Submission to the Climate Change in Western Australia – Issues paper 2019

Climate Change in Western Australia

The Electric Vehicle Council (EVC) is the national peak body representing the electric vehicle industry in Australia. We represent members involved in providing, powering and supporting electric vehicles.

We are a cross sectoral organisation whose engagement with a wide range of stakeholders supports the advancement of a strong domestic electric vehicle industry.

We welcome the opportunity to make a submission to the Climate Change in Western Australia – Issues Paper 2019 to assist the development of a holistic approach to climate change policy that includes a robust electric vehicle strategy.

The Western Australian Government signed a Memorandum of Understanding (MoU) with the Electric Vehicle Council in December 2017 to 'identify opportunities to collaborate in promoting and accelerating the transition to electric vehicles in Australia.'[1]

The Electric Vehicle Council will continue to work with the Western Australian Government on electric vehicle and climate change strategy, however, we would like to see stronger commitment to government fleet targets, electric vehicle public charging infrastructure, and electric vehicle industry development.

The Electric Vehicle Council would be happy to engage on this MoU or any other related strategy at any invitation.

[1] Sub-national Collaboration on electric vehicles (2017) *Memorandum of Understanding* https://www.environment.act.gov.au/__data/assets/pdf_file/0004/1137181/Electric-Vehicle-MoU.pdf

Why does Western Australia need a Climate Change policy that includes electric vehicles?

Climate change continues to have a detrimental effect on Australia's people, environment and landscape. The Western Australia Climate Change Issues Paper identified that climate change will continue to adversely affect Western Australians if the state does not respond to the urgent need for strong climate change policy. Impacts to Western Australia include increasing extreme weather events, diminishing freshwater availability, risk to human health, impacts to primary industry, loss of biodiversity, risk to natural ecosystems and rising sea levels.[2]

Conversely, Western Australia stands to benefit from decisive action on Climate Change, as industry, communities, tourism, ecosystems and environments increasingly demand action. A robust policy will see new investment opportunities to the region that supply jobs and attract new technology, while delivering cleaner air and preserving native flora and fauna.

It is essential that Western Australia develops a cohesive strategy to mitigate the associated risks of climate change and addresses the need to plan and adapt the way we power our lives. Carbon emissions are the leading cause of climate change impacts globally and despite Australia's commitment to the Paris Climate Agreement, they continue to increase nationally and in Western Australia.

Western Australia contributes 17% of Australia's Greenhouse Gas emissions, despite only being home to 10.85% of the total population[3]. Therefore, the Western Australian Government has an important role to play in fulfilling our global commitment to the environment. Rising emissions and waste levels are impetus for an accelerated approach to new and renewable energy generation, transport electrification and future mobility models, and innovative waste management strategies, so we do not fall short of this target.

Given that transport accounts for 17% of Western Australia's carbon emissions, electric vehicles must form part of any plan to reduce emissions. The Western Australian Government should work with the Federal Government to implement fuel efficiency standards to reduce transport and vehicle emissions. Fuel efficiency (CO_2 emission) standards have been adopted in around 80% of the global light vehicle market (including the US, EU, Canada, Japan, China and India) to cap the growth of transport emissions.[4] Fuel efficiency standards will also demonstrate certainty to the electric vehicle market.

Decarbonising the transport sector will result in reduced transport emissions while providing jobs, investment opportunities, fuel security and support for new energy generation and battery storage. Supporting the transition to electric vehicles can also be a relatively low-cost abatement solution for governments and consumers.

Additionally, the transition to electric vehicles will allow Western Australia to develop an onshore circular economy; and become a world leader in the global lithium supply chain. With large deposits of lithium and the mining industry already looking to invest, Western Australia is one of a few places uniquely placed to develop an onshore lithium battery

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[2] Department of Water and Environmental Regulation (2019) *Western Australia Climate Change Issues Paper.*
[3] ABS (2016) *Australian Demographic Statistics.*
[4] https://theconversation.com/australians-could-have-saved-over-1-billion-in-fuel-if-car-emissions-standards-were-introduced-3-years-ago-117190

supply chain that includes sustainable battery stewardship, providing jobs and investment for local communities. This is outlined in the Chamber of Commerce and Industry of Western Australia report *WA's Future in the Lithium Battery Value Chain*[5].

Industry development in Western Australia is already showing great potential and with the right government support, Western Australia will become a global leader in the electric vehicle industry.

Electric vehicles

Electric vehicle sales continue to increase globally with 2.1 million electric vehicles sold in 2018.[6] This trend will continue as consumers are provided with more electric vehicle models at lower price points, and charging infrastructure becomes ubiquitous. In high uptake markets, policy direction from national, state, and local governments is already sending strong signals that the shift to electric vehicles is happening now.

Despite this global trend, the absence of a national strategy in Australia has so far led to uncertainty, restricting investment in our domestic market. Australia's unique advantage in the electric vehicle supply chain presents a significant opportunity for our economy and for state, territory and local governments to prepare for and capture value from the global transition to e-mobility. The inclusion of electric vehicles in WA's climate change policy will demonstrate commitment to reducing its transport and carbon emissions.

The adoption of electric vehicles in Western Australia will:

- reduce noxious pollution and associated health impacts
- create new jobs, including in the mining, manufacture, sustainability and renewables sectors
- encourage sustainable transport and energy choices
- reduce fuel costs for consumers and businesses
- provide increased fuel security
- lower Australia's carbon emissions and contribution to climate change.

