

EMISSION FREE MODES OF PUBLIC TRANSPORT

Organisation: Nexport Pty Ltd

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To the Members of the Legislative Assembly Committee on Transport and Infrastructure
NSW Parliament

Nexport welcomes the invitation to make a submission Legislative Assembly Committee on Transport and Infrastructure's inquiry into emission free modes of public transport.

Nexport is an Australian based company, registered and based in NSW. Nexport is an Australian market leader in zero emission transport with over 60 zero emission buses and 5 million kilometres travelled since 2020. Unlike other local OEMs still producing diesel vehicles, Nexport is only focused on Zero Emission Vehicles (ZEV).

Nexport's established market position within the Australian bus industry is an invaluable position due to the high operational, structural and financial barriers to entry. This has allowed Nexport to consolidate its market position and expand into adjacent commercial vehicle segments. Wide-ranging discussions have been held with corporates and government across sectors including waste, freight, logistics, mining, retail and construction. Nexport are uniquely able to procure or develop bespoke commercial vehicles to achieve both operational requirements and emissions targets.

In addition to our production capabilities, Nexport (along with a range of consortium partners) have the unique expertise to deliver "turn-key" solution in relation to transitioning a depot to accept, adopt and operate a ZEV fleet.

Our turnkey solution includes analysis (operations / fleet / infrastructure), capital works and upgrades (depot / grid / network), asset deployment (vehicle and charger) and aftercare (training, deployment, integrated systems and maintenance).

Backed by valuable industry experience and knowledge,

- the capacity and capability for industry to provide emission free modes of public transport,
- benefits and costs to taxpayers,
- the opportunities for, and impact to, local manufacturing operations,
- other jurisdictions that have emission free modes of public transport, and
- any other related matters.

Should you require any further information on Nexport's submission, then please don't hesitate to contact me or [REDACTED] or [REDACTED]

Yours sincerely,

Michel Van Maanen
Chief Executive Officer
Nexport

Contents

1. Introduction	3
Overview of NSW bus fleet.....	3
2. Capacity and capability of industry to provide emissions free public transport	4
Nexport's turn-key solution	4
Nexport Zero Emission Public Transport Bus	8
3. Benefits and Costs to Tax-Payers	9
Customer Benefits.....	9
Community Benefits	9
NSW Specific modelling of benefits	10
4. The opportunities for, and impact to, local manufacturing operation	12
Nexport manufacturing footprint	12
Industry readiness	12
5. Other jurisdictions that have emission free modes of public transport	13
Current Trends	13
Future Commitments	14
6. Conclusion	14

1. Introduction

The transport sector represents one of the largest and fastest growing sources of greenhouse gas emissions globally, and accounts for approximately 20 per cent of NSW's carbon dioxide emissions.

Diesel and compressed natural gas buses make up almost half of NSW public transport's direct emissions, so transitioning our fleet will be an important contribution to delivering on the state's commitment to net zero emissions by 2050. The transition will also allow NSW to demonstrate its leadership in climate action and lead the way for the broader transport industry to adopt zero emissions technologies.

It is with this context that Nexport, the leading provider of zero emission buses in Sydney, is making this submission.

Beyond the reduction of public transport related emissions, Nexport believes the advantages of are:

- Improved ride comfort, customer experience and safety due to reduced noise and sound impacts from zero emission buses ("ZEBs")
- Reduction in health care costs associated with noise and pollution impacts
- Operational savings due to lower maintenance and "fuel" costs associated with ZEBs
- Economic development through manufacturing and skills development
- Alignment with national international decarbonization commitments

Our submission provides:

- An overview of the bus fleet in NSW
- Nexport's ability to provide a turn-key solution to transition bus based public transport to zero emission using innovative financial and contractual models allayed with technical, project and risk management capabilities.
- Benefits and costs to taxpayers from a zero-emission bus fleet
- Nexport's manufacturing footprint and impact of government policy on industry readiness
- International trends with regard to zero emission bus uptake.








Overview of NSW bus fleet¹

The NSW bus fleet is made up of about 8300 mostly diesel buses of different sizes which are operated by over 500 different operators across the state.

Half of them is deployed in Sydney and the rest across outer metro and regional parts of the State. The graphic below provides a further breakdown.

