

**Submission
No 137**

INQUIRY INTO USE OF E-SCOOTERS, E-BIKES AND RELATED MOBILITY OPTIONS

Organisation: Australasian College of Road Safety

Date Received: 16 August 2024

ACRS Submission to the inquiry into the use of e-scooters, e-bikes and related mobility options



**AUSTRALASIAN COLLEGE OF
ROAD SAFETY**

To:

Legislative Council Portfolio Committee No. 6 – Transport and the Arts
NSW Parliament

e: portfoliocommittee6@parliament.nsw.gov.au

p: (02) 9230 2739

For further information please contact:

18 August 2024

Table of Contents

Introduction	3
E-Mobility safety.....	3
Research.....	4
ACRS NSW e-mobility safety forum.....	5
Enforcement considerations.....	7
Recommendations	7
Conclusion	9
References.....	10

Introduction

The Australasian College of Road Safety is the region's peak membership association for road safety with a vision of eliminating death and serious injury on the road. Our members include experts from all areas of road safety including policy makers, health and transport professionals, academics, community organisations, researchers, federal, state and local government agencies, private companies and members of the public. The purpose of the College is to support our members in their efforts to eliminate serious road trauma through knowledge sharing, professional development, networking and advocacy. Our objectives include the promotion of road safety as a critical organisational objective within government, business and the community; the promotion and advocacy of policies and practices that support harm elimination; the improvement of relative safety outcomes for vulnerable demographic and user groups within the community; the promotion of post-crash policies and practices; and the promotion of a collegiate climate amongst all those with responsibilities for and working in road safety.

The College believes that we should prevent all fatal and serious injuries on our roads; the road traffic system must be made safe for all road users; system designers should aim to prevent human error and mitigate its consequences; life and health are not exchangeable for other benefits in society; and that all College policy positions must be evidence based.

In this submission, ACRS recommends:

- Transport and mobility plans need to be integrated to promote a wide range of transport and mobility options
- Commitments to reduce road trauma require legislative and regulatory measures which enable and provide the safe use of electric micro-mobility devices for all road users, including device users, pedestrians and other road users
- Continued research into safety issues facing all e-micromobility options, including e-scooters and e-bikes. Nationally consistent definitions and data would be a significant enabler of this research

E-Mobility safety

There are various asserted benefits of micromobility devices, including greater mobility choices, reduced traffic congestion, environmental benefits and for some devices (such as e-bikes), health and fitness benefits.⁽¹⁾ The adoption and use of private and shared e-scooters presents a particular challenge, not only within NSW but across Australia and internationally. Some e-scooters and other e-micromobility devices may present as active transport options and solutions for 'last kilometre' travel solutions, but these devices (excluding e-bikes that still require pedalling) do not require any physical activity or action from the rider to travel.

Despite the identified benefits of electric personal mobility devices, there are significant safety issues that influence the current and anticipated future usage of e-mobility solutions, including electric scooters, electric bikes and electric skateboards, as well as other electric mobility devices. E-scooters are significantly different from pedal cycles and e-bikes, and this results in different risks and trauma outcomes. This is influenced by their smaller wheels, electric power that can be fully controlled by the throttle and the higher and further forward position of the rider's centre of gravity.

There is a range of risks that e-micromobility devices pose to their users, pedestrians and other users of similar devices. The current legislative, regulatory and operating environments do not sufficiently protect these groups from the risks of experiencing trauma when using these devices or from others using these devices.

The NSW Road Safety Action Plan 2026 is the strategic direction for reducing road trauma in NSW.(2) The document contains NSW Government targets to reduce road trauma which apply to all road users and industries. The Roads Minister's Foreword (Page 2) describes the plan:

The Plan is based on the proven Safe System approach to road safety, enabling safe roads, speeds, people, and vehicles, which when implemented together allow the road systems to not only keep us moving, but, more importantly, keep us safe.

