Australian Electric Vehicle Association

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To: Community Development and Justice Standing Committee, Parliament of Western Australia

Re: **Inquiry into the safety, regulation and penalties associated with the use of eRideables**

**Introduction**

Thank you for the opportunity to contribute to this inquiry on personal electric mobility, commonly referred to as e-rideables. I write to you in my capacity as both National President and the Western Australian Director for the Australian Electric Vehicle Association (AEVA) – a volunteer-run, not-for-profit organisation dedicated to the full electrification of transport as quickly as possible. We represent the consumers and end-users of electric vehicle (EV) technology, whether as drivers, riders, commuters or enthusiasts. Since 1973, our organisation has advanced the case for electrification of all modes of transport as a means to shield Australia from global fuel price shocks, eliminate road transport-related air pollution, significantly reduce greenhouse gas emissions, and to enable a more equitable and affordable transport system.

This inquiry has come about because of an unfortunate rise in accidents and risky behaviour on e-rideables. Their popularity and the motivations of those who ride them, cannot be ignored. We believe that all such devices should be embraced with appropriate regulation.

**Summary of Recommendations**

| **Issue** | **AEVA's recommendations** |
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| Non-compliant e-rideables: | • Enforce the existing rules on unlicensed and non-compliant devices.<br>• Maintain existing importation conditions on devices and parts, but;<br>• Establish a clear pathway for design rule compliance, licensing and compulsory third party insurance for any e-rideables which would exceed the limits set in the Road Traffic Code.<br>• Deliver a comprehensive public information campaign around these models, and how to get them licensed, for both retailers and individuals. |
| Compliant e-rideables: | • Maintain existing rules around maximum top speed, use on public roads and shared paths<br>• Support retailers of these devices with clear guidance around their capabilities, and the obligations of riders<br>• Continue supporting e-rideable hire companies, but with specific pick-up and drop-off locations, well clear of high pedestrian activity |
| Active transport budget and infrastructure | • Increase active transport from current ~1% to 20% of the state transport budget, in line with UNEP recommendations.<br>• Commit to construction of a comprehensive network of protected bike lanes, shared paths and safe spaces to ride<br>• Encourage e-rideables as a valid and safe form of transport through a public advocacy campaign<br>• Allow smaller e-rideables (scooters and folding bikes) to be taken on public transport, with dedicated space for stowing |

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| Fire risk and safety of devices | • Work with industry regulatory bodies and agencies to ensure all charging equipment carries a regulatory compliance mark<br>• Establish a battery inspection and certification system where any battery may be inspected for compliance<br>• Develop guidance around safe places to store and charge e-rideables, separated from habitable buildings and spaces<br>• Develop guidance around e-rideable charging best practice<br>• Provide secure parking for e-rideables at transport hubs |

**Explanation and analysis**

The AEVA believes that the revolution in electric personal mobility is a net positive force which should be embraced. It should be steered towards a fair and equitable system, enabling freedom of mobility in an otherwise sprawling, car-dependent urban landscape. Every person on a bicycle, e-bike, e-scooter or skateboard, electric unicycle or moped, or electric motorcycle (broadly taken as 'e-rideables') is *one fewer person travelling by car, and typically an oil-burning car at that*.

The e-rideable revolution has been unfolding for the past 20 years, driving innovation and advancing efficiencies in both the drive technology and mass-production. This has lowered costs substantially, meaning owning an electric bike or scooter has never been cheaper, or more accessible. It is no surprise these devices have been so popular - car ownership is expensive and burdensome by comparison, while the ability to ride and park them almost anywhere offers supreme convenience. Unfortunately, this growth in popularity has also resulted in increased injuries and deaths relating to their use and abuse.

The AEVA believes that all forms of electric personal mobility should be supported, but appropriately regulated. We acknowledge these devices come with risks for both users and bystanders, and that riders have a responsibility to ensure the safety of themselves and others. The probability of a crash is defined by the actions of a rider and the environment they're travelling in, but the severity of the consequences depends on the kinetic energy of the vehicles involved.

The existing laws around e-rideables are mostly adequate, but they are frequently poorly understood and often not well enforced. The prevalence of non-compliant, yet otherwise compelling zero-emission e-rideables proves that ***their popularity cannot be ignored***, and in our further view, ***should be given a pathway to legality***. Critically, ***the provision of safe, separated infrastructure*** in the form of bike lanes and principal shared paths, is the single most important factor in ensuring the safety of all bicycle and compliant e-rideable users.