Transforming energy generation

Electric vehicles can both benefit from and support increased renewable energy generation. Therefore, the shift to renewable energy generation should be congruent with the transition to electric road transport.

As noted in the WA *Climate Change Strategy,* reducing emissions from the electricity sector has the potential to catalyse emissions reductions in road transport. When electric vehicles are refuelled from renewable sources, greenhouse gas emissions can be eliminated[7].

Electric vehicles can also support increased renewable energy generation. Electric vehicle charging will see a significant new source of demand on the electricity grid, requiring investment in new generation. In addition, electric vehicle charging can also support

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[5] Chamber of Commerce and Industry WA (2018) *WA's Future in the Lithium Battery Value Chain.*
[6] Climate Council (2018) *Australia's Rising Greenhouse Gas Emissions.*
[7] ARENA (2019) *Electric vehicles* https://arena.gov.au/renewable-energy/what-are-electric-vehicles/

renewable energy generation at the network level through timing demand to meet supply of renewable energy and providing ancillary services such as voltage and frequency control.

Future technologies will additionally revolutionise the way electricity is distributed, generated and regulated. Vehicle-to-grid, for example, will turn electric vehicles into virtual power plants, which communicate with the grid and demand response services to store or dispatch electricity as needed. BNEF estimates that if 40% of vehicles are electric by 2040 with vehicle to grid capabilities, that would imply a 'behind the motor' capacity of 350 gigawatt-hours equivalent to energy storage the same size as Snowy Hydro 2.0 (with reference to the Federal Government's proposed plan in 2018).[8]

It is important that the Western Australian Government note these benefits will not be realised if the transition to electric vehicles is left unmanaged. Appropriate incentives and a supportive regulatory regime will need to be identified and implemented to ensure the grid is positioned to both benefit from and support increased uptake of electric vehicles.

The Electric Vehicle Council is working with the electric vehicle industry, electricity sector and energy market bodies to identify issues, opportunities and actions needed to ensure both the grid enables electric vehicle charging and is positioned to benefit from electric vehicle charging.

The Western Australian Government should structure its climate change and energy policies to so that electric vehicles support and benefit from renewable energy generation, to ultimately reduce carbon emissions from the energy sector and the transport sector.

Industry innovation

The uptake of electric vehicles presents unique opportunities for Western Australia due to the abundance of critical minerals such as lithium, cobalt and nickel. The global demand for lithium ion batteries is expected to increase by 32.4%.[9]

There is opportunity for Western Australia to capitalise on this demand by incentivising investment in the lithium mining and recycling industry. The creation of EV specific industry programs will attract potential investors by demonstrating government support for EV industries, supporting the development of a skilled workforce, and ensuring adequate infrastructure.

A coordinated and cohesive climate change policy, which identifies the role of Western Australia in lithium battery mining and manufacture for clean and green industries such as battery storage, electric vehicles and solar PV, would attract investment and provide secure jobs to the area.

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[8] Sydney Morning Herald (2018) *'Behind the motor': Can electric vehicles sustain not drain the grid?'*

[9] Australia trade and Investment Commission (2018) *The Lithium-ion battery value chain.*

Opportunities for industry development include:

- Develop strategy to downstream Australia's lithium resources and by consulting with industry and using existing research- such as that completed by the Australian Mining and Exploration Companies.[10]
- Lithium recycling plant development
- Vehicle and component manufacture
- E-mobility technology development
- Climate vehicle testing

Given the skilled workforce of Western Australia, there is opportunity to take advantage of the existing workers and resources. Adoption of electric vehicles will require the Western Australian Government to provide training pathways and upskilling opportunities for those currently in the automotive and electricity sectors. The electric vehicle sector will additionally provide jobs in new industries such as battery recycling, battery manufacture, lithium mining, electrical and energy.

Future Mobility

The future of mobility is changing. It is clear from international developments that transport industries are looking to provide consolidated, healthy, shared and green transport options. There is a shift away from private vehicle ownership to public transport, that includes on demand and autonomous vehicles to make catching public transport easier for the first step and last mile.

Future mobility models include Mobility-as-a-Service (MaaS), Connected and Autonomous Vehicles (CAVs), micromobility including electric scooters and bikes, and electric vehicle car sharing services and vehicle hire. There is an important role for electric vehicles (which include electric micromobility options) to play in future mobility.

Electric vehicle uptake

Through providing policy and regulatory certainty, governments play a vital role in presenting Australia as a viable market for electric vehicles, which increases the variety and volume of vehicle supply. This is particularly important to increase the supply of lower priced/more affordable EV models.

Without adopting appropriate policies and regulations to support electric vehicle uptake, as has occurred in other comparable economies, Australia will continue to be a laggard and risks becoming a dumping ground for old technology. The WA Government must develop a holistic climate change policy that includes an electric vehicle strategy to demonstrate certainty to carmakers and consumers.

There are numerous reports available that outline the barriers and benefits of electric vehicles and transport electrification. The Electric Vehicle Council publishes an annual report, *State of Electric Vehicles* that addresses questions raised in the Issues paper.[11]

Questions such as '*What are the barriers to purchasing a low emissions vehicle for your household and business?'* and '*What can be done to facilitate the uptake of electric and*

[10] Australian Mining and Exploration Companies & Future Smart Strategies (2018) *A lithium industry in Australia: A value chain analysis for downstreaming Australia's lithium resources.*
[11] Electric Vehicle Council (2019) *State of Electric Vehicles 2019.*

other low-emissions vehicles in Western Australia?' no longer require research, but policy action.

Policy measures to increase electric vehicle uptake include:

- Government fleet targets
