

# Transport and Infrastructure Net Zero Consultation Roadmap

## Take the survey

Department of Climate Change, Energy, Environment and Water

---

Response received at:

July 26, 2024 at 12:17 PM GMT+10

Response ID:

sbm2f82ecc15d60b87bd2248

---

1 Confirm that you have read and understand this privacy notice.

Yes

2 Please indicate how and if you want your submission published.

Public

3 Published name

Hiringa Energy Pty Ltd

4 Confirm that you have read and understand this declaration.

Yes

5 First name

Jack

6 Last name

Rickers

7 Email

[REDACTED]

8 Phone

[REDACTED]

9 Who are you answering on behalf of?

Organisation

10 Organisation name

Hiringa Energy Pty Ltd

11 What best describes you or your organisation?

Industry

12 What sector do you represent?

Heavy road vehicles (trucks, buses etc.)

Energy

Infrastructure

All transport

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  
Hiringa Energy - Transport and Infrastructure Net Zero Roadmap - Consultation Response.pdf
- 69 Upload a submission  
Not answered
- 70 Upload supporting file  
Not answered
- 71 Upload supporting file  
Not answered

# HIRINGA

## HIRINGA ENERGY

### TRANSPORT & INFRASTRUCTURE NET ZERO ROADMAP CONSULTATION RESPONSE



---

## EXECUTIVE SUMMARY

---

Hiringa appreciate the opportunity to provide feedback to the Transport & Infrastructure *Net Zero Roadmap*.

Hiringa's response is summarised as follows:

- **There is no 'silver bullet'** to decarbonise heavy road transport. We agree that a diverse supply of low and zero-emission technologies and fuels, enabling infrastructure, and incentives are required to shift demand away from diesel reliance.
- **There is strong evidence supporting hydrogen as an 'efficient' abatement pathway** for several applications and heavy vehicle types due to comparatively short refuelling times, payload maximisation and range.
- **Hydrogen blending systems are an effective short to medium-term solution** to decarbonise Australia's ICE fleets and accelerate deployment of hydrogen refuelling infrastructure.
- **The forecasted schedule for refuelling infrastructure and FCET availability should be brought forward.** Hiringa have proven the viability of a commercial-scale refuelling network in New Zealand, and the timing for TCO parity between FCETs and diesel ICE vehicles in Australia is fast approaching.
- **We support the announcement of a National Hydrogen Highways** funding program if carefully delivered, however caution against 'picking winners' and crowding out broader investment.
- **Vehicle subsidisation for early adopters, accelerating regulatory reform and lowering the investment barriers** for all potential investors are recommended for Government action.

**Jack Rickers**

Commercial and Business Development Lead



 | [W www.hiringaenergy.com](http://www.hiringaenergy.com)

## Definitions

Acronym	Definitions
ADR	Australian Design Rule
ATA	Australian Trucking Association
CRC	Co-operative Research Centre
FCET	(Hydrogen) Fuel Cell Electric Truck
CSIRO	Commonwealth Scientific and Industrial Research Organisation
HRAU	Hiringa Refuelling Australia
HRNZ	Hiringa Refuelling New Zealand
HVIA	Heavy Vehicle Industry Association
ICE	Internal Combustion Engine
OEM	Original Equipment Manufacturer
TCO	Total Cost of Ownership
ZEV	Zero Emission Vehicle

