Submission No 24

EMISSION FREE MODES OF PUBLIC TRANSPORT

Organisation: BusNSW

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Inquiry into Emission Free Modes of Public Transport

11 July 2022

BusNSW is the peak body for the NSW private bus and coach industry. BusNSW's mission is to foster the efficient and sustainable growth of public transport in NSW, and to promote the benefits of bus travel.

Buses play a vital role in delivering public transport in NSW and carry more than 330 million passengers annually, including over 500,000 students travelling to and from school each day. More passengers are carried by bus in NSW than by any other mode of transport, including rail. The flexibility offered by buses, their ability to operate at short notice along a myriad of routes and with a minimum of infrastructure spending, and their capacity to carry a variable passenger load make them an ideal solution to meet a range of transport needs.

BusNSW Members provide bus services under *Transport for NSW* (TfNSW) contracts in Sydney metropolitan and outer-metropolitan areas, and in NSW rural and regional areas. They also provide "non-contracted" services in the long distance, tourist and charter sector. BusNSW also represents a wide range of bus manufacturers and other industry suppliers as Associate Members. Traditionally our members have been at the forefront of innovation, embracing new technology to provide the highest standards of safety and customer experience.

Governments around the world are taking action to prepare for and accelerate the adoption of emission free modes of transport, in recognition of the economic, social and environmental benefits. BusNSW acknowledges that the NSW Government has published a *Zero Emission Bus Transition Strategy* to reflect its commitment to achieving net zero public transport emissions as an essential part of reaching net zero greenhouse gas emissions by 2050.

BusNSW understands that the focus of the Legislative Assembly's Inquiry is the feasibility of emission free modes of public transport in the long term and its impact on industry, taxpayers and local manufacturing operations.

Outlined below are BusNSW's comments in response to each of the Committee's Terms of Reference; namely:

- The capacity and capability for industry to provide emission free modes of public transport.
- Benefits and costs to taxpayers.
- Opportunities for, and impact to, local manufacturing operations.
- Other jurisdictions that have emission free modes of public transport; and
- Any other related matters.

1. **The capacity and capability for industry to provide emission free modes of public transport**

The transition of the current diesel fleet to a *Zero Emissions Buses* (ZEBs) brings considerable upheaval for bus operators, manufacturers and suppliers. Whilst BusNSW supports the move, there are a range of factors that will impact the speed at which the industry can move to emission free modes of transport and continue to manage infrastructure and bus services into the future.

a) Complexity

Bus operators conduct regular passenger services on behalf of the NSW Government. As a result, it is important that the necessary Government policies and infrastructure are in place to smooth the path for transitioning to a zero emission fleet of buses. The NSW Government may need to consider a new business model to run ZEBs where its partnership role and risk is clearly quantified.

There will be a need to ensure that the procurement of buses by operators has mechanisms that facilitate a fair allocation of risk regarding the uncertainty around operating a fleet that has a growing proportion of ZEBs during the contract term. Careful consideration should be given to any request for bus operators to make major and sudden changes to operational practices including refuelling, maintenance, fleet and parts compatibility, and new regulatory and compliance regimes.

b) Transition Phasing

In May 2020, TfNSW called for expressions of interest from leaders in the energy, transport, manufacturing and financing sectors to participate in trials of zero emission buses and associated technologies. These trials will be undertaken in partnership with transport operators in the Sydney and Outer metropolitan areas and are part of the NSW Government's strategy to transition the entire public bus fleet to zero emissions.

In December 2020, Minister for Transport and Roads, Andrew Constance, announced that he is challenging TfNSW to aim for a goal of electrifying the state's entire bus fleet of 8,000 contract buses by 2030. TfNSW is now developing a plan to achieve this ambitious target, including the intended procurement process and funding of vehicles, charging equipment and depot infrastructure.

In June 2021, a *NSW Zero Emission Bus Transition Strategy* was released. The strategy includes a number of key themes for NSW including:

- The initial stages of the transition will focus on battery electric vehicles while undertaking scaled trials of hydrogen fuel cell electric vehicle technologies.
- The transition will be weighted towards metropolitan areas, with a heavier focus on regional areas in the latter years.
- In metropolitan areas, the transition will prioritise areas where TfNSW has long-term access to key depots and bus fleets are relatively standardised.
- In outer metropolitan and regional areas, the transition will prioritise operations that are best suited to current battery electric technology, and TfNSW will trial

both battery electric and hydrogen fuel cell technologies to understand what best suits more challenging regional and remote operations.

