2025 consultation

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4 July 2025

Volvo Group Australia submission in response to

Net Zero Commission (NSW) Consultation

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VOLVO

4 July 2025

Dear Net Zero Commission NSW team,

Volvo Group Australia (VGA) is pleased to provide input into the work and approach of the Net Zero Commission to address climate change.

We commend the Net Zero Commission for its comprehensive approach to addressing climate change and its commitment to inclusive consultation. The questions posed in this consultation are critical in ensuring that the strategies developed are both effective and equitable and we urge the Net Zero Commission to consider the rapidly growing freight task and the challenges and opportunities it presents.

VGA would like to take the opportunity both highlight some key critical areas with recommendations, as well as detail some of the current barriers and obstacles being experienced in the road freight sector. This document has been structured around questions 2, 5 and 9 asked by the Commission, and further details as we believe will be helpful data and information sources.

These critical areas include –

- Climate change & zero emission heavy vehicles
- Net zero pathways for maritime
- Technology and fuel types required for decarbonisation
- Freight task growth and productivity
- The role of government and regulations

Information is from the Volvo Group's internal new technologies experience, capabilities and roadmaps; our customers' various feedback to us in operation; and our global experience in more 190 countries globally where we have witnessed both best practice examples and failures that New South Wales, and Australia, can take learning from.

We have also contributed submissions to the following consultations related to broader net zero efforts:

- *House of Representatives Standing Committee on Climate Change, Energy, Environment and Water inquiry on the transition to electric vehicles*
- *Enabling supply of renewable diesel in Australia,* Department of Climate Change, Energy, the Environment and Water, Fuel Quality Section
- *Transport and Infrastructure Net Zero Consultation Roadmap*, Department of Infrastructure, Transport, Regional Development, Communications and the Arts

Thank you for considering our input provided. Please do not hesitate to contact me if you require any additional information, and we welcome the opportunity to further support the Net Zero Commission in their work to drive the necessary shifts to address climate change.

Yours faithfully,

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Contents

1.0 Background

1.1 About Volvo Group Australia

Volvo Group Australia (VGA) has more than 1,600 local employees, and manages the manufacturing, distribution and operation of Volvo Trucks, Mack Trucks and UD Trucks relevant to the freight sector, as well as Volvo Buses, Volvo Penta marine and industrial engines, Volvo Construction Equipment and Volvo Financial Services.

Since 1972 VGA has produced almost 80,000 Australian Made Volvo and Mack trucks in Queensland, and today are one of Australia's largest vehicle manufacturers. Every truck built at our Wacol, Queensland facility carries official 'Australian Made' certification. These operations proudly support a local supply chain of more than 120 suppliers and injects more than $400m annually into the Australian economy. In 2023, this figure exceeded $600m.

Looking to the future, VGA has committed to expand its local manufacturing operations to build not only internal combustion engine (ICE) trucks, but also heavy-duty battery electric trucks from 2026 in Wacol.

Transport	
Question 9:	What are likely to prove the most effective approaches to accelerate rapid decarbonisation across freight and passenger transport?

2.0 Climate Change & Zero Emission Heavy Vehicles

Globally Volvo Group has a target of net zero value chain emissions by 2040 - ten years earlier than the Paris Agreement and Science Based Targets initiatives (SBTi) commitments. This will enable our customers to have zero emission fleets by 2050, which is clearly aligned also with the NSW Government and the Commonwealth's decarbonisation targets.

Transport plays a critical role in the transition to a low- or net-zero emissions economy. The transport sector is currently the third largest contributor to the nation's greenhouse gas emissions, accounting for more than 21% of emissions (38% of that coming from road freight) and is projected to be Australia's largest source of emissions by 2030 (Department of Climate Change, Energy, the Environment and Water, 2023).

Understandably, pressure is mounting on the industry to accelerate its decarbonisation journey, in which electric vehicles (EVs), low carbon liquid fuels and Hydrogen technologies will all play important roles.

Recommendation: The Commission must act with urgency
Heavy vehicles in the road freight sector offer a major opportunity for decarbonisation. The fact that the average age of trucks on Australian roads today is 15 years, draws attention to the fact we cannot afford to wait to start prioritising the decarbonisation of this sector to meet NSW and Australia's emission targets.

