

Transport  
for NSW

# Towards Net Zero Emissions Freight Policy





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# Acknowledgment of Country




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Transport for NSW acknowledges the traditional custodians of the land on which we work and live.

We pay our respects to Elders past and present and celebrate the diversity of Aboriginal people and their ongoing cultures and connections to the lands and waters of NSW.

Many of the transport routes we use today – from rail lines, to roads, to water crossings – follow the traditional Songlines, trade routes and ceremonial paths in Country that our nation's First Peoples followed for tens of thousands of years.

Transport for NSW is committed to honouring Aboriginal peoples' cultural and spiritual connections to the lands, waters and seas and their rich contribution to society.



# Minister's Foreword



As the Minister for Transport, I am pleased to present the Towards Net Zero Emissions Freight Policy for NSW. This Policy is a significant step forward in our commitment to reduce emissions in the transport sector, one of the largest contributors to greenhouse gases.

The critical role of freight in supporting our communities has never been more apparent and there is a heightened recognition of the value that sustainable and efficient supply chains provide. However, freight is also responsible for a significant proportion of emissions generated by transport. It is imperative that we take action to significantly reduce freight emissions and this Policy sets out the roadmap for achieving this goal.

As the State grows, freight volumes are estimated to increase by 34 per cent by 2061. A connected and efficient supply chain is vital for stakeholders to move increasing volumes of goods as well as to improve sustainability and community well-being in the decades to come. There are now significant opportunities to accelerate the transition of heavy vehicles away from fossil fuels and help achieve net zero emissions for road and rail freight transport by 2050.

This Policy provides a roadmap to reduce emissions from the road and rail freight sector in NSW. These include incentives for the uptake of low and zero emission technologies; the removal of barriers that hinder uptake of these technologies; and initiatives to boost collaborative enterprise by researchers, industry and government for trialling and engaging with emerging technologies.

Importantly, this Policy has been developed in consultation with industry stakeholders who have provided valuable input and feedback throughout its inception.

The implementation of this Policy will require a collaborative effort between the government, industry and the wider community. It will require investment in new and emerging technologies, changes to business practices and a joint commitment to reducing freight emissions. The benefits of these measures will be felt not only in the environment but also in our economy, with the potential to drive innovation, create jobs and increase competitiveness.

I am confident that the Towards Net Zero Emissions Freight Policy will make a significant contribution to our efforts to combat climate change and build a sustainable future for NSW. I look forward to working with all stakeholders to achieve these goals.

**Jo Haylen MP**

Minister for Transport

# The Policy at a Glance

Achieving significant reductions in road and rail freight transport emissions requires government and industry to work together to embrace innovative solutions and make impactful changes to the way we currently move goods across NSW. While the responsibility for reducing transport emissions lies with multiple State agencies, it is Transport for NSW (TfNSW) that is best placed to support the decarbonisation of freight transport in NSW.

The Towards Net Zero Emissions Freight Policy (the Policy) has been developed in consultation with the freight industry, academia and other NSW Government partners. While it covers all road and rail freight, the Policy prioritises activities in the heavy vehicle road freight sector (4.5 tonnes and above of gross vehicle mass), as this is where we can make the greatest immediate impact.

The Policy is framed around short (0-2 years), medium (3-5 years) and long (5+ years) term actions and adopts a staged approach for the journey ahead. It considers current and emerging technologies and barriers to the adoption of these technologies.

The Policy acknowledges industry feedback about the challenging commercial and regulatory environment, uncertainties regarding future technologies and market development and the concerted effort required to transition to net zero.

We will therefore invest in ongoing research and analysis to provide an empirical foundation for future freight emission reduction strategies.

While battery electric and hydrogen comprise the predominant types of low and zero emission technologies available for freight, the rapid innovation in this space means the Policy is open to consider new and emerging low and zero emission technologies and approaches that will help reduce road and rail freight transport emissions.

TfNSW recognises the whole of government approach required to achieve net zero emissions and the unique opportunities and challenges faced by the road and rail freight sector in achieving this goal. The Policy outlines the key priorities and related actions we will implement to support industry achieve net zero emissions for road and rail freight transport by 2050.

## Summary of the Policy Priorities & Actions



### Regulatory Frameworks

#### Road Actions

- |     |  |
|-----|--|
| 1.1 | Review state regulations applicable to freight to identify necessary changes for heavy LZEVs on the road network and potentially remove incentives for high emitting vehicles. |
| 1.2 | Advocate for changes to national heavy vehicle standards that help maximise the benefits from new and emerging vehicle technologies, including the Australian Design Rules.    |
| 1.3 | Provide concessions on mass limits for heavy LZEVs operating on the State-road network to enable access.   |
| 1.4 | Work with other jurisdictions to accelerate the implementation of Euro VI and Euro VII emissions standards in Australia.   |
| 1.5 | Work with the Commonwealth and other States and Territories to consider an appropriate road user charging framework for heavy LZEVs.   |

#### Rail Actions

- |     |   |
|-----|---|
| 1.6 | Review service level agreements between TfNSW and rail infrastructure managers to explore further opportunities to optimise the capacity of rail freight, particularly through two-way loading. |
| 1.7 | Investigate options and the most effective instruments to embed emission standards or control measures in NSW.  |
| 1.8 | Explore options for a coordinated national approach to reducing red tape when industry begins applying low and zero emission technology solutions to locomotives that cross state borders.      |



### Research, Modelling and Trials

#### Road Actions

- |     |   |
|-----|---|
| 2.1 | Undertake emissions and economic modelling to identify effective medium and long-term options to reduce freight emissions and increase heavy LZEV uptake.                               |
| 2.2 | Collaborate with other jurisdictions to conduct an East Coast geospatial analysis to inform optimal locations for recharging and/or refuelling of alternate fuels.                      |
| 2.3 | Undertake a network analysis to understand the impact of increased vehicle mass and dimensions on infrastructure and the opportunities for a freight network redesign and optimisation. |
| 2.4 | Develop TfNSW's capability in freight emissions and economic modelling in the heavy vehicle sector.   |