- TfNSW is undertaking technical planning to determine design performance requirements for fleet, depots and supporting infrastructure.

In September 2021, BusNSW has provided TfNSW with a submission on the transition strategy which covers a wide range of issues relating to fleet, depots, staff, suppliers and contracts and was based on feedback from members (A copy of the BusNSW submission is attached). BusNSW is seeking for the NSW Government to consult with industry via BusNSW to ensure the transition to zero emission bus strategy adopted provides the best outcome for government, operators and the community.

Electric buses have been included on TfNSW's Bus Procurement Panel 3 and a number of Sydney Metropolitan operators have procured ZEB contract buses from the Panel. As part of the NSW Government's commitment to transition the entire 8,000-plus bus fleet to zero emissions, in early 2022 it was announced that Custom Denning had been awarded a contract to design, manufacture and assemble 79 new electric buses. Once built, the 79 buses will operate services in Sydney's inner west.

The NSW Government launched the NSW Hydrogen Strategy in October 2021. The strategy brings together existing and new policies into a framework to support the development of a commercial hydrogen industry in NSW. The strategy also identifies opportunities for hydrogen fuel cell buses and includes the need to complete feasibility and proof of concept testing of hydrogen buses.

The state's first trial of a hydrogen-powered electric bus will begin on the Central Coast in 2022, as part of the NSW Government's plan to transition the contracted fleet to zero emission technology. The project is a partnership with the Department of Planning and Environment, local bus manufacturer ARCC, Central Coast operator Red Bus, and Origin Energy.

Given the level of changes needed and the fact that engineering development of electric vehicles and options for generating electricity are continually evolving, BusNSW recommends that the introduction of electric vehicles and technologies be managed on a phased basis according to short, medium and long-term strategies.

These strategies should not be 'one size fits' all but rather tailored to the varied contract types and operating conditions throughout the state. A phased transition would also enable industry to monitor the performance and reliability of ZEBs in Australian conditions over time and mitigate any potential issues before a full-scale implementation.

In June 2022, TfNSW released some information relating to its ZEB rollout plan to respond to the challenge of transitioning the bus fleet in NSW to zero emissions.

The Strategy provides for the transition to ZEBs according to the following sequence:

- Greater Sydney by 2035
- Outer Metropolitan Regions by 2040
- Regional NSW by 2047.

BusNSW generally agrees with this phased approach, though further details in relation to the tranches and respective number of buses for each region are required.

NSW is currently on track to have more than 200 zero emission buses in service by mid-2023.

c) Zero Emission Bus Procurement Options

Bus operators contracted by the NSW Government purchase buses from a TfNSW Bus Procurement Panel, which has to date approved several models of ZEB that use battery electric technology (Two door city bus). ZEB options need also to be made available for the other vehicle types operating in NSW which currently have no ZEB alternative, to assist operators (especially in rural and regional areas of NSW) to prepare adequately for the transition to ZEBs and managing them into the future. These bus types include:

- Articulated
- Double Decker
- Category 1 High Floor School Bus
- Category 2 High Floor School Bus
- Category 3 High Floor School Bus
- Category 4 High Floor School Bus
- One door Urban / two door City (Low floor accessible bus)

d) Fleet Lifecyle Management

Larger diesel buses generally have a long contract life of approximately 25 years. To date the lifespan of electric vehicles under Australian conditions is unknown, as are the end-of-life costs of ZEBs (for e.g., battery resale, battery recycling and manufacturing and disposal of vehicle and batteries). As a result, the contract "life" of ZEBs requires flexibility until these issues are understood.

The current maximum age of buses under TfNSW contracts is 25 years. BusNSW has advocated for a reduction in the maximum age to eighteen (18) years, which is consistent with other jurisdictions in Australia and globally. Based on current advice regarding battery life, this would allow for one battery replacement during the life of the bus. BusNSW understands that batteries are currently 20-30% of the cost of a battery electric bus. The economic viability of introducing a third battery cycle to an 18- year-old bus, which is likely to have ageing technology and safety features, needs to be carefully considered.

The proposed approach would ensure that existing diesel buses have received capital payments to their full value (New Fleet Periodic Payments or Principal/Interest payments) prior to their disposal. The contract arrangements and responsibilities for the disposal of existing diesel buses prior to them reaching their maximum age will need to be considered, including impacts on the second-hand bus market. Consideration needs to be given to a systems solution framework ("circular economy") to tackle ZEB end-of-life challenges relating to waste and pollution.

