Consultation on the design of a Fuel Efficiency Standard

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Introduction

The Australian Hydrogen Council (AHC) is the peak body for the hydrogen industry, with over 100 members from across the hydrogen value chain. Our members are at the forefront of Australia's hydrogen industry, developing the technology, skills and partnerships necessary to ensure that hydrogen plays a meaningful role in decarbonising Australian industry.

AHC welcomes the opportunity to engage with the design of an Australian fuel efficiency standard (FES) and commends the introduction of the National Electric Vehicle Strategy in April.

A FES has the capability to effectively reduce the emissions intensity of Australia's road transport, as well as facilitate the supply of zero and low emissions vehicles (ZLEVs), including fuel cell electric vehicles (FCEVs). This enabling mechanism will signal Australia's seriousness to manufacturers, accelerating the availability, affordability, choice and technologies of passenger and light commercial vehicles.

In fact, it is unclear how Australia can meet the legislated goal of a 43 per cent emissions reduction on 2005 levels by 2030 without a robust transport strategy, including policy such as a significant and globally competitive FES. Acknowledging how delayed Australia is in comparison to similar international jurisdictions, especially as a relatively small market, it is integral that Australia can reduce this gap to gain supply of the most efficient ZLEVs as soon as possible.

Additionally, AHC supports the super credits mechanism in encouraging ZLEVs and especially FCEV supply and demand. This approach means that the importation and sale of ZLEVs is incentivised as these are counted as more than one vehicle under the FES, potentially leading to lower prices, increased prevalence and therefore acceptance of alternative technologies. However, to ensure transparency and avoid these multipliers being used to offset business as usual in the long term, this mechanism should be phased out. This will enable greater supply of ZLEV technology as Australian vehicle suppliers are navigating this new and ambitious FES, and these super credits will be phased out after this grace period as the technologies also become more prevalent on Australian roads.

We need a national ZLEV strategy for heavy vehicles

AHC, alongside the Australian Trucking Association (ATA), the Electric Vehicle Council (EVC) and the Heavy Vehicle Industry Association (HVIA), recently released a statement in response to the National Electric Vehicle Strategy requesting an extension to heavy vehicles and noting the urgency for government action.

The heavy vehicle industry needs a market signal to provide confidence and certainty of investment. The fundamental priorities refer to regulatory barriers and infrastructure, but as these are recognised, ambitious policy will be required to also drive down the costs and encourage supply of heavy ZLEVs. To assist this, AHC calls upon the Australian Government to engage with industry to determine whether a fuel efficiency standard for heavy vehicles or a sales target will suit the Australian context.

With the implementation of a fuel efficiency standard for light vehicles, this could be extended for heavy vehicles; however, with separate targets to other vehicle categories. This mechanism has

been utilised in similar jurisdictions, such as in Europe, and is generally a holistic albeit more complicated mechanism. An alternative is a sales target for heavy ZLEVs, which is a key element of the Global Memorandum of Understanding on Zero-Emission Medium and Heavy-Duty Vehicles which was a COP26 pledge that has currently been signed by 27 countries. This MoU includes a sales goal for zero emission new truck and bus sales of 30 per cent by 2030 and 100 per cent by 2040. Similarly, in the 2022 Grattan Truck Plan report,[1] it recommends starting an Australian zero emissions sales target for rigid trucks at 2 per cent for a 2024 implementation, ramping up to 30 per cent by 2030 and 100 per cent by 2040.

Either way, this mechanism will play a key role in a comprehensive national heavy ZLEV strategy, which should also incorporate additional enablers such as investment in refuelling infrastructure and further FCEV trials, as well as tax breaks or instant asset write-off on the purchase of heavy FCEVs. The Grattan Institute[2] recommended a purchase price incentive to bridge the cost gap for businesses while the heavy ZLEV technology matures, ultimately accelerating the transition. This included a mechanism referencing the California Hybrid and Zero Emission Truck and Bus Voucher Incentive Project (HVIP), in which the Australian Government could offer vouchers to businesses at the point of purchase for 50% of the gap, which would shrink as heavy ZLEVs reach price parity with diesel.