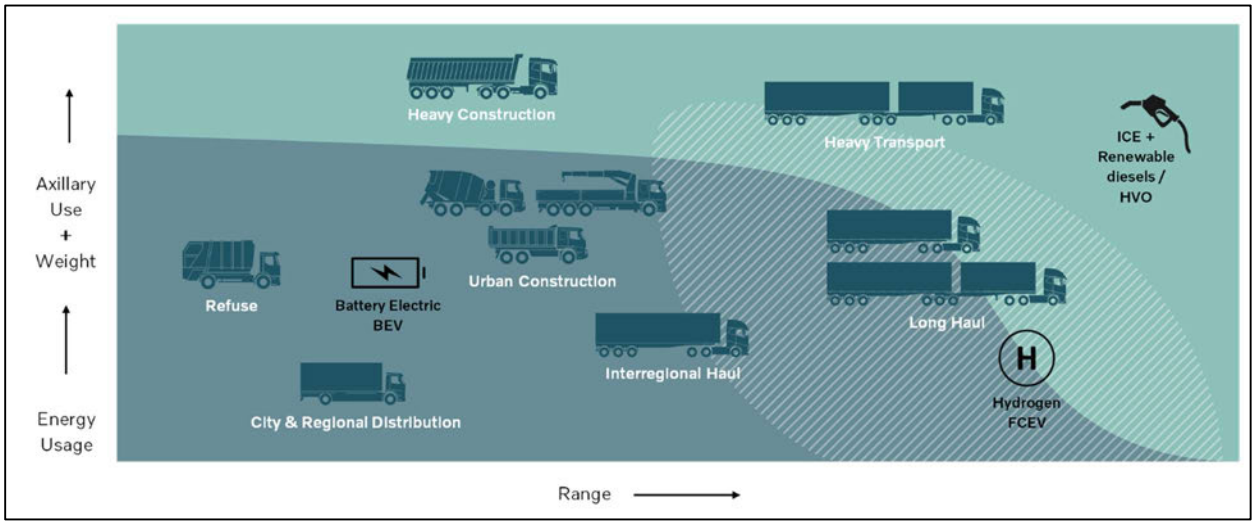
2.1 Three-pronged approach to the decarbonisation of freight – no silver bullet

After extensive studies on various technology types and energy efficiencies, the Volvo Group concluded that no single heavy vehicle technology or fuel type will provide the total solution for decarbonisation and increased efficiency. Just as heavy vehicles are used for a diverse range of applications and freight tasks, multiple technologies and fuels will be required for the transport sector's decarbonisation journey, including battery electric, hydrogen fuel cell, hydrogen ICE and traditional ICE vehicles operating on renewable fuels such as hydrogenated vegetable oil (HVO).

It is important to understand that no single vehicle / energy technology type should be viewed as the best or only solution, but rather one key and important technology to be used in combination with the others. Each has its own advantages and limitations when it comes to development, infrastructure, cost, productivity and life cycle environmental impact and efficiency.

Figure 1 below illustrates how the energy usage and range required in operation influences the likely best technology type, highlighting that one fuel/energy type will not be optimal or possible for all.

Figure 1: Energy type by range and energy usage



- **Battery electric** – Suitable for city/regional distribution, intrastate, refuse and some urban construction.