	Bus configuration	Seating capacity (per bus)	Qty	Procurement method	ZEB option currently available**
	Mini	8 - 18	29	NSW Government Motor Vehicle Pre-qualification Scheme (SOM653), or Bespoke procurement	Not available
	Standard*	44+	3719	TINSW Bus Procurement Panel	Available
	Articulated	52 - 64	251	TINSW Bus Procurement Panel	Not available
	Double Decker	85 - 93	91	TINSW Bus Procurement Panel	Not available
	Total		4090		

Note: *Standard buses include: 5.52 low floor 12.5m rigid, 10.7 low floor 14.5m rigid, and 280 non-low floor one and two door buses.
**Indicates availability on the NSW Government Motor Vehicle Pre-qualification scheme or TINSW Bus Procurement Panel as at July 2021

	Bus configuration	Seating capacity (per bus)	Qty	Procurement method	ZEB option currently available**
	Category 1	8 - 14	118	NSW Government Motor Vehicle Pre-qualification Scheme (SOM653)	Not available
	Category 2	15 - 28	569	NSW Government Motor Vehicle Pre-qualification Scheme (SOM653)	Not available
	Category 3 High Floor School Bus	29 - 43	262	TINSW Bus Procurement Panel	Not available
	Category 4 High Floor School Bus	44+	2122	TINSW Bus Procurement Panel	Not available
	Articulated	52 - 64	5	Bespoke procurement	Not available
	One door Urban* / two door City (Low floor accessible bus)	44+	1068	TINSW Bus Procurement Panel	Available
	Total		4144		
	TrainLink Coaches	42	100	Bespoke procurement	Not available

Note: *One door urban bus availability is subject to discussions with manufacturers as only two door models are listed on the current bus panel.
**Indicates availability on the NSW Government Motor Vehicle Pre-qualification scheme or TINSW Bus Procurement Panel as at July 2021

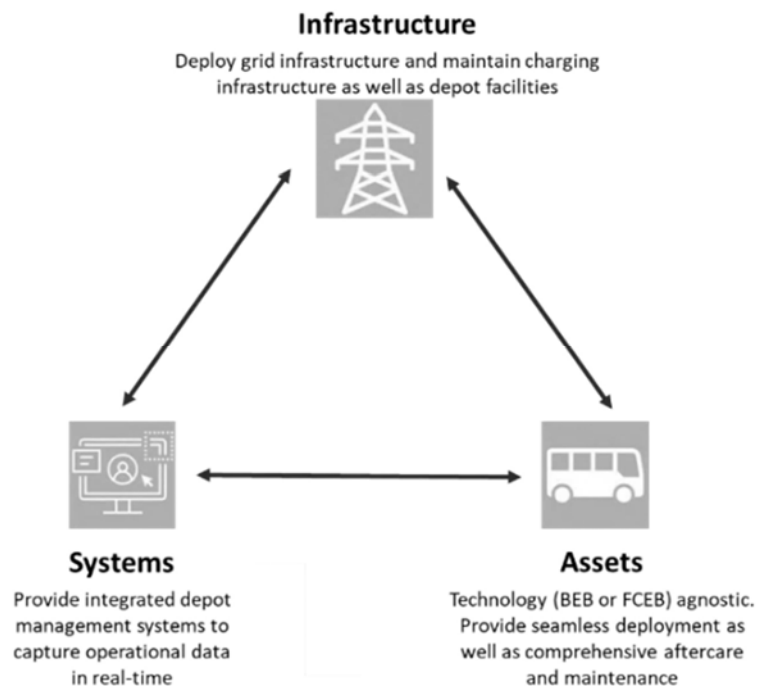
¹ Transport for NSW Zero Emission Bus Transition Strategy:

<https://www.transport.nsw.gov.au/system/files/media/documents/2021/zero-emission-bus-transition-strategy.pdf>

2. Capacity and capability of industry to provide emissions free public transport

The zero emissions public transport value chain is based on the triumvirate of infrastructure, asset and systems (as per the diagram below):

- Nexport has capabilities to provide a turn-key as well as piece meal solution across these 3 areas.
- Nexport's offering can include unique financial and contractual structuring that will create operational savings over the life of the contract as well as eliminate the need for the government to wear the upfront capital costs associated with infrastructure upgrades / grid augmentations.
- Nexport's zero emissions bus has been selected for procurement by NSW based public transport operators through Transport for NSW ("TfNSW") Bus Panel #3 procurement scheme.
 - This bus (and other Nexport public transport) vehicles are manufactured in Western Sydney.



Nexport's turn-key solution

Key characteristics of Nexport's turnkey solution:

Nexport can offer a "one-stop" solution that consists of:

- Supplying TfNSW bus Panel #3 specification rigid battery city buses
- Installation of associated charging infrastructure
- Upgrade of depot to be able to adopt and commercially operate ZEB
- Maintenance of buses and chargers.
- Financing (if required)

The commercial and operational benefits of our turn-key proposition include:

- Performance guarantees through back-to-back contracts between all contractors and sub-contractors.