#### Rail Actions

- |     |  |
|-----|--|
| 2.5 | Undertake research and modelling to understand the emissions impacts and projections of moving more freight on rail in NSW.  |
| 2.6 | Explore Zero Emission Motive Power Options for freight trains as part of an assessment to develop a Western Sydney Freight Line.   |
| 2.7 | Collaborate with industry and/or other jurisdictions on other potential trials or demonstrations of the use of low and zero emission locomotives (including retrofit options) on the NSW rail network. |
| 2.8 | Explore options to develop a national approach to support cross-border trials and joint investments in charging or refuelling infrastructure across the rail freight network.                          |



## Incentivising Transition

### Road Actions

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|------------|--|
| <b>3.1</b> | Use research and modelling to identify potential incentives to reduce the whole-of-life cost of heavy LZEVs and support the uptake of these vehicles.                    |
| <b>3.2</b> | Optimise heavy vehicle movements by uplifting capacity and encouraging greater use of and access for higher productivity vehicles, particularly through two-way loading. |

### Rail Actions

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|------------|--|
| <b>3.3</b> | Continue to work with NTC and other relevant stakeholders to identify barriers and opportunities to uplift the efficiency of the accreditation process for new rail fleet operations in NSW to encourage industry investment in new and low and zero emission locomotives. |
| <b>3.4</b> | Explore options to improve the road and rail interface at intermodal terminals to support rail mode shift.   |



## Education and Engagement

### Road Actions

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|------------|---|
| <b>4.1</b> | Continue providing industry with reliable and up to date information (as it becomes available) about the economic, environmental and social benefits of LZEVs.                                |
| <b>4.2</b> | Collaborate with industry to develop guidance materials (including cost comparison tools) and share results from LZEV studies and trials to support operator decisions in switching to LZEVs. |
| <b>4.3</b> | Investigate options for a State-based heavy vehicle rating system to inform and influence vehicle purchasing decisions.   |
| <b>4.4</b> | Work with industry to explore appropriate fleet and/or emission targets.  |

### Rail Actions

- |            |   |
|------------|---|
| <b>4.5</b> | Explore options to establish a stakeholder reference group consisting of representatives from other relevant agencies as well as industry and the research community. |
| <b>4.6</b> | Work with industry and other relevant agencies to explore appropriate fleet and/or emission targets.  |



## Procurement

### Road Actions

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|------------|---|
| <b>5.1</b> | Investigate opportunities and the business case to transition the heavy vehicle fleet owned and/or leased by TfNSW to LZEVs.  |
| <b>5.2</b> | Encourage greater use of LZEVs in road transport infrastructure projects, particularly through contract conditions, key performance indicators and regulatory exemptions. |

### Rail Actions

- |            |   |
|------------|---|
| <b>5.3</b> | Encourage greater use of LZEVs in rail transport infrastructure projects, particularly through contract conditions, key performance indicators and regulatory exemptions. |
|------------|---|





# 1. Towards Net Zero Emissions Freight Policy



Source: Volvo

TfNSW plays a key role in implementing carbon emissions reduction policies consistent with achieving the NSW Government’s emissions reduction targets. We have worked closely with industry, government agencies and other stakeholders to establish a policy that will help achieve net zero emissions for road and rail freight transport by 2050.

The Policy sets out a clear pathway to help the road and rail freight transport sector significantly reduce its emissions and focuses on what TfNSW can do to support industry in the short, medium and long term. The Policy has been designed to give a clearer focus to new policy settings by removing regulatory constraints, mobilising necessary resources and driving investments to help decarbonise road and rail freight transport.

### Our approach for the Policy

TfNSW acknowledges the significant challenges for industry in transitioning to net zero. We recognise that our role in this transition is to provide clear policy leadership to remove barriers and accelerate uptake.

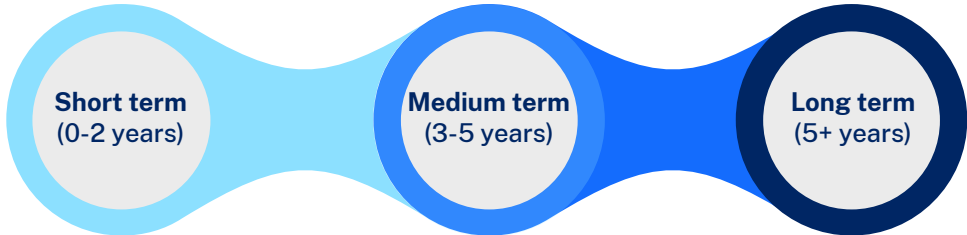
We have framed the Policy around **short (0-2 years), medium (3-5 years) and long (5+ years) term actions**. The Policy adopts a staged approach for the long journey ahead to decarbonise freight that takes into account industry feedback regarding TfNSW’s need to create an environment that supports current technologies and opportunities and does not limit future opportunities.

Therefore, the Policy has been designed to respond to what we can do in the short term and to develop a pathway forward to allow for medium and long-term actions. These actions are agile and responsive to technological and market developments, as well as freight challenges such as global supply chain crises and sustainably managing the growing freight task. The Policy is also focused on actions TfNSW can undertake at a state level and the supporting role we can play in complementing other state agencies and the Commonwealth.

### Our scope for the Policy

The Policy is focused on road and rail freight Carbon Dioxide Equivalent (CO<sub>2</sub>e)<sup>1</sup>, or simply, ‘carbon emissions’, as these modes constitute the largest proportion of freight transport emissions. Because both the road and rail networks fall within TfNSW’s remit, this is where we can make the most significant impact.

The scope for road freight is limited to heavy vehicles with a gross vehicle mass (GVM) of 4.5 tonnes and above.



<sup>1</sup> Carbon Dioxide Equivalent (CO<sub>2</sub>e) is the major greenhouse gas emitting from vehicles. It is composed of Carbon Dioxide, Methane, Nitrous Oxide and other gases such as hydrofluorocarbons.