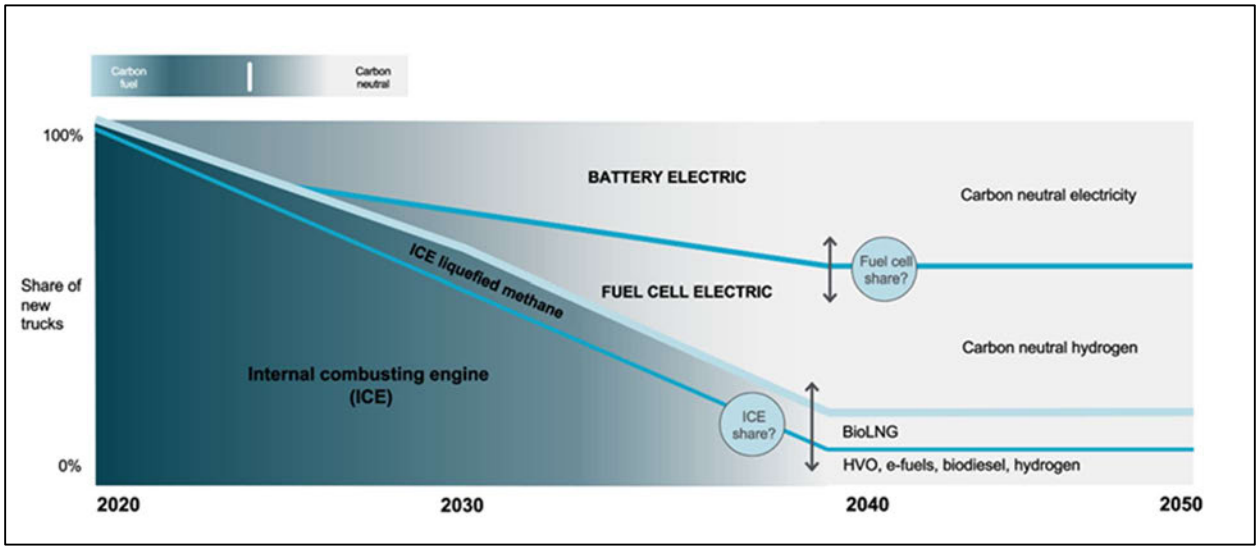
- **Hydrogen fuel cell and Hydrogen ICE** – Suitable for applications requiring larger energy usage and range such as interstate and intrastate haul, and some construction and mining applications.

- **Internal Combustion Engine (ICE) vehicles operating on renewable fuels such as hydrogenated vegetable oil (HVO)** – Will be required for some heavy transport, demanding haul, and heavy construction applications where neither battery electric or hydrogen fuelled vehicles will be viable due to their range and energy limitations. They similarly provide a suitable alternative for decarbonisation where the required infrastructure in not available. For example, in some rural and regional locations.

2.2 Technology will evolve over time

Figure 2 below shows Volvo Group's estimate of how heavy-duty vehicles globally will be decarbonized over time, showing that besides the full battery-electric vehicles that are **available now**, fuel-cell/hydrogen electric vehicles and trucks running on biogas (BIO-LNG) and/or Hydrotreated Vegetable Oil (HVO) will contribute to transport decarbonisation over time. This also considers the development and advancements of each of the technology types and of course may differ country to country according to availability of resources.

Figure 2: Estimate of how heavy vehicles will decarbonise over time



2.3 Freight Task and Productivity

As detailed in the Transport for NSW's Freight Policy Reform consultation paper (April 2024), by 2040 road freight is projected to be 57.1 per cent above 2020 levels in NSW. The interstate road task is expected to be 84 per cent above 2020 levels, increasing from 39.1 billion tonne kilometres to 71.9 billion tonne kilometres, potentially impacting road safety, road funding and investment prioritisation, at both a state and national level. While the road freight volumes moved within metropolitan Sydney and within regional NSW are lower volumes than the interstate road freight task they are also projected to increase.

This increasing freight task coupled with both the current and expected future driver shortage, magnifies the fact that implementing strategies, policies and regulations that prioritise productivity is critical. For example, reviewing and updating current Heavy Vehicle General Mass Limits and vehicles to enable higher loads and ensure optimal vehicle configurations and efficiency.

Increasing productivity, and as a by-product reducing the number of heavy vehicles required to perform the freight task, would also deliver safety benefits to the freight industry and other road users.

RECOMMENDATION: Review and remove current curfews for silent zero emission heavy vehicles

Reviewing the current curfews imposed on heavy vehicle operations, is another mechanism that the NSW policy makers should also consider, to again increase freight productivity and increase road safety for all road users by decreasing volume of heavy vehicles operating in peak hour traffic and during school drop off and pick up times.

For example, **removing curfews on silent zero emission heavy vehicles as an incentive to promote and accelerate the transition to zero and low emission vehicles.**

2.3 Net Zero Pathways for Maritime

VGA would also like to highlight the need and importance to future proof the domestic maritime industry. VGA is very supportive of introducing an emission standard, similar to heavy vehicle road transport solutions, in the maritime space.