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- Provide a blueprint by which NSW Government can accelerate the transformation other depots across NSW.
- Requires no upfront investment from NSW Government with regard to infrastructure/depot upgrade - upfront costs smoothed over contract period
- Seamless deployment through a consortium with expertise in bus operations, OEM and asset manager.
- Limit exposure to variable costs such as electricity

A turnkey model can directly address some the perceived barriers limiting the accelerated adoption of zero-emission buses such as:

- Relatively higher upfront capital costs of ZEBs (on a capital purchase basis) relative to diesel buses
- Misalignment between with the time needed to recover upfront investment in depot upgrades, charging infrastructure and fleet acquisition and typical bus contract tenures.
- Lack of clarity on who has to bear the cost of grid augmentation – operator, transport authority, depot landowner (if different from operator) or third-party financier
- The turnkey solution will be inclusive of capital works and upgrades (depot / grid / network), asset deployment (vehicle and charger) and aftercare (training, deployment, integrated systems and maintenance) using a Total Cost of Ownership model

Nexport can offer a flexible financing solution based on Total Cost of Ownership (“TCO”):

In the case of public transport, there are five key cost levers form the critical components of the capital, maintenance and operational costs associated with vehicle assets.

- Depot Works Cost – Electrical/Civil/IT works needed for a depot to be able to operate a ZEB fleet.
- Maintenance Cost – Cost maintaining a ZEV fleet
- Energy Cost - Cost of electricity.
- Fleet Cost – Capital cost of the ZEV fleet and related charging infrastructure
- Other Costs – Project management, risk management, software costs

Using the above components of the costs, the TCO is calculated using the following formulae:

$$\text{TCO} = \frac{\text{Depot Works Cost} + \text{Energy Cost} + \text{Maintenance Cost} + \text{Fleet Cost} + \text{Overhead Costs}}{\text{Contract Period} \times \text{Kilometers Travelled}}$$

It is important to note that though in this particular case the kilometers travelled is used as a normalizing factor, in line with government contracts.

A Total Cost of Ownership funding model can facilitate all capital and operational aspects of the transition to be captured into a single charge either as a cost per kilometre basis or monthly lease basis.

Under a monthly lease, the cost of these inputs will be amortised over the agreed contract life and a fixed fee is invoiced every month. In the cost per kilometre model, the TCO inputs will be amortised over an agreed number of kilometres over the contract life, invoicing is then based on the kilometres travelled per month.

Nexport’s innovative contract structure can enable an accelerated transition to emission free public transport – AssetCo/OpCo:

From a financing standpoint, the main challenges regarding a ZEB transition are:

- Higher upfront capital associated with acquiring ZEB buses
- Operators may have limited financing options for fleet acquisition/depot upgrade
- Government may have to make upfront (as well as considerable) investment related to depot upgrade, charging infrastructure installation and related electrical/civil works.



- Contract period (8 years) does not give third party participants/financiers enough time to recoup returns from financing a depot upgrade

The "AssetCo / Opco" model offers a solution that incorporates the financing, operation and maintenance of an electric depot while allowing the operator to focus on service delivery, staff and contract management.

Benefits of this model are:

- Mitigates upfront costs for government (and operators) and distributes risk across all relevant stakeholders.
- Allows new players enter buy purchasing ZEB assets (vehicle, charger, depot) and lease them to operators/governments to use.
- Allows for upgrading of assets in line with prevailing technological/financial trends

Nexport model offers a risk-free transition to zero emission public transport

Nexport has assembled a consortium of partners with specific expertise across public transport operations, ZEB manufacturing, finance, customer-experience, depot electrification, charging infrastructure, systems integration and overall project management.

Our partnering approach will be demonstrated by:

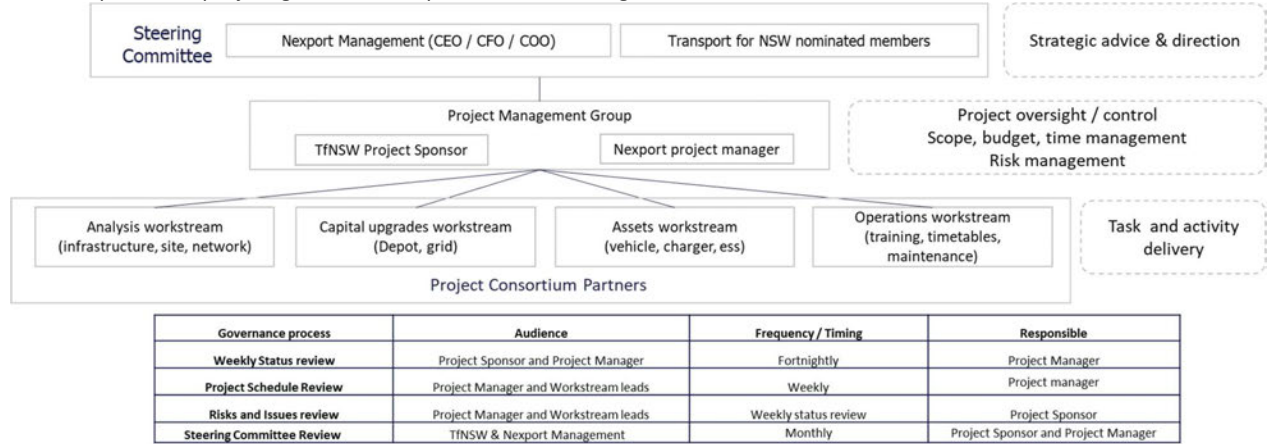
- Sharing common values and mission.
- Utilising the combined skills of our respective organization's people and systems.
- Providing a transparent shared view on performance.
- Develop processes for sharing feedback and celebrating successes.
- Regular and frequent stakeholder meetings to manage progress and deliver on the contractual KPIs
- Flexibility of finance to meet your operational needs.