Additionally, in the past bus operators have experienced difficulties when spare parts for certain models of bus are no longer available, especially towards the end of their contract life. There is therefore a need to ensure the long-term supply and support of chassis and body components for ZEBs.

e) Development of Robust Infrastructure

BusNSW believes that the transition to ZEB infrastructure within bus depots should initially focus on metropolitan operators and depots where TfNSW has long term access rights (i.e., current and previous State Transit Authority depots and private operator depots where TfNSW may have an interest).

The NSW Government program to procure metropolitan bus services for Greater Sydney has involved the franchising of three (3) regions previously operated by State Transit and the current tendering of ten (10) private bus operator regions. The announcement also advised that as part of the process, there would be an ambitious transformation of the bus fleet from diesel to zero-emission buses.

Most depots in Greater Sydney and Regional NSW are owned by private bus operators. BusNSW notes that the NSW Government's response to the parliamentary inquiry into electric buses in NSW (published in March 2021) indicated that while infrastructure upgrades to government-owned depots will be funded by the government, the model for funding upgrades to privately owned depots is unclear.

It is important that bus replacements continue at normal levels for metropolitan contract regions whilst a model for funding upgrades to privately owned depots is developed. This should be based on ZEBs with negotiated commercial arrangements for the installation of infrastructure and charging equipment. Bus service contracts will play a vital role in managing the ZEB transition timeline.

Private bus operators generally have a preference to manage the installation of infrastructure required to operate ZEBs at depots when they have ownership of the property. BusNSW supports a system where there are clear rights linked to the funding and ownership of the fixed and portable infrastructure and equipment required to operate ZEBs. Most private operators who own their depot would be willing to manage the risk associated with the installation and maintenance of ZEB infrastructure where there is a suitable mechanism to amortise the costs.

Where an incumbent operator has previously not been the successful proponent in a tender, they had an opportunity to lease their depot, which is predominantly hard stand, to a third party for other business activities (i.e., a trucking company). In some cases, the depot sites have the potential for redevelopment, including industrial, commercial and residential.

The installation of infrastructure for the charging of electric buses in depots will significantly impact on the hard stand area and on the leasing and redevelopment options for the owners. Consideration should therefore be afforded to the commercial arrangements between government and operators to manage the ongoing ownership and availability of infrastructure to support an electric bus network.

Flexibility in battery charging is paramount to ensure the ongoing provision of bus services. To manage charging demand for battery electric vehicles, new infrastructure will be required in depots together with upgraded utilities to ensure the supply of electricity is stable, abundant, operationally economic and is procured in a way that meets governments environmental goals.

f) Contracts, Standards and Regulation

The introduction of large-scale change to the public transport sector requires a review of applicable standards and regulations. For instance, given buses often move between depots and localities, the NSW Government should consider the regulation of a standard to ensure that buses supplied by different *Original Equipment Manufacturers* (OEMs) have compatible plugs and charging devices to ensure flexibility in fleet management locally and interstate.

Buses that are legally permitted to travel on NSW roads without restriction must not exceed a certain weight (Gross Vehicle Mass). The transition to electric buses may require a formal review of mass limits to account for the weight of batteries and other ZEB componentry which may lead to non-conformance of current axle mass regulations. Alternatively, the government could consider the introduction of a permit system to enable electric buses to legally travel on NSW roads into the future.

The NSW Government's plans to transition the diesel fleet to a zero emissions fleet will mean considerable change for bus operators into the future. There is significant uncertainty regarding the cost impacts of operating ZEBs over the medium to long term, and a limited understanding of how key performance indicators that are related to the operation and maintenance of the fleet will be affected.

g) Workforce Training

Ensuring industry has an "electric ready" workforce to meet the needs of a zero-emission future requires the development of accredited training qualifications and pathways for mechanics, operational staff, bus drivers and contractors. The bus industry is well advanced in regard to ZEB training.

TAFE NSW is developing three levels of training as follows:

Level 1 – Baseline Training for all persons working around ZEB's

This is micro skills training (short courses) which is not Nationally 6recognized. It includes the following modules.