The Policy is focused on immediate opportunities to switch diesel fleets to available low and zero emission vehicles (LZEVs) in certain road freight segments and improving the fuel efficiency and emissions performance of the diesel fleet through various measures. These include retrofitting with new technologies, adopting modern vehicles that meet EURO VI emissions standards and providing increased access for vehicles that deliver higher productivity.

The Policy also focuses on broader longer-term opportunities to support industry transition to LZEVs, including removing regulatory barriers, supporting trials and leveraging government fleet procurement. While currently available LZEVs are largely battery electric, hydrogen, and plug-in electric hybrids, the Policy is not limited to these existing technologies and has been developed to respond to the constant innovation in this rapidly evolving sector.

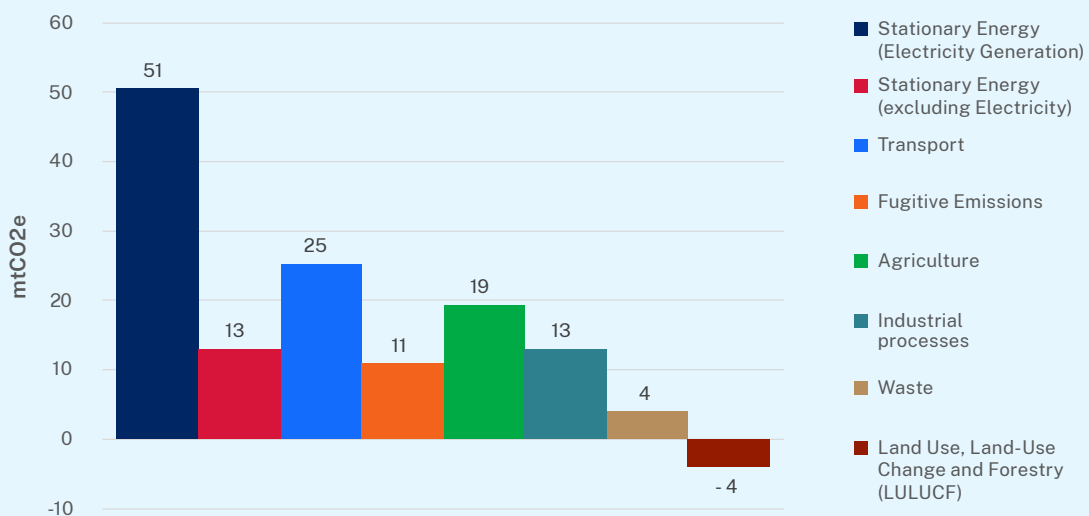
We recognise that access to charging and refuelling infrastructure across the entire NSW freight network is a critical challenge for decarbonising freight. Large-scale infrastructure solutions will require coordinated efforts with other NSW Government agencies, the Commonwealth and industry. We will continue to work with other partners to plan and co-deliver infrastructure initiatives.

## Our engagement with industry

In developing the Policy, TfNSW has met with over 50 industry peak bodies, vehicle manufacturers, freight operators and service providers, along with state, local and federal government organisations. This consultation was undertaken to better understand strategic opportunities for NSW to achieve net zero for road and rail freight transport and the role TfNSW could play to support industry efforts to decarbonise.

Although there were a wide range of views around the applicability and viability of various technologies, and the nature and scale of government intervention needed, there was consensus among stakeholders that governments and industry needed to both consider immediate opportunities and set a framework for longer term options that would put the road and rail freight sector on the trajectory to net zero emissions by 2050. The Policy acknowledges industry views that freight needs a measured approach that considers market constraints, challenges faced by industry and the need to consider policy priorities and actions over the short, medium and long term.

**Fast Fact:** In 2021, the transport sector was the second largest GHG producer generating around 25 million metric tonnes of CO<sub>2</sub>e (mtCO<sub>2</sub>e) which accounted for 19 per cent of total emissions in NSW.<sup>2</sup>



<sup>2</sup> Australian Government, Department of Climate Change, Energy, the Environment and Water, Australia's National Greenhouse Accounts, <https://www.greenhouseaccounts.climatechange.gov.au/>

## Our commitment to lead by example

TfNSW recognises that we must lead by example in reducing emissions. We have electrified our bus and corporate passenger and heavy commercial vehicle fleet to reduce vehicle emissions. We use renewable energy for our passenger trains and infrastructure to reduce coal-powered electricity emissions. We are also embedding net zero considerations in the development of infrastructure by adopting low-embodied carbon materials for road pavement and using cleaner fuels for construction vehicles.

In the freight space, we will be embedding freight emissions reduction commitments into our procurement decision-making processes and establishing appropriate sustainability requirements and performance indicators to encourage the use of LZEVs for infrastructure projects and other TfNSW operations.

The magnitude of our procurement spending and the ability to set procurement requirements on goods and services means there is a significant opportunity and responsibility to influence both suppliers' activities and the market for LZEVs and encourage greater innovation across the supply chain. Therefore, by switching our own fleet to LZEVs we hope to help attract cheaper LZEV models into the market, stimulate the second-hand market for electric heavy vehicles and boost industry confidence in terms of 'tried and tested' technology options.