The roles and responsibilities of the consortium would be allocated as per the table below:

Party	Responsibility
NSW Government (through TfNSW)	Project Sponsor Regulatory approvals Contract Lead Setting of performance requirements
Operator Partner	Depot management Service delivery in line with TfNSW contract Driver/Mechanic/Depot staff management Customer service
Nexport	Accountable for end-to-end project management and ongoing sub-contract and consortium partner management Provision of electric buses Provision of driver and mechanic training Management of system integration as required Management depot design and construction Responsible to acquire necessary permits required for depot construction
Energy Advisor partner	Grid/Depot/Infrastructure analysis Project management of depot upgrade if awarded contract
Charger provider	Provision of charging infrastructure Provision of charger management applications for operational purposes Maintenance of charging infrastructure
Infrastructure installation partner	Electrical/Civil works related to depot upgrade Charging infrastructure installation
Financing partner	If required, can provide cost effective financing solution to support the delivery of the project

Nexport's methodology ensures robust project governance along with prudent risk management

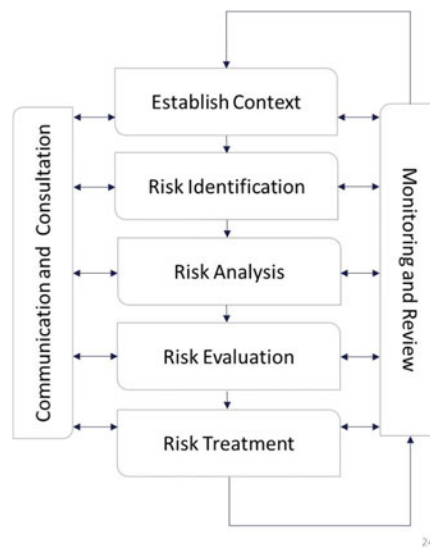
An example of the project governance is provided in the diagram below:



Nexport will proactively manage risks throughout the life of the project. The project plan and TCO estimate will include resourcing for risk management. The project management team will be responsible for ensuring the ongoing identification of risks, maintenance of the risk register, and monitoring the implementation and effectiveness of risk mitigation actions included in the registry.

As part of a project initiation a risk workshop will be conducted to identify risks and mitigation strategies which will be documented in a comprehensive risk register.

Regular risk review meetings will be used within the product and project teams as a practical implementation of the ongoing risk monitoring process. Transparency of the risk management process to the project governance will be achieved through regular reporting on the highest priority risks across the Project Management Team and Steering Committee. This is detailed in the diagram below:





Nexport Zero Emission Public Transport Bus

The Nexport BEV model is one of the best-selling models for public transportation in Australia with more than 80 vehicles currently running in Central and Western Sydney and Brisbane. Cumulatively, they have completed more than 5 million kms and continue to meet performance and contractual obligations.

The unique Lithium-iron-phosphate batteries are the safest in the industry and come with a reliability guarantee through a 8-year battery warranty and a nationwide network of service providers.

Nexport BEV has been selected by Transport for NSW for procurement by NSW based public transport operators through the *Bus Panel #3 procurement panel*. The bus specification has been provided below.

Passenger capacity	61 persons (based on ADR regulations, max. 18.000kg and count 80kg per passenger) 47 seated, 19 standing
Gross Vehicle weight	18000 kg
Length	12.5 meters
Wheel base	6400 mm
Turning circle	12m
Batteries	368 kwh LFP batteries
Range	Upto 320kms depending on operating conditions
Charging time	6 to 8 hours

Significantly, over the past 3 years, there have been no safety related issues (attributable to us an OEM) . This is a testament to our safety driven culture and capabilities. Nexport offers several safety mechanisms as standard that enables operators to implement the buses with confidence. The following table provides some of these standard features.

ADR/DDA Compliant	Nexport buses are 100% DDA and ADR compliant. During the operational history of the Nexport bus fleet there has not been a non-compliance raised for an ADR related issue.
Battery	The LFP battery chemistry used by Nexport is acknowledged as the safest technology on the market for Bus operation. This is due to its thermal stability under all operating conditions and low energy release if a thermal runaway was to occur. In addition to the safety aspects of LFP it also provides other operational benefits including slower cell degradation over the life of the battery, a longer battery life cycle, reduced cost and improved environmental impact at end of life.
General safety	Nexport have established a training program that ensures safety is the prime consideration. We have included critical topics including safe charging and high voltage maintenance and operation. In addition, all Nexport manuals are aligned to Worksafe Australia guidelines.