Our submission recommends including high-powered e-rideables in the moped or motorcycle category with a clear pathway for regulation and licensing. We call for a significant increase in the active transport budget, allowing construction of protected cycling infrastructure to boost participation. We believe small e-rideables should be permitted on public transport such that traversing Perth is less of a challenge. Finally, we support the development of clear guidance around structures for the safe storage and charging of e-rideables to prevent the propagation of damaging or life-threatening fires. Regulations just need to catch up. *Let's not throw the baby out with the bathwater*.

**Current legislation and regulations**

Western Australia's Road Traffic Code classifies vehicles into categories, ranging from bicycles, e-bikes, e-scooters, mopeds, motorcycles, cars and heavy vehicles. Much effort is put into defining a vehicle type, such that it may be permitted to operate on public roads, or not. Any road-going

vehicle in Australia must comply with the relevant Australian Design Rules (ADRs). If a vehicle has not been listed in the Register of Approved Vehicles (RAV) it may not be operated on public roads.

The main categories are summarised in Figure 1. This chart helps clarify some of the terms used to describe various electric personal mobility devices, but does not categorise them based on their legal right to be used on public roads.

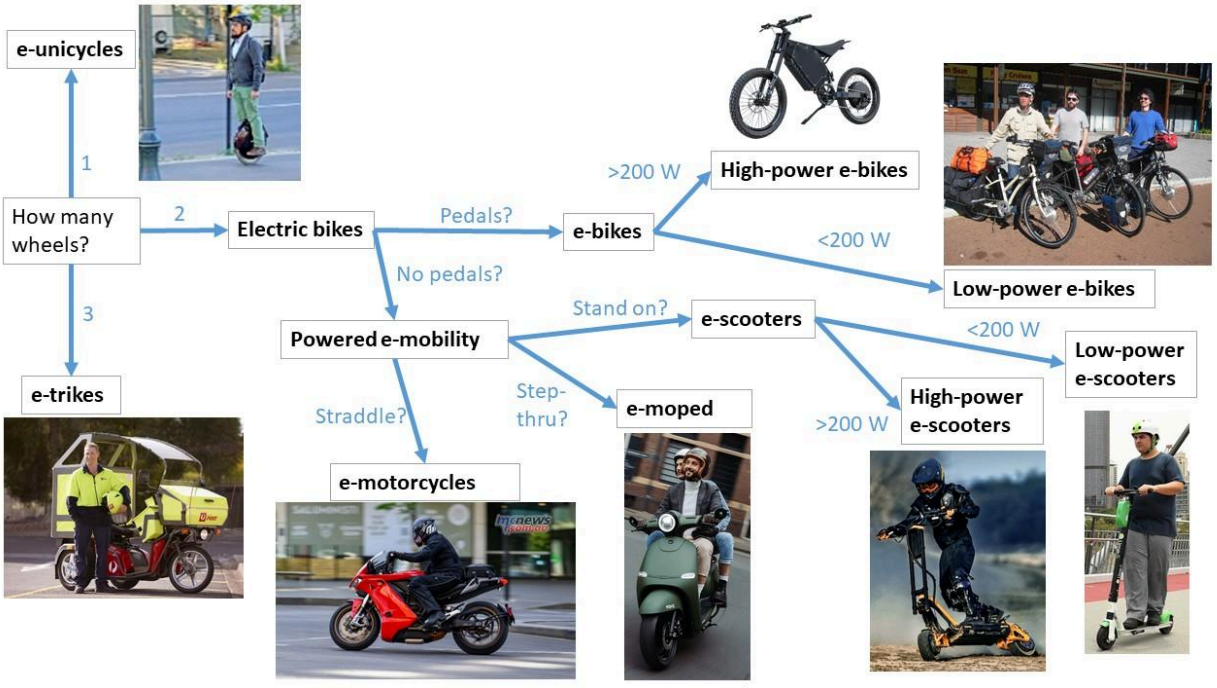


Figure 1: System map describing various e-rideable devices

Each e-rideable category has within it a wide range of capabilities, including payload, acceleration and top speed, however the law makes some very specific delineations for any unlicensed e-rideable which is allowed to be ridden on public roads or shared paths.

The easiest to define is an un-powered **bicycle** – two wheels, pedals and brakes. Weighing as little as 7 kg and propelled entirely by the rider. A cyclist can easily achieve speeds of 35 km/h on flat ground, but the average speed for most is about 20 km/h. Bicycles are allowed on all shared paths and public roads (except motorways) and children of any age may ride them. After about 140 years of regular use, the bicycle is a well-established mode of transport the world over. Bicycles and their riders quite reasonably do not require licensing, registration, or compulsory third-party (CTP) insurance as the risk of causing serious injury or death is very low.