We see there is an opportunity for the Net Zero Commission to support the introduction of emission standards on smaller marine vessels and leisure craft. Overseas for example, we have seen for some time now emissions standards being enforced on closer to shore vessels and operations. For example -

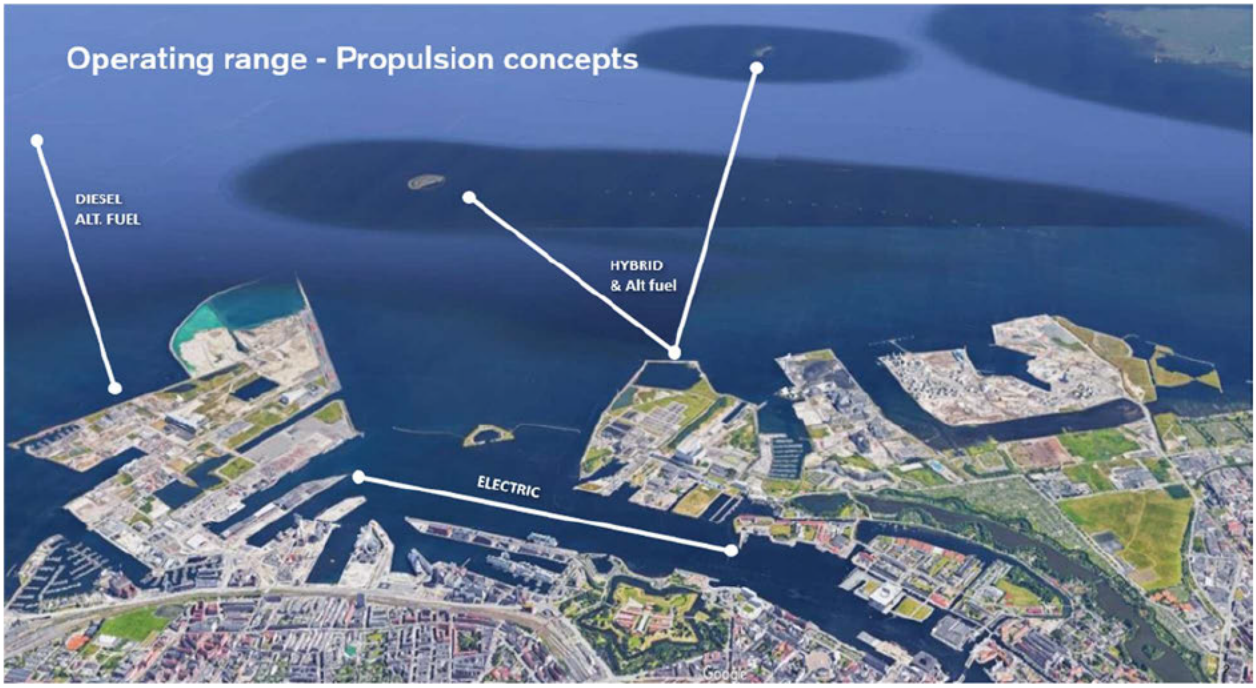
- Leisure boats
- Passenger ships and ferries
- Short sea and river transport vessels
- Coast guard and patrol vessels
- Work boats and tugboats

Our learning from experience abroad, such emission standards have typically been phased in not only over time, but also by vessel type and size. For example, the EU directive for noise and emission requirements on recreational craft, started with recreational vessels with hull lengths between 2.5m and 24m.

While full electric solutions are available today, their usage is limited to short distance, close to shore operations. We already see excellent examples of this in practice abroad for close to shore, in-river or in land waterway passenger transport. The Brisbane CityCat and ferry services ahead of BNE2032, and the Swan River ferry services in Perth are example prime candidates where this electrification makes sense.

When the distance increases i.e. greater than 10nm off mainland, hybrid solutions are an ideal solution to offer zero emissions in areas that benefit from the low noise and pollution, but also have a diesel or alternative fuel engine ready as a range extender.

Electrifying ferry, in-river and in-land waterway passenger transport are a low hanging fruit for Governments to make progress on their decarbonisation targets and offer excellent value for money.



Informing and empowering change	
Question 2:	**What actions can the commission take to engage across the community to help drive the shifts needed for the net zero transition and for effective climate change mitigation and adaptation?**

3.0 Role of Government

Government, regulators and policymakers all play a key role in implementing, and in many cases enforcing, the key changes required to achieve safer, cleaner, more productive and efficient freight operations – harmonised not only within the state of NSW, but also nationally. For example, government need to take the lead in implementing the required regulation changes for positive freight and supply change developments.

