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A response to the Review of Queensland's Electrical Safety Act 2002 – key definitions and emerging technologies discussion paper

SUBMISSION

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Date June 2023

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Contents

1. Introduction.....	3
2. Executive Summary	4
3. The Industry Snapshot	4
The Fleet.....	5
The Manufacturing Industry	5
Operators.....	6
Skills	6
4. Consultation Paper.....	6
EV Hazards and Risk.....	7
Bidirectional charging.....	8
Voltages.....	8
Training.....	9
Regulatory Considerations	11
Interjurisdictional analysis	13
Definitions	13
Automatic Mutual Recognition	16
5. Industry Feedback.....	17
6. QBIC and BIC recommendations.....	17
7. APPENDIX 1.....	19
8. APPENDIX 2 BIC Letter of Support.....	22



1. Introduction

The following submission is a joint submission from the Queensland Bus Industry Council (QBIC) and the Bus Industry Confederation of Australia (BIC). We appreciate the opportunity to open a dialogue concerning this topic and the future of the Motor Trades and Bus Industry.

QBIC is the peak representative industry body for the Bus and Coach Industry in Queensland, and as such the “voice” of private Bus and Coach Operators in Queensland. QBIC represents School Services, Commercial Contracts, and Long Distance, Tour and Charter operators, Original Equipment Manufacturers (OEM’s), Supply Partners and other associated industry Members. QBIC has over 100-years of history in advocacy and representation following the amalgamation of the Bus & Coach Association (QLD) Inc and the Bus Operators Association (QLD) Inc.

The BIC is the national peak body which has embodied a moving people vision and strategy to foster better public transport outcomes and planning for ‘liveable’ cities and regions. Through this focus, the BIC has become well-regarded as the lead organisation for consultation on public transport and people movement, across federal, state and territory governments and the jurisdictions. A significant part of the BIC’s mandate is also to represent bus and coach manufacturers and suppliers on national policy and regulation issues with the National Transport Commission (NTC), the National Heavy Vehicle Regulator (NHVR) and various federal working groups such as the Strategic Vehicle Standards and Environment Group and the Technical Liaison Group.

The BIC’s vision is to enhance the sustainability and liveability of Australia’s cities and regions by moving people using bus and coach transportation. They do this by representing the collective interests of members and assist them in promoting the safety, efficiency and effectiveness of bus and coach transport in Australia.

BICs Moving People Objectives include:

- Ensure that buses and coaches operate safely and effectively,
- ensure the accessibility and mobility needs of Australian’s are met, regardless of where they live or their circumstances,
- promote policies and actions that are environmentally responsible,
- encourage investment in public transport infrastructure and services,
- promote the development of a viable and improved bus and coach industry in Australia,
- foster and promote a viable bus and coach manufacturing industry,
- promote public understanding of the contribution made by the bus and coach industry to Australia’s economy, society and environment,
- promote the use of public transport as a viable alternative to the car,
- coordinate and make more effective existing federal, state and local government policies and programs that relate to passenger transport.



QBIC and the BIC present this joint submission due to the importance of this consultation and the effect it will have on the national bus industry, the State and Federal Governments timelines for achievement of decarbonisation of the transport industry and the bus manufacturing, maintenance and service industry.

2. Executive Summary

QBIC and BIC believe that there are several key issues that need to be addressed nationally rather than by state jurisdictions. Our members conduct businesses in fleet operations both large and small, manufacturing, across urban rural and remote settings. It is imperative that Australian jurisdictions act as one on these topics to ensure national consistency. The Motor Trades industry and Transport sectors (Passenger and Heavy Vehicle) operate in the national context under the National Heavy Vehicle Regulator (NHVR) which operates an extensive safety and chain of responsibility regime. In addition, the bus industry in Queensland operates under an accreditation scheme regulated and managed by the Department of Transport and Main Roads.

QBIC and BIC principal concerns can be summarised as follows

- The future of manufacturing, maintenance and servicing of a mixed-use fleet for the next 25 years,
- Current workforce skill shortages exacerbated by additional regulation,
- Ensuring a just transition for current staff and industry participants, and
- Overly complicated and unnecessary regulation that overlays already existing regulation and systems with more regulation.

QBIC and BIC propose that Buses can continue to be safely built, operated, and maintained by the continuing adoption of Australian Design Rules (ADR), Operator Accreditation, OEM and TAFE training, State and Federal schemes to raise awareness and education to address concerns regarding electric vehicles generally, This awareness and education is already largely facilitated by the processes and developments already being undertaken by TAFE and Original Equipment Manufacturers to:

- Upskill existing technicians,
- train apprentices,
- create awareness for all areas of the industry including management drivers and crash repairers,
- skill first responders in dealing with incidents and supportive material,

QBIC and BIC firmly and safely believe by continuing this approach, the Bus industry will continue to build, operate and maintain buses safely in Queensland and Australia.

3. The Industry Snapshot

The Bus industry is quite simply an essential service and one that ensures all sectors of the community can participate in schools, work, social and tourism activities. It also provides enormous benefit in terms of employment and emergency response in times that rail and other modes of transport are disabled. During the Covid pandemic the bus industry continued as an essential service to ensure that communities, businesses and the public could still engage and undertake their activities. "In Queensland each year, there are approximately 60 million school bus passenger trips . [Hansard](#)

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[questions on notice](#), 8.7 million Regional Urban Bus passenger trips ([data.qld.qconnect-urban-bus-patronage](#)) and 28 million passenger trips on the SEQ TransLink Network ([translink-tracker](#)).”

The Fleet

The bus industry in Australia, as of 2022, had a fleet of over 77,000 vehicles., including over 11500 vehicles in Queensland. The Queensland fleet is currently a mixture of diesel, natural gas and small number of electric and diesel electric hybrid vehicles.

Based on various industry surveys undertaken by the BIC in 2018 and 2020, the bus and coach industry in Australia directly employs more than 85,000 people in a range of jobs including drivers, mechanics, engineers, skilled production workers and transport professionals in various specialised fields such as planning and service delivery.