Commitments to reduce road trauma require legislative and regulatory measures which enable and provide the safe use of electric micro-mobility devices for all road users, including device users, pedestrians, and other road users. The Safe System approach is the lens through which e-micromobility devices are introduced to protect users and others from the risk of fatal or serious injuries. Taking systems approach to the multifaceted challenges in e-micromobility can enable device use while protecting users, riders, pedestrians and other road users in NSW.

The United Nations General Assembly Resolution 78/148 has proclaimed 2026-2035 as the United Nations Decade of Action on Sustainable Transport(3). That resolution reaffirms the UN commitment to:

Promote access for all to safe, age- and gender- responsive, affordable, accessible and sustainable urban mobility...by integrating transport and mobility plans into overall urban and territorial plans and promoting a wide range of transport and mobility options.

Research

Extensive and detailed publications on micromobility provide insights into the multifaceted challenges to safely implement legislation, regulation and devices globally. Key safety issues for e-scooter riders identified by the European Transport Safety Council (ETSC) were(4):

- 20-50% of casualties attending hospital suffer head injuries
- Very few riders wore helmets
- More riders fall in single vehicle collisions than by colliding with other road users and
- Intoxication and blood alcohol concentration is a problem

Australian research found that during the research period, alcohol use was reported by 34% of people suffering e-scooter injuries and helmet use by only 33%.(5) Data on e-scooter and e-mobility device usage is poorly recorded and underrepresents current trauma outcomes. Injury surveillance and safety outcomes require improved data standardisation and sharing nationally.

The ETSC found that the design of e-scooters places the rider at risk of falls and head injury because “loss of control when navigating defects or changes in surface level is more likely at higher speeds and results in more severe head injuries” and that “surface defects caused half of falls in a study of e-scooter casualties”.(4)

A 2023 American study found that e-micromobility devices represented a 117% increase in emergency department treatments between 2017 and 2021, and that the largest share of these were for e-scooter related injuries.(6) Between 2020 and 2021 the study found that e-scooter injury treatments increased by 66% and the literature review conducted demonstrated that a large proportion of “injuries result from single-vehicle crashes and falling off on roadways, sidewalks, and bike lanes (page 4). Conflicts with motor vehicles accounted for 72% of e-scooter crashes, demonstrating the importance of safe, separate infrastructure and intersections for e-micromobility users. Helmet use was also a significant safety risk identified in this research. ACRS highlights recommendations from the Royal Australasian College of Surgeons that outline:(7)

- The need for e-mobility legislation providing nationally consistent laws to ensure the safe use of personal mobility devices while being aligned with appropriate law enforcement measures to be implemented; and
- Nationally consistent data collection is a critical system component to enable the impact of e-mobility devices to be measured consistently and accurately and to allow any emerging issues to be identified and addressed

ACRS supports continued research into safety issues facing all e-micromobility options, including e-scooters and e-bikes. Nationally consistent definitions and data would be a significant enabler of this research.

NSW is not the first jurisdictions to consider issues around e-mobility. The United Kingdom Parliamentary Advisory Council (PACTS UK), the International Transport Forum, and ETSC have produced reports and recommendations to improve e-mobility safety, especially for e-scooters and their riders.(4, 8, 9)

ACRS NSW e-mobility safety forum

ACRS NSW Chapter hosted a public forum on 6 August 2024 to present various expert perspectives on the e-mobility safety challenges and experiences. The five presenters included a local council, the NSW Government from Transport for NSW, Transurban, a trauma and medical expert, and an academic research expert. A summary of key issues raised by each presenter is outlined below.

Mr Philip Devon, Manager, Transport Network, Northern Beaches Council, highlighted challenges around young e-bike riders under 16 years of age who have not been exposed to road rules of extensive safety education as part of the Graduated Licensing Scheme and lack knowledge around road rules. There were extensive concerns around riding and speeding on paths and roads while not wearing helmets, and riding tampered devices to remove the need to pedal, and exceeding legal speeds of 25km/h. To address community concerns and these safety challenges, Northern Beaches Council took an innovative and successful approach in developing an e-bike safety campaign and used behavioural science to design messaging to a challenging demographic. These interventions achieved extensive reach across the Local Government Area through local stakeholders, posters and signs, outdoor activations and installations in schools.