# 2. Strategic Outcomes



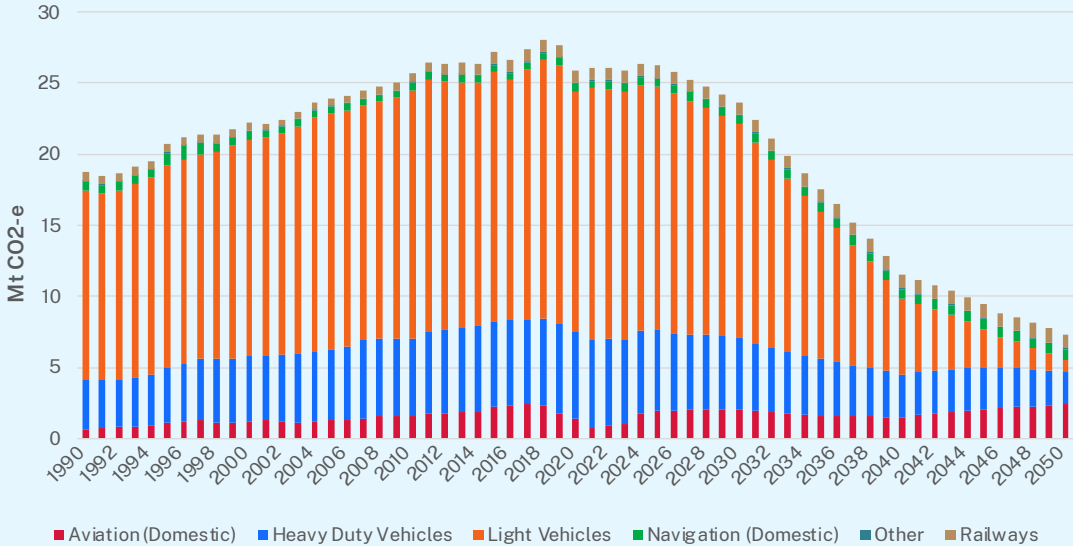
TfNSW is taking a range of actions to help reduce emissions and mitigate the wider environmental impacts of transport through a suite of strategies and programs. The Policy recognises that the issues and options available to the freight industry differ to those of passenger and other transport modes. We acknowledge that these issues will be challenging to resolve, particularly through government action alone.

The Policy complements and builds on national efforts through knowledge sharing and participation in national research, trials and infrastructure initiatives.

At the global level, several countries including the UK, Canada, Chile, New Zealand and Norway, have signed the *Heavy Vehicles (Truck and Bus) Statement* targeting 100 per cent zero emission

heavy-duty truck and bus sales by 2040. Under the Global Memorandum of Understanding for Zero-Emission Medium-and Heavy-Duty Vehicles, participating countries set an interim goal of 30 per cent new zero-emission heavy vehicle sales by 2030<sup>3</sup>. These efforts will play an instrumental role in stimulating the global market for heavy LZEVs and will supplement our Policy.<sup>4</sup>

**Fast Fact:** Generally, emissions from road transport in NSW are expected to increase year-on-year until the mid-2020s before declining.<sup>5</sup> However, under the current policy settings<sup>6</sup> this is insufficient to meet our net zero goals by 2050.



3 Bloomberg Philanthropies, C40 Cities, the Global Commercial Vehicle Partnership, and the Rocky Mountain Institute, 2021, Memorandum of Understanding (MoU) on zero-emission medium-and heavy-duty vehicles. Drive to Zero.

4 Drive to Zero and the Netherlands Government co-lead the MoU on zero-emission medium-and heavy-duty vehicles, where leading countries commit to working together to enable 100% zero-emission new truck and bus sales by 2040. The Australian and NSW governments are not signatories of the Statement nor the MoU.

5 The New South Wales Department of Planning and Environment 2022, NSW Greenhouse Gas Emissions Projections, January 2023

6 Current policy settings include the Stage 1 of the 'Net Zero Plan', committed funding under stage 2 and 3 and other government policies and programs.

The Policy recognises that decarbonising freight is critical to achieving net zero emissions, given the constantly growing demand for freight in urban and regional NSW. TfNSW is committed to being a catalyst for change to help deliver strong and meaningful outcomes for our businesses, industries and people in our communities.

The Policy also recognises that our freight stakeholders expect a high-quality network that delivers safe, accessible, reliable and affordable transport options that matches their growing needs.

The NSW freight task will continue to evolve with changes in our businesses, trading patterns and lifestyles, including the increase in e-commerce and online shopping. We expect affordable freight services that improve our quality of life and support our businesses to grow.

## Delivering for freight stakeholders

When combined with automation and connectivity, LZEVs can improve freight connectivity in NSW by enabling modern freight solutions that meet customer needs. Modern vehicles tend to be cheaper to operate, which makes access to goods and commodities easier and more affordable, especially in regional and remote areas.

A well-connected freight network can also unlock new direct-to-customer business opportunities and provide greater choice of goods, where they come from and multimodal options for their delivery.

Increasing the attractiveness of rail for bulk and other goods will also help improve regional and remote connectivity across NSW, as this mode can help to transport larger goods volumes in less time.



Source: Daimler Truck Australia

Greater access to use of heavy LZEVs has positive impacts on air quality and noise, facilitates direct business-to-consumer deliveries and creates seamless connections to local markets. This benefits small businesses that rely on easy and cheap access to stakeholders and helps suppliers remain competitive.

Improved connectivity and last-mile access for LZEVs in urban and regional centres and neighbourhoods will also support communities and build a sustainable transport system.

## Liveable communities

Achieving net zero emissions will also lead to cleaner, quieter and more liveable neighbourhoods, healthier communities and a more resilient transport system. It will help to lower long-term risks from climate change, such as increased frequency of extreme weather events, which could reduce disruptions to the freight network.

TfNSW is committed to delivering policies, incentives, regulations and support for industry to accelerate the transition to LZEVs. This begins with transitioning our own heavy commercial vehicle fleet and considering freight emissions reduction in our operations, such as the use of cleaner vehicles and fuels for construction activities. These actions will also help to stimulate the market.

Optimising the network for rail freight will help deliver broader socio-economic benefits by reducing road congestion and traffic-related accidents and injuries, and by lowering impacts on road infrastructure.

Providing local communities and neighbourhoods with greater access to LZEVs will give local businesses and residents more options for sending and receiving goods with reduced environmental impacts, while improving freight efficiency in regional centres and neighbourhoods.

Providing greater access for LZEVs on the road network creates a significant opportunity to reduce emissions by minimising total movements, and enabling seamless connections to stakeholders, or between freight hubs. Improving access will lead to productivity improvements which will further encourage the uptake of LZEVs.





