

**Submission  
No 29**

## **ELECTRIC AND HYBRID VEHICLE BATTERIES**

**Organisation:** Bicycle Industries Australia

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Mr Greg Warren MP Chair  
Joint Standing Committee Road Safety (Stay Safe)  
NSW Parliament  
Macquarie Street SYDNEY NSW 2000

By Email: [staysafe@parliament.nsw.gov.au](mailto:staysafe@parliament.nsw.gov.au)

Dear Chair

Bicycle Industries Australia (BIA) would like to thank the Joint Standing Committee for the opportunity to provide a submission for this inquiry.

Consumer and industry members safety are paramount in the minds of the light electric (specifically bicycle) industry as we move towards a more electric future.

While the use of light electric vehicles, is not new, mass production, technological advancements, and evolving consumer demand have brought about a transformative shift in the industry.

Consumer sentiment continues to shift for a desire to utilise light electric vehicles (LEV). Sales of e-bikes across the globe and in Australia show that the shift to electric vehicles is well underway.

Bicycles have consistently outsold motorcars each year in Australia for more than two decades, with sales of new bikes growing to 1.7million units during covid (this does not include scooters or other LEV). Sales of e-bikes has now grown to 20% of all annual bike sales and if we continue to follow international trends, we expect this number to grow to 50% of annual sales.

The world's leading automakers, motorcycle and electronic manufacturers are investing heavily in e-bike technology, identifying not only economic, but environmental and community benefits of transitioning greater numbers of people and goods to be moved by LEV. These brands are investing hi levels of funding in the technology required, but also production capacity to produce millions of LEV.

The transition to LEV to complete the transport task has been shown to have significant benefit to both the Australian economy and the community.

In 2022 the bicycle sector made the following contribution<sup>1</sup> -

- \$16.9billion to the Australian economy
- 514,096 tonnes of carbon dioxide (tCO2e) avoided over the year (equivalent of taking 207,000 cars off the road for a year)
- \$954million in health and social benefits
- \$1.9billion in cycle tourism (mainly to regional economies)

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<sup>1</sup> The Australian Cycling and E-Scooter Economy in 2022



The release of a 2021 report by the Institute for Sensible Transport found that based on NSW Treasury figures, providing direct incentives for the purchase of e-bikes returned between a \$3 and \$7 return on investment for every dollar invested<sup>2</sup>.

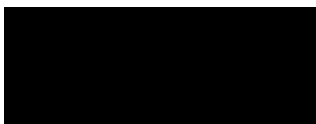
These benefits have been highlighted through the current costs of living crisis, with many families benefiting from the ability to achieve their transport tasks utilising e-bikes as a cost-effective substitute reducing the requirement for a primary or secondary motor vehicle.

Nevertheless, as with any transformative industry shift, along with the benefits, there are challenges that both the industry and decision-makers must overcome.

We as a nation have an opportunity to benefit significantly from this change but must work together at all levels to achieve the potential.

The BIA would welcome the opportunity to expand on the information provided through this submission and look forward to discussing the issues further with the Joint Standing Committee.

Regards Peter



Peter Bourke  
General Manager  
BICYCLE INDUSTRIES AUSTRALIA



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<sup>2</sup> E-bike Subsidy for Australians



## **Bicycle Industries Australia**

Bicycle Industries Australia is an independent not-for-profit incorporated membership organisation representing bicycle industry importers, manufacturers, retailers and suppliers. Affiliated with peak industry organisations around the world, BIA is leading the development of the industry in Australia.

For over 50 years the BIA has operated to support bicycle importers, manufacturers and distributors, and in 2014, incorporated the activities of the Retail Cycle Traders Association to expand its focus to include bicycle retail.

Through its leadership and expertise, the BIA has held key positions on Standards Australia committee CS-110, Auto Skills Australia, PWC Skills for Australia's IRC, AUSMASA (The mining and automotive skills alliance), along with the Australian Bicycle Council and Cycling Walking Australia New Zealand.

## Definitions

Throughout this report, I will refer to a variety of definitions of an e-bike. Please note although some of these relate to jurisdictions outside of the control of this inquiry, I have chosen to maintain all definitions to highlight the lack of clarity within each of the Government departments involved in the importation, sale and use of e-bikes.