The bus and coach industry is predominantly based around the provision of school bus and public transport (route) services that are provided under state and territory government contractual arrangements. These contracted services are primarily provided by privately owned bus and coach operators, with a small percentage of bus fleets being government owned and operated. The industry also provides contracted government services such as special school transport for children with disabilities, long distance coach services and coach services to support the rail network. The bus industry is also becoming involved in other emerging markets such as aged care, health and paratransit.

The Manufacturing Industry

The BIC estimates that in the manufacturing of the completed bus, \$5 billion is contributed to the Australian economy each year and close to \$1.5 billion in supplies and services to keep the buses operational and delivering services. In 2019 and 2020 industry reported deliveries of buses and coaches were 1,449 and 1,226 respectively. The BIC estimates that the manufacturing sector employs more than 10,000 people in Australia including a strong network of Australian and global component manufacturers (eg. public transport seats) and suppliers that support the build of a bus (eg. air conditioning units) most of whom have setup businesses in Australia.

Over the past 15 years greater competition has appeared in the Australian bus and coach marketplace with fully built vehicles mainly from Asia, Europe and South America being imported. In 2020, 88.9% of public transport passenger route service buses and 59.6% of school buses were manufactured and assembled in Australia, the majority built by Australian body manufacturers on European or Asian chassis; the remainder being fully imported buses and coaches primarily from Asia, with some from Europe and South America.

Southeast Queensland is the heartland of Australian bus manufacturing with over 30% of Australian manufacturers based there (5 factories), more than any other state or territory.

The bus and coach manufacturing sector can also be seasonal in nature, with sales and deliveries sometimes significantly reliant on the public transport and school bus procurement policies of state and territory governments. The procurement process can often be based on short term, sharp increases in demand for bus passenger services caused by increases in fuel and living costs; the long-term impact of congestion in an ever-increasing urban Australia; electoral cycle priorities; regulated vehicle replacement programs; average age of fleet and maximum age regulations; and the rise and fall of the Australian dollar.



Operators

Over several decades, the bus and coach industry has consolidated, with a fundamental shift from generational family-based bus companies in our cities to national and multinational businesses, especially in metropolitan areas. With contract reform, many smaller operators have shifted their focus to being sole providers of charter services, no longer continuing route work. However, in rural and regional Australia, family businesses still predominate. The NTC (2016) estimates that more than 3,000 bus companies are operating across Australia servicing towns and regions, tour and charter services and major cities, and most are small to medium sized businesses.

Operators have a mix of skills and experience

Skills

The Bus Industry at present employs a vast number of different job classifications which in turn have varied skill requirements. These include

- Bus Driving,
- operations/Scheduling Protection officers,
- Fleet Managers
- diesel and gas mechanics,
- auto Electricians,
- depot/Yard specialists,
- glass/tyres and suspension specialists,
- HVAC system specialists,
- structural/body maintenance and repairers,
- painting and general refurbishment,
- Trade assistants and apprentices
- fabrication and welding positions,
- bodybuilders and fabricators,
- administration business operations accounting/finance, HR and payroll skills,
- accounting and Business management

In particular bus drivers and diesel mechanics are the two most in demand jobs in the sector and our industry is competing heavily with the mining and long-distance transport industries for skilled workforce. Given the significant number of operators in rural and remote areas, skilled labour is expensive and in high competition areas operators are reporting diesel mechanics are being paid up to \$180,000 a year to maintain and keep bus fleets operating.

4. Consultation Paper

The discussion paper has reviewed the electric vehicle (EV) landscape in Queensland. QBIC and the BIC agree with the following out of scope evaluation articles being;

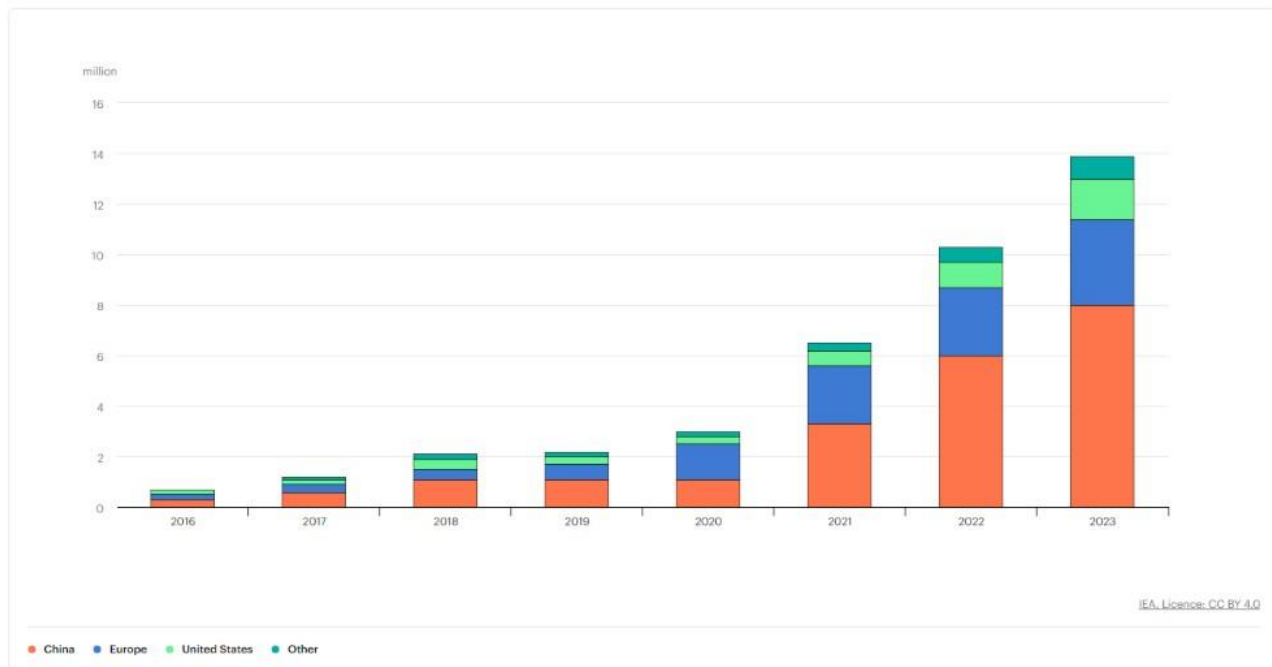
- E-scooters and e-bikes, generally, which are explored in Part 3.1,
- electric mining vehicles, which require full licensing at present,
- hydrogen-powered electric vehicles,



- train and trams,
- electrical component powered by a petrol-powered ICE such as headlights, HVAC,
- other electrical components of the vehicle (e.g. outlet socket) powered by lithium-ion battery.

