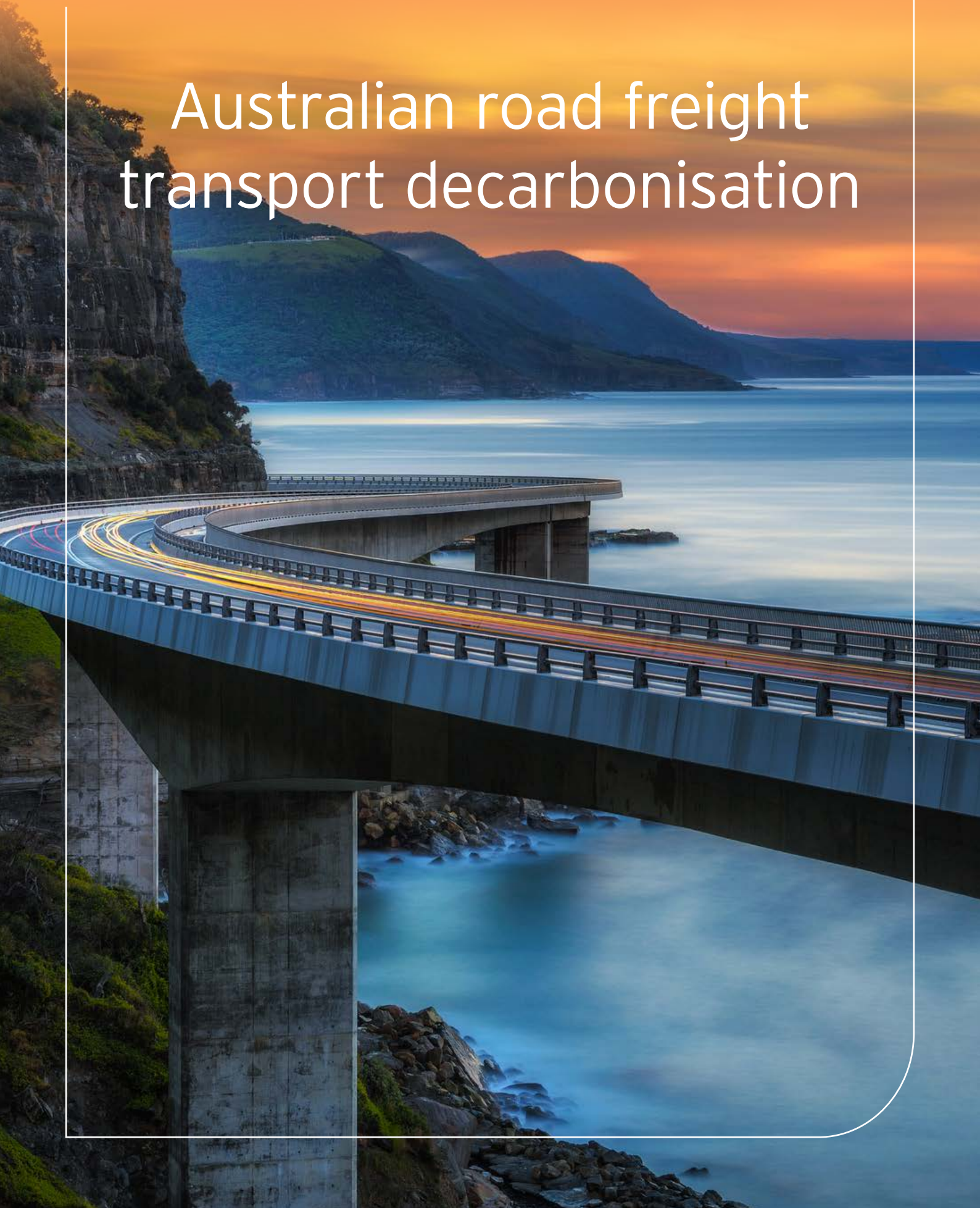


NATROAD

NATIONAL ROAD TRANSPORT ASSOCIATION

Industry white paper

Australian road freight transport decarbonisation



FOREWORD

The Australian economy is delivered on the back of a truck, and this will be no different as we transition to a net zero carbon economy. To achieve community and regulatory expectations on lowering carbon emissions the road freight transport industry needs to plan how we can enable the transition sustainably.