3.1 General Mass Limits

Not only do current General Mass Limits (GML) under the Australian Heavy Vehicle National Law (HVNL) impact possible advances in freight productivity, but they also restrict, and in many cases prevent, the operation of Zero Emission Vehicles (ZEV) that are required for the decarbonisation journey of the medium and heavy-duty road transport sector.

Australia faces unique legal constraints regarding axle limits, unlike many other countries globally that permit significantly higher limits to counterbalance the impact of battery tare weight. The European Council Directive 96/53/EC allows 10t on the front axle for example, compared to Australia's 6.5t, and the European Council are currently reviewing their policies to increase this further.

3.2 Front Axle Limits

Australia's current 6.5t steer axle mass, otherwise known as Front Axle Limit (FAL), is not enough to enable the legal operation of Heavy Duty zero emission vehicles, including both Battery Electric Vehicles (BEV) and Hydrogen Fuel Cell Electric Vehicles (HFCEV) and Hydrogen Internal Combustion Engine (ICE) vehicles, when carrying the same payloads as done today with diesel ICE vehicles. This is due to the increased tare vehicle weight of at least 1.0t of these new technology vehicles. In some models and applications this weight increase can be up to 2.0t.

Ideally the current 6.5t FAL would be increased to 8.5t FAL, which would future proof for the next generation BEVs, and future Hydrogen technology vehicles as well. An increase to 8.0t FAL however would be sufficient for most BEVs in the interim today.

8.0t FAL today would enable comparable change from diesel equivalent i.e. optimal efficiency, payload and productivity, including for rigid vehicles such as refuse trucks and up to 16 pallet box bodies as examples.

3.3 Rear Axle Limits

In addition to the FAL, ideally the Tandem Axle Drive Group, otherwise known as the Rear Axle Limit (RAL) will also be increased at the same time to enable a higher overall Gross Vehicle Mass (GVM) and payload.

In Australia the current national RAL is 17.0t. Ideally this would be increase to 19.0t, which would again future proof for future generation BEVs and Hydrogen Fuel Cell EVs. 18.5t RAL however would be sufficient for most BEVs in the interim today.

RECOMMENDATION: Increase GML for zero emission heavy vehicles

Volvo recommends that the current GML for low and zero emission heavy vehicles is increased as per the below table.

If the proposed higher limits that will be required for future technologies, including Hydrogen Fuel Cell EVs are not yet possible, we would recommend increasing limits to those shown in the interim column below. This is essential to ensure optimal payloads, efficiency and productivity is at the very least maintained.

Axle	Current	Interim solution	Future requirement
Front (steer) Axle Limit	6.5t	8.0t	8.5t
Real (tandem drive) Axle Limit	17.0t	18.5t	19.0t

3.4 Regulation permanency & national harmonisation

Regulation permanency

While we commend the NSW Government for taking the proactive initiative to launch the NSW Zero Emission Heavy Vehicle Access Trial, the fact it is a two-year trial is problematic. The lack of long-term certainty and flexibility of routes and operations make investment decisions and business cases for zero emission trucks difficult for operators and local manufacturers alike, despite the desire for many to accelerate their own decarbonization journeys.

RECOMMENDATION: Implement Regulation changes with permanency to secure confidence

VGA stresses the importance of implementing such regulatory changes with permanency to give operators and industry the confidence and ability to invest and/or implement significant change.

National harmonization of regulations

In addition to the above challenges related to GML regulations, another closely related barrier is the lack of national consistency – including intrastate consistency. The national harmonization of heavy vehicle standards, weights and dimensions is critical to ensure the maximum efficiency, productivity and decarbonisation of the industry. The freight and logistics industry by its very nature is not bound by borders or boundaries, but as a result of the differing regulations between the jurisdictions unfortunately we are creating them. Again, this significantly hampers the productivity potential electric heavy vehicles, which in turn impacts the commercial viability for many operators.

Even within single jurisdictions, such as NSW, the lack of harmonisation across state-owned and local governments roads is again extremely problematic. For most local governments engineers are not allowing higher axle limits, and this is proving as a major deterrent and barrier. Clear funding allocations for local governments and relevant communications are necessary.

RECOMMENDATION: Government to mandate the necessary changes

In this case, we see a real need for NSW state government, or the Commonwealth, to mandate the changes, and assist in sharing pavement and asset wear studies, and appropriate funding for road and maintenance.