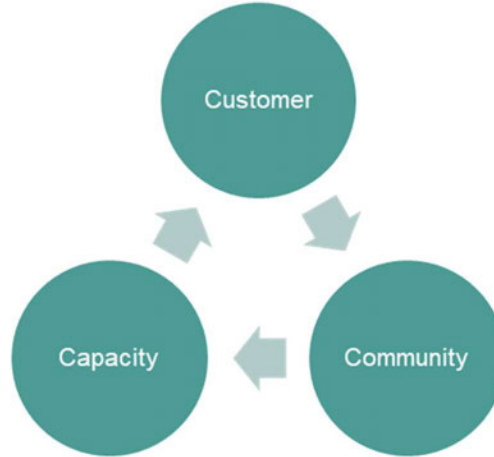
In addition to the Bus Panel #3 specification bus, Nexport public transport product portfolio also includes:

- 7m zero emission minibus: For on-demand and community transport use cases
- 9.7m coach style zero emission bus: For rail replacement and school transport use cases.

Details of these 2 vehicles can be provided upon request.

3. Benefits and Costs to Tax-Payers

Transitioning Sydney's fleet to zero-emission will bring a range of benefits including in the areas of customer experience, environmental, health in the form of improved air quality, well-being as well as economic outcomes through operational cost savings. We see these benefits being delivered for customers, community and building capacity for New South Wales.



Customer Benefits

Ride Comfort

International case studies suggest that zero-emission buses are quieter and have relatively less vibrations than diesel buses which in turn improves ride comfort for passengers.

- A survey of 1300 passengers riding electric buses in 8 Swedish municipalities revealed that they preferred electric buses rather than combustion engine buses² as they were quieter inside (and outside at bus stops), produced less emissions at bus stops.
- The city of Edmonton (Canada) also surveyed nearly 3000 customers who had ridden electric buses³:
 - From a noise perspective, 73% of respondents said electric bus were much better than a diesel equivalent.
 - 73% of respondents considered the electric bus as being better than a diesel equivalent with respect to fumes.
 - When comparing the smoothness of ride between electric buses and non-electric buses, 66% of respondents evaluated the electric bus as being better.

Safety

The use of sophisticated digital and software systems means that safety features are more closely integrated than diesel buses. Furthermore, technological advancements in the manufacturing of zero-emission buses allow for the inclusion of additional safety features such as lane departure warnings, advanced driver warning systems, overspeed detection, camera mirror systems, pedestrian warnings and forward impact detection.

In comparison to diesel buses, electric buses have simpler drive trains, require fewer toxic chemicals and liquids and have fewer moving parts. This means that electric buses are more reliable and thus decrease the chances of dangerous mechanical malfunctions.

Community Benefits

Decrease in Greenhouse gas emissions

² Preferences of Electric Buses in Public Transport; Conclusions from Real life Testing in Eight Swedish Municipalities - <https://www.diva-portal.org/smash/get/diva2:911643/FULLTEXT01.pdf>

³ Electric Bus Feasibility Study, June 2016 (City of Edmonton) - https://www.edmonton.ca/public-files/assets/document?path=transit/ets_electric_feasibility_study.pdf

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A study by the city of Edmonton estimated that an electric bus will emit approximately 40% less CO₂ (including power generation) than its diesel equivalent.

A 2019 study in the International Journal of Sustainable Transportation found that the total societal costs for emissions from diesel powered buses running a specific route were found to be 100 times more than if the bus was powered by electricity (assuming the electricity was generated from renewable sources like wind)⁴

Noise Pollution

A joint study⁵ by the University of Stuttgart, University of Duisberg-Essen and the University Applied Sciences Erfurth showed that at low speeds, there was 14dB(A) difference between diesel and electric buses.

This measure is comparable to the modelling done for the city of Karlskrona (Sweden) showing that electric buses in general were 5 dB(A) less noisy than diesel buses during acceleration (0 to 35 km/h).

Healthcare Cost Savings

According to the 2016 Clean Air for NSW report, there are 520 premature deaths in Sydney each year due to air pollution⁶. For each replacement of an existing diesel bus by zero-emission, there are corresponding health care benefits. For example, In New York City, it is estimated that the transition of its 5,700 diesel buses to zero-emission will save \$150,000 per bus each year in the health costs⁷.

Operational cost savings

Transition to a Zero-emission fleet creates savings across all the key cost levers that they needed to manage operations.