This will be one of the most significant changes to impact Australia's supply chains and it is critical that we develop a transition strategy to get this right. Road freight transport is largely a small business industry operating on tight margins, there is no pathway to a low emissions future without ensuring the cost effectiveness of that transition.

As Australia's largest road freight transport industry association, NatRoad has been working towards ensuring that our industry has a transition strategy and a secure economic future as we seek to better protect our climate and environment.

We have been collaborating extensively with stakeholders on the issues to be addressed in a transition to a net zero economy.

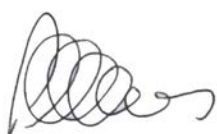
- The 2023 NatRoad national conference focused on key issues and challenges in the transition to lower emissions and our Board adopted key principles to guide our policy approach.
- Joining the Geneva-based International Road Transport Union (IRU), the world road transport organisation representing 3.5 million transport, and logistic firms in more than 100 countries, we have gathered data from other markets around the world on the best solutions for decarbonising transport.
- We are actively working with our association partners to develop a range of industry initiatives to support members as well as the industry, on their decarbonisation journey.

Developing a transition strategy for decarbonising road freight transport will require widespread collaboration, including with operators, suppliers, the broader industry, stakeholders, and government.

This industry white paper represents the next stage of NatRoad leadership on decarbonisation, identifying issues, finding solutions, and seeking to build the basis for stronger industry and government collaboration. Industry and government must work together to deliver a substantive roadmap to lower emissions sustainably.

We acknowledge the support of our association partners. Without their support, our work on behalf of industry would not be possible.

The task of delivering real reductions on carbon emissions will be driven by industry, and we must ensure that industry has the solutions, opportunities, and investment certainty which is essential to securing our economic and climate future.



Paul Fellows
Chairman



Warren Clark
Chief Executive Officer

NatRoad Decarbonisation Guiding Principles

The decarbonisation of Australia's road freight transport industry requires a fundamental and radical shift in investment, resources, skills, and operations in what is a critically important part of the nation's supply chains. The pace and scale of the change required is dramatic.

NatRoad is strongly of the view it is a challenge needing to be shared between the thousands of businesses involved in road freight transportation with governments across Australia - federal, state, and local - and other supply chain participants including major customers. With low profit margins, and the added challenge of growth in freight volumes to meet, the industry does not have the capacity to undertake such a major change on its own.

Quite simply, road freight transport is too critical to the nation to fail.

Policy settings, emission targets, and support measures need to be put in place. They must be practical and realistic, calibrated against the industry's ability to invest and undertake widespread change in what is a relatively short time span.

Australia has legislated economy-wide emission reduction targets of net zero by 2050, and 43 percent by 2030, with a revised and higher target to be set soon for 2035. The next few years will be critical to determining the emissions reduction pathway for the industry.

The NatRoad Board has endorsed the following guiding principles for our approach. In developing these, we have drawn on the experience and advice of our global partners - including the Geneva-based International Road Transport Union (IRU), our counterparts in the United Kingdom and New Zealand.

1. Co-design, co-investment, committed funding and support.
2. A centerpiece Clean Transport Fund.
3. Collaboration on key aspects between relevant stakeholders and groups.
4. Capacity building rather than the decimation of segments of the industry.
5. Tangible recognition of road freight as an essential service critical to the nation's supply chains, economy and well-being.
6. Accelerating technology optimisation.

In seeking to apply these principles, this industry white paper sets out our strategy for lowering road freight carbon emissions and providing a basis for closer collaboration with industry and government.

Our strategy for lowering road freight carbon emissions

Australia needs a transition strategy to deliver lower carbon emissions on the path to net zero whilst we deliver a growing freight task and a stronger economy.

We need a transition strategy that manages the uncertainty of technological development, and one which de-risks investments to enable business to make long term and cost-effective decisions that drive down emissions. We need a strategy to address the inter-related policy issues, and challenges, as well as enabling operational decisions to reduce emissions.

The NatRoad strategy for lowering road freight carbon emissions includes key areas of focus.