The accelerated transition to LZEVs will bring additional safety dividends, as modern heavy vehicles are often equipped with advanced safety features such as collision avoidance systems, lane keeping assist and blind spot detection. The use of these technologies in our existing diesel fleet improves safety for truck drivers, other road users and the wider community.

Low and zero emission technologies will also reduce people's exposure to air and noise pollution. This will improve the amenity of city and town centres as well as residential neighbourhoods along road and rail freight corridors, and at places around ports, intermodal terminals, logistics hubs and distribution centres.

## Thriving businesses and industries

Freight plays a critical role in driving economic growth by maintaining the economic competitiveness of our State and improving our quality of life in NSW. It creates jobs, connects people with essential goods and services, and links industry with national and global markets. As NSW continues to grow, our freight networks and supply chains must become more efficient, reliable and sustainable to meet the increasing demands of our communities.



Source: Janus Electric

When combined with smarter management of our freight networks and better planning, the transition to low and zero emission technologies gives us new opportunities to improve the productivity of road and rail freight.

LZEVs can deliver operational and cost efficiencies in the supply chain. Electric vehicles have lower operating costs, which allows for more affordable services to more stakeholders in more areas. This enables faster and cheaper freight services to regional and remote areas which can boost regional economic growth and support local industries. Improving the productivity of the freight sector will boost the NSW economy and improve our economic competitiveness.

With many large freight and logistics service providers committing to becoming carbon neutral, LZEVs present an opportunity for companies to achieve their corporate social responsibility targets and goals in a financially sustainable manner.

Electrification, particularly when combined with automation and connectivity, will help enable and support new and innovative types of freight services, such as same-day or out-of-business-hours deliveries. It can also help improve the efficiency of freight by creating opportunities for seamless intermodal connectivity.

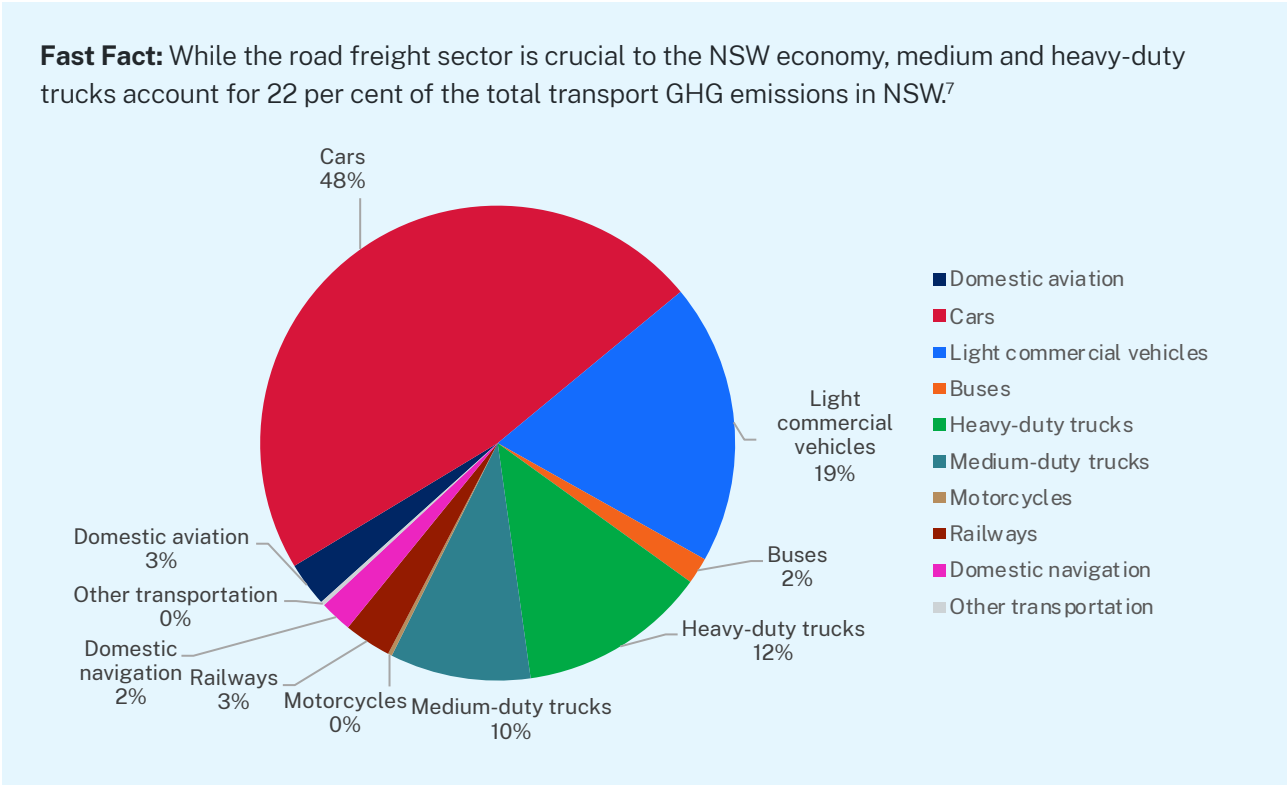
Low and zero emission technologies will create new jobs and industry growth opportunities, particularly in adjacent sectors such as vehicle components manufacturing and servicing, renewable energy generation and storage. The shift to battery electric vehicles will also help stimulate the state mineral resources industry, particularly the production of lithium and cobalt that are critical to battery electric vehicle manufacturing.

# 3. Policy Priorities & Actions



TfNSW will work in close partnership with industry, research partners and other agencies and jurisdictions to identify and implement cost-effective opportunities to support industry in reducing freight emissions at a pace and scale meaningful to achieving net zero by 2050.

**Fast Fact:** While the road freight sector is crucial to the NSW economy, medium and heavy-duty trucks account for 22 per cent of the total transport GHG emissions in NSW.<sup>7</sup>



Addressing road freight emissions will be a challenging task given most of the road freight industry is comprised of small-sized operators, with 70 per cent of them having only one vehicle. This creates significant challenges for implementing measures such as fleet electrification, which may both create significant costs and have a disruptive impact on businesses.