- Driver Cost – Transition to a zero-emission fleet enables the use of advanced telematics and analytics. Information and data from these systems can be used to improve driver training/performance (for eg: driver behavior, braking regeneration, idle time energy use).
- Maintenance Cost – Cost maintaining a ZEB fleet is demonstrably lower over the life of the fleet compared to diesel.
- Energy Cost - A fully electrified depot can access wholesale electricity rates which can be cheaper than retail prices (and lower on a per litre basis compared to diesel).
- Fleet Cost – Capital cost of the ZEB fleet is amortised over the life of the vehicle

A study by ClimateWorks Australia on an electric bus in a depot in Nowra showed that the bus reduced daily running costs by 72% compared to diesel buses⁸

NSW Specific modelling of benefits

As part of a recent tender submission, Nexport modelled the benefits of transitioning the entire bus fleet in 2 contract regions (in South and Southwest Sydney) to zero emissions. For context, the combined fleet in the 2 regions is approximately 220 buses.

For reasons of confidentiality, the regions have been anonymized, but the findings are presented below:

⁴ Sven Borén (2020) *Electric buses' sustainability effects, noise, energy use, and costs*, *International Journal of Sustainable Transportation*, 14:12, 956-971, DOI: 10.1080/15568318.2019.1666324 - <https://doi.org/10.1080/15568318.2019.1666324>

⁵ Modelling noise reductions using electric buses in urban traffic. A case study from Stuttgart, Germany – Felix Laib, Andreas Braun Wolfgang Rid, [Link](#)

⁶ NSW Government (2016) *Clean Air for NSW* page 10, <https://www.epa.nsw.gov.au/-/media/epa/corporate-site/resources/air/clean-air-nsw-160415.pdf?la=en&hash=EEF491BFDC5F5C7438AAA62C956B4F8CD392E7A2>

⁷ Legislative Assembly of New South Wales (2020) *Electric buses in regional and metropolitan public transport networks in NSW*, page 3 <https://www.parliament.nsw.gov.au/ladocs/inquiries/2563/Report%20-%20electric%20buses%20in%20regional%20and%20metropolitan%20public%20transport%20networks%20in%20NSW.pdf>

⁸ ClimateWorks Australia submission to inquiry into *Electric buses in regional and metropolitan public transport networks in NSW*, <https://www.climateworkscentre.org/wp-content/uploads/2019/12/ClimateWorks-submission-NSW-electric-bus-inquiry.pdf>

Key Conclusions:

- Zero-emission buses are, compared to diesel buses, quieter and have relatively less vibrations – resulting in a smoother ride for passengers. Other areas where a ZEB fleet will contribute to an improved customer experience are in safety, accessibility and cleanliness.
- A 100% ZEB fleet in the contract regions will remove nearly 284,000 tonnes of CO₂ e-, and enable potential savings of nearly \$18m in healthcare due to reduced noise and GHG pollution
- An accelerated roll-out ZEBs in the 2 contract regions will generate nearly \$9m and \$12m in operational cost savings because of reduced maintenance and running costs
- Catalyse local economic activity

Economic Activity

The buses will be assembled either at Nexport's Glendenning facility or at the 11,000 square meter facility in Bankstown, Sydney. Located within the Bankstown Airport industrial precinct, this purpose-built factory will have the capacity to produce 400 buses annually. Nexport anticipates that this site will support 60 to 80 new jobs and boost the local supply chain through demand for spare parts and components. Economic activity would also be created through local upskilling, workforce development and training.

National context and policy alignment

Australia is a signatory to the Kyoto Protocol and the Paris Agreement. While acknowledging that public transport is a state jurisdiction, any efforts to reduce transport related emissions will contribute to Australia's ability to meet its commitments under these accords.

The NSW and Australian Government have a memorandum of understanding (MoU), that sets out how the governments will work together to reduce emissions. Given that buses make up nearly half (46%) of TfNSW's carbon emissions, a transition to zero emissions will significantly contribute to the carbon emission reduction objectives under the MoU.

The NSW Government's Net Zero Stage 1 Plan outlines a plan to deliver a 50% cut in emissions by 2030 compared with 2005 levels, laying the foundation for progressing towards net zero emissions by 2050. The NSW Electric Vehicle (EV) Strategy will drive sales of EV to more than 50% of new car sales by 2031, preparing the NSW for a low-emissions future.

The ZEB transition also meets objectives of other NSW Government policies:

- TfNSW Future Transport Technology roadmap
- TfNSW Future Transport Strategy
- NSW Hydrogen Strategy
- NSW Clear Air Strategy
- TfNSW Future Energy Strategy

There are broader strategic implications from a transition to a ZEBs fleet such as:

Energy Security

Today Australia relies on foreign liquid fuel imports for 85% of its needs. Australia's refining capacity is also dwindling, and it's estimated that by 2030 there will simply be no refining capacity in Australia at all⁹. Electricity for transportation creates a resiliency benefit since the "fuel" is generated onshore thereby reducing our dependence on the global petroleum supply chain adding to our nation's energy security.