Waiting for permit approvals by each individual Local Council and road owner is proving not to have the urgency and buy-in required for change.

3.5 Road and infrastructure funding

One barrier inhibiting access approvals is concern around the impact increased axle weights will have on road infrastructure and pavements, and the associated costs.

Pavement wear is a common concern worldwide, and significant testing and studies have been conducted. Most countries have many years of experience allowing higher axle weight limits, long before new technologies were introduced, that we could learn from.

While there is increased pavement wear, studies and experience indicate the impact is relatively low and that the additional cost is not comparable to the cost of not reducing carbon emissions and climate

change. The cost of repairing roads and infrastructure from major weather events alone is just one example of this.

Closely related, concerns of pavement and structural damage is also leading to a number of jurisdictions restricting access to key freight routes and assets such as toll roads, bridges and tunnels, which again has a major impact of the operational productivity, commercial viability and attractiveness of heavy vehicle EVs.

While there is increased pavement wear for a Heavy EV, studies and experience indicate the impact is not as great as often assumed. In fact, when wide tyres (super single 385/65) are used on the steer, coupled with road friendly suspension the impact on pavements from the greater axle weights can be largely overcome.

A recent study showed for example that use of super single 385/65 tyres can reduce road pavement wear by 11% statically, and then then depending on the road profile, will further reduce pavement wear by up to 30% for poorly maintained roads or 17% for well-maintained roads. This in some cases, means that the pavement wear caused from a higher mass electric vehicle is the same, or very close to, its diesel equivalent without super-single tyres or road-friendly front suspension that are allowed legally on roads today. In some cases, the EV vehicles actually resulted in less pavement wear due to suspension advances.

A recent study was also recently performed by Ausroads in Victoria, which also supported this view.

RECOMMENDATION: Government to increase their role to educate on the 'Bigger Picture'

At VGA we also see a need for Government to play a role in educating more broadly on 'the bigger picture'. For example, the Cost of increased road maintenance vs. Cost of Climate Change Impacts and the Benefits of zero emission vehicles and reduced carbon.

Many Local Government road engineers (as one example), are making judgements based on a very narrow set of criteria and data.

3.6 Zero Emission technology quality and safety standards

Australia has always taken its operating, safety, ADRs and Design standards extremely seriously, resulting in a safe and high-quality freight, logistics and transport industry. With the introduction of new zero emission technologies there is a need to ensure that these standards are kept up to date.

Currently for example, we are not aware of any electric heavy vehicle specific quality standards or regulations that are mandated in Australia for the purpose of increasing battery electric vehicle safety, including reducing the risk of thermal events. In Europe for example they require UN ECE R100 standard for the approval of road electric vehicles. The regulation specifies all tests that must be carried out on lithium propulsion batteries.

Unfortunately, the battery fires and thermal events that have occurred involving non-regulated EVs in Australia tarnish the image and reputation of all EVs. As a result, we are starting to see road authorities not permitting EVs to operate on certain bridges, toll roads and in tunnels. Such restrictions would be a major barrier and deterrent for the uptake of EVs, and potentially also greatly impact productivity and commercial viability of EVs for operators.

Regarding such EV restrictions, we are not currently aware of any restrictions put on electric trucks, buses or cars, in terms of driving through tunnels or over bridges that are open for general traffic, outside of Australia. Most notably we would like to draw attention to the operation of Electric Heavy Vehicles in what can be considered the European 'tunnel countries' of Norway, Switzerland, Austria and France, among others, where normal general traffic operation is permitted with vehicles complying to EU regulations. There are also examples of EVs operating in underground mines in some countries.

Volvo EV Solution

From Volvo's perspective, we have put a lot of effort and investment into the quality and safety of the lithium-ion batteries, including a high focus on the battery and cell design, Battery Management Systems (BMS) and battery monitoring systems. As shown in Figure 4 below, Volvo's Electric vehicle ranges adhere to not only the UNECE R100 standard mandated in Europe, and many other places around the world, but also undertake additional testing on top of this international standard.