TfNSW also recognises the significant role that rail can play in decarbonising the freight transport sector. Rail freight produces 16 times less GHG emissions and it is four times more fuel efficient compared to road freight.<sup>8</sup> We are therefore committed to optimising the role of rail within the overall freight task in NSW as a measure for reducing freight emissions.

<sup>7</sup> Australian Government, Department of Climate Change, Energy, the Environment and Water, Australia's National Greenhouse Accounts, <https://www.greenhouseaccounts.climatechange.gov.au/>

<sup>8</sup> Deloitte (2017), 'Value of Rail: The contribution of rail in Australia', <https://www2.deloitte.com/content/dam/Deloitte/au/Documents/Economics/deloitte-au-economics-value-rail-contribution-australia-161117.pdf>

## The key priorities for the Policy are:



### Regulatory Frameworks

Ensure regulatory frameworks are fit-for-purpose and not a barrier to transition



### Research, Modelling and Trials

Develop an evidence base for policy and investment decisions



### Incentivising Transition

Incentivise the transition to low and zero emission technologies



### Education and Engagement

Educate and empower our stakeholders to make informed choices



### Procurement

Leverage procurement to drive sustainable outcomes





## Priority 1: Regulatory Frameworks

### Ensure regulatory frameworks are fit-for-purpose and not a barrier to transition

TfNSW is committed to ensuring regulatory frameworks in NSW are fit-for-purpose to enable and support industry in reducing freight emissions. We will update existing and/or develop new regulatory frameworks to reduce red tape and regulatory barriers to the uptake of low and zero emission technologies for road and rail freight and potentially remove incentives for high emitting road freight vehicles. We will work with other jurisdictions to develop a national regulatory environment to be agile, technology agnostic and aligned with global best-practice.

Through the Heavy Vehicle National Law review and National and NSW Heavy Vehicle Access Policies we will deliver improved sustainability, safety and productivity for heavy vehicles on a national scale. We will continue advocating

for national heavy vehicle emissions standards and changes to the Australian Design Rules to allow for cleaner, safer and more productive vehicles.

We acknowledge that current regulatory frameworks restrict the use of heavier and wider vehicles on our road network and recognise that axle mass limits can be a barrier to early market adoption of LZEVs. We will undertake further research and work with industry and other government agencies to assess the impact of heavier vehicles on road safety and infrastructure.

We understand the need for immediate solutions that provide flexible, fit for purpose access to better enable industry to transition to LZEVs. This includes a two-year access trial enabling heavier masses on the steer and drive axles.

We also recognise that our role in the reduction of rail freight emissions must align with national regulatory mechanisms. We will work closely with jurisdictions to reduce emissions in line with Australia's climate change targets.

Road Actions		Commencement timeframe
1.1	Review state regulations applicable to freight to identify necessary changes for heavy LZEVs on the road network and potentially remove incentives for high emitting vehicles.	0-2 years
1.2	Advocate for changes to national heavy vehicle standards that help maximise the benefits from new and emerging vehicle technologies, including the Australian Design Rules.	0-2 years
1.3	Provide concessions on mass limits for heavy LZEVs operating on the State-road network to enable access.	0-2 years
1.4	Work with other jurisdictions to accelerate the implementation of Euro VI and Euro VII emissions standards in Australia.	0-2 years
1.5	Work with the Commonwealth and other States and Territories to consider an appropriate road user charging framework for heavy LZEVs.	0-2 years
Rail Actions		
1.6	Review service level agreements between TfNSW and rail infrastructure managers to explore further opportunities to optimise the capacity of rail freight, particularly through two-way loading.	0-2 years
1.7	Investigate options and the most effective instruments to embed emission standards or control measures in NSW.	3-5 years
1.8	Explore options for a coordinated national approach to reducing red tape when industry begins applying low and zero emission technology solutions to locomotives that cross state borders.	3-5 years



## Priority 2: Research, Modelling and Trials

### Develop an evidence base for policy and investment decisions

Globally, the freight sector has been slow at decarbonising due to challenges in technological and market development. There is also limited real-world information and evidence on future demand and supply, including when LZEVs are likely to become available and feasible for long-haul road and rail freight. This creates an investment risk for industry and uncertainties for governments whose policies may not achieve the desired environmental and economic outcomes.

Research and emissions modelling will help determine the nature and extent of government intervention required and identify the most practical and cost-effective policy solutions to deliver the largest reduction in freight emissions. Establishing an ongoing program of research and modelling will enable more accurate projections over time. We are working with other government agencies to develop an emissions projection and cost benefit analysis model to assess the impact

of various policy levers on emissions and broader socio-economic impacts.

For instance, TfNSW recognises that shifting more freight on rail could help with the overall decarbonisation of freight. We will undertake further research to understand the degree and timeline required for the rail mode shift to create impactful and long-lasting emissions reductions.

TfNSW will undertake research and analysis to support informed policy and planning decisions around road access provisions for new and emerging vehicles with increased mass and dimensions. This work will help us understand the likely asset management and cost impacts on infrastructure, such as road pavements, tunnels, bridges and kerbside spaces, as well as future network design and maintenance.

TfNSW is also assessing the development of a Western Sydney Freight Line corridor to facilitate the development of industrial zones in the new Western Sydney Aerotropolis district. Part of this assessment includes a study into the suitability of alternative energy and zero emissions sources (Zero Emission Motive Power Options) for freight trains expected to operate on the new corridor.