- Module 1: Introduction to electric vehicles, systems and components
- Module 2: Connect and disconnect charging systems
- Module 3: Initial emergency response
- Module 4: Safe and energy-efficient driving

Level 2 - General Service and Maintenance Operations

- This is a Skill Set for workers who service/maintain buses that includes the following two Nationally recognised units of competency.
    i. AURETH001 - Depower and reinitialise battery electric vehicles
    ii. AURETH002 - Service and maintain battery electric vehicles

These units are from the Automotive Retail, Service and Repair (AURETH) training package and are currently available for delivery by an approved Registered Training Organisation (RTO) such as TAFE NSW.

Level 3 - Master Service Technician Electric Vehicles

This proposed training is for specialised technicians and is still to be developed.

Further to this, a new Nationally recognised unit of competency "*Operate a battery electric bus or coach*" for drivers is being developed by the Transport and Logistics *Industry Reference Committee* (IRC), which is managed by *Australian Industry Standards* (AIS). This new unit of competency "TLIC9977Y Operate a battery electric bus or coach" will be an elective for the *Certificate III in Driving Operations* course and could also be used in a Skill Set. This new unit will be part of the Transport and Logistics Industry (TLI) training package and should be approved for delivery by approved RTOs by mid-2022.

BusNSW would welcome the provision of State and/or Commonwealth Government funding to subsidise the essential training that is needed in the bus and coach industry as a result of the transition to zero emissions. The *Smart and Skilled Program* could be used to provide funding to help workers in NSW acquire the skills needed to drive, maintain and operate ZEBs.

2. Benefits and costs to taxpayers

a) Benefits

Battery electric and hydrogen fuel cell vehicle technologies allow governments to address environmental concerns associated with pollution and emissions from the existing bus fleet. This in turn has broader economic and social benefits. These technologies provide an energy source that is cleaner than oil, resulting in lower carbon dioxide and air pollutant emissions including nitrogen oxide and particulates. The cleaner and quieter vehicles provided by this technology create more liveable communities and better health outcomes for the population. They also have the potential to improve public perceptions of bus travel and thereby grow public transport patronage.

A move to emission free transport technologies has the potential to provide much needed job opportunities for Australia's automotive manufacturing industry. These jobs would cover a range of skills within the industry from software development to vehicle/component manufacturing and maintenance and servicing.

b) Costs to Taxpayers

In June 2022, the NSW Government provided details of its zero-emissions bus rollout plan as part of the NSW Budget for 2022-23. Under this plan, the NSW Government has advised that it will:

- invest $218.9 million over the next seven years to support the contracted bus fleet move to zero-emissions technology,
- further set aside almost $2 billion to begin the transition of more than 8,000 buses, ensuring the State would have a fully transitioned fleet by 2047,
- provide funding of $84 million to enable transition planning, including electrical grid upgrades at 11 TfNSW bus depots,
- provide $25 million over three years for regional trials in new and emerging technologies, including hydrogen fuel-cell electric buses,

It is unclear how the cost of electric buses compares to traditional diesel vehicles over their lifetime. However, a significant investment of capital is required to purchase the ZEB fleet and ensure that appropriate infrastructure is in place.

To disperse these costs over a suitable time period, BusNSW supports a phased approach to the implementation of emission free modes of transport, focusing first on key metropolitan areas. This approach coupled with regular post implementation review and assessments of emerging technologies will help ensure that regionally appropriate technologies are implemented that reflect the needs of rural NSW, protecting against premature obsolescence and safeguarding taxpayers' investment.

As the demand for electricity increases, there is also a risk that electricity providers will increase prices. The significant uncertainty in relation to medium to long term electricity prices means there is a need to have a suitable indexation mechanism for energy within TfNSW bus service contracts. There is a significant opportunity for government to collaborate with providers to secure economically viable sources of electricity to minimise the impact on bus operators, taxpayers and end users.

3. Opportunities for, and impact to, local manufacturing operations

Globally, manufacturers (including many BusNSW Associate Members) are investing in the development of electric and hydrogen-based technologies for buses and coaches. As a result, the transition to ZEBs and related technologies provides an exciting opportunity for the private bus industry to provide its input and experience to ensure the best outcomes are achieved.