The IRU experience has shown in other markets the most cost-effective pathway to net zero includes both the use of alternative fuels and energy and promoting energy efficiency within the existing fleet. The IRU Green Compact applies these solutions through five pillars.

- Alternative fuels.
- Efficient logistics.
- Efficient vehicles.
- Driver training.
- Collective mobility.

This provides a global roadmap for the industry to achieve net zero emissions by 2050. The model covers a comprehensive set of variables and strategies, factoring in growing transport demand, regional flexibility, and global energy availability.

NatRoad will work with the IRU to apply Green Compact modelling to Australia to improve the evidence base for reform.

Understanding the task ahead

Over the last 30 years, Australia has achieved reductions in noxious emissions from heavy vehicles of between 40 to 80 percent. This has occurred while the vehicle fleet has increased by over 50 percent, the number of kilometers travelled has increased by approximately 80 percent, and the amount of freight moved by articulated trucks has increased by over 150 percent.

Carbon emissions over this period have grown slightly slower than the growth in the amount of freight transported in our economy¹. This shows that the link between growing emissions and a growing economy can be uncoupled as has been achieved with noxious emissions.

We can have a stronger economy whilst we drive down emissions, if we enable cleaner vehicles and more efficient energy use.

The nature of our road freight transport sector

Transport makes up 20 percent of Australia's total emissions.

Freight makes up 40 percent of transport emissions.

Road freight makes up 83 percent of freight emissions.

Heavy duty freight makes up 38 percent of road freight emissions, with medium duty contributing 29 percent and light commercial vehicles contributing 33 percent².

Articulated trucks make up approximately 17 percent of the truck fleet but move 77 percent of road freight³.

Over 64 percent of articulated trucks have a gross combination mass of 60 tonnes or greater.

Approximately 62 percent of rigid trucks have a gross combination mass of up to 12 tonnes⁴.

The average range for an articulated truck is 232.1 km per day, or just 103.6 km per day in our capital cities.

The average range of a rigid truck in a capital city is just 60.5 km per day, or just 44.4 km per day in provincial urban areas⁵.

These statistics tell us we must have a strategy for road freight emissions to achieve net zero emissions, noting the complexity of the road freight transport sector.

The iconic road train and High Productivity Freight Vehicles (HPFVs) are the workhorse of the Australian trucking industry however, they are a minority of the fleet and a minority of road freight emissions. Known as eco-trucks in the IRU Green Compact, HPFVs reduce the number of vehicle trips involved in the freight task, reducing fuel use and emissions.

Whilst the heavy freight sector will be more challenging to decarbonise, short haul and urban freight will provide more immediate opportunities for reducing emissions.

Whilst some trucks travel significant distances, Australia's population is largely urban based and the same applies to our truck fleet.

The transition strategy for decarbonising Australian road freight must be able to navigate this complexity.

¹BITRE data.

²Climateworks, 2023, Delivering freight decarbonisation: Strategies for reducing Australia's transport emissions.

³BITRE data.

⁴BITRE assessment.

⁵ABS.

1. Collaboration and sharing

No single organisation and no single government can achieve a transition on this scale on its own. Across our industry, and with stakeholders, we need to promote collaboration, share research, build the evidence base for decisions, and build broad support for policy reforms enabling a cost-effective transition to a low and zero emissions future.

NatRoad will work towards the establishment of a new forum for building collaboration with industry and government for the decarbonisation of Australian road freight.

2. Guidance for business

In a small business industry operating on tight margins, it will be critical that guidance is given to operators to equip them to work with customers and suppliers on the right strategy to reduce emissions.

With the support of Bridgestone Australia, NatRoad has developed a set of resources (Driving Decarbonisation program) to equip our members to work with their customers and suppliers on reducing transport emissions.

3. Financial viability

Australia will not achieve net zero emissions for road freight transport without a financially viable industry capable of making the investments needed to make it a reality.

Co-investment from the government brings forward the point of cost parity of low carbon solutions and enables an accelerated reduction in emissions.

CASE STUDY: Team Global Express Depot of the Future

Team Global Express (TGE) is developing Australia's largest vehicle electrification project in Western Sydney, with \$20.1 million in funding from ARENA on behalf of the Australian Government.