# NET ZERO ROADMAP CONSULTATION RESPONSES

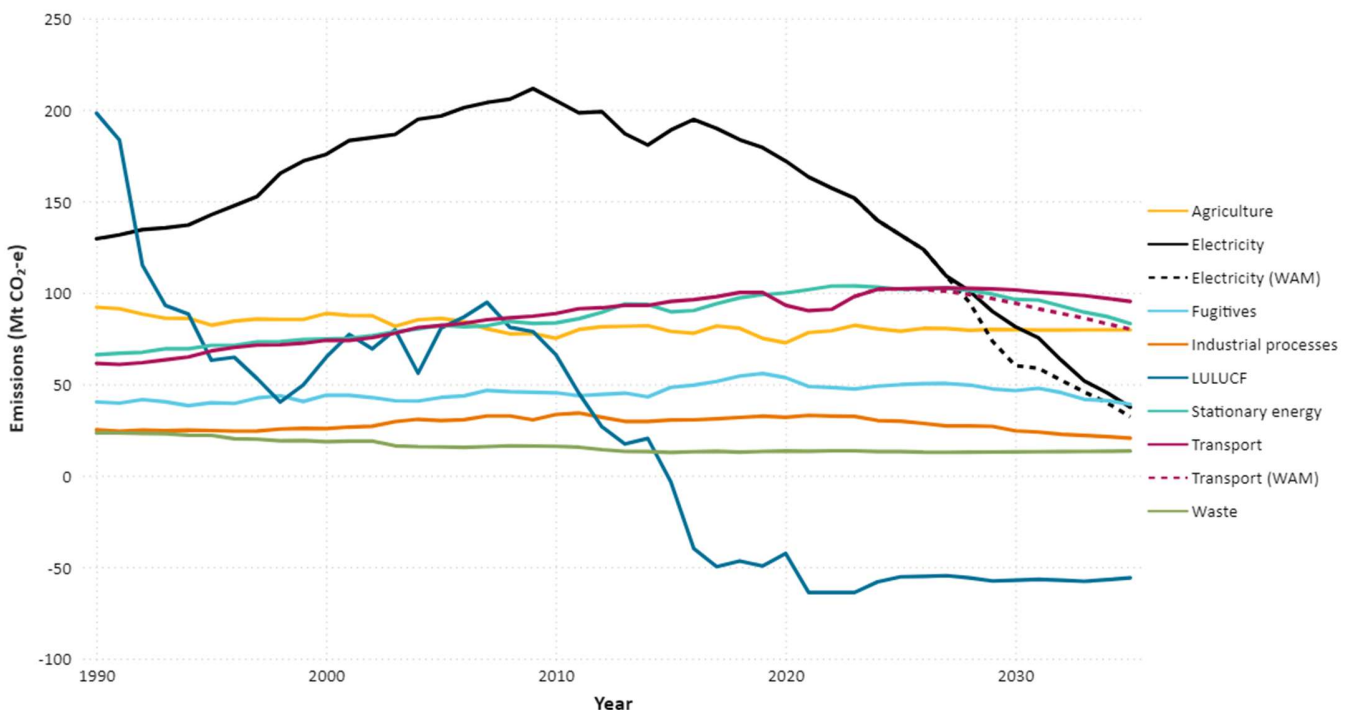
**QUESTION 10.** THE HEAVY VEHICLE NET ZERO PATHWAY RELIES ON A MIX OF TECHNOLOGIES. WHICH OF THESE SHOULD BE PRIORITISED AND WHY?

**There is no ‘silver bullet’** to transition heavy road vehicles away from fossil fuels.

Hiringa agree that a diverse supply of low and zero-emission technologies and fuels, enabling infrastructure and incentives are required to shift demand away from diesel reliance.

Transport is set to become Australia’s highest emitting sector by 2030. Articulated and rigid trucks will be a major contributor with emissions set to increase 15% over the next decade<sup>1</sup>. This is despite passenger vehicle emissions falling between 2025 and 2030.

While true this uplift will be driven by Australia’s growing freight task, it also highlights the hard-to-abate nature of heavy road vehicles.



Australia's emissions projects under the baseline and 'with additional measures' scenario Mt CO<sub>2</sub>-e. Source: DCCEEW

<sup>1</sup> <https://www.infrastructure.gov.au/sites/default/files/documents/transport-and-infrastructure-net-zero-consultation-roadmap.pdf>

For heavy road vehicles in particular, the most **efficient**<sup>2</sup> abatement pathway will be use-case specific, impacted by range of interrelated economic, technical, operational and environmental factors, including but not merely well-to-wheel efficiency.

In our view hydrogen is likely to be the most efficient pathway for several heavy road vehicle applications. The key reasons why are summarised by a recent CSIRO Report<sup>3</sup>, which suggest FCETs will play a material role abating linehaul freight task due to:

- Comparatively short refuelling times compared to alternate solutions, being especially important where time-cost is critical.
- Payload maximisation, through avoiding a substantial negative impact of carrying large, heavy batteries; and
- Greater range between refuelling / charging locations.

‘Dual fuel’ technologies should also be considered an important short to medium-term solution.