**Pedelec**- A vehicle meeting European Committee for Standardization EN 15194:2009 or EN 15194:2009+A1:2011 Cycles - Electrically power assisted cycles - EPAC Bicycles.”

**EPAC – (national)** – means an electrically-powered pedal cycle with a maximum continued rated power of 250 watts of which the output is:

- (a) progressively reduced as the cycle’s speed increases; and
- (b) cut off, where:
  - (i) the cycle reaches a speed of 25 km/h; or
  - (ii) the cyclist stops pedalling.

**EPAC – (NSW)** – means an electrically-powered pedal cycle with a maximum continued rated power of 500 watts of which the output is:

- (a) progressively reduced as the cycle’s speed increases; and
- (b) cut off, where:
  - (i) the cycle reaches a speed of 25 km/h; or
  - (ii) the cyclist stops pedalling.

**Power Assisted Pedal Cycle – (NSW)** - means a vehicle, designed to be propelled through a mechanism primarily using human power, that:

- (a) meets the following criteria:
  - (i) is equipped with one or more auxiliary propulsion electric motors;
  - (ii) cannot be propelled exclusively by the motor or motors;
  - (iii) has a combined maximum power output not exceeding 200 watts;
  - (iv) has a tare mass (including batteries) of less than 35 kg;
  - (v) has a height-adjustable seat; or
- (b) is an electrically power-assisted cycle;

but does not include a vehicle that has an internal combustion engine.

### **Power Assisted bicycle (state specific)**

- A bicycle with one or more auxiliary motors attached which has a combined maximum ungoverned continuous rated power output not exceeding 200 watts.
- An electrically power-assisted cycle (EPAC). These are pedal cycles with an electric motor that has a maximum continued rated power of 250 watts. The power-assistance progressively reduces as the speed increases and cuts off once a top speed of 25 kilometres per hour is reached. EPACs require the rider to pedal to access the power.

**E-bike** – General term encompassing road legal bicycles assisted by an electrical motor in one or all jurisdictions across Australia

## Community benefits

Australia, for many, is currently impacted significantly by a 'cost of living,' crisis with the NRMA reporting that transport is accounting for up to 17% of total household income or around \$22,000 per household per year.

With around 50% of all trips in metropolitan areas 5km or less, and 50% of trips in regional cities 4.5km or less, distances easily covered by LEV, the transition to sustainable transport will have significant impact on household spending. Replacing the primary or secondary motor vehicle should be encouraged and supported by the NSW Government.

Along with cost savings for individuals and households, the transition to LEV will have a positive impact on the NSW economy, through reduced congestion, increased productivity cost savings to the health system and reduced carbon emissions<sup>3</sup>

In 2022 the bicycle sector made the following contribution to Australia -

- \$16.9billion to the Australian economy
- 514,096 tonnes of carbon dioxide (tCO<sub>2</sub>e) avoided over the year (equivalent of taking 207,000 cars off the road for a year)
- \$954million in health and social benefits
- \$1.9billion in cycle tourism (mainly to regional economies)

Any recommendation that reduces the capacity of LEV (in particular e-bikes), from providing a transport solution from the NSW community will have a negative impact on many individuals, the NSW economy and the NSW environment.

Extending on the above, any policy that prevents the access of LEV from higher density living will negatively impact those that require it the most, economically and socially.

We support the development of improved guidelines to improve safety but strongly argue against banning LEV from any general public or private facilities in NSW.

## RECOMMENDATION

- Develop and introduce guidelines to support the safe storage and charging of LEV in public and private buildings in NSW.

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<sup>3</sup> The Australian Cycling and E-Scooter Economy 2022

## Legislation

To determine the future opportunities and steps to manage LEV batteries, the committee must understand the history of the legislation that has contributed to arriving at this point.

Prior to 2012, the Australian regulations relating to power assisted cycles were loosely defined. The critical restriction in road legislation identified at that time, was that the power of the motor does not exceed 200w **maximum output**. At that time throttle only e-bikes were allowed across Australia.

The Federal Parliamentary Secretary for Transport introduced [Vehicle Standard \(Australian Design Rule - Definitions and Vehicle Categories\) 2005 Amendment 6](#) (pedalec) in May 2012.