There are also non-financial mechanisms that could be employed now to enable the supply of commercial ZLEVs, including the adoption of clean truck zones/exemptions from urban truck curfews, signing the Global Memorandum of Understanding on Zero-Emission Medium and Heavy-Duty Vehicles, removing import duties on ZLEVs, the review of Australian Design Rules to align with international standards, and implementing axle mass concessions for ZLEV trucks to counteract the payload capacity lost to heavy ZLEV technology.

We address several of these matters in this submission.

Heavy vehicles must be addressed now

We note that heavy vehicles have been excluded from the proposed fuel efficiency standard and largely from the National Electric Vehicle Strategy. It is not made clear why the consultation paper only covers light vehicles and whether there is scope for this or another strategy to include other vehicle categories. We are concerned that this is a lost opportunity and we strongly recommend that the Australian Government considers extending a focus to heavy vehicles (buses and trucks) as part of conducting a comprehensive heavy vehicle strategy.

Light LZEVs are increasing in prevalence. The Federal Chamber of Automotive Industries[3] has reiterated this in its recent sales data, where electric vehicles (EVs) accounted for 8 per cent of April 2023 sales in comparison to 1.1 per cent in April 2022. AHC is glad to see this traction, but we believe that this focus on the transport sector – Australia's most emissions intensive – needs to broaden in scope to incorporate heavy vehicles.

[1] Terrill, M., Burfurd, I. and Fox, L. (2022), *The Grattan truck plan: Practical policies for cleaner freight*, Grattan Institute, report, August, https://grattan.edu.au/wp-content/uploads/2022/08/Grattan-Truck-Plan-Report.pdf.
[2] Ibid.
[3] Federal Chamber of Automotive Industries (2023), *FCAI releases April 2023 car sales data*, media release, 3 May, https://www.fcai.com.au/news/index/view/news/798.

In response to the National Electric Vehicle Strategy, a report by Adiona Tech[4] used the latest ABS vehicle data to illustrate why heavy vehicles warrant the focus of transport decarbonisation. While passenger cars represent a higher proportion of the Australian landscape, both in terms of volume and emissions total, at 75 per cent and 52 per cent respectfully, heavy vehicles are much less fuel efficient. To illustrate, articulated trucks represent only one per cent of the vehicles on Australian roads but make up 15 per cent of transport emissions. Furthermore, articulated trucks travel vast distances; 600 per cent more kilometres per year than the average passenger vehicle. Adiona Tech's conservative estimate suggests that transitioning one delivery truck is equivalent to almost six passenger LZEVs. The benefit of decarbonising Australia's heavy vehicles is on a steeper scale and indicates an opportunity not yet recognised towards our net zero ambitions.

In order to take advantage of this prospect, Australia must first realise some of the factors that impact heavy vehicle transition. As a brief overview, AHC would like to point the government's attention to the matters of pace to transition, the commercial nature of heavy vehicles, and some of the barriers facing heavy ZLEV uptake, namely regarding design regulations and considering insufficient refuelling infrastructure.

Heavy transport requires much more time to transition

The heavy transport transition in Australia is naturally much slower than the transition for lighter transport. A major factor is that Australian trucks remain in use significantly longer than other countries, with an average age of 10-15 years. [5] The Grattan Institute[6] notes that approximately 14 per cent of Australian trucks on the road were built before 1996, when Australia had not yet implemented a pollution standard, and a further 12 per cent (1996-2002) were only required to fulfil the Euro I. This means that Australia's heavy transport topography holds an unbalanced proportion of outdated and heavily polluting vehicles that do not meet current standards, let alone ambitious targets. Australia therefore requires an array of support mechanisms to bring down the average age and consequently emissions of heavy vehicles.