The average age of a truck on Australia’s roads exceeds 14 years and the transition of fleets to zero emission solutions will be gradual. Addressing emissions from existing and yet to be purchased ICE vehicles is therefore essential.

There are several options to address ICE vehicle emissions, such as the recently introduced ADR 80/04 mandating Euro VI fuel efficiency standards, as well as ‘drop in’-fuels however these are unlikely to be made widely available in the near-term.

Hydrogen fuel blending systems have strong potential to immediately address otherwise unavoidable emissions.

Additionally, because the cost of retrofitting traditional vehicles with hydrogen blending systems is low compared to new ZEVs, with supporting incentives adoption has the potential to be rapid. Because dual fuel technologies allow trucks to switch back to diesel once hydrogen has been consumed, the solution will also reduce adoption barriers such as range anxiety and hydrogen fuel availability or cost certainty.

Dual fuel trucks can support immediate establishment of hydrogen refuelling infrastructure, thereby overcoming the ‘chicken and egg’ dilemma preventing more rapid availability of FCETs in Australia.

Current examples of hydrogen fuel blending systems include:

- WASCO Australia’s hydrogen fuel blending system integrated with a Freightliner Coronado 114 long distance haulage prime mover. Trials in April 2024 demonstrated 20% diesel offset on a normal duty cycle; and
- MyTransport’s dual fuel blending system integrated with several prime movers, demonstrating up to a 40% diesel offset.

---

<sup>2</sup> It is important to define what we mean by ‘efficient’ in the context of decarbonisation. For any given carbon-intensive activity, there will be a range of technically-feasible decarbonisation pathways, and the most efficient is that which delivers decarbonisation at the lowest (unsubsidised) abatement cost, AND (importantly) at the required scale.

<sup>3</sup> CSIRO (2023). *Hydrogen Vehicle Refuelling Infrastructure Report*.



Picture courtesy of NZ Trucking Media: MyTransport's dual fuel integrated into Volvo FM Prime Mover (30kg hydrogen storage) with B-Double trailer fueling with H2 at Hiringa Auckland station



MyTransport's dual fuel integrated into Volvo FH 700 Prime Mover

**QUESTION 9. DO YOU AGREE WITH THE NET ZERO PATHWAY FOR HEAVY ROAD VEHICLES?**

**The timeline for hydrogen deployment should be accelerated.**

The *Net Zero Roadmap* forecasts the ‘scale up’ of hydrogen refuelling infrastructure to occur after 2030 and wide-spread availability after 2040.

In Hiringa’s view these timelines should be more ambitious for the following reasons:

**1. New Zealand is demonstrating viability of the commercial ‘scale-up’ of hydrogen refuelling now, as Australia should**

Hiringa’s development of HRNZ,<sup>4</sup> an operating, high-capacity hydrogen heavy vehicle refuelling network in New Zealand is demonstrating that hydrogen can indeed be relatively competitive with diesel in heavy vehicle applications now, with limited initial policy support.

The HRNZ Network reached financial close for Phase 1 in September 2021 and was formally launched on 23rd April 2024. Phase 1 comprises an initial four hydrogen refuelling stations to service up to 95% of New Zealand’s North Island heavy freight movements.



*HRNZ Phase 1 Network Locations*

<sup>4</sup> Hiringa Refuelling New Zealand (“HRNZ”) is a joint investment by Hiringa, Mitsui, Green Impact Partners and K1W1, with concessional debt support from the New Zealand Government’s Energy Efficiency and Conservation Authority. See <https://www.hiringaenergy.com/post/ground-to-be-broken-on-new-zealand-s-first-green-hydrogen-refuelling-site>

HRNZ development overcame similar deployment and adoption barriers faced by Australia's heavy transport industry. While the differences between the jurisdictions are well understood, Hiringa believe Australian network development is also viable in the near-term, with targeted support.