BusNSW Associate Members are actively pursuing the development of ZEB manufacturing. Future development is dependent upon manufacturers having a clear understanding of Government policy to transition to ZEBs. Information on timing, procurement numbers, new vehicle specifications and expected outcomes are required to allow manufacturers to confidently invest in this area of their business. Once manufacturers and suppliers have a clear understanding of Government's commitment to ZEB procurement, significant economic outcomes would be created through research, design and employment.

a) Procurement

In NSW, buses purchased by private bus operators for use on Government contracted services must be chosen from a bus procurement panel where they have pre-approval from TfNSW. This Procurement Panel determines the contract bus makes and models available for purchase by bus operators. A review of the TfNSW Bus Procurement Panel will therefore be needed to ensure that procurement specifications for ZEBs align with the current contractual arrangements with bus operators and suppliers as well as the Government's broader vision for ZEBs.

The procurement process provides the NSW Government with an opportunity to mandate or include electric buses and bus components (including charging stations and other infrastructure) as part of Government procurement. Technology grants, research and development grants, payroll tax exemptions and employment incentives could also be considered to support Australian manufacturers to provide innovative solutions to government.

The current bus and coach procurement climate is highly variable (refer to figure 1 below). Procurement lulls are interspersed with periods of high demand which causes demand stress in other areas of the sector and discourages manufacturers. BusNSW would therefore recommend that a more structured approach is taken to electric bus procurement to allow the bus manufacturing industry to better plan the supply cycle. NSW and Australia more generally need to ensure a suitable supply network to support ZEB development and operation including after sales service. This would help ensure the retention of qualified and experienced tradespeople with specialised skills.

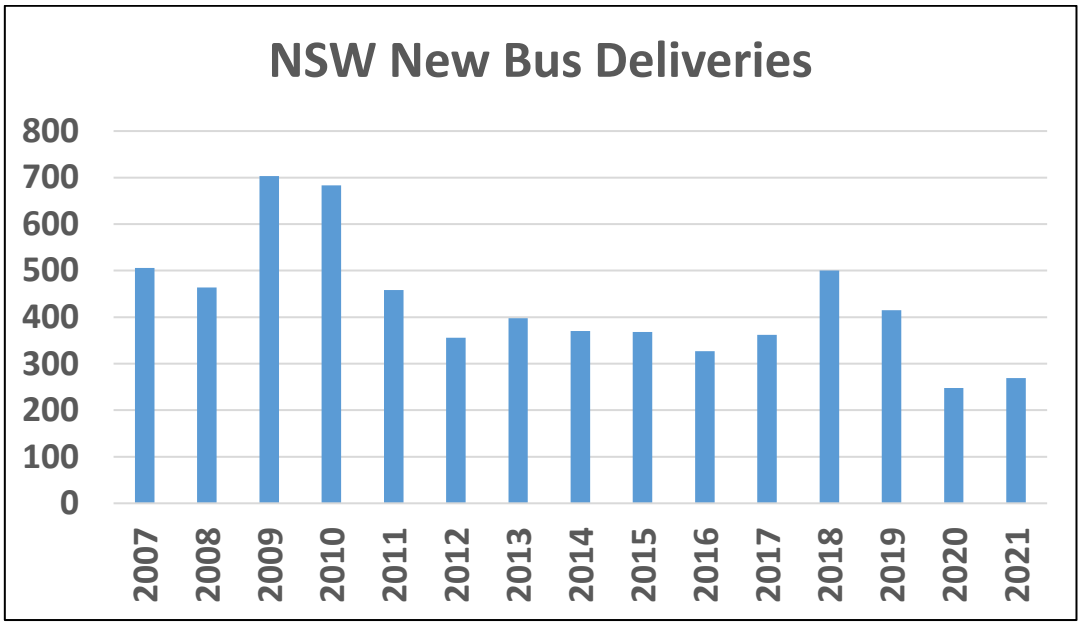

Figure 1: New Bus/Coach Deliveries in NSW from 2007 - 2021

b) Local Content

The NSW Government and Opposition have recently expressed a desire to manufacture public transport assets locally. This has created some concerns for suppliers who import battery electric and hydrogen fuel cell buses/chassis/components due to "local content" requirements being unclear. There are a number of companies who have imported chassis, buses and components over a lengthy period and have a history of providing after sales support and providing local jobs. This will need to be considered for the next TfNSW Bus Procurement Panel (Generation 4) which BusNSW understands is due to commence in 2023.

Any "local content" targets for bus manufacturing that are set by the NSW Government will need to be supported by a strict and transparent audit regime that ensures there is a consistent approach. BusNSW understands that jurisdictions such as Victoria use a third party certifier to evaluate local content percentages based on agreed rules.