This project will deploy 60 battery electric delivery vehicles and associated charging infrastructure and see one third of the TGE Western Sydney fleet transition to battery electric vehicles and operate under a back to base model.

Team Global Express and their shareholders Allegro are contributing \$24.2 million to the project⁶.

This is a clear illustration of how investment from government can make low emission solutions possible today.

The Team Global Express is a world leading project however it is only one project. Reducing emissions in the near term will require more ambition from government, including significantly higher levels of funding.

⁶ARENA, December 2022. [Depot of the future delivers Australia's largest electric vehicle logistics fleet](#)

Design of a Clean Transport Fund

NatRoad recommends that the Australian Government should establish a \$3.5 billion Clean Transport Fund.

The Australian Government should establish a Clean Transport Fund with an initial \$3 billion additional investment across the budget forward estimates, for a total \$3.5 billion commitment. The Clean Transport Fund would include:

- \$2 billion for low emissions freight financing, similar in structure to the investments made by the Clean Energy Finance Corporation (CEFC).
- \$1 billion for zero emission vehicle incentives.
- The existing \$500 million Driving the Nation Fund, which focuses on light vehicles and a small number of heavy vehicle projects.

This investment may not be sufficient in the long term however it represents a reasonable and proportionate initial investment to drive down emissions and accelerate the market take-up of low emissions solutions.

CEFC financial support has proven to be a successful market-focused mechanism for mobilising private sector investment, attracting \$2.82 in private sector capital for every \$1.00 invested by the CEFC. An investment commitment of \$12.7 billion has enabled a total transaction value of \$48.8 billion⁷. Additionally, since its inception approximately \$3.3 billion of capital has been returned or repaid to the CEFC making it available to be reinvested⁸.

The low emissions freight financing should be designed to enable investments in projects to drive down road freight emissions in a cost-effective manner.

At \$2 billion in initial funding, it would represent about half of the projected public benefits from reducing carbon emissions created by road freight transport.

The Grattan Institute calculated the public benefits from accelerating the uptake of zero emission trucks to be approximately \$4.2 billion, including avoided health costs, avoided CO2 emissions and reduced noise. However, these benefits would require \$9.6 billion in costs to business, including infrastructure, vehicles and a time and weight penalty⁹.

The low emissions freight financing would seek to mobilise private capital towards achieving public benefits and it would utilise a model ultimately seeking repayment of the public investment. It would represent a hand up, not a handout.

A \$1 billion zero emission vehicle incentive could then provide a temporary return of the increased taxation on heavy vehicles back to the industry to accelerate the cost-effectiveness of zero emission trucks. It would provide a simpler support mechanism easily accessible by smaller fleets and targeted to the cost premium of zero emission vehicles and infrastructure.

As a result of the increase in the road user charge, and the corresponding decrease in fuel tax credits, the heavy vehicle sector will contribute an additional \$1.1 billion in revenue to the Australian Government over the budget forward estimates¹⁰. This is not the full level of revenue, just the increase above and beyond what trucking operators are already paying.

⁷CEFC, figures up to 30 June 2023.

⁸CEFC, 2022, [Budget signals major funding boost for CEFC as part of Rewiring the Nation program.](#)

⁹Grattan Institute, 2022, The Grattan truck plan. The modelling also includes \$15.7 billion in benefits for business, but \$12.5 billion is the result of avoided fuel costs. The model assumes all zero emission trucks will be electric, overstating this benefit and failing to account for the higher fuel costs of both green hydrogen and renewable diesel. This also means that the benefits cannot be assumed to apply across the industry equally, and longer distance and heavier transport operators are unlikely to receive the full scale of projected savings. It should also be noted that as Grattan utilise current carbon offset prices, it is possible that the carbon savings will be greater over time.

¹⁰Australian Government, Budget 2023-24, Budget Paper No. 2: Budget Measures, p175

At the same time as it is collecting an additional \$1.1 billion in heavy vehicle taxes the Australian Government has also decided to reduce its funding ratio for national and freight routes in regional areas, which are key priorities for freight. The system is clearly broken, making the temporary redirection of the additional revenue a reasonable contribution to the cost of reducing emissions.