Mr Bernard Carlon, Chief, Centres for Road Safety and Maritime Safety, Transport for NSW, highlighted the benefits of active transport along with the road trauma challenges and multi-faceted challenges facing legislators and e-mobility device users. In NSW between 2019 and 2023, there were 53 pedal cyclist fatalities and 9536 serious injuries, while there were 231 pedestrian fatalities and 4704 serious injuries.

Mr Carlon identified the need to take individual approaches to different forms of e-micromobility devices, with e-scooters and e-bikes not being comparable. The users, manoeuvrability and crash profile of each of the devices is unique and needs to be addressed for its own risk profile and responded to appropriately. A key challenge is that the Federal Government legislation has not kept pace with market changes regarding the importation laws relating to e-micromobility devices.

Mr David Beck, Road Safety Technical Manager, Transurban, provided insights around the large number of delivery riders and international student riders using motorway tunnels and ramps who may not be aware of or understand NSW road rules and signage. A lack of cyclist-specific road navigation platforms further compounds the problem. Mr Beck identified that the safety risks are not only to e-micromobility riders, but also staff who help safely remove them from tunnels, and other road users who must take evasive actions and reduce their travel speed to avoid crashes with riders in tunnels and on freeways.

Dr John Crozier, vascular and trauma surgeon, provided extensive insights into the types and extent of trauma that e-micromobility users face, especially e-scooter riders. Dr Crozier highlighted the life altering trauma experienced by e-scooter users involved in crashes, the most common type of which are falls from the e-scooter. He also noted that despite data collection challenges, there is an increasing trend of emergency department presentations for e-scooter related injuries in Queensland and across Australia. Prevalent contributing risk factors include alcohol use, not wearing a helmet and speeding. Dr Crozier highlighted that future e-micromobility research should focus on detailed and consistent crash data, insurance requirements, lawsuit outcomes, terms of use and liability for shared schemes, understanding user knowledge (via focus groups, surveys) and how infrastructure can be harmonised to protect these vulnerable road users from harm.

Finally, Professor Narelle Haworth, Centre for Accident Research and Road Safety – Queensland, presented academic research on e-micromobility devices and their safety challenges, and the differences between e-scooters and e-bikes. The main differences between the two highlighted by Professor Haworth are the vehicles, the users and the rules. E-scooter rider safety concerns are the small wheels and electronic control systems, with falls being the most common crash type whether on road or paths. These echo the findings presented by Dr Crozier, who presented the wide range of injuries, but particularly the head injuries, upper limb fractures (including shoulder, elbow and wrist) and lower limb injuries that e-scooter riders suffer. Professor Haworth also presented evidence that private e-scooters reduced walking trips by 60%.

E-micromobility devices would benefit greatly from separated and connected infrastructure to safely separate them from vehicles on the road and from vulnerable pedestrians. This infrastructure should also provide safe, lower speeds (including speed limiters, tamper-proof devices) and safe, equitable intersection design. Footpaths often provide dangers to e-scooter users, especially when they are cluttered or damaged.

A broad range of perspectives were presented during this forum, and all recognised a range of risks to riders and pedestrians that are best addressed through a systems approach and require a range of legislated and mandatory controls at multiple levels of government.

A recording of the forum can be made available to the Committee.

Enforcement considerations

The adoption of e-mobility devices presents challenges for enforcement and the safety of riders and other road users. Several rideable vehicle configurations are already prohibited in NSW and cannot be registered or used on roads or road-related areas.⁽¹⁰⁾ Ten years ago, petrol-powered bicycles, perhaps the forerunners to modern e-bikes, were deemed unsafe and defined as motor vehicles. They present a road safety issue, in part because of their use by disqualified drivers.⁽¹¹⁾

E-bikes and e-scooters currently being sold and ridden are not immune from unlawful tampering and modifications which make the devices go faster. A high-profile case in the Australian Capital Territory involved a disqualified driver who rode a speed-tampered e-scooter on a path along the Majura Parkway at speeds of up to 105 km/h. The presence of illicit drugs (methamphetamine) was also a factor in the incident.⁽¹²⁾ The use of speed-tampered e-mobility devices can undermine public support for safe e-mobility usage and take-up. Anti-tampering devices should be installed directly from the factory to minimise (and ideally negate) the ability of end-users to tamper with devices.