However, when these older vehicles are up for replacement and Australia looks to decarbonise, unfortunately the supply of ZLEV technology for heavy vehicles also lags. The Truck Industry Council[7] estimates that truck technology is approximately five years behind passenger vehicles and there isn't yet a viable, commercially available ZLEV technology for freight on an ICE replacement basis. This is where a fuel efficiency standard or ZLEV sales target for heavy vehicles could play a pivotal role in

[4] Adiona Tech (2023), *Connected Thinking: An Adiona Tech report on Australian transport electrification priorities*, https://www.adionatech.com/resources/connected-thinking-report.
This report is primarily based on the most recent data from the Australian Bureau of Statistics - ABS (2020), *Survey of Motor Vehicle Use, Australia*, https://www.abs.gov.au/statistics/industry/tourism-and-transport/survey-motor-vehicle-use-australia/latest-release).

[5] Electric Vehicle Council and Australian Trucking Association (2021), *Electric trucks: Keeping shelves stocked in a net zero world*, https://electricvehiclecouncil.com.au/wp-content/uploads/2022/01/ATA-EVC-Electric-trucks_Keeping-shelves-stocked-in-a-net-zero-world-2.pdf.

[6] Terrill, M., Burfurd, I. and Fox, L. (2022), *The Grattan truck plan: Practical policies for cleaner freight*, Grattan Institute, report, August, https://grattan.edu.au/wp-content/uploads/2022/08/Grattan-Truck-Plan-Report.pdf.

[7] Truck Industry Council (2022), *Truck Industry Council's submission to the Commonwealth of Australia's National Electric Vehicle Strategy Consultation Paper – September 2022*, https://consult.dcceew.gov.au/national-electric-vehicle-strategy/submission/view/457.

signalling Australia's appetite for heavy vehicle transition, incentivising the supply and affordability of ZLEVs.

Furthermore, heavy vehicles are generally a commercial asset and, more so than passenger vehicles, require a strong business case for the full lifecycle of the vehicle and recognition of risk. Approximately 80 per cent of truck businesses have five or less vehicles, therefore, the risk of transitioning even a single truck is a significant share of the business' operational capabilities. [8] In this case, the uncertainty concerning total cost of ownership and insufficient infrastructure is compounded, requiring substantial indicators and enablers to incentivise transition. There is an important role for the Australian Government to support these businesses in their transition, facilitating confidence and alleviating overheads through mechanisms such as subsidies, tax breaks and scrapping import duties for heavy ZLEVs.

Regulatory barriers create unnecessary delays in vehicle adoption

Australia imports over 90 per cent of its medium trucks from Japan, and around two thirds of heavy trucks from Japan or Europe. However, Australian design standards are different from all overseas markets: Australian trucks cannot be wider than 2.5m, which is misaligned with Europe (2.55m) and North America (2.6m). Vehicles based on EU or US market designs are around 60 per cent of new heavy trucks, and the cost to redesign for our market is estimated at A$15-$30 million a year.[9] Future battery electric vehicles (BEV) and FCEV trucks will be even more costly/difficult to redesign. We recognise the work that the Australian Government has been undertaking to address the international harmonisation of the Australian design rules (ADRs) and urge that these standards be further reviewed to lessen the regulatory barriers, within reason and while upholding safety.

Additionally, steer axle mass concessions should be considered for heavy ZLEVs. ZLEV technology is generally heavier than an ICE, meaning that this weight cuts into the mass capacity that would be allocated to payload.[10] As a short-term incentive to combat this deterrent, the Australian Government should implement an axle mass concession for commercial heavy ZLEVs, so as to allow for technical non-compliance for vehicles currently in operation. [11] This is a mechanism that has been utilised in comparable overseas jurisdictions, such as the EU and California.

Heavy vehicles already operate at a range of dimensions and weights, including through individual road access permit approvals and the Performance Based Standards scheme. However, this approach has a high regulatory burden which disincentivises use of these vehicles. Incentivising a large scale shift to heavy ZLEVs will require these vehicles to become widely available and without a payload or regulatory penalty, which can be achieved with an axle mass concession.

[8] Ibid.
[9] Department of Infrastructure, Transport, Regional Development and Communications (2021), *Discussion Paper: Safer freight vehicles*, Australian Government, p. 5.
[10] Lee, B., Gordon, J., Sutton, K. and Kushwah, A. (2023), *Roadmap to Fuel Cell Electric Truck Commercialization California Market Assessment*, CALSTART, March, https://calstart.org/wp-content/uploads/2023/03/Roadmap-to-FCET-Commercialization.pdf, p. 6.
[11] See EVC & ATA (2021), p. 14, and Terrill, Burfurd & Fox (2022), p. 30.