Energy Management:

The use of advanced energy technologies such as battery storage/vehicle-to-grid systems at depots can help NSW to replace or defer investments of peaking capacity, provide operating reserves to help respond to changes in generation and demand, or they can be used to defer transmission system upgrades in regions experiencing congestion from load or generation growth

⁹ <https://www.aph.gov.au/DocumentStore.ashx?id=677ff8dd-ce35-40ee-9af8-bfec1e43d125&subId=301736>

4. The opportunities for, and impact to, local manufacturing operation

Nexport manufacturing footprint

Nexport is committed to maintaining and growing zero emission vehicle transport manufacturing in NSW.

We currently have a facility in Glendenning (W. Sydney) that has a capacity to produce 75 buses a year. It is out this facility that a significant majority of the electric buses operating in Sydney have been manufactured.

Currently, the facility supports nearly 40 full-time employees across production, engineering, procurement, customer service and after-care. In addition to the production of zero emission buses, the Glendenning facility houses the “technologistics” R&D facility as part of our partnership with UNSW.

R&D and innovation initiatives being undertaken at the technologistics center include the development of a new passenger/parcen hybrid vehicle as well as design and manufacturing of a lightweight composite materials through our partnership with Quickstep (a Sydney based carbon fiber composite manufacturer).

Due capability and capacity of constraints of the zero-emission transport supply chain in Australia, Nexport must import key components such as chassis, body and battery systems. Further, the size of the Glendenning facility limits Nexport’s ability to undertake extensive product development which would enable us to access / build a broader variety of local suppliers.

It is for this reason that Nexport is establishing a new 11,000 square meter production facility in Bankstown, Sydney. Located within the Bankstown Airport industrial precinct, this purpose-built factory is sized with the capacity to produce 400 buses annually. Nexport anticipates that this site will support up to 80 new jobs and boost the local supply chain through demand for spare parts and components. Once commissioned, we anticipate that nearly 90% of the Nexport bus will be built with NSW content.

Manufacturing has the highest multiplier effect of any economic sector: for every US\$1.00 spent in manufacturing, another US\$2.74 is added to the economy¹⁰. Therefore, the estimated total economic value of Nexport investment will be in the order of \$58m and support nearly 900 indirect jobs¹¹.

Location	Direct Jobs	Supplier Jobs*	Induced Jobs**	Total Indirect Jobs
Glendenning	40	116	180	296
Bankstown	120	347	540	887

* Includes materials and capital services supplier jobs

** Includes jobs supported by re-spending of income from direct jobs and supplier jobs, as well as public-sector jobs supported by tax revenue

Industry readiness

There is a perception that Australian ZEB manufacturing capability and supply chain is not adequately mature enough to meet anticipated demand – electrification of nearly 12,000 NSW public transport buses.

While there are a nearly half a dozen Original Equipment Manufacturers (“OEMs”) capable of producing ZEBs, they would need to make substantial investment in production capacity in order to meet projected volumes based on ZEB policy announcements.

¹⁰ *Creating pathways for tomorrow’s workforce today*,
<https://www2.deloitte.com/us/en/insights/industry/manufacturing/manufacturing-industry-diversity.html/#endnote-23>

¹¹ *Economic Policy Institute Updated employment multipliers for the U.S. economy*,
<https://www.epi.org/publication/updated-employment-multipliers-for-the-u-s-economy/>



Given the continuing uncertainty of timing between public statements and actual procurement programs, OEMs remain hesitant in making production uplift expenditures.

It is for this reason, that Nexport urges the Assembly that through this inquiry process advocate that the NSW Government gives certainty with regard to quantum and timing of zero emission bus procurement.

Nexport does not seek minimum or guaranteed quantities – but does ask that public announcements be supported by a clear roadmap to funding and procurement to allow for planning and supply chain readiness.

Supply chain constraints

There are significant global supply chain challenges meaning that if Nexport doesn't "lock in" long lead items, we cannot meet our commitment to customers. Further, competition from international markets has also meant that suppliers aren't willing to commit stock to unless they receive upfront payments.

Nexport effectively is in the position of taking on commercial risk of ordering long lead items and holding in stock to meet the delivery times or order after the roll out of government procurement but that would have meant complete uncertainty regarding when component stock would arrive – leading to blow out of our delivery time as well as further losses caused by inefficiencies in assembly due to disjointed arrival times of stock.

It is for this reason that it is critical that when the NSW Government make public commitments, it be followed with timely plans and procurement programs.

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

Current Trends

China is the world's leader in electric bus deployment - 80,000 zero-emission buses were sold in 2020, and that was around 90% of the country's new city bus market.

In the European Union, zero-emission buses accounted for 6% of new registrations in 2020, up from 4% in 2019. The Netherlands was far ahead in first place within the European Union with 81% of new city buses registered being zero emission in 2020.