EV Hazards and Risk

The consultation paper highlights an increasing trend in registrations of EV's in Queensland and points to a new industry. However, the paper does not explore or consider the international maturity of the EV market around the world and its size. As we see from the following graphic representing electric car sales internationally, from 2016-2023 there will be almost 14 million vehicles sold around the world in Europe, China and the United States.



International electric-car-sales-2016-2023

This is an important point to make as the consultation paper itself points to the hazards and risks associated with EV's. These hazards and risks are well described however when looking at international comparisons, other jurisdictions have far more experience and trend data to evaluate the hazards and the potential risk scores and actual incident rates. When we examine the discussion paper data we see 337 verified battery fires globally and an additional 82 yet to be determined after a collective total of some 20 million EV have been sold. This equates to an incident rate of 0.002095% over almost a ten-year period. This is an important point to make and consider and we shall return to this point later in the submission.

U.S. auto insurer AutoinsuranceEZ¹, following a study of the National Transportation Safety Board (NTSB), Bureau of Transportation Statistics (BTS), and government recall data from Recalls.gov, indicated that battery electric vehicles have just a .03% chance of igniting, compared to internal combustion engine vehicle's 1.5% chance.

When we examine the Queensland EV data, a total of 68,000 vehicles were registered in 2021 with no corresponding incident data or detail in the report, presumably because there is none available based on the small sample and high-

¹ <https://www.autoinsurancenez.com/gas-vs-electric-car-fires/>



quality products being sold under the Australian Design Rules (ADR's) and ANCAP rating systems. Thus, we should be looking at the sample of data given from international jurisdictions, whereby 20 Million vehicles in China, Europe and the USA provide a statistically relevant sample size and incident rate.

Bidirectional charging

The discussion paper also highlights that bidirectional charging is a future possibility. We highlight current home battery installations are being created with bidirectional charging. These are installed by electricians and used by untrained homeowners. The reality in the transport industry at present is that trained technicians maintain the fleet, and other staff, like drivers also receive extensive training prior to use of a vehicle. The paper indicates that there is a difference between establishing a house battery and establishing an electric vehicle battery bidirectional system, however, both are currently undertaken by electricians and once installed left to the owner and energy retailer to operate. Bidirectional charging is the installation of equipment by a qualified electrician, however regardless of the venue, being a depot, house for a car, bus or a truck, there is no difference after it is installed by a licensed electrical contractor. AS 3000 and 5139 and other Australian standards already cover the install and safety requirements for batteries including bidirectional charging which is managed by appropriate battery and charger software.

Voltages

The discussion paper raises the electrical risk of voltage in vehicles and compares vehicle voltages to current low voltage (LV) (greater than AC 50 Volts and DC 120 Volts) installations in homes and businesses suggesting that an electrician is required. The Williams Report appears to raise the fact that bikes and cars should not be covered, but that buses and trucks should be now considered within scope of the Electrical Safety Act. The discussion paper seems to draw a conclusion that all vehicles regardless of voltage should be regulated.

The discussion paper section 3.3.5 also states *"To some degree, voltage is almost irrelevant in assessing the nature of the danger for batteries. Arc flash potential for batteries can be significant – for example – a 24V DC battery bank in an enclosure may have the potential for a 30kA short circuit current (typically where parallel battery banks are used) which could result in an arc flash energy of 10.7cal/cm² and an arc flash boundary of over 1.3 metres."*

Given this statement implies risks even at extra low voltages (24v DC), QBIC and the BIC wish to point out that the industry has safely and competently managed the risks associated with extra low voltage batteries for more than 50 years, achieved by suitable training of technicians. Suitable training to higher voltages would also safely address any risks, attaining and upskilling existing competency being the key.

QBIC and the BIC must draw a line here that there is a difference in the scope of what is work under the electrical safety act currently and what is now normal operation of a vehicle. In many areas of work there are licenses and trained staff that deal with particular work. If we look at the "work" of an electric motor or a battery pack in many circumstances these are not new. Electric motors and rewiring motors have been a feature of the construction and mining industry for decades if not almost a century, this should not change. Batteries are also not new however again "work" on batteries needs to be clarified as either replacement of components that are powered by a battery versus refurbishing and repairing. The discussion paper does not clearly describe either of the above situations. This delineation/definition of work is crucial to ensure that the EV industry in Queensland does not grind to a halt and place emission targets, jobs and businesses at risk.



Repair work on motors and batteries where these units need to be opened rewired and then replaced into service will be similar to those requirements currently in place in different industries. Original Equipment Manufacturers and current Electrical Contractors and Auto Electricians will have the tools and the trained staff as required under even the current requirements of the Act. Original Equipment Manufacturers have comprehensive service manuals that describe what is permitted and specific procedures for undertaking any maintenance and repair work on a vehicles irrespective of voltage. This sets a baseline so that any trained staff are working in strict compliance of the safe working requirements as laid out by an OEM.

The discussion paper rightly points out the WHS Act of Queensland requires a PCBU to ensure staff have the appropriate skill knowledge and abilities to undertake the work they are doing. The motor trades industry has had electric hybrid vehicles in the Australian car market for over 10 years including the Toyota Prius, with a booster achieving up to 600 Volts. The discussion paper has failed to show any data of incidents or otherwise demonstrating that there is an increasing risk. The paper does demonstrate that international studies and statistics show that incidents are very, very low. The highest industry and penetration of electric and hybrid vehicles is the taxi industry and there have been no significant issues related to propulsion or servicing that the discussion paper has been able to detail.