The critical elements of this regulation are;

- Maximum assisted speed 25kmh
- Maximum power of 250w **maximum continuous rated**

\* Please note the difference between maximum and maximum continuous is significant

Throttle only power assisted cycles up to 200w continued to be allowed.

At that time, to import an e-bike, a permit was required through the Federal Government for each shipment of goods containing an e-bike.

Victoria became the first state to adopt EN15194 into road regulations in Sep 2012.

Over the course of the following 5 years, each state adopted the modification of the Australian Design Rules (EN15194), with the NSW Dept National Parks and Wildlife Service the final jurisdiction in May 2017 to allow the use of e-bikes on public land.

In 2017, when all Australian state and territory regulations became aligned, Australia imported approximately 9,000 Pedalecs and power assisted cycles (negligible numbers of road legal e-bikes are made in Australia).

The number of e-bikes imported in 2022 grew to 200,000 units<sup>4</sup>

In 2016 Standards Australia released the standard for a pedalec AS 15194:2016 as a modified adoption of the European standard EN15194:2009 (we are still operating from the EU 2009 standard which is now 15 years old).

This process created a consistent definition of a pedalec across all jurisdictions in Australia (incorporating import, sale and use of e-bikes).

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<sup>4</sup> The Australian Cycling and E-Scooter Economy in 2022



In Jan 2021, the Assistant Minister to the Deputy Prime Minister, introduced the [Motor Vehicle Standards \(Road Vehicles\) Amendment Determination \(No 1\) 2021](#) (without consultation with the industry or states), moving the definition from a Pedalec to an EPAC and modifying the definition of a Power assisted pedal cycle.

This created a new definition for the importation of e-bikes.

NSW was the only Australian state or territory that adopted the new definition without modification into road regulations.

Further to that modification, the NSW Minister for Metropolitan Roads introduced [Road Transport Legislation Amendment \(electric skateboards and Bicycles\) Regulation 2023](#) in March 2023, introducing a 500w continuous rated power limit, and creating a variation between NSW and all other Australian jurisdictions, including importation regulations, sales regulations along with road use regulations.

The combination of speed and power (25kmh and 500w) adopted by the Minister is also unique to NSW from any other jurisdiction in the world. The decision was made **against industry advice**, as it was advised that it would promote confusion and increase the risk of poor-quality, higher-powered units in NSW.

The change to NSW regulations, created the fundamentally flawed situation whereby there are currently different definitions of a Pedalec/EPAC/power assist pedal cycle/power assisted bicycle across the federal and state departments involved in the 'life' of an e-bike.

- Federal Dept of Transport – relating to import
- Standards Australia/ACCC – relating to sale
- NSW Dept of Transport – relating to use

The changes to the definition also created the situation that the largest mainstream suppliers of drive units and batteries into the Australian LEV market, do not supply an e-bike built to NSW unique specifications as it would be 'more trouble than it's worth.'

Coinciding with these changes, the Federal Department of Transport released the ROVER administrative portal for the management of import applications and approvals under the Road Vehicle Standards (RVS) legislation on the 1st of July 2021.

The ROVER system modified the import permit for an EPAC/Pedalec/power assisted cycle to an 'Advisory Notice' under the title of 'that thing is not a road vehicle' (although e-bikes are defined as road vehicles under the Act).

Prior to the ROVER system the importation of any shipment that included an EPAC/Pedal/Power assisted cycle required a permit. Under the ROVER system guidelines, this requirement was withdrawn.



*‘While you don’t need permission to import vehicles that are not road vehicles, you may like to apply for an advisory notice through [ROVER](#), the department’s online application and approval portal. The advisory notice will confirm that the thing you are importing is not a road vehicle. You’ll have to answer questions about the e-scooter and provide the manufacturer’s specifications. The fee for an advisory notice is \$55.’<sup>5</sup>*

In 2018, the federal government also withdrew an exemption to the 5% import tariff on e-bikes imported from countries not featured in a Free Trade Agreement.

The majority of cheaper e-bikes originate in China and do not attract the 5% tariff due to the FTA. The majority of higher quality units attract the 5% tariff due to their point of manufacture, further promoting the import of lower quality e-bikes.