Where criteria for maximum weight, speed and wattage are prescribed in legislation, evidence from speed measuring devices and, in the case of wattage, mechanical examination, might be required to prove an offence beyond a reasonable doubt. Legislators could look for standards such as “e-bikes must not have a hand-throttle” which are more easily identified by the riding public, the police, and the courts.

Finally, there are competing demands for police resources. There is an opportunity cost in tasking police resources away from highway speed and alcohol enforcement, for example, to monitoring e-bike and e-scooter riding on footpaths, shared paths etc. It is best to design a system where enforcement is part of the solution, not the only solution.

Recommendations

Recommendation	Details
Apply a Safe System lens to unsafe e-scooter use	Immediate action is taken to address unsafe private and shared scheme e-scooter use at all levels of government by applying a Safe System lens
Connected, separated infrastructure delivery	E-mobility devices should not be permitted for use on footpaths or roads and require dedicated, protected and connected infrastructure for their use. A well-connected micromobility network would support transport using e-micromobility devices and pedal cycles. E-scooters should not be able to use footpaths unless speed limited, which requires challenging technical implementation that may be subject to tampering by users
Mandatory helmets	Riders must always wear an Australian Standards approved helmet that is securely fitted and fastened to their head. This aligns with existing Australian helmet wear requirements and can contribute to reducing head trauma for riders

Solo riders only	There should only be one person riding an e-mobility device at any time (exceptions should exist for e-bikes designed to carry multiple passengers). E-scooter riders must always ride solo.
Anti-tampering	Should be prohibited by legislation for e-microbility devices. This also requires importation legislation to be updated to ensure that devices are built and imported to Australia with anti-tampering built-in to all devices
Age limit of 16 years or older	There should be a minimum age limit of 16 years (or older) for e-scooter riders
Speed limited devices	Where e-micromobility users share a space with pedestrians or shared zones, a 6-10km/h built-in speed limit could reduce conflicts between riders and pedestrians and provide significantly greater safety outcomes due to the impact that speed has on trauma outcomes in the event of a crash. Private e-mobility devices must be speed limited with anti-tampering devices from the factory to an absolute maximum speed of 20km/h. This speed is higher than the average speed of many pedal cyclists in urban areas and should be the maximum speed for e-scooters.
Drink riding, drug riding and handheld mobile phone use should be banned	These actions must be prohibited by legislation in NSW and enforceable by NSWPF to ensure the safety of e-micromobility device users and others.
Rider education	Provide rider education for younger users to enable safer use of e-micromobility options, encouraging helmet use and safe interactions with other road and shared path users.
Mandatory design rules	Set universal standards for devices, including for e-scooters: <ul style="list-style-type: none"> • maximum unladen device weight of 20kg • Maximum continuous rated motor power of 250W • minimum wheel sizes (front 30.5cm and rear 25.5cm) • Independently controlled front and rear brakes • Front and rear lighting requirements and mandatory use at all times • mandatory audible warning devices • aligned technical standards when regulating devices permitted for sale on the Australian market All e-micromobility devices should be subject to universal design standards.
E-micromobility fleet operator responsibilities	Operators of e-micromobility fleets should <ul style="list-style-type: none"> • Support safe riding behaviour, • Implement mandatory training pre-first ride, • geo-fence speed control where relevant, • Switch devices off if double riding and/or alcohol use is detected • maintain devices in safe working condition with regular checks of and maintenance of brakes, lights and batteries, • collect and report telematics data on speeding, acceleration/deceleration or distracted riding to provide users with post-trip feedback to promote safer riding.
Enforcement	NSWPF must retain or be equipped with the appropriate powers to police and enforce offences relating to all e-mobility devices

Conclusion

The information contained in this submission and the topics covered are by no means exhaustive. Issues such as funding, battery safety, rider and point-of-sale education, insurance ramifications, importation requirements, Australian design rules, consumer law, work health and safety, and infrastructure standards are also relevant to e-mobility. This highlights the importance for a systems-based approach as decisions made with one outcome in mind can have wide-ranging consequences.