Training

In examining training, firstly an examination of the existing workforce, the skills and gaps is required. The discussion paper does not address the workforce plan that is needed to satisfy the needs of particularly the bus industry, nor does it adequately address the broader motor trades skills and existing staff. Whilst we recognise the discussion paper is not a workforce planning paper, the discussion paper and the Williams Report have made little acknowledgement of current trade level skills in the motor trades and heavy vehicle industry. These trades have already been servicing and repairing hybrid vehicles for some 10 years without incident.

QBIC however can demonstrate that industry has been working with TAFE over 5 years and TAFE have a well-developed plan and training structure to upskill current employees. Training courses for hybrids even date back to 2013. There has been no risk assessment demonstrated that indicates more licensing or a shift in scope of licensing is needed. TAFE training need analysis identified;

- First Responder/Basic Safety training,
- driver Operations training,
- apprenticeship service, repair and diagnosis training,
- existing workers upskilled with advanced diagnostic training,
- diagnosis, service and repair (co-development of accredited training required).

Significantly TAFE, through its emerging technology division has clearly identified to industry the following broad description of each level of training;

- All personnel
 - safety awareness training,
 - chain of responsibility (National Heavy Vehicle Regulator – NHVR - requirement),
 - basic electric vehicle & hydrogen fuel cell operations,



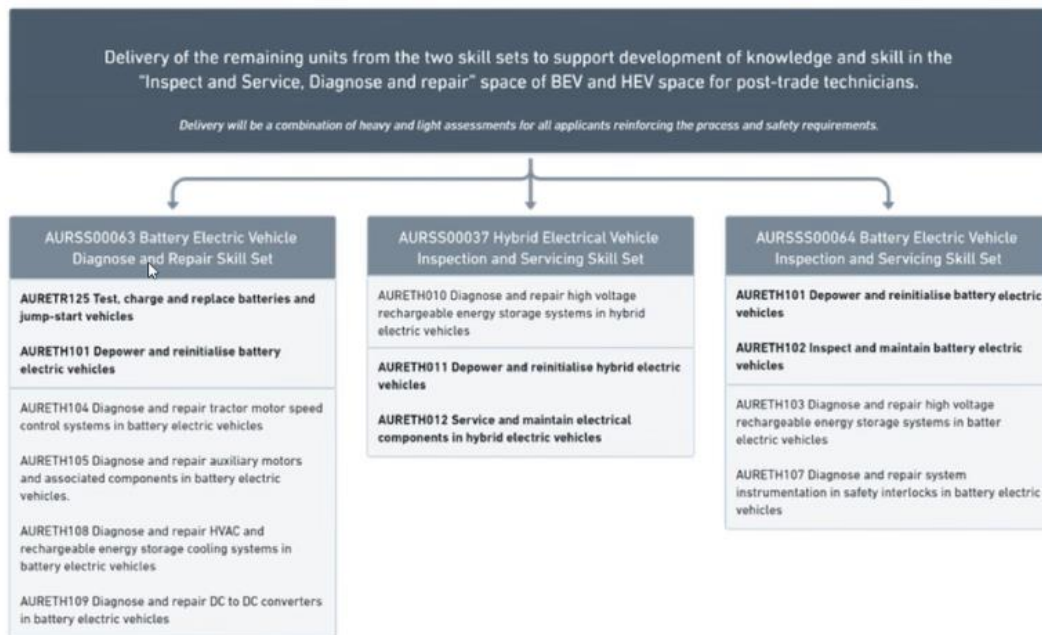
- environmental awareness around battery electric vehicles.
- Drivers and fixed operators
 - driver operation training,
 - efficient driving techniques, battery management,
 - first response process,
 - connect and reconnect procedures for charging purposes.
- Apprentice training
 - working safely, identifying safety issues,
 - depower and de-energise procedures, PPE,
 - inspection & servicing precautions, basic trouble shooting,
 - electric vehicle apprenticeships.
- Technicians and post trade training
 - diagnose and repair skillsets, precautions and troubleshooting, national accreditation,
 - depower and de-energise procedures, PPE,
 - safe operation, service and repair of hydrogen fuel cell vehicles.
- Diagnostic Technician
 - OEM specific training, nationally accredited,
 - high level diagnosis process and safety,
 - mentor training,
 - leadership and management.

TAFE has released the following training to the industry with a detailed plan, and consultation with industry to upskill current employees and adjust current training packages including apprenticeships with relevant competencies.

AUR30620 Certificate III in Light Vehicle Mechanical Technology	AUR31120 Certificate III in Heavy Commercial Vehicle Mechanical Technology	AUR31220 - Certificate III in Mobile Plant Technology	AUR30320 Certificate III in Automotive Electrical Technology
<p>AURETH011 Depower and reinitialise hybrid electric vehicles (elective)</p> <p>AURETH012 Service and maintain electrical components in hybrid electric vehicles (elective)</p> <p>AURETH101 Depower and reinitialise battery electric vehicles (elective)</p> <p>AURETH102 Inspect and maintain battery electric vehicles *(elective)</p>	<p>AURETH011 Depower and reinitialise hybrid electric vehicles (Unspecified Elective)</p> <p>AURETH012 Service and maintain electrical components in hybrid electric vehicles (Unspecified Elective)</p> <p>AURETH101 Depower and reinitialise battery electric vehicles (Unspecified Elective)</p> <p>AURETH102 Inspect and maintain battery electric vehicles * (Unspecified Elective)</p>	<p>AURETH011 Depower and reinitialise hybrid electric vehicles (Unspecified Elective)</p> <p>AURETH012 Service and maintain electrical components in hybrid electric vehicles (Unspecified Elective)</p> <p>AURETH101 Depower and reinitialise battery electric vehicles (elective)</p> <p>AURETH102 Inspect and maintain battery electric vehicles * (elective)</p>	<p>AURETH011 Depower and reinitialise hybrid electric vehicles (elective)</p> <p>AURETH012 Service and maintain electrical components in hybrid electric vehicles (Unspecified Elective)</p> <p>AURETH101 Depower and reinitialise battery electric vehicles (elective)</p> <p>AURETH102 Inspect and maintain battery electric vehicles * (elective)</p>

Apprentice Training Matrix above

Whilst the above training is appreciated it must be noted that in the bus industry, we will have a fleet of diesel buses in service until at least 2045 based on current replacement programs in the passenger and commercial sectors. As such the bus and truck industry will need a regime of training that will still need to produce diesel mechanics with additional skills of electric vehicles to complete their training. Specific courses have also been developed to upskill current mechanics.