Figure 4: Volvo BEV Testing

ECE R100 Standard

- Vibration
- Thermal shock and cycling test
- Mechanical shock
- Mechanical integrity (crush)
- Fire resistance
- External short circuit protection
- Overcharge protection
- Over-discharge protection
- Over-temperature protection

Additional Volvo tests

- Humidity test
- Immersion test
- Passive propagation resistance
- Over current protection
- Over charge
- External short circuit
- Heating
- Temperature cycle

RECOMMENDATION: Volvo recommends mandating the UNECE R100 standard for Battery Electric Vehicles

Volvo recommends mandating the UNECE R100 standard, which is currently legislated in Europe and other parts of the world, for the approval of road electric vehicles. This regulation would promote and ensure battery quality and safety standards and eliminate the risk of having untested solutions operating on Australian roads.

It is critical for this standard to also be linked to road, asset and tunnel access to avoid restricted EV networks maps reducing EV productivity and commercial viability. Access to such critical freight routes is fundamental to ensuring Freight productivity is maintained.

Similar standards should also be introduced for other new technology types such as Hydrogen ICE and Hydrogen Fuel Cell vehicles as examples.

3.7 Incentives

As has been seen around the world, incentives of varying natures are critical for the acceleration and transition to zero emission HVs – especially in the early years of transition.

Experience around the world indicates one major key success factor for the government to consider involves committing to and ensuring the availability of 'Green funding' and financing schemes for operators to utilise. Current ARENA project funding and initiatives by the Clean Energy Financing Corporation (CEFC) are some examples of what is required to accelerate the decarbonization of the transport industry.

Potential incentives and strategies for zero emission heavy vehicles (ZEHV) incentives include -

- Green funding and / or discount debt facility (e.g. through a bank) or aggregated facility through the Clean Energy Finance Corporation (CEFC)
- Government rebate / Cash-back at point-of-sale on purchase of ZEHV
- Government to cover gap between ICE and ZEHV
- Offering support for investment in building and operating necessary charging infrastructure
- Offering support for the building of both private and public charging points at truck depots, at loading and unloading destinations in the logistic system, as well as at resting places and truck stops along the highway network
- Waive Fringe Benefits Tax for ZEHV
- Reduce toll / port access fees for ZEHV
- Stamp duty changes at state government level
- Instant asset write-off incentive

Other non-financial incentives may include –

- Shortening and simplifying the process for obtaining permissions for private and public charging stations
- Waiving curfews for silent and ZEHV
- Accelerating ASRS Standards reporting requirements across both private and public sectors

Removal of curfews

The removal of operating time curfews for zero emission and low noise vehicles is another action the governments could take, at zero/low cost to help accelerate the uptake of zero emission vehicles. This would help operators increase productivity for their vehicles and in-turn reduce the payback period of their capital investment. In addition to increased productivity, reducing the number of trucks on the roads during peak hours would also positively increase road safety as well.

Financial incentives or waiving of costs, charges or taxes

Financial incentives, or waiving of additional costs/charges/taxes, will be required to encourage the purchase of net zero vehicles. We have seen in the solar panel transition, and in the NABERS Commercial Building Disclosure Program for office buildings that early adopters were provided with incentives and rebates, leading to the success of those two programs.

Education on new Sustainability Reporting Standards (ASRS Standards)

Another motivation for some businesses to adopt zero emission EV technologies may be to reduce their Scope 1 emissions, which the announcement of ASRS Standards reporting may put pressure on.

Educating industry, including all members of the supply chain, on the ASRS Standards (including Scope 1, 2 and 3 definitions) may increase organisations urgency to not only invest in zero emission technology for their own Scope 1 emission reductions, but also to demand their supply chains utilise them as part of their Scope 3.

RECOMMENDATION: Introduce both financial and non-financial incentives to accelerate freight productivity and decarbonisation

The NSW Government should work together with the Federal Government to introduce a combination of both financial and non-financial incentives to accelerate the uptake of low and zero emission vehicles – in particular green financing, green funding and the removal of curfews to increase productivity.

The government should also roll out education programs not only on the business case for adopting Zero Emission Electric Heavy Vehicles, but also on the new ASRS (and ISSB) reporting standards – potentially with targets mandated.

Accelerating emissions reductions	
Question 5:	**What additional information and evidence should the commission consider when assessing progress towards NSW's targets for reducing net greenhouse gas emissions?**

4.0 Total Cost Assessment

4.1 A total cost assessment is required including severe weather & healthcare

Although the barriers facing the industry on its path to net zero emissions are real and will take collaboration and investment to overcome, the cost of not reducing emissions is more daunting.