With the modifications of the ROVER import platform, the withdrawal of the tariff exemption and the variations between state and federal definitions of an EPAC/Pedalec/power assisted cycle for import, sale and legal road use, it has created significant confusion and made it easier and cheaper to import inferior quality products (including batteries) that are more susceptible to malfunction.

This process has also decreased the clarity for those charged with ‘policing’ the legislation.

This history has unfortunately been a demonstration of poor consultation, communication and implementation over the last 5 years.

The industry believes that the attempts to improve the definition of an EPAC/pedalec/power assisted cycle were implemented in good faith, but we are aware that many of the actors involved in the process have not previously examined an LEV prior to making the modifications, resulting in a poorer quality outcome.

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<sup>5</sup> <https://www.infrastructure.gov.au/department/media/news/importing-e-scooters-made-easy#:~:text=While%20you%20don't%20need,is%20not%20a%20road%20vehicle.>

## RECOMMENDATIONS

- Undertake a complete review international best practice on battery standards
- Update the NSW e-bike legislation to clarify regulations including methods of assessing/testing of power restrictions for authorities
- Remove ambiguity on capacity for riders to change/modify restrictions on motor output
- Support a national alignment project of regulations, managed through either Cycling Walking Australian New Zealand or the BIA.
- Lobby the federal Government to review and improve the management and policing of the ROVER import portal with an emphasis on the treatment of e-bikes that do not meet EN15194
- Undertake communication campaign to law enforcement to ensure knowledge of current legislation
- Development of e-bike parking guidelines for public and private facilities
- Development of consistent consumer advice on e-vehicles, including a centrally funded and delivered education campaign
- Increase the size and conspicuity for compliance plates on all EPAC's
- Withdraw Power Assisted Pedal Cycle category

## Battery standards

There are many jurisdictions across the world challenged with the management of lithium-ion battery-based vehicles.

The US Senate has announced a Bill to require the introduction of a mandatory consumer product safety standard with respect to rechargeable lithium-ion batteries used in personal mobility devices.

### The Bill

The bill will require that a battery standard will be mandatory and require all lithium ion based light electric vehicles sold in the USA to meet the identified requirements.

This passing of the bill will extend the enforcement of the American battery standard (UL 2271) which is currently only required for all e-bikes in New York city.

In July 2023, the EU introduced battery regulation 2023/1542 to create harmonized legislation for the sustainability and safety of batteries.

The bill includes 6 critical elements-

- CE Conformity assessment
- Battery passport
- Supply chain due diligence
- Extended producer and importer responsibility and registration
- Material recovery
- Replaceability of batteries.

There are a number of quality battery standards required for the use of light electric vehicle products in major jurisdictions, and NSW should support and promote the adoption of these standards.

## RECOMMENDATIONS

- Review the international best practice for battery standards
- Lobby the federal government for the introduction of national battery standard.

## Consumer behaviour

### SPEED

Australia remains a jurisdiction with the 'lowest' maximum assisted speed limits of e-bikes around the world.

The Australian standard is based upon the European standard En15194:2009 version released in 2009.

Since that time, across Europe, a speed pedelec category has been introduced allowing identified e-bikes to travel with motor assistance up to 45kmh. In North America, the speed limits are 32kmh for e-bikes and 45kmh for hi speed e-bikes (similar to Europe). The limit is 32kmh in New Zealand.

One critical reason identified by many consumers for purchasing unregulated or modified e-bikes is often stated as looking for speed for either safety in traffic or to arrive at their destination faster.

The review of speed and an increase of the limit may reduce the number of consumers choosing 'online, unregulated' products.

### INCENTIVES

Tasmania announced in 2023, a \$1.2million incentive fund for the purchase of sustainable vehicles including e-bikes.

The City of Adelaide motion to introduce e-bike purchase incentives passed unanimously on the 30th of January 2024 becoming the first Australian city-based incentives.

In the absence of federal leadership, states and cities are now recognising the benefits of local incentives to promote e-bike purchase.

With the inclusion of specific battery and standards guidelines, these incentives have been shown around the world to promote greater uptake of higher quality e-bikes and improving the quality of the market, including the second-hand market.