Existing Technician Upskilling Training matrix above

In our examination of overseas countries who are well ahead of Australia's and Queensland's transition for electric vehicles, upskilling employees has been the predominant model. No jurisdiction that we have examined including Europe, China and the USA have moved away to separating out tradesman based on fuel technology, all have realised that upskilling (like we have done in the motor car market for the last 10 years) of current staff is the most cost effective and just transition with the least amount of disruption. It is also important to note that we are also unable to find any jurisdiction in the world who has seen the need to broaden out their licensing regime to include EV with specific electrical licensing or in fact create an equivalent restricted license.

Regulatory Considerations

The paper states there is no licensing framework for particular work on electric vehicles, this is true however, that is not to say that regulation, licensing or accreditation and other consumer protections already in place are not working and are failing to protect consumers and workers. Currently the definition of electrical work, equipment, installation and appliance work as a combination in unison to determine what is licensed and unlicensed work. The Williams Report seems to indicate that an expansion of licensing is required due to the voltages of the electric vehicles. The Williams Report and the discussion paper fail to identify the other regulations and systems that are in place across a number of industries. These include Australian Design Rules, ANCAP safety ratings of vehicles, Australian Automotive Service and Repair Authority, Operator Accreditation schemes, National Heavy Vehicle Regulator (NHVR) Chain of Responsibility laws, professional standards and membership schemes based on trade qualifications.

QBIC and the BIC would support retaining Section 14(2) of the Act and the exemption of the propulsion system of vehicles as not being included in the meaning of electrical equipment. As we have mentioned earlier, there are other protections, rules and legislation in relation to vehicles at a federal level and to interfere and add additional complexity to the manufacturing of vehicles severely risks Queensland's bus and coach building activities and maintenance ability.



The discussion paper also details that hydrogen vehicles are out of scope. A hydrogen vehicle is powered by electricity due to the conversion of hydrogen into electrical energy, creating electricity at similar voltages as battery electric vehicles. One might ask, does this indicate why the original exemption for vehicles was given based on the unique platform that a vehicle presents?

Should the definition of work conflate the maintenance and operation of vehicles being considered electrical work this may well see the state governments EV plan and decarbonisation plan for Queensland severely hampered and delayed. It may discourage manufacturers from supplying electric vehicles to the region and prioritise other regions. That is not to say that electrical safety is not important. The motor trades industry over the past 10 years and the safety record of electric vehicles in Australia, Europe, China and USA demonstrate that there is not a cogent reason for removing this exemption or alternatively changing the definition of work should not impinge on the diagnosis and replacement of parts in a vehicle by a trained competent person.

We believe that industry's engagement with TAFE Queensland and the creation of supplemental education combined with OEM training means that consumers, workers and the general public are safe and do not need additional licensing. Obviously the WHS Act and the ES Act identify PCBU requirements and obligations, these would continue to apply and form a relevant enforcement regime in the unlikely event (0.002% chance) of an incident.

QBIC and the BIC would suggest that should the ESO wish to have an extra level of protection an option would be to engage with the Department of Transport and Main Roads to add relevant criteria to the Operator Accreditation Scheme which must be obtained prior to operating passenger services in Queensland. To show how extensive this scheme is the following legislation is referenced:

- Transport Operations (Passenger Transport) Act 1994
- Transport Operations (Passenger Transport) Regulation 2018
- Transport Operations (Passenger Transport) Standard 2010
- Transport Operations (Road Use Management—Accreditation and Other Provisions) Regulation 2015
- Transport Operations (Road Use Management—Dangerous Goods) Regulation 2018
- Transport Operations (Road Use Management—Driver Licensing) Regulation 2021
- Transport Operations (Road Use Management—Road Rules) Regulation 2009
- Transport Operations (Road Use Management—Vehicle Registration) Regulation 2021
- Transport Operations (Road Use Management—Vehicle Standards and Safety) Regulation 2021
- Heavy Vehicle National Law (HVNR) Act 2012
- Work Health and Safety Act 2011
- Work Health and Safety Regulation 2011
- Anti-Discrimination Act 1991
- Disability Discrimination Act 1992*
- Disability Standards for Accessible Public Transport 2002*

The discussion paper highlights departmental powers to issue recalls and this seems to indicate that the ESO wishes to have this power, however motor vehicle recalls handled by the ACCC and other federal government bodies have been in place and reliable for decades. The ESO will not have the data and information of customers and lacks the inter jurisdictional ability to force recalls in other states. The current EESS system of electrical equipment standard is not a



nationally unified system and as such the ESO having the power of recall for one state will be duplicitous. However, the WHS Act and Fair-trading Act in Queensland already has the power to initiate recalls with the ACCC.

The ESO also points in the discussion paper to the National Road Vehicles Standards Act 2018 which will implement common standards, it is not clear then why the ESO and Act review are suggesting changes in this area that will lead to industry confusion and risk manufacturing and maintenance industries.

Interjurisdictional analysis

The ESO paper indicates that NSW and WA have licensing requirement for motor mechanics, the converse is true that all other states do not have licensed motor mechanics, as such more than 70% of motor trade mechanics have been and are unlicensed. Apart from the usual consumer protections issued there seems to be no supporting evidence supplied as to the advantages of having a licensing regime. Yes, other states have released discussion papers however, it is our view that the motor trade industry is resistant against extending electrical licensing without cogent reasons and data to demonstrate that there is a consumer, worker risk higher than what has been experienced in the past.