An **e-bike** is any two-wheeled bicycle which has an electric motor for assistance. The current Road Traffic Code defines an E-bike as a pedal-operated bicycle with up to 200 watts (W) of powered assistance. The electric motor must cut out at speeds over 25 km/h. E-bikes fitting this category also do not require licensing, registration or CTP insurance. In the AEVA's view, these would be considered low-powered E-bikes (Fig. 1). **Electric cargo bikes** are larger, heavier E-bikes which still have a speed limit of 25 km/h but may have a 250 W motor.

Many powered mobility devices are on the market, where the rider does not contribute to propulsion. These would include electric **unicycles**, **e-scooters, e-skateboards** and larger, heavier e-rideables such as **e-mopeds** and **e-motorcycles**. E-scooters such as those provided by hire operators in many Australian cities fit the definition of an e-rideable as defined in the Road Traffic Code. They do not require a license, registration or CTP insurance, but they often have restrictions on where they may be ridden, and if they are allowed on footpaths. Some states allow them to be ridden on footpaths below 10 km/h, and on shared paths or city streets where the speed limit is 50

km/h or less. The devices must not exceed 25 km/h under power. WA's regulations also prohibit anyone under the age of 16 from riding these. Anyone under 16 can still ride a motorised scooter, provided it is below 200 W power and not exceed 10 km/h.

Several companies have established hire programs around compliant e-rideables, and they can be found in most Australian cities and regional centres. The operations have received criticism though, mainly around idle scooters being a nuisance and their inappropriate use on footpaths in high pedestrian traffic areas. Some have geofencing features, preventing them from being ridden in pedestrian malls, for example. AEVA supports the continued operations of these businesses, but recommends limiting the locations where scooters may be docked. All other conditions for their use should remain in place. On geofencing and speed limiting - one must wonder, if this is such an effective and desirable policy for e-rideables, why not extend it to all automobiles?

Any new e-rideable with a top speed of less than 25 km/h, would be considered compliant under the current code, while those exceeding these limits would generally fall under the e-moped or e-motorcycle definition. Unless approved by the Commonwealth, they remain illegal to operate in public spaces. In WA, a **moped** is considered to be a powered two-wheeled vehicle with no more than 4,000 W of power, and not exceed 50 km/h at full speed. These must be licensed, registered and carry CTP insurance. The rider must at least have a WA-issued C-class (car) driver license and be older than 16 years. It is possible for a 16-year-old Western Australian to acquire an R-N class (moped) license before getting a C-class license.

Finally, an **E-motorcycle** is any two-wheeled, electric-powered vehicle capable of exceeding 50 km/h. This puts the vehicle into the L category (motorcycle) as defined under the Commonwealth Road Vehicle Standards Act. There are two categories of motorcycle; learner-approved (LAMS) and open class. LAMS bikes must have a power-to-weight ratio of 150 kW/ton or less. Riders must have an R-E class license to ride a LAMS approved bike, while an unrestricted R-class (motorcycle) license is needed to ride an open class motorcycle, electric or otherwise. As per the Road Traffic Code, any moped or motorcycle which is licensed for use on public roads, cannot be ridden on shared paths or footpaths, nor can they travel in bicycle lanes or other dedicated cycling infrastructure.

**Slipping through the cracks**

The space between compliant e-rideables and mopeds or motorcycles is where the non-compliant e-rideables sit. Because their top speed easily exceeds 25 km/h, they are no longer road-legal, but their *purchase and possession is not illegal*, *nor is their use on private land*. Moreover, many are fitted with a power limiting switch, giving them a plausible adherence to the code. Some bikes are marketed as "Road legal with the flick of a switch", but clearly, the converse is also true. This feature is non-compliant, and would rightfully be confiscated under the current laws. These devices aren't fitted with ADR-compliant lights, brakes or turn signals, so they cannot be licensed out of the box, but should the importer wish to, the Commonwealth does provide the means for a vehicle to be added to the RAV.

This is not unique to electrically powered bikes. It is possible to purchase an unlicensed petrol motorcycle from a dealership for use on closed tracks and farms, however most models are also on the RAV. Most high-powered e-bikes and e-scooters are not listed in the RAV and with a few exceptions, cannot be licensed. It must be pointed out that the e-motorcycle being ridden by the teenager causing the recent tragic death of a woman in Edgewater, was a model for which a *road-licensed option already exists*.