In the United States and Canada, the share of zero-emission buses has been on the rise since 2017, and these accounted for around 4% of the bus market in 2020; most of the sales were in California.

Shenzhen, China, with a population of 12.59 million was the first major city in the world to switch its entire bus fleet to electric. The city's fleet electrification took place over a relatively short time frame, from 2009 to 2017¹².

The Shenzhen experience provides a useful case study of bus electrification and highlights the importance of collaboration. According to the International Energy Agency's analysis of the Shenzhen bus transition, "the partnership among bus operators, bus manufacturers, financial organisations and charging companies significantly alleviated the technology uncertainty and spread the cost burden."¹³

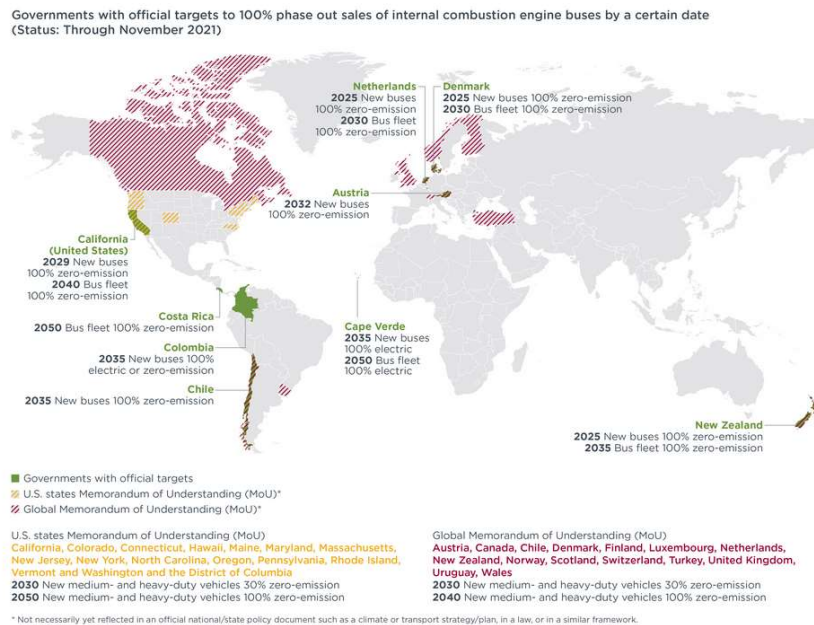
¹² Keegan (2018) *Shenzhen's silent revolution: world's first fully electric bus fleet quietens Chinese megacity*, <https://www.theguardian.com/cities/2018/dec/12/silence-shenzhen-world-first-electric-bus-fleet>

¹³ International Energy Agency (2020) *Case Study: Electric buses in Shenzhen, China*, <https://iea.blob.core.windows.net/assets/db408b53-276c-47d6-8b05-52e53b1208e1/e-bus-case-study-Shenzhen.pdf>

Future Commitments

Several national and sub-national governments have set targets to phase out ICE buses or procure 100% electric buses. Seven countries have a target for a 100% electric bus fleet (Denmark, The Netherlands, New Zealand, Austria, Cape Verde, Chile, and Colombia).

Several large sub-national governments have similar targets, including California (2029 target year for 100% electric bus procurement, and 2040 target year for 100% electric bus fleet)¹⁴.



Denmark, New Zealand, and the Netherlands are the most progressive in terms of time frame, aiming for 100% new zero-emission bus procurements by 2025.

In addition to these official commitments, two memoranda of understanding (MoU) are concerned with phasing out conventional combustion engine buses. One signed by governors from 15 U.S. states and the mayor of Washington, D.C. aims to have all sales of new medium- and heavy-duty vehicles in their respective jurisdictions be zero-emission by no later than 2050.

Additionally, a global MoU was launched at COP26 to accelerate the zero-emission medium- and heavy-duty vehicles market by setting a 100% zero-emission target including new bus sales by 2040. Signatories of the global MoU are Austria, Canada, Chile, Denmark, Finland, Luxembourg, Netherlands, New Zealand, Norway, Scotland, Switzerland, Turkey, United Kingdom, Uruguay, and Wales.

6. Conclusion

The NSW Government should be congratulated on continuing to lead the way in uptake of zero emission public transport especially in the bus space.

Nexport would like to support this commitment by offering through this submission funding and contract models which will lessen the upfront burden to government as well as reduce operational cost over the life of a contract.

¹⁴ Global overview of targets for phasing out combustion engine vehicles: <https://theicct.org/decarbonizing-bus-fleets-global-overview-of-targets-for-phasing-out-combustion-engine-vehicles/>



Partnerships between government, financial institutions, bus operating companies and bus manufacturing companies will be the key to the successful transition of the bus fleet.

Nexport is thankful for the opportunity to make this submission. For more information or to discuss the submission further please contact Michel Van Maanen on [REDACTED] or [REDACTED].