We again draw the attention to the motor trade experience in the last 10 years with passenger vehicles, the ESO has been unable to demonstrate incident or injury data linked to EV maintenance or the second-hand car market that would raise a concern or a need to license work.

The ESO has also not looked at international jurisdictions, the BIC representatives have liaised with the United Kingdom and other international jurisdictions and have been unable to find any jurisdiction in the world who has created an electrical worker license to work on electric vehicles. The UK like most of Europe support government endorsed industry competency based self-regulation that only people with the appropriate skills work on vehicles, no legislative licensing. The UK have issued over 39,000 EV competency certificates alone since 2016². What the BIC's discussions and information shows is that the process TAFE is moving through by updating training and skills with existing staff is safe, sufficient and working well across multiple jurisdictions both in Australia and overseas.

Definitions

The consultation paper has mentioned and discussed the topic of definitions. The definitions within the current ES Act are a series of interlocking concepts that determine the head of power of the legislation in practical terms. These definitions will have a significant impact if their current definitions, if changed, will have on the total motor trades industry. Regulators and governments must ensure that there are no unintended consequences of making changes, if they do it may cripple and severely impact on the ability to provide services to the general public.

The discussion paper however focuses on definitions in relation to solar generations (PV Systems) and BESS. The paper in the EV section demonstrates that it is an intent to include BESS and the section 3.3 of the paper indicates that motor trades particularly buses will lose their exemption.

Definitions are incredibly important however the motor trades industry and the Electrical Safety Act have different terminology when it comes to terms such as High Voltage and Low voltage.

² Source: <https://www.theimi.org.uk>



ES Act Definition	Motor Trades terminology / Understanding generally
Extra Low Voltage (below 50V AC or 120V DC)	Low Voltage
Low Voltage (above 50V AC and 120V DC – 1000V)	High Voltage
High Voltage (above 1000V AC or 1500V DC)	Extra High Voltage

Section 14 – 19 of the Act states

14 Meaning of electrical equipment

(1) Electrical equipment means any apparatus, appliance, cable, conductor, fitting, insulator, material, meter or wire that—

- a) is used for controlling, generating, supplying, transforming or transmitting electricity at a voltage greater than extra low voltage; or
- b) is operated by electricity at a voltage greater than extra low voltage; or
- c) is part of an electrical installation located in an area in which the atmosphere presents a risk to health and safety from fire or explosion; or
- d) is, or is part of, a cathodic protection system.

(2) Electrical equipment does not include any apparatus, appliance, cable, conductor, fitting, insulator, material, meter or wire that is part of a vehicle if—

- a) the equipment is part of a unit of the vehicle that provides propulsion for the vehicle; or
- b) the electricity source for the equipment is a unit of the vehicle that provides propulsion to the vehicle.

15 Meaning of electrical installation

(1) An electrical installation is a group of items of electrical equipment that—

- a) are permanently electrically connected together; and
- b) can be supplied with electricity from the works of an electricity entity or from a generating source; and
- c) do not include items that are works of an electricity entity.

18 Meaning of electrical work

(1) Electrical work means—

- (a) connecting electricity supply wiring to electrical equipment or disconnecting electricity supply wiring from electrical equipment; or
- (b) manufacturing, constructing, installing, removing, adding, testing, replacing, repairing, altering or maintaining electrical equipment or an electrical installation.



Examples of electrical work—

- installing low voltage electrical wiring in a building
- installing electrical equipment into an installation coupler or interconnector
- replacing a low voltage electrical component of a washing machine
- maintaining an electricity entity's overhead distribution system

(2) Electrical work does not include the following— *(we have selected areas that may relate to Motor Trades as exemption if such vehicle exemption was not available in the ES Act)*

- a) work that involves connecting electrical equipment to an electricity supply by means of a flexible cord plug and socket outlet;
- b) work on a non-electrical component of electrical equipment, if the person carrying out the work is not exposed to an electrical hazard;

Examples for paragraph (b)—

- painting electrical equipment covers
- repairing hydraulic components of an electrical motor
- replacing a drive belt on a washing machine

(c) replacing electrical equipment or a component of electrical equipment if that task can be safely performed by a person who does not have expertise in carrying out electrical work;

(d) assembling, making, modifying or repairing electrical equipment in a workplace under the Work Health and Safety Act 2011 that is prescribed under a regulation for this paragraph, if that is the principal manufacturing process at the workplace, and arrangements are in place, and are detailed in written form, for ensuring that—

(i) the work is done safely and competently; and

(ii) the equipment is tested to ensure compliance with

relevant standards;

(f) locating or mounting electrical equipment, or fixing electrical equipment in place, if this task is not performed in relation to the connection of electrical equipment to an electricity supply;

19 Types of electrical work for this Act

(1) Electrical installation work is electrical work associated with an electrical installation, but does not include the following electrical work—



- (a) testing, repairing or maintaining electrical equipment included in the electrical installation;
- (b) electric line work associated with the electrical installation.

Examples of electrical installation work—

- installing or altering wiring or fixed appliances in a building
- installing or altering a switchboard

In addition to the ES Act we must also consider the regulation section 70 to 73 having an impact

What the paper considers and suggests is that if BESS (internationally referenced as RESS – Rechargeable Energy Storage System in vehicles) for motor vehicles are considered to be electrical work, installation of equipment in the future will need to be an electrical worker. If we examine the current definitions that an installation needs to be “ permanently connected to an entity or generating source”, batteries are not generating, they are by nature storage and our batteries are not permanently connected as they are modular and can be removed and connected through plugs and connections. The question is IF the vehicle exemption is removed what unintended consequences are there for other industries if batteries are considered generation or batteries are considered permanently connected?

Additionally one might think that to achieve consistency in the new act you would also have to reconsider the definition of what is not electrical work. As we have highlighted there are possibly 5 subsections of clause 18(2) of the act that should the exemption for vehicles be removed the legislation will have to contemplate how this effect is managed and enforced and communicated to industry.

It is imperative that before any legislation is drafted as a whole that the Electrical Safety Office and Queensland Parliamentary Counsel engage with motor trades industry, being the core industry impacted by such changes. The regulatory impact of these changes has the possibility to derail passengers’ services and government electric vehicle industry and transition programs for the next 20 years.