Total cost of ownership certainty for FCEVs requires further heavy vehicle trials

It is recognised that FCEVs will play a significant role in heavy transport alongside BEVs. As noted in the 2019 National Hydrogen Strategy, hydrogen fuel carries significantly more energy than the equivalent weight of batteries. This is particularly useful for buses and trucks that must travel long distances, or where battery weight compromises effective payload. It is also suitable for commercial use, where effective range and recharging/refuelling times affect the bottom line.[12]

A significant factor in the uptake of heavy FCEVs is the uncertainty of total cost of ownership (TCO). While there is significant work being produced to assist in this calculation, including from AHC members, the Australian Government can also play an additional role in facilitating heavy vehicle trials. These knowledge gaps due to the immaturity of the technology within the Australian context affect the investment gap. As noted by Advisian,[13] manufacturers need to provide supply to create fleet sizes that justify the (unclear) potential infrastructure spend, and purchasers need proof of fuel consumption and operational cost benefits over the life of a vehicle (also currently unclear). Until commercial pilots can provide commercial operations with strong validation of a fully commercial product and business model, heavy ZLEVs will experience slow adoption.

In its work for the National Hydrogen Strategy in 2019, Aurecon[14] recommended that for FCEV trials to be considered effective with substantial evidence and learnings across a sufficient fleet size, investment would need to be between $20-$100 million for each trial. AHC notes the significant work and funding that the federal and state governments have invested in FCEV bus and truck trials, however almost four years on, the State of Hydrogen report[15] illustrates that only the investment in the Hume Hydrogen Highway initiative has reached this financial threshold, and at the lowest end.

The Hume Hydrogen Highway is an integral and welcome initiative, in which we look forward to the next stages when proponents are announced and the proposed extension to Queensland for the East Coast Renewable Hydrogen Refuelling Network is committed. Provided how long is required to design, consult, tender and execute on such projects, it is paramount that sufficient planning and funding is allocated for each individual freight corridor to ensure that TCO is further clarified and lessons learned are coordinated.

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[12] California Fuel Cell Partnership (2021), *Fuel cell electric trucks: A vision for freight movement in California – and beyond*, July, https://app.greenrope.com/content/Fuel-Cell-Electric-Trucks-Vision-CaFCP.pdf, p. 9.
[13] Advisian (2021), *Australian hydrogen market study: Sector analysis summary*, 24 May, for the Clean Energy Finance Corporation, https://www.cefc.com.au/media/nhnhwlxu/australian-hydrogen-market-study.pdf.
[14] Aurecon (2019), *Hydrogen for Transport: Prospective Australian Use Cases*, October, https://www.dcceew.gov.au/sites/default/files/documents/nhs-hydrogen-for-transport-report-2019.pdf
[15] Department of Climate Change, Energy, the Environment and Water (2023), *State of Hydrogen 2022*, Australian Government, https://www.dcceew.gov.au/sites/default/files/documents/state-of-hydrogen-2022.pdf

As advocated for in our White Paper,[16] AHC would recommend the below as part of a heavy ZLEV strategy to assist in TCO calculations:

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

Refuelling infrastructure must be boosted in major freight corridors

The recently released National Hydrogen Infrastructure Assessment[17] recognises the transport sector as the largest contributor to domestic hydrogen demand in the coming decade. Despite this, the State of Hydrogen 2022 report[18] identifies light and heavy transport to be two of the four slowest advancing hydrogen sectors. Both reports point to the importance of refuelling infrastructure to support this demand, with an emphasis of locating infrastructure in major cities and along heavy haulage routes. While there is a pipeline of committed, publicly funded refuelling projects, further infrastructure investment is required to expand this network along these and additional corridors, combatting range anxiety and empowering commercial vehicle owners to transition their fleets to ZLEVs.