Key to Hiringa's New Zealand success, and replicable learnings for Australia include:

1. Partnership with required supply chain participants. For example, HRNZ development included shipper and carrier networks, fleet owners (e.g. TR Group) and OEMs; and
2. Design and deployment of infrastructure to best service vehicles and applications where hydrogen has been demonstrated as an efficient solution, such as interstate linehaul. This includes:
  - *Phased establishment of minimum viable networks*, based on combining both logistics and transport hubs and inter-region network nodes servicing major linehaul freight corridors (e.g. the Pacific and Hume highways). This approach focusses supply toward identified early adopting vehicle classes where there is strong evidence supporting hydrogen as the most efficient abatement pathway;
  - *A distributed layout with suitable site spacing*, to ensure hydrogen fuel supply security and network redundancy for current 350 bar and emerging 700 bar HFCEV technologies. This layout also offers an operationally consistent experience to current diesel refuelling; and
  - *Onsite production*, required for initial network development to provide supply security and due to cost of transport and limited, expensive 3<sup>rd</sup> party supply options.

## **2. Refuelling infrastructure should be deployed now to take advantage of approaching TCO parity between FCETs and diesel trucks.**

FCET technologies may reach parity with diesel trucks before the anticipated 'scale up' of refuelling infrastructure. To fully take advantage of the expected TCO parity for various FCET classifications for interstate linehaul, the scale-up of refuelling infrastructure must occur prior, or at minimum concurrently

Recent TCO modelling<sup>5</sup> undertaken by Swinburne University in collaboration with Federal and state governments identifies FCET technology as the fastest to achieve parity with fossil fuels for several heavy vehicle classes for interstate transport.

Key findings are visualised below:

---

<sup>5</sup> TCO undertaken as part of the iMOVE CRC funded 'Transition Toward Zero Emissions Heavy Vehicles: Analysis, Planning and Policy' Project.

Vehicle	Technology type	The year of price parity		
		Best case	Neutral case	Worst case
B-double	BET	2027	2030	2039
	FCET	2026	2029	2033
Semi-trailer	BET	2029	2034	2045
	FCET	2027	2030	2035
Rigid truck	BET	2028	2032	2041
	FCET	2027	2030	2035

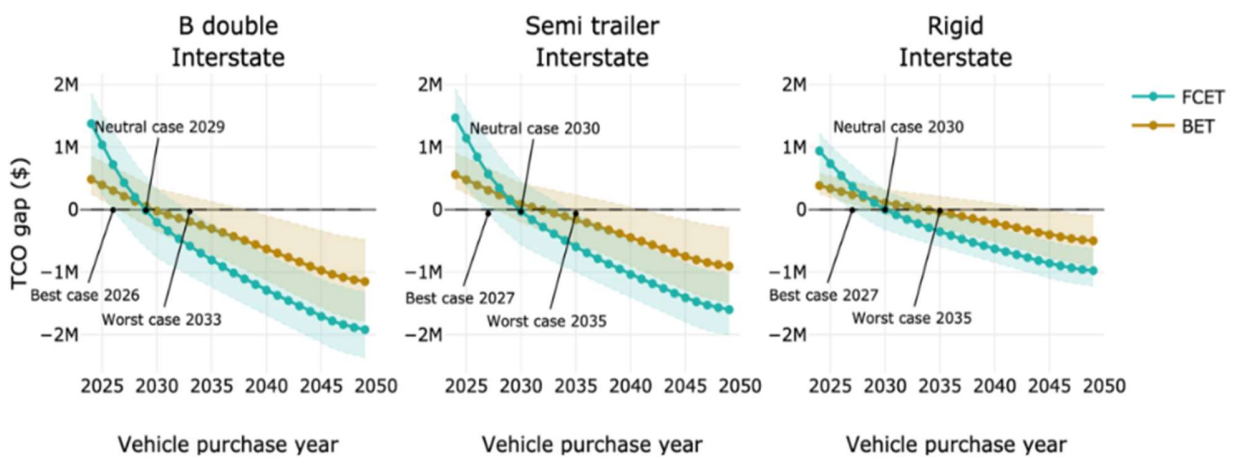


Figure 1 - TCO findings presented by Swinburn University at the HVIA's 'Truck show X' May 2024.

## 10. WHAT ACTIONS NEED TO BE TAKEN, AND HOW WOULD THESE CHALLENGES ADDRESS CHALLENGES AND OPPORTUNITIES?

Key actions by government should seek to overcome hydrogen adoption barriers (challenges) identified within the *Net Zero Roadmap*, leading to accelerated availability of refuelling infrastructure and FCETs.

At present, the Australian Government should prioritise laying durable industry foundations (including policy mechanisms) upon which scaled market activation can be built in the near-term.