Road Actions		Commencement timeframe
2.1	Undertake emissions and economic modelling to identify effective medium and long-term options to reduce freight emissions and increase heavy LZEV uptake.	0-2 years
2.2	Collaborate with other jurisdictions to conduct an East Coast geospatial analysis to inform optimal locations for recharging and/or refuelling of alternate fuels.	0-2 years
2.3	Undertake a network analysis to understand the impact of increased vehicle mass and dimensions on infrastructure and the opportunities for a freight network redesign and optimisation.	0-2 years
2.4	Develop TfNSW's capability in freight emissions and economic modelling in the heavy vehicle sector.	3-5 years
Rail Actions		
2.5	Undertake research and modelling to understand the emissions impacts and projections of moving more freight on rail in NSW.	0-2 years
2.6	Explore Zero Emission Motive Power Options for freight trains as part of an assessment to develop a Western Sydney Freight Line.	3-5 years
2.7	Collaborate with industry and/or other jurisdictions on other potential trials or demonstrations of the use of low and zero emission locomotives (including retrofit options) on the NSW rail network.	5+ years
2.8	Explore options to develop a national approach to support cross-border trials and joint investments in charging or refuelling infrastructure across the rail freight network.	5+ years



## Priority 3: Incentivising Transition

### Incentivise transition to low and zero emission technologies

TfNSW is focused on delivering the best suite of incentives (and disincentives) that will help overcome various market barriers and put the freight industry on a trajectory to net zero by 2050. As road freight emits the bulk of freight emissions, TfNSW is committed to accelerating early adoption and stimulating market development of LZEVs and more efficient vehicles through targeted incentives.

Internationally, incentives (and disincentives) for road freight have been effective in accelerating the transition away from aging diesel fleets while also improving safety and productivity outcomes. Early adopters will also help stimulate the second-hand market and support fleet renewal.

Incentives will be evidence-based in their ability to influence both uptake of LZEVs and the emission reductions likely to be achieved. Incentives will also be rolled out in a phased manner with an initial focus on options that can effectively deliver immediate emission reductions.

For example, in the short-term we will focus on facilitating greater road access for LZEVs and high productivity vehicles, particularly those

within the Performance Based Standards (PBS) Scheme which is designed to maximise safety and environmental performance. These vehicles offer significant emission reductions for industry as they can complete a freight task in fewer trips compared to their conventional counterparts. This reduces fleet size and vehicle kilometres travelled.

For rail freight, a key barrier to investing in low and zero emission locomotives is the approval processes for new locomotives in NSW. Industry has advised that red tape adds significant time and costs and has resulted in the continued use of aged and heavily polluting locomotives beyond their operational lifespan. An important priority for us is to streamline these processes in NSW and work with the National Transport Commission and other relevant stakeholders to develop national principles for approving new locomotives, to enable and support faster innovation in rail freight.



Source: Daimler Truck Australia

Road Actions		Commencement timeframe
3.1	Use research and modelling to identify potential incentives to reduce the whole-of-life cost of heavy LZEVs and support the uptake of these vehicles.	0-2 years
3.2	Optimise heavy vehicle movements by uplifting capacity and encouraging greater use of and access for higher productivity vehicles, particularly through two-way loading.	0-2 years
Rail Actions		
3.3	Continue to work with NTC and other relevant stakeholders to identify barriers and opportunities to uplift the efficiency of the accreditation process for new rail fleet operations in NSW to encourage industry investment in new and low and zero emission locomotives.	0-2 years
3.4	Explore options to improve the road and rail interface at intermodal terminals to support rail mode shift	3-5 years

9 Transport for NSW, 2022, Performance Based Standards, accessed April 14, 2023, <https://www.transport.nsw.gov.au/operations/roads-and-waterways/business-and-industry/heavy-vehicles/road-access/performance-based>



## Priority 4: Education and Engagement

### Educate and empower our stakeholders to make informed decisions

Education and information sharing are powerful tools to build awareness, influence immediate change and empower industry to make informed and sustainable decisions. For this reason, industry has called for greater support in terms of access to information, tools and capabilities to boost adoption of new and emerging technologies.

Through increased industry engagement and communication, TfNSW hopes to enable original equipment manufacturers (OEMs), operators and logistics companies to share up-to-date data, knowledge, international success, lessons and global trends.

TfNSW acknowledges our important role in market development by sharing reliable research and data, such as the benefits and costs of new and emerging technologies. Through the NSW Freight Data Hub, TfNSW has provided more freight data, including telematics data, to help industry improve efficiencies across the supply chain.

We also acknowledge the journey to net zero for rail freight will require a coordinated approach between governments, industry and the research community. This is due to the limited real-world information and evidence on future demand and the supply and feasibility of low and zero emission technologies for rail freight. TfNSW will explore options to establish a stakeholder reference group to enable roundtable discussions about opportunities for conducting feasibility studies, and proof-of-concept testing and trials of these technologies.

Road Actions		Commencement timeframe
4.1	Continue providing industry with reliable and up to date information (as it becomes available) about the economic, environmental and social benefits of LZEVs.	0-2 years
4.2	Collaborate with industry to develop guidance materials (including cost comparison tools) and share results from LZEV studies and trials to support operator decisions in switching to LZEVs.	0-2 years
4.3	Investigate options for a State-based heavy vehicle rating system to inform and influence vehicle purchasing decisions.	3-5 years
4.4	Work with industry to explore appropriate fleet and/or emission targets.	5+ years
Rail Actions		
4.5	Explore options to establish a stakeholder reference group consisting of representatives from other relevant agencies as well as industry and the research community.	0-2 years
4.6	Work with industry and other relevant agencies to explore appropriate fleet and/or emission targets.	5+ years







## Priority 5: Procurement

### Leverage procurement to drive sustainable outcomes

TfNSW acknowledges our role in leading by example when it comes to reducing emissions. The Policy complements broader commitments and actions outlined in the *Future Transport Strategy*, *Transport Sustainability Plan 2021*, *Future Energy Strategy* and other relevant policies and strategies.

TfNSW also supports broader Government commitments including the *NSW Hydrogen Strategy*, which has established a 20 per cent target for hydrogen fuel cell vehicles within the NSW Government fleet by 2030. TfNSW will partner with NSW Treasury and industry to conduct feasibility studies, trials and proof-of-concept testing of our truck fleet and establish models for large-scale deployment and fleet transition to achieve that target.