We note the House of Representatives Standing Committee on Regional Development, Infrastructure and Transport's recent Inquiry into the implications of severe weather events on the national regional, rural, and remote road network. The experiences relayed in that inquiry show the consequences of delays and damage to Australia's delicate supply chain. The massive costs caused as a result of climate change have not yet been compared to the cost of accelerating decarbonisation.

Furthermore, while often the cost of pavement wear and infrastructure are raised as barriers to the acceleration of BEVs, a total cost assessment has not yet been done taking into consideration the benefits BEVs offer, and the health care costs caused by diesel heavy vehicles (in addition to rising costs caused by increasing extreme weather events due to climate change).

For example, diesel exhaust emissions are classified as a **Group 1 carcinogen** by the International Agency for Research on Cancer (IARC)[1]. This means they are definitively linked to an increased risk of **lung cancer** in humans, which would have a major cost impact on the nation's healthcare system.

As a result, on 7 September 2023, SafeWork Australia members agreed to add a workplace exposure limit (WEL) for diesel particulate matter (DPM) at 0.01 mg/m3 (elemental carbon) to the list of Workplace Exposure Limits for airborne contaminants (WEL list).

The World Health Organization (WHO) have also published studies into the health impact and cost on society from noise pollution, which again electric vehicles would help alleviate and reduce.

4.2 Cross departmental collaboration is required

The transport sector supports and touches multiple areas of government, and not just those in the Department of Department of Infrastructure, Transport, Regional Development, Communications, and the Arts' wheelhouse. For example, the transport sector supports, is a major contributor to, and is reliant on effective policies by departments, regulators, and agencies such as, but not limited to the below list. Cross collaboration between these departments and groups is essential for progress on the transition to EVs.

- Department of Climate Change, Energy, the Environment and Water
- Department of Education
- Department of Foreign Affairs and Trade
- Australian Renewable Energy Agency
- Australian Transport Safety Bureau
- Clean Energy Regulator
- Climate Change Authority
- Australia Skills Quality Authority (National Vocational Education and Training Regulator)
- Australia Trade and Investment Commission (Austrade)

In many jurisdictions the department responsible for freight and transport is not the department responsible for infrastructure and roads, which again adds further complexity to getting alignment of key regulations and policies. For example, new axle weight limits for zero emission vehicles. Increased axle weight regulations in most jurisdictions are reliant on increased funding for road infrastructure, but in some jurisdictions no single department has control over both, or the scope to do the total cost benefit analysis considering → Cost of increased road infrastructure and impact of health care system vs. Benefits of zero emission vehicles and reduced carbon emissions and diesel particulates.

[1] www.iarc.who.int/news-events/iarc-diesel-engine-exhaust-carcinogenic/

RECOMMENDATION: Utilise data effectively to make informed decisions on pavement wear and structural impact, and work cross functionally to enable required budgets

Closely related, is the opportunity to also utilise this data to forecast likely pavement wear and structure impacts, for example from heavier and/or longer vehicles to feed into government road and infrastructure funding in both state and federal budgets.

Currently we are seeing such data not being used wholistically for example, with cost, risk and value analysis. For example, what is the likely cost of pavement repairs required if higher axle weights are granted? What is the cost of climate change and natural disaster impacts of the roads and pavements?

6.0 References

Department of Climate Change, Energy, the Environment and Water. (2023, September 29). Retrieved from National Greenhouse Gas Inventory Quarterly Update: September 2023: https://www.dcceew.gov.au/climate-change/publications/national-greenhouse-gas-inventory-quarterly-update-september-2023

Department of Infrastructure, Transport, Regional Development, Communication and the Arts. (2023, August 16). *Review of the National Freight and Supply Chain Strategy - Discussion Paper.* Retrieved from www.infrastructure.gov.au/department/media/publications/review-national-freight-and-supply-chain-strategy-discussion-paper

European Environment Agency. (2022, July 18). *Health impacts of exposure to noise from transport.* Retrieved from European Environment Agency: https://www.eea.europa.eu/en/analysis/indicators/health-impacts-of-exposure-to-1

National Heavy Vehicle Regulator. (2016, July). *National heavy vehicle mass and dimension limits.* Retrieved from National Heavy Vehicle Regulator: www.nhvr.gov.au/road-access/mass-dimension-and-loading/general-mass-and-dimension-limits