The introduction of e-bike purchase incentives will encourage the purchase of higher quality e-bikes.

## RECOMMENDATIONS

- Review international best practice to identify best power and speed restrictions
- Introduce state-based incentives for the purchase of e-bikes utilising a platform and structure that the NSW government introduced for e-vehicle purchase incentives
- Lobby the federal government for the introduction of tax incentives for e-bikes bringing parity with e-vehicles.



## Industry training

The development and delivery of training packages for bicycle mechanics in NSW and across Australia has been poorly supported by Government for a significant period of time.

Under the Australia and New Zealand Standard Classification of Occupations (ANZSCO) rating for skills/careers, bicycle mechanic is rated as a level 5, on a par with a shopping trolley collector and an usher at the movies.

Under the ANZSCO rating, a level 5 skill is described as 'may require some on the job training'.

Bicycles are a road going vehicle which features electronic, hydraulic and mechanical systems, and now may include batteries that are declared dangerous goods, this assessment is not a reflection of the skill requirements of a bicycle mechanic.

This rating has been a factor in many governments reducing and providing minimal support for bicycle mechanic training in Australia.

As a result of the lack of supported training, the development of training units within the packages has failed to be maintained to reflect the requirements of the qualification with regards to lithium-ion batteries

Due to the lack of state and federal support for accredited training, the industry has supported the development of fee for service training packages, brand specific training programs and the introduction of international courses to increase awareness and skill development in the industry.

### RECOMMENDATION

- Fund the delivery of fee for service specific training units on the management, storage and handling of lithium-ion batteries in the bicycle industry.

## Data / what is really happening?

The collection of accurate data on lithium-ion battery fires is an issue that many fire authorities across Australia have identified as critical in planning future direction.

There is no agency in Australia that has accurate data on LEV lithium battery fires.

- Number of light electric vehicle lithium-ion battery fires
- Type of fire (scooter/hoverboard/e-bike)
- History/damage of system/battery/charger
- Brand of system
- Modifications to system
- Was it road legal?
- Other reason for overheating

In a presentation to the bicycle industry on the 19th of January 2024, a Senior Fire Investigator of the SA Metropolitan Fires Services said,

‘it is overwhelmingly the case that the fires occur when users are tampering..... or importing online and making their own homemade systems, overwhelmingly they are the cause of the fire.’

‘It is quite uncommon if users purchase all of the components together and they are used in accordance with the manufacturer’s instructions, it is very rare that there is an instance when they fail.’

<https://www.bikeoz.org/batteryforum>

‘Based on experience we ‘know’ what are the types of batteries that are burning, but we do not have the data to support future decisions.’

### RECOMMENDATION

- Fund a centralised data collection project to identify accurately the number and cause of all lithium-ion battery fires.

## Handling of batteries

The industry has developed a series of resources for bicycle retailers and wholesalers.

These include:

- Standard operating procedures
- Storage systems
- Handling procedures
- Transport
- Recycling

Under a Green Wheels program funded by NSW EPA, each NSW bicycle retailer is evaluated for its ability to reduce its carbon footprint.

The safety and security of collecting and storing damaged or end of life batteries was identified as a high priority but extreme risk.

The result of this assessment has been that many retailers are not willing to collect end of life batteries, leading to 'dumping' of batteries from consumers in general waste (these batteries cannot be collected in general battery deposit bins at Bunnings (or similar) due to the energy capacity).

### RECOMMENDATION

- Fund a coordinated program that provides a safe storage solution at bicycle retailers and distributors to hold damaged and end of life batteries e-bike batteries until transport to an appropriate recycling centre.

## E-Scooters

The BIA does not have a specific focus on e-scooters but would identify that the lack of clarity provided by the federal and NSW state governments has significantly contributed to the proliferation of inferior quality products in NSW.

The impact of changing or inconsistent legislation has been identified earlier regarding e-bikes

### RECOMMENDATIONS

- Lobby the federal government for the introduction of nationally consistent definitions of e-scooters and the promotion of consistent regulations relating to their use.
- Lobby federal government for the inclusion of a specific category for e-scooters requiring an import permit on the ROVER importation portal.
- Introduce a nationally consistent regulation for the use of e-scooters in NSW.