The ACRS appreciates the opportunity to make this submission and contribute to improving community safety. We are particularly keen to highlight that”

- Transport and mobility plans need to be integrated to promote a wide range of transport and mobility options
- Commitments to reduce road trauma require legislative and regulatory measures which enable and provide the safe use of electric micro-mobility devices for all road users, including device users, pedestrians and other road users
- ACRS supports continued research into safety issues facing all e-micromobility options, including e-scooters and e-bikes. Nationally consistent definitions and data would be a significant enabler of this research.

Please do not hesitate to contact us should you need any further information.

Mr Michael Timms
NSW Chapter Chair
Australasian College of Road Safety

Dr Ingrid Johnston
Chief Executive Officer
Australasian College of Road Safety

References

1. National Transport Commission. Barriers to the safe use of personal mobility devices, Decision Regulation Impact Statement. <https://www.ntc.gov.au/sites/default/files/assets/files/NTC-Decision-RIS-PMDs.pdf>: NTC; 2020.
2. NSW Government. 2026 Road Safety Action Plan [cited 2022 10 July]. Available from: <https://towardszero.nsw.gov.au/roadsafetyplan>.
3. United Nations General Assembly. Strengthening the links between all modes of transport to achieve the Sustainable Development Goals: Resolution A/RES/78/148 Seventy-eight session. <https://documents.un.org/doc/undoc/gen/n23/418/68/pdf/n2341868.pdf?token=Gpf5FOLvrPhChHA3ee&fe=true>: UN; 2023.
4. Yannis G, Crist P. Safer Micromobility: Technical Background Report. <https://www.itf-oecd.org/sites/default/files/safer-micromobility-technical-report.pdf>: OECD/ITF; 2024.
5. Cevik J, Read D, Putland M, Fazio T, Gumm K, Varma A, et al. The impact of electric scooters in Melbourne: data from a major trauma service. ANZ J Surg. 2024;94(4):572-9.
6. Stoeltje G, Hansen T, Hwang W, Geisbrecht T. Micromobility Regulation: Best Practices Review. Report TTI-05-04. https://safed.vtti.vt.edu/sdm_downloads/tti-05-04-micromobility-regulation-best-practices-review/: U.S. Department of Transportation; 2023.
7. Vallnuur K, Beck B, Smyth T, Pfrunder L. Electric Mobility in Australia: Royal Australasian College of Surgeons; 2022 [cited 2024 13 August]. Available from: <https://www.surgeons.org/about-racs/position-papers/electric-mobility-in-australia-2022>.
8. Winchcomb M. The Safety of Private E-Scooters in the UK: Final Report. <https://www.pacts.org.uk/wp-content/uploads/PACTS-The-safety-of-private-e-scooters-in-the-UK-Final-Report.pdf>: Parliamentary Advisory Council for Transport Safety, ; 2022.
9. European Transport Safety Council, Parliamentary Advisory Council for Transport Safety. Recommendations on Safety of E-Scooters. <https://etsc.eu/recommendations-on-safety-of-e-scooters/>: ETSC; 2023.
10. NSW Government. Prohibited vehicles [cited 2024 13 August]. Available from: <https://www.nsw.gov.au/driving-boating-and-transport/vehicle-registration/unregistered-vehicles/rules-for-unregistered-vehicles/prohibited-vehicles>.
11. Blackman T. Disqualified NSW driver stung riding petrol-powered bicycle. Nine News <https://www.9news.com.au/national/man-charged-after-riding-illegal-motorised-bicycle-on-public-roads/737454ee-558c-442f-b926-2ee87cc09140>. 2022 30 August.
12. McLean C. Canberra man who rode e-scooter at 100 kph before trying to flee police sentenced to one month in jail. ABC News <https://www.abc.net.au/news/2023-05-04/canberra-man-caught-speeding-on-e-scooter-jailed/102299854>. 2023 4 May.