There are several policy options which could support this outcome, outlined below:

### 'Hydrogen Highway' Funding

We acknowledge that the Commonwealth Government has already announced \$80 million to support delivery of an Australia-wide Hydrogen Highways initiative.

National program delivery should leverage learnings resulting from the NSW/VIC Hume Hydrogen Highway initiative which is still yet to announce a successful recipient(s). While the objectives of the initiative are appropriate, we note:

- The \$20 million size of the funding pool is only capable of supporting a single consortium. The implication is to crowd out broader investment along the Hume Highway as new entrants may consider they are unable to compete with subsidised competitors; and
- Extended delay in the announcement has disrupted further project planning within the target region (including our own) due to uncertainty in the competitive landscape.

As a result, we caution whether alone this approach – being ‘winner takes all’ and very lengthy in delivery, will be sufficient to materially accelerate decarbonisation of heavy road transport, which (as we have noted) is a very clear opportunity, but one which requires broad sector investment by multiple participants.

### **Additional Government Actions and Policy Options**

Instead, or perhaps in tandem, we suggest additional funding is appropriated and broadly distributed across the following three areas:

#### **1. Vehicle subsidisation for early adopters.**

While diminishing, there remains a TCO disparity between heavy FCET and diesel fleets, driven by higher capital cost for heavy FCET acquisition at the current early stage of deployment of these vehicles, where basic economies of scale for vehicle manufacturers do not yet exist.

Given this, we advocate for introduction of a broadly available fixed capital subsidy administered on a ‘first-in, first-served’ basis<sup>6</sup> for purchase and/or lease of heavy FCETs, with a clear plan for adjustment downwards over time in per-vehicle terms as the cost improvements are realised.

Eligibility should be broad, to include dual fuel technologies due to the long life of Australia’s existing ICE fleets and the ability to deliver immediate emission reduction outcomes and support deployment hydrogen refuelling infrastructure, accelerating the timeline for FCET availability.

The subsidy could be tiered, with respect to the TCO for grouped vehicle classifications and proportionate with likely abatement impact.

Within the medium term, Hiringa expects such a policy may be able to be withdrawn entirely, provided other broader carbon policy support (such as valuing the efficient abatement being delivered in this manner) persist for the long term.

#### **2. Accelerate regulatory reforms to support Australia as a destination market for heavy FCEVs**

Conversion costs for Australian compliance adds a further cost barrier to hydrogen adoption within the sector, and so discourages global vehicle manufacturers who otherwise may prioritise Australia as a high-ambition market for decarbonising road transport.

We agree with ATA’s recommendation to increase truck and trailer width to 2.6 metres. We note that the ATA’s submission paper responding to the ‘Safer Freight Vehicles Discussion Paper’<sup>7</sup>

<sup>6</sup> An example of an established subsidisation model is California’s ‘Hybrid and Zero-emission Truck and Bus Voucher Incentive Project’ (“HVIP”) which incentivises purchase of zero-emission heavy vehicles by providing vouchers for purchasers and lessees for eligible vehicles on a first come, first-served basis. <https://californiahvip.org/>

<sup>7</sup> See <https://www.truck.net.au/sites/default/files/submissions/20210630ATASubmissionSaferFreightVehicles.pdf>

identifies ‘access to the latest international technology and zero emission vehicles’ as a motivation for its position.

### 3. Lower the infrastructure investment barrier for all potential investors

Rather than ad-hoc grant funding for one or a handful of hydrogen refuelling stations, a broadly-available and efficiently-delivered policy support mechanism for narrowing the delivered cost of hydrogen fuel to heavy FCET users should be established.

This might be in the form of a **customer rebate on fuel cost**, including a self-adjusting ‘contract for difference’ model relative to diesel, and/or **production support mechanism** (such as the NSW Renewable Fuel Scheme) providing value to the producer or retailer of the hydrogen fuel to allow them to lower their sales price.

New Zealand government provided \$16 million of finance as part of the HRNZ \$NZD50 million project.

Regardless of the recipient of the subsidy, such a policy provides broad support to demand for hydrogen as a transport fuel and thus the certainty needed to underpin refuelling infrastructure investments.

A policy of this type is not distortive to competition among hydrogen producers, retailers or customers as the support is available equally to all. In fact, this competition maintains a strong incentive to be lowest-cost operating on such a level playing field for policy support.