In proposing these changes, NatRoad is seeking a hand up, not a handout. Our Clean Transport Fund proposal seeks a temporary and partial return of higher taxes back to the industry, and a fund based on the level of public benefit to be gained with capital repaid over time.

4. Effective regulation

Regulations not fit for purpose can delay the transition to reduce emissions, for no significant public benefit.

NatRoad strongly welcomes the reforms by state governments to increase axle weight limits for electric trucks, a critical reform to enabling operators to deploy low emissions solutions. However, each state has moved to implement this reform in a different manner, risking increased complexity for no apparent policy rationale or outcome.

At the same time, HPFV road access approvals are often tied up in red tape. Governments and road managers need to increase as-of-right gazetted approval and implement an automated access approval system.

5. Critical infrastructure

Infrastructure will be critical to enabling the solutions to reduce emissions, including promoting energy efficiency, and deploying alternative energy and fuels.

Bridges and roads

Low emission vehicle solutions are heavier. Upgrading Australia's road and bridge network to enable road access approvals for HPFVs and zero emission vehicles should be an infrastructure priority for all governments.

Alternative energy recharging and refueling infrastructure

We must also ensure access to fast electric vehicle charging infrastructure for trucks which can extend the range of vehicles and reduce the size of the batteries.

Reducing the need for a bigger battery would help to reduce the upfront cost premium and the potential loss of payload for an electric truck.

Australia cannot sit back and wait for someone else to develop hydrogen trucking - our truck sector is unique with a portion of our fleet which travels significant kilometers and at higher mass. Our potential use case for hydrogen will be greater than some overseas markets.

But for Australia to be a global leader in hydrogen trucking, we will need the refueling infrastructure that provides investment certainty that hydrogen truck models should be sent to the Australian market.

6. Road pricing reform

Road pricing and infrastructure reform are critical enablers to the decarbonising of road transport. Without reform, road related revenue will collapse over time and undermine the ability of governments to fund a safe road network without increasing other taxes.

Governments should also reform the link between road user charges and road funding, with improvements to the effectiveness of road funding. This would improve the delivery of the enabling infrastructure that a net zero road freight transport sector will require.

Failing to reform road user charges will effectively hand light vehicles a 'congestion incentive' by reducing the cost of driving for passenger vehicles. This may incentivise a shift of urban passenger trips from public and active transport onto road, risking higher levels of congestion and undermining a broader sustainable transport system.

Lower tolls for Euro VI and low emission heavy vehicles

Reducing tolls for cleaner trucks would incentivise their uptake by improving the total cost of ownership of these vehicles. It would also directly incentivise cleaner trucks in urban areas, improving air quality in our cities.

NatRoad has recommended to the NSW independent tolls review that the truck toll multiplier should be reduced to 1.5 times for Euro VI heavy vehicles and abolished for electric and zero emission vehicles.

7. Alternative fuels and energy

Our transition strategy seeks to ensure the decision around which truck to use stays with the people best placed to match capabilities with a transport task - the trucking operator.

At the same time, Australia should seek to accelerate the options most likely to make a material contribution to reducing carbon emissions, to give trucking operators more choice, bring forward the point of cost parity being reached and enable the market to deliver low carbon solutions.

Battery electric vehicles

Battery electric trucks are already available in the Australian market and will increasingly become viable transport options, especially for short haul and urban based freight tasks. The cost and performance of batteries is expected to continue to improve over coming years, which will increase the potential uses of battery electric trucks.

Hydrogen fuel cell electric and hydrogen combustion vehicles

Hydrogen models hold two clear potential benefits for the Australian transport sector - increased range (especially for liquid hydrogen) and increased vehicle combination mass capabilities.

With several major trucking manufacturers working on development and towards production by the end of the decade, Australia has a unique moment to send a clear signal to the global marketplace that Australia should be a priority market for hydrogen trucking. This will require further reforms to standards and regulations, and critically the development of a hydrogen refueling network.

Other global reports project that hydrogen will not reach cost parity with diesel until well into the future, and well after battery electric trucks. Australia should prioritise lowering the domestic cost of green hydrogen production, to bring forward this cost parity for Australian trucking.