By taking a proactive approach to procurement, TfNSW can make a significant contribution to reducing emissions and creating a more sustainable future for transport in NSW. We have already started the journey to reduce our emissions by electrifying our bus and corporate

passenger fleet and transitioning our heavy commercial vehicle fleet. We will build on this by embedding freight emissions reduction commitments into our procurement decision-making and establishing appropriate sustainability requirements and key performance indicators to enable the use of LZEVs for infrastructure projects and in other TfNSW operations.

By adopting sustainable procurement practices and leveraging our purchasing power we can help stimulate the LZEV market, support fleet renewal and increase industry confidence. By working together, we can make significant strides in reducing emissions and contributing to a more sustainable future.



Road Actions		Commencement timeframe
5.1	Investigate opportunities and the business case to transition the heavy vehicle fleet owned and/or leased by TfNSW to LZEVs.	0-2 years
5.2	Encourage greater use of LZEVs in road transport infrastructure projects, particularly through contract conditions, key performance indicators and regulatory exemptions.	0-2 years
Rail Actions		
5.3	Encourage greater use of LZEVs in rail transport infrastructure projects, particularly through contract conditions, key performance indicators and regulatory exemptions.	0-2 years

# 4. Our Pathway to Net Zero Emissions for Freight










### Road actions



### Rail actions

Timeframe	Short-term (0-2 years)	Medium-term (3-5 years)	Long-term (5+ years)
 <b>Regulatory Frameworks</b>	<p><b>1.1</b> Review state regulations applicable to freight to identify necessary changes for heavy LZEVs on the road network, and potentially remove incentives for high emitting vehicles.</p> <p><b>1.2</b> Advocate for changes to national heavy vehicle standards that help maximise the benefits from new and emerging vehicle technologies, including the Australian Design Rules.</p> <p><b>1.3</b> Provide concessions on mass limits for heavy LZEVs operating on the State-road network.</p> <p><b>1.4</b> Work with other jurisdictions to accelerate the implementation of Euro VI and Euro VII emissions standards in Australia.</p> <p><b>1.5</b> Work with the Commonwealth and other States and Territories to consider an appropriate road user charging framework for heavy LZEVs.</p> <p><b>1.6</b> Review service level agreements between TfNSW and rail infrastructure managers to explore further opportunities to optimise the capacity of rail freight, particularly through two-way loading.</p>	<p><b>1.7</b> Investigate options and the most effective instruments to embed emission standards or control measures in NSW.</p> <p><b>1.8</b> Explore options for a coordinated, national approach to reducing red tape when industry begin applying low and zero emission technology solutions to locomotives that cross state borders.</p>	
 <b>Research, Modelling and Trials</b>	<p><b>2.1</b> Undertake emissions and economic modelling to identify effective medium and long-term options to reduce freight emissions and increase heavy LZEV uptake.</p> <p><b>2.2</b> Collaborate with other jurisdictions to conduct an East Coast geospatial analysis to inform optimal locations for recharging and/or refuelling of alternate fuels.</p> <p><b>2.3</b> Undertake a network analysis to understand the impact of increased vehicle mass and dimensions on infrastructure, and the opportunities for a freight network redesign and optimisation.</p> <p><b>2.5</b> Undertake research and modelling to understand the emissions impacts and projections of moving more freight on rail in NSW.</p>	<p><b>2.4</b> Develop TfNSW's capability in freight emissions and economic modelling in the heavy vehicle sector.</p> <p><b>2.6</b> Explore Zero Emission Motive Power Options for freight trains as part of an assessment to develop a Western Sydney Freight Line.</p>	<p><b>2.7</b> Collaborate with industry and/or other jurisdictions on other potential trials or demonstrations for the use of low and zero emission locomotives (including retrofit options) on the NSW rail network.</p> <p><b>2.8</b> Explore options to develop a national approach to support cross-border trials and joint investments in charging or refuelling infrastructure across the rail freight network.</p>
 <b>Incentivising Transition</b>	<p><b>3.1</b> Use research and modelling to identify potential incentives, to reduce the whole-of-life cost of heavy low and zero emission vehicles and support the uptake of those vehicles.</p> <p><b>3.2</b> Optimise heavy vehicle movements by uplifting capacity and encouraging greater use of and access for higher productivity vehicles, particularly through two-way loading.</p> <p><b>3.3</b> Continue to work with NTC and other relevant stakeholders to identify barriers and opportunities to uplift the efficiency of the accreditation process for new rail fleet operations in NSW to encourage industry investment in new low and zeroemission locomotives.</p>	<p><b>3.4</b> Explore options to improve road and rail interface at intermodal terminals to support rail mode shift.</p>	
 <b>Education and Engagement</b>	<p><b>4.1</b> Continue providing industry with reliable and up to date information (as it becomes available) about the economic, environmental and social benefits of LZEVs.</p> <p><b>4.2</b> Collaborate with industry to develop guidance materials (including cost comparison tools) and share results from LZEV studies and trials to support operator decisions in switching to LZEVs.</p> <p><b>4.5</b> Explore options to establish a stakeholder reference group consisting of representatives from other relevant agencies as well as industry and the research community.</p>	<p><b>4.3</b> Investigate options for a State-based heavy vehicle rating system to inform and influence vehicle purchasing decisions.</p>	<p><b>4.4</b> Work with industry to explore appropriate fleet and/or emission targets.</p> <p><b>4.6</b> Work with industry and other relevant agencies to explore appropriate fleet and/or emission targets.</p>
 <b>Procurement</b>	<p><b>5.1</b> Investigate opportunities and the business case to transition the heavy vehicle fleet owned and/or leased by TfNSW to LZEVs.</p> <p><b>5.2</b> Encourage greater use of LZEVs in road transport infrastructure projects, particularly through contract conditions, key performance indicators and regulatory exemptions.</p> <p><b>5.3</b> Encourage greater use of LZEVs in rail transport infrastructure projects, particularly through contract conditions, key performance indicators and regulatory exemptions.</p>		



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