It is the view of the AEVA that any e-rideable which does not meet the power and top speed classifications set by the Road Traffic Code, ***should be able to be licensed as a moped or motorcycle***. Like any other L class vehicle, AS/NZS1698 compliant helmets must be worn, and the

bikes may not be ridden on shared paths or bike lanes. Licensing would allow riders to contribute to, and carry CTP accident insurance, while offering a level of accountability through number plate identification. The licensing process should be straight-forward, and available to both retailers and individuals.

Licensing these bikes would require retailers to become registered motorcycle dealerships, and this demands further compliance with conditions set by the Department of Local Government, Industry Regulation and Safety. If the bike was purchased directly from overseas, the owner should have access to the same licensing system, albeit without the benefit of bulk registration discounts normally available to dealerships. This will require certified automotive engineers to review the e-rideable for key safety features, as per the current system for vehicle modifications and Individually Constructed Vehicles.

AEVA implores that if such e-rideables are not licensed or fitted with compliant equipment, then *they should remain illegal to ride on public roads and shared paths* until registered. The success of such a strategy requires effective enforcement from WA Police and Main Roads officers, along with cooperation from any retailers that sell the devices locally. An excellent public information strategy, which includes retailers should be developed and promoted widely.

We understand there have been calls for the banning of the importation of any, or all e-rideables. AEVA cannot see this being workable, considering the number of devices here already. Moreover there are hundreds of online retailers around the world selling these devices, and whole DIY communities dedicated to building such bikes from parts. Many of our members have forged successful careers in automotive and electrical engineering through their interest in building electric bikes and scooters. An import ban would require Australian Customs and Border Force to inspect even more packages than they do currently, while the likelihood of otherwise compliant equipment getting held up is increased. In the spirit of harm minimisation, we feel that creating a pathway for legal registration and compliance is the better option.

**Personal protective equipment and safe infrastructure**

Western Australia, like other states and territories, mandates the wearing of helmets when riding a bicycle. This has since been extended to include the riding of e-bikes and other e-rideables which meet the classifications detailed above. Wearing an AS/NZS 1698 compliant helmet for mopeds and motorcycles has been compulsory for decades longer. The reduction in severity of head trauma through a well fitted helmet is irrefutable, even though the introduction of mandatory helmet laws was followed by a significant and sustained drop in cycling participation. Some in the medical profession are calling for mandatory full-face helmets for all e-rideables, particularly given the higher incidences of facial injury with stand-on devices. Such helmets are significantly more expensive, and in our view their use should be compulsory for only moped and motorcycle riders.

The hierarchy of controls is used to mitigate risk in any activity with health and safety considerations. Beginning with Elimination, the most effective mitigation approach is to remove the hazardous situation completely. Substitution and Engineering solutions are next, followed by Administrative measures, and finally personal protective equipment (PPE) as the last line of defence against harm. When the most obvious hazard facing cyclists is high speed automobiles, the effectiveness of a helmet is extremely limited. Thus, it is essential that separated, protected, automobile-free cycling infrastructure (bike lanes) be provided, eliminating the hazard altogether. In the absence of a separated route, an engineered structure which prevents cars and bikes from interacting is highly effective and confidence inspiring.

The AEVA firmly agrees with the United Nations Environment Program's call for 20% of all jurisdictions' transport budgets to be dedicated to active transport infrastructure. Western Australia's active transport budget is typically under 1%, with the exception of the construction of

the Matagarup and Boorloo Bridges. Increasing the prevalence of cycling and active transport infrastructure will inspire confidence in new riders, and facilitate mode shift. In some cases, this will require reclaiming lanes currently granted to automobiles; a feat rarely attempted, yet unavoidable if our health, climate, energy and environment goals are to be met.

**Commuting and stowage on public transport**

Perth is the world's longest city, with a metropolis stretching over 150 km north to south. The lack of population density stemming from rapid growth in a post-automobile era, means Perth has some of the longest commutes in Australia. These conditions have led to sparse public transport options, firmly entrenching the private car as the primary form of transport. E-rideables offer a means for people to get out of their cars, but the vast distances call for heavier batteries and faster devices.

One option is to use an e-rideable to get to a transport hub, and continue the journey by bus or train. Travellers must lock their e-rideable in a secure location near the station, as current laws prevent the stowage of e-rideables on Transperth services. This prevents commuters from being able to use their e-rideable to complete the trip. Bike-train-bike is preferable to bike-train-walk.