Renewable diesel

Renewable diesel also has clear potential benefits - as a drop in transition solution for internal combustion vehicles to bring down emissions quicker, and as a potential decarbonisation pathway for the hardest to abate parts of the heavy vehicle fleet.

However, limited domestic supply and high costs are significant barriers for Australian trucking operators.

Increasing supply of renewable fuels and energy

Decarbonising Australian trucking will require low-cost supplies of renewable electricity, green hydrogen, and renewable diesel. It may also require investments in the electricity grid, both for electric truck charging infrastructure and to power the production of green hydrogen production.

Whilst Australia exports to overseas markets supplies which are crucial to the production of renewable diesel, there is a clear and pressing need to increase the supply and lower the cost of this low carbon fuel in Australia.

Skills, training, and standards

Alternative fuels, energy and drivetrains will require the right standards, and a workforce with the right skills and training.

We will need a workforce and an industry capable of supporting different vehicle technologies and fuels on the road, and appropriate standards to ensure these technologies are safe and can be scaled with increased use.

Trucking operators should be able to charge their electric truck or refuel their hydrogen truck at any installation – adding complexity to plug type or hydrogen pressure will only slow the transition.

8. Energy efficiency

Improving the energy efficiency of the heavy vehicle fleet provides cost effective emission reductions in the near-term future, and IRU modelling shows that these efficiencies provide a significant level of the emission reductions which will be required.

High Productivity Freight Vehicles

Australia has had significant success in deploying HPFVs. Our standard vehicles are more productive than many overseas markets, and our HPFVs are the workhouse of Australia's road freight transport industry.

But more can be done. Australia can improve our road infrastructure and improve road access approvals to promote further energy efficiency across our road freight networks and reduce the number of individual truck trips required to keep our economy moving.

Digitisation and optimisation

Route optimisation and using digital technologies to ensure we are using our trucks as efficiently as possible are key tools to improving the energy efficiency of road freight transport.

Idling, excessive revs, handling, routing, and speed all impact a vehicle's fuel consumption, and as a result, carbon emissions. Advanced telematics can assist in reducing these driving behaviours and reduce carbon emissions by up to 15 percent¹¹. They can also identify the best options for electric vehicles based on routes, topography, average journey metric and vehicle types, leading to reductions of up to 15tCO per vehicle¹².

Efficient vehicles and tyres

Technologies such as low rolling resistance tyres, improved aerodynamics and lightweight materials can improve vehicle efficiency and contribute to a significant reduction in carbon emissions.

Low rolling resistance tyres reduce the energy required to move a vehicle, reducing fuel consumption. Bridgestone tests have shown they can save fleets up to 9.6 percent in fuel and emissions, and on average a saving of 6.9 percent¹³.

Retread truck tyres reduce waste and carbon emissions in manufacturing, which results in reducing lifecycle emissions.

Driver training

Driver training to manage fuel consumption subsequently reduces emissions. It is also a critical element of driving battery electric vehicles and maximising the potential range of the vehicle.

Whilst driver training can provide an important reduction in emissions, international evidence also suggests that fuel prices are an important contributor to participation in training, engaging smaller operators in training can be difficult, and ongoing monitoring is important.

¹¹Data based on [Webfleet](#) Optidrive analysis.

¹²Data based on analysis from nearly 100,000 [Webfleet](#) connected vehicles in 2022.

¹³Data provided by Bridgestone.

NEXT STEPS

NatRoad welcomes engagement and stronger collaboration towards a transition strategy for decarbonising Australian road freight transport.

Please contact the NatRoad Policy Director at samuel.marks@natroad.com.au



About NatRoad

With a proud history dating back to 1948, NatRoad operates to represent its members and as advocates for the \$96 billion road freight industry. With more than 45,000 trucking companies employing more than 140,000 people across the country, the road transport industry is one of Australia's biggest economic drivers.

NatRoad is a not-for-profit Association that is 100% funded via its membership fees and business partnerships. No funding is provided by government or unions. Our board is made up of individuals who run transport businesses and have members from owner-drivers to road freight and large fleet operators, representing all aspects of the industry.

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