The heavy transport industry is developing FCEV models, many of which will be available in the second half of this decade indicating the acceleration of availability. In a study[19] of heavy transport across Europe, USA, China and India, it noted that FCEVs will cater for up to 50 per cent of long-haul transport in these regions and would expect TCO parity with ICE between 2032 and 2037 (excluding India which is expected to take longer) based on current policy ambition and fuel prices. In order to decarbonise the transport sector and help Australia meet our net zero ambitions, we will need strong policy to bring FCEV price parity forward. However, this will be halted if there is insufficient refuelling infrastructure to support this.

Furthermore, there is a necessary role for the Australian Government to coordinate a public refuelling network with nationally standardised consideration of access, suitability and consistency of hydrogen form (referring to liquid or compressed gas at specific pressure). Without a nationally

[16] Australian Hydrogen Council (2021), *Unlocking Australia's hydrogen opportunity*, September, https://h2council.com.au/wp-content/uploads/2022/10/AHC_White_Paper_FINAL_28-Sep-21_2021-09-30-012757.pdf

[17] ARUP (2023), *National Hydrogen Infrastructure Assessment: Final Report*, Australian Government, https://www.dcceew.gov.au/sites/default/files/documents/national-hydrogen-infrastructure-assessment-final-report.pdf

[18] Department of Climate Change, Energy, the Environment and Water (2023), *State of Hydrogen 2022*, Australian Government, https://www.dcceew.gov.au/sites/default/files/documents/state-of-hydrogen-2022.pdf, p. 11.

[19] Mission Possible Partnership (2022), *Making Zero-Emissions Trucking Possible: Trucking Transition Strategy*, July, https://missionpossiblepartnership.org/wp-content/uploads/2022/11/Making-Zero-Emissions-Trucking-Possible.pdf, p. 10.

consistent infrastructure strategy, ideally based on international standards, the TCO of FCEV is severely impacted.

Looking at the pipeline of publicly funded hydrogen refuelling infrastructure, there will be four refuellers along the Hume Hydrogen Highway (NSW and VIC with scope for QLD expansion), a network proposed by CS Energy (QLD), as well as one refueller each from Aurizon (QLD), Viva Energy (VIC) and ATCO (WA).[20] While there are additional refuelling stations under construction and under development, these publicly funded projects can reasonably be expected to be consistent in terms of hydrogen form and accessibility. Despite the relatively long range of FCEVs, provided the dispersed locations and distance between refuelling stations, there is a risk even if only one of these is inaccessible or under maintenance that travel becomes uncertain and compromises the security of the network.

Summary

Once again, we welcome the National Electric Vehicle Strategy and the opportunity to engage with the design of an Australian fuel efficiency standard. However, there is an urgent necessity to extend the Australian Government's focus on decarbonising domestic transport to the heavy industry. We acknowledge the significant investment already supplied, but more is required.

It is with these key issues in mind that AHC makes the following recommendations:

1. Under the current consultation, enforce an ambitious FES for light vehicles.
2. Develop a national ZLEV strategy for heavy vehicles with both financial and non-financial incentives, including:
    a. A lessening of the regulatory and administrative burden, especially concerning width and axle mass, through the harmonisation of standards with international markets and a ZLEV axle mass concession.
    b. Fund further heavy FCEV trials to aid total cost of ownership certainty. This should include separate trials for heavily-trafficked truck routes (at least two trials of heavy fleets at minimum of $200 million each), lighter logistics trucks (at least three trials at $25 million each), and for bus routes near hydrogen centres (at least two larger trials at $45 million each for 40 buses).
    c. Increase investment and planning in refuelling infrastructure, coordinating a nationally consistent network that will be ready for FCEV demand.
    d. Develop a heavy vehicle FES or sales target for the Australian context.

We look forward to engaging further in this matter.

If you wish to discuss any element of this submission in further detail, please contact me at ncerexhe@h2council.com.au.

[20] Department of Climate Change, Energy, the Environment and Water (2023), *State of Hydrogen 2022*, Australian Government, https://www.dcceew.gov.au/sites/default/files/documents/state-of-hydrogen-2022.pdf, p. 26-29.

Kind Regards,

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