AEVA recommends that *small, compliant e-rideables like e-scooters and foldable e-bikes be permitted on Transperth buses and trains*, even during peak hours. Stowage space should be provided on dedicated rail carriages. Commuters should de-power their device for the duration of the journey. Secure, undercover parking for all e-rideables should also be provided at bus and railway stations. Until Transperth can offer more convenient and regular services, we should expect this multi-mode commute to become more common.

**Li-ion batteries and fire safety**

As with any form of stored energy, Li-ion batteries carry the risk of physical damage and over-heating, potentially leading to a thermal runaway fire. The Insurance Council of Australia has reviewed the risk of battery fires in electric mobility and concluded that while electric cars and motorcycles carry very low risk, personal mobility devices carry a particularly high risk of fire. They report this is primarily due to lower production standards for batteries and components, in line with high demand for low-cost products. They also note that some property fires were initiated from an e-rideable which was on charge inside the building where it was stored.

Production electric cars and motorcycles are made to internationally accepted standards and are able to withstand the rigours of the automotive environment. Battery packs are hermetically sealed, encapsulated and thermally managed, along with highly dependable battery management systems (BMS) to report any signs of problems long before they get worse. The on-board charger is designed to suit the battery pack and is also well protected. Any off-board charging equipment is required to meet Australian standards and regulatory compliance. By contrast, e-scooters and e-bike batteries are often made to a price, with minimal packaging, limited efforts to waterproof the battery enclosure, and mounted where hard physical impacts are likely. The battery charger supplied with the equipment can be used interchangeably with other devices, with no consistency of plugs or connectors (although this has improved markedly). The charge connectors may not be protected, resulting in ingress, corrosion and high resistance joints, all contributing to a higher risk of fire.

The AEVA supports efforts to ensure compliance with any charging equipment for e-rideables, including mandatory RCM certification for any chargers sold in Australia. We also support any efforts to ensure local retailers of e-rideables are importing high quality devices and equipment, and would encourage the establishment of a code of practice for minimum battery construction

standards. Vehicle Standards Bulletins exist for all light vehicles, including the National Code of Practice (NCOP14) for conversion of vehicles to electric drive. AEVA helped create this document, and is keen to ensure it is updated with minimum standards for battery construction. The same standard may be used to assess compliance for e-rideables. We suggest convening a panel of experienced engineers and designers with a strong track record in battery construction and their application to vehicles, who may provide guidance on any battery assemblies for certification.

Finally, despite the best efforts of manufacturers and owners, fires can still happen. The risk of property damage and loss of life is substantial when e-rideables are charged inside habitable buildings. AEVA would support development of a code of practice around safe places to store and charge e-rideables where the likelihood of a fire propagating is minimal. This may be a detached shelter or under-cover area where all building materials are non-flammable. The space can be monitored remotely with appropriate fire prevention technology. The risks can be significantly mitigated with low cost, sensible measures employed by retailers, users, and facilities managers.

**Conclusion**

Electric bikes, scooters and skateboards are representative of the electric transport revolution taking hold around the world. These low cost, highly convenient, emissions-free options for transport have enabled people to reduce their dependence on the automobile, and enjoy fast, efficient mobility. This has led to growth in higher-powered devices which also have the potential to advance zero-emission private mobility, but also come with much greater responsibilities for the safety of the rider and those around them. Reckless use and abuse of these vehicles in public spaces has already resulted in injuries and fatalities, prompting this inquiry.

The AEVA believes the benefits of e-rideables of all shapes and sizes far outweigh the downsides, and does not support an outright ban. We support enforcing the existing laws governing what constitutes a compliant e-rideable in the current Road Traffic Code, while creating a pathway for the legal registration and licensing of more powerful e-mopeds and e-motorcycles using the provisions already in place for light vehicles. This same system could be used to review and certify any battery-powered vehicle which is not covered elsewhere. We support the continued enforcement and confiscation of non-compliant e-rideables which are not registered for use on public roads or shared paths.

AEVA supports the carriage of small, compliant e-rideables on Transperth services, and the creation of secure parking space for these devices at train and bus stations. We also support the establishment of minimum standards and a code of practice for the safe storage and charging of e-rideables around habitable spaces like homes, apartments and office buildings.

Thank you for your time and consideration, and if you have any questions or would like further detail on our policy recommendations, or wish to interview myself or an AEVA representative on these matters, feel free to contact us using the details provided.

Sincerely,

Dr Chris Jones
President,
Australian Electric Vehicle Association