and fuel retail businesses recognise that they have 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 these economies are similar in nature to Australia's market but are significantly ahead of Australia in terms of experience with the adoption of low carbon drivetrains within the road transport sector - both light vehicle and heavy vehicle operation.

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 to support Australia's Net Zero 2050 ambitions.

Nonetheless, ACAPMA and most of its' member businesses, recognise the role that our industry must play in supporting the provision of low carbon mobility energy which includes: (a) increasing provision of public fast charging infrastructure for BEVs, (b) development of first-generation Hydrogen Refuelling stations for heavy vehicles in Eastern Australia, and (c) introducing renewable diesel blends for road freight operation.

The market expansion of these initiatives in accordance with Australia's Net Zero 2050 Ambition 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 and ultra-rapid EV charging infrastructure at service stations.

d) High switching costs associated with the transition from conventional diesel ICE vehicles to BEV and Hydrogen FCEV drivetrains, with this cost penalty expected to be significant and enduring for at least a decade

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

In addition to the market factors cited above, this submission provides specific feedback on the architecture of the Consultation Roadmap for the achievement of Net Zero within the Australian Transport Sector. These comments include:

f) The Roadmap places a disproportionately *low focus* on the delivery of GHG emissions reductions from the market adoption of next generation 'series hybrid' technology within the Australian light vehicle fleet. This approach is considered out-of-step with the increasing focus on environmental merits of this technology - and the lower overall transition costs associated with adoption of same.

g) The Roadmap places a disproportionately *high focus* on the realisation of emissions reductions for the national heavy vehicle fleet via the adoption of low carbon drivetrain technologies (i.e. BEVs and Hydrogen FCEVs), despite these products being subject to very limited availability over the medium term and despite the high-cost premium of these vehicles over conventional powered trucks.

h) The Roadmap places a disproportionately low focus on the realisation of emissions reduction via the widespread market adoption of low carbon liquid fuel blends within the national truck fleet, even though such an approach could deliver significant near-term reductions across the entire fleet (e.g. R10 and R20 diesel blends). These reductions could be stepped over time by utilising the national fuel quality standards mechanism to increase blends of high emission reduction renewable diesel (i.e. minimum 65% emissions reduction for 'neat' product), eventually progressing to ultra-low carbon liquid fuels such as near-zero emissions synthetic diesel.

i) The Roadmap fails to address the key challenge of market adoption of low carbon technology vehicles (both light and heavy vehicles) that is associated with Australia's longstanding retention of high numbers of older vehicles. Failure to address this issue risks non-achievement of the realisation of Australia's Net Zero 2050 aspiration within the national road transport sector. Within this context, trucks 16 years or older are projected to account for one-third of the more than 850,000 trucks that are expected to be in operation in 2030 – with most of these operating in and around Australia's capital cities.

j) The apparent implicit assumption in the Roadmap that new low carbon technology vehicles and low carbon liquid fuels will reach a point of price equivalence with conventional vehicle technology and fuels is highly contestable. It would therefore be prudent for the roadmap to canvass potential economy-wide measures (e.g. differential taxation) to engineer economic equivalence and or reduce the likely inflationary impact on the national economy over the next two decades.

k) The Roadmap is silent on key issues associated with an orderly transition to Net Zero within the Australian Road Transport Sector. Specifically, there is a need to consider (i) the likely movement in the relativities between transport energy over time and the degree to which this could impact clean technology adoption rates, (ii) Australia's desire to maintain good levels of liquid fuel security during the transition given rising geopolitical concerns, (iii) the potential inflationary risk in terms of the future cost of passenger and road transport, and (iv) related issues of social equity for low wealth households and competition distortion risk in the road freight sector.

ACAPMA believes that the above issues are significant and must be addressed as part of the finalisation of Net Zero Transport & Infrastructure Roadmap. If left unaddressed, these issues threaten achievement of the realisation of Net Zero 2050 emissions from the Road Transport Sector in Australia.

5. Recommendations

ACAPMA makes the following recommendations with respect to the finalisation of the national Roadmap for the achievement of Net Zero within the Australian Transport Sector in general, and the road transport sector in particular.

Recommendation 1: The Roadmap needs to include a market credible, multi-technology pathway for reduction of light vehicle emissions via the inclusion of advanced 'series' hybrid technologies - in line with increasing focus on this technology within the global light vehicle market.

Recommendation 2: Increase the emphasis on the likely role to be played by low carbon liquid fuels for the reduction of GHG emissions reduction with the national heavy vehicle fleet. Such an approach could be stepped and utilise the national fuel quality standards mechanism for the market adoption of renewable and synthetic diesel blends that deliver increasing levels of emissions reduction when compared with conventional diesel.

Recommendation 3: Recognising that low carbon vehicle technology and fuels will not come at zero cost to end-users or the economy, undertake an analysis of the likely persistent cost premium of 'fuel-switching' within the national light vehicle and heavy vehicle fleets. Utilise the findings of this analysis to design strategies that seek to mitigate this cost difference such as differential taxation, capital grants for new technology purchases (particularly for road freight operators), and road user charges.

Recommendation 4: Given Australia's longstanding retention of older vehicles, particularly heavy vehicles, explore mechanisms for accelerating replacement of conventionally powered vehicles (especially trucks) with cleaner technology vehicles.

Recommendation 5: Include a discussion about the need for development of alternatives to the current fuel excise regime, including commentary on the likely timing of same, to ensure preservation of the government investment in the national road network in real terms.

Recommendation 6: Include comprehensive commentary on the strategies that will be pursued by the Australian Government to support an orderly and 'fair' transition to low carbon transport, given the complex link between transport activity, social equity and economic input costs (i.e. with respect to freight costs). Specifically, the Roadmap needs to include a discussion about how related national objectives (i.e. liquid fuel security, social equity, and minimisation of inflationary impacts on transport input costs) will be managed throughout the transition to Net Zero 2050.

6. Further Information

Further information about this submission can be obtained by contacting the below officer:

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