Based on the volume of zero emission buses to be procured over the next two decades, BusNSW has the view that a strategy which involves a mix of local and offshore manufacturing should be adopted. BusNSW is seeking for the NSW Government to consult with industry via BusNSW when developing a bus procurement strategy that considers long-term support and local jobs.

c) Supply Partnering

Some of the smaller bus bodybuilders who have supplied bus operators in NSW over many years will need to form partnerships with zero emission chassis suppliers to stay in business and assist the NSW Government to meet transition targets. An interim arrangement may be required, including a pricing review, to give these manufacturers an opportunity to build ZEBs in the medium to long term. This may involve the building of bus bodies on hybrid chassis or Euro 6 diesel chassis for outer-metropolitan and rural/regional operations. The strategic review planned by TfNSW for 2024 provides an opportunity to reset and give manufacturers time to plan for a more complete transition to zero emissions.

Bus and chassis manufacturers, bus body builders and auxiliary equipment suppliers have an integral role to play in meeting the state's ZEB target and need to invest significantly in infrastructure and skilled labour to be in a position to scale up quickly as the NSW Government accelerates the ZEB transition. However, there is concern about committing to funding and developing the resources that will be needed due to the absence of a clear bus procurement plan, details of local content requirements, and a commitment to a specific number of deliveries per annum. BusNSW recommends that the NSW Government develop a 10-year bus procurement plan that provides certainty for suppliers and operators and allows both groups to prepare for the transition to zero emissions.

4. Other jurisdictions that have emission free modes of public transport

NSW is arguably "ahead of the game" in terms of the transition to ZEBs in Australia. Approximately 100 ZEB buses are currently operating across Sydney metropolitan and outer metropolitan contract regions. The procurement and operation of ZEB buses is also written into the next generation of Greater Sydney bus contracts. BusNSW understands that the majority of other jurisdictions are pursuing a similar transition to emission free public transport.

5. Any other related matters

a) Integration

There is a significant amount of change currently occurring within the NSW bus transport sector. The NSW Government is trialling autonomous vehicles, on-demand bus services, ride share and other initiatives. Extensive infrastructure investment is also scheduled as part of the *Future Transport Strategy 2056*. It is therefore essential that emission free transport policy development does not occur without proper industry consultation and that all transport planning is done in an integrated manner.

b) Safety: Mechanics and Emergency Personnel

Another matter warranting attention is the potential safety issues associated with maintaining ZEBs and managing incidents. Almost a century of experience with diesel engines has given mechanics, emergency personnel and others a comprehensive understanding of safety issues associated with repairing, servicing and responding to emergencies with traditional vehicles

The same cannot be said for battery electric and hydrogen fuel cell vehicles. For this reason, on 1 September 2019 the NSW Government announced changes that require electric, hybrid and hydrogen vehicles manufactured or modified after 1 January 2019 to have a safety label fixed to the front and rear number plates.

The labels are intended to help Emergency Services staff and first responders in the event of a crash. Vehicles can be quickly identified as having an electric or hydrogen components, so that specific procedures can be followed to make the incident safer for all present. These types of labels and other safety initiatives may need to be extended to on road and depot infrastructure to ensure the safety of transport workers and the broader community.

c) Safety: Pedestrians and Road Users

The greatest hazard associated with bus travel involves pedestrians, bike riders and other road users crossing the path of a bus. ZEBs are far quieter than traditional heavy vehicles and have the potential to increase injuries and fatalities to pedestrians and others unaware of their proximity.

ZEBs and their associated technologies are advancing at a rapid rate. It is therefore important that Government develops standards and associated regulations that keep pace with the change. Buses carry precious cargo and passengers' safety should be at the forefront of any requirement to implement ZEBs. BusNSW recommends that the NSW Government undertake a thorough review of Passenger Transport and Road Transport legislation to consider any changes required to support the operation of ZEBs. As a part of the implementation of these changes, awareness campaigns will be required to promote safety around ZEBs.

Conclusion

As noted throughout this submission, close engagement with industry is critical to making the transition to ZEBs a success. The NSW Government needs to introduce a range of "industry readiness" strategies that are based on consultation and supported by a strong communications plan.

BusNSW looks forward to working in partnership with the NSW Government on the exciting move to zero emission public transportation, and thanks the committee for the opportunity of contributing to this important inquiry.

If you would like to discuss these comments in more detail, please contact me on [redacted].

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