Industry also has little understanding of what it means to be considered an electrical contractor. The areas for change here will mean that all motor trade services will need to be come electrical contractors with qualified technical persons and businesspeople. A licensed electrical person cannot work as a fee for service sole employee and there is nothing under the Williams Report that demonstrates or contemplates a relaxation of contractor requirements or QTP / QBP. The Williams Report is suggesting that these qualifications and requirements are further strengthened. Conversely licensed electrical contractors would also need to be automotive technicians in order to understand the intricacies of working on a motor vehicle and also comply with the requirements of Heavy Vehicle National Law (HVNL) and other requirements bullet pointed in the ‘regulatory considerations’ section earlier in this document. Without this an operator cannot attain accreditation to operate vehicles.

Automatic Mutual Recognition

The Office of Industrial Relations and the Minister for Industrial Relations has announced that Queensland will not be allowing any automatic recognition of skills nationally. This decision will impact on any licensing changes that the government makes in relation to the new ES Act. The change made of the suggested likened electrical worker being required to work on vehicles in Queensland will add another dimension of protectionism and restricting the free



movement and exchange of trade across borders and will limit and delay the flow of competent motor trade employees from entering Queensland.

The State Government has an ambitious target of replacing bus fleets from 2025 as electric vehicles, these buses may not be manufactured in Queensland and service technicians may need to come from interstate to train and educate local staff. However, these service technicians would need to be individually licensed in Queensland, perhaps with a full electrician trade depending on vehicle and status of definition of electrical equipment. Overseas expertise often provided by major OEMs in upskilling Australian staff on the specifics of electric vehicles plus occasional difficult fault diagnosis would be extremely difficult as they would not be licensed even though deemed competent elsewhere globally. Queensland would essentially be isolated in this respect and fall behind in expertise as a consequence.

5. Industry Feedback

During the consultation period QBIC received feedback from its Members (operators, OEM's and associates) directly concerning the discussion paper. It is fair to summarise the feedback into the following general comments;

- skill shortage of staff currently,
- need to train and retain staff,
- OEM and TAFE Training preferred and available now,
- Electrical Licensing will increase costs and skill shortages,
- rural and remote difficulties in sourcing qualified staff,
- distinct difference between a building electrical installations and motor vehicles.

QBIC has attached Appendix one which has examples of the direct feedback we are receiving from Members.

6. QBIC and BIC recommendations

QBIC and the BIC have examined the three suggested options of the discussion paper. Those being:

- Option 1 Status quo. Industry undertakes self-regulation on training requirements for work on electric vehicles.
- Option 2 Legislative change. Capture work on electric motors within the definitions of 'electrical equipment' and 'electrical work', for the purposes of a licensing requirement.
- Option 3 Awareness and Education. Produce an awareness and education campaign to address concerns regarding electric vehicles generally, including work.

QBIC and the BIC believe that Option 1, retaining the motor vehicle exemption with an education campaign as mentioned will have the same safety outcome with industry led regulation and provide certainty for EV fleet renewal over the next 20 years. We have chosen option 1 for the following reasons;

- The vehicle industry exemption has been safe and successful for the last 10 years of hybrid and electric vehicles,
- workforce planning and skills development has already developed down this path achieving safe outcomes, inline with international approaches.



- utilising existing systems and reducing administration and red tape so that it does not add additional cost to businesses,
- suitable for all levels and types of motor vehicle businesses from sole traders to multinationals,
- no net safety benefit has been identified or quantified from option 2.

In evaluating the ESO discussion paper and the Williams Report it has been stated that the department and government are yet to make decisions about how the current definitions will be reworded. No Government, Public Service Department or industry stakeholder can say with any certainty what ramifications will materialise until clear definitions or changes are articulated. Regulatory impact statements will not accurately evaluate the cost of any such change across society including the electrical manufacturing and motor trades industries or even the general public without clarity of what is in scope and out of scope.

It has also been discussed that any changes to the legislation may be undertaken in stages or tranche'. This methodology also presents difficulties and unintended consequences for industry and cause delays and confusion, at a time that industry and manufacturing have already made investment decisions. It is of serious concern to QBIC and BIC that Mercedes Benz has withdrawn from the bus industry. Duplication of regulation and increasing of costs and state jurisdictional differences could be the catalyst for others to exit the state or even the nation.

QBIC and BIC principal concerns are that by deleting the Vehicle exemption in the Electrical Safety Act it will adversely impact

- the future of manufacturing, maintenance and servicing of a mixed-use fleet for the next 25 years,
- exacerbate current workforce skill shortages,
- reducing an ability for a just transition of current staff and industry participants, and
- overly complicate and regulate an industry that has a significant national interest and impact.

QBIC and BIC propose that Buses can and will continue to be safely built, operated, and maintained by the continuing adoption of Australian Design Rules (ADR), Operator Accreditation, OEM and TAFE training, State based WHS Act, State and Federal schemes to raise awareness and education to address concerns regarding electric vehicles generally,

QBIC and BIC firmly and safely believe by continuing this approach, the Bus industry will continue to build, operate and maintain buses safely in Queensland and Australia.



7. APPENDIX 1

MEMBER FEEDBACK AND COMMENTS

Unable to conduct repairs outside business hours. Costings would be less than ideal As a rural operator travel costs for qualified repairers is extremely expensive.
This would be untenable. Electricians DON'T work on vehicles. There is an inherent shortage of electrical tradespersons already, so this would become nearly impossible to facilitate from a workforce point of view also. Furthermore, our business cannot fathom completing an Electrical Contractor Licence in order to employ our own electricians.
Currently, as the manufacturer, we do not require special licencing. The issue is, that there is no high voltage course available for mobility, so how will people be trained? Transport is different to commercial and domestic electrical systems, and certain electric bus manufacturers utilise systems in different ways, i.e.: some require different processes for shutting down the high voltage systems, in order to work on the bus. They won't have access to this specific information.
All vehicles. Tafe and our suppliers have very good courses already.
Technicians working on any EV does need OEM / TAFE training and a National accreditation. We do not see Licensed Electricians as a requirement to safely work on any EV, rather a skilled, suitably trained and competent person
No. It needs to be an add-on to the existing automotive trades. There is more to a vehicle than just the electric motor - this should all be able to be maintained by existing automotive tradespeople, with upskilling to incorporate new tech.
Any work requiring electrical isolation (make safe) should be an adjunct to mechanical.



Just have my trained staff recognized with a formal course like TAFE or my suppliers could do.
There should be no exclusions on licencing requirements. There is no requirement for an electrical trades licence to work on Extra Low Voltage. Safe work practices can be introduced where an appropriately qualified restricted licence maintainer can safely disconnect and reconnect the main power source as well as test to confirm items are deenergised other people undertake work on deenergised components. Relevant trades people without restricted electrical licences can then work on the deenergised components. An awareness and education program should be undertaken for first responders and anyone working in the automotive industry who will be working on or near electric vehicles. This would ensure they understand the risks involved with electric vehicles when attending breakdowns or working on and around them in a workshop environment or on road, consideration should be given to AS5732:2022 when developing training and education material.
Electric vehicles should be excluded from the Act. Charging & refuelling infrastructure on the other hand should be included under the Act. Vehicle vs Infrastructure
Technicians working on any EV does need OEM / TAFE training and a National accreditation. We do not see Licensed Electricians as a requirement to safely work on any EV, rather a skilled, suitably trained and competent person
NO. We don't want licensed electricians, we want our staff trained and recognised for this. Otherwise there is no opportunities for them with this new technology.
Yes. Being able to diagnose and replace deenergised unique OEM parts is a critical role of garage maintenance staff. Working on live parts, batteries or opening and repairing electrical components is specialised work that can be undertaken by a qualified electrician or OEM.
No. Based on the current skills shortage and lack of experience with vehicles, sourcing qualified electricians and electrical contractors would present a severe risk to ongoing service delivery.
No. We cannot even source an electrician to work on existing building infrastructure in a timely manner.



No nor would it be required. Restricted licence limited qualification for isolation, make safe, remove and replace componentry units should suffice. Repair, rebuild of individual components should require full electrical trade licence.

Set up a formal system to train existing staff on working with EVs like suppliers do now. This supported with a TAFE qualification course is all it needs. Let the government use this. It's what happens elsewhere.

If the OEM's can manufacture and supply items not forming part of the propulsion system that can be categorised into the same definition as a uniquely styled plug where reversed polarity isn't possible then it could be appropriate for anyone to connect and disconnect equipment.

A restricted ticket maybe useful for a maintenance model based on a replace like for like equipment but not suitable for maintaining internal electrical equipment/components.

If it has wheels and uses electric propulsion, it's not part of a building trade qualification.

Keep a clear defined separation between Vehicles vs Infrastructure.

EV Manufacturers have introduced rigorous safe work methods that meet Australian Standards and WorkSafe compliance, including current TAFE qualifications.

OEM's have introduced electrical organisations and training to ensure their technicians meet the Australian electrical standards for an Electrical worker and Electrical supervisor.

Any qualification must be a National standard



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8. APPENDIX 2 BIC Letter of Support

Proud member of the Bus Australia Network

Moving forward together.



26 June 2023

Queensland Government

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**Re: A response to the Review of Queensland's Electrical Safety Act
2002 – key definitions and emerging technologies Discussion paper**

To whom it may concern,

Thank you for the opportunity to make a submission on the review of Queensland Electrical Safety Act 2002. As the potential ramifications of the review outcomes may impact the bus and coach industry nationally the Bus Industry Confederation (BIC) has collaborated with the Queensland Bus Industry Council (QBIC) on a combined submission. The Bus Industry Confederation (BIC) is the national peak industry body for the Australian Bus and Coach Industry. We represent bus and coach operators, body and chassis manufacturers and suppliers, associated service providers and state bus associations on issues of national importance.

From an industry wide perspective, the introduction of licensing requirements as suggested in the Acts review would seriously hamper the Queensland Governments initiated transition to zero emission vehicles detailed in Queensland's new Zero Emission Vehicle Strategy. A key element of that Strategy is that every new TransLink funded bus added to the fleet will be a zero-emission bus from 2025.

We note that the Premier, in January 2023, announced that the Government would boost Queensland's local manufacturing industry by making buses for Queensland, by Queenslanders, in Queensland. The proposed licencing requirements would adversely impact the ability to manufacture and sell electric vehicles in Queensland and impede the operator's ability to maintain and repair them. The consequence would be in long term hiatus in the industry's ability to supply and operate battery electric buses until the industry re-skilled to the licensing requirements or recruited appropriately qualified people from a sector already experiencing skills shortages nationally.

The introduction of licensing requirements as suggested would also likely result in many manufacturers and suppliers reconsidering their futures in Queensland, and some may choose to close altogether or relocate their operations to another state. With Queensland being the major base for

Bus Australia Network

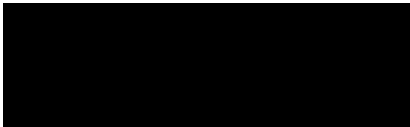


Buses manufacturing in Australia with five manufacturing companies, along with many component suppliers, this would put thousands of Queensland jobs at risk. Consequently, it would also affect the entire Australian Bus and Coach Industry.

QBICs submission is fully endorsed by BIC, as it is not only important for Queensland but all other State and Territory jurisdictions. The technology is not new to the bus industry with Hybrids in operation since 2012 and Electric buses since 2019. The submission demonstrates the practices and processes already in place to ensure the safe build, operation, maintenance, and repair of these vehicles, with safety as its first and most important consideration. This is in line practices internationally as mentioned in the submission.

The BIC together with QBIC are happy to be part of any further consultative process, noting these safe practices and processes are not unique to Australia and have been in place for many years in other countries including UK, Mainland Europe and USA.

Yours sincerely



Roz Chivers
Executive Director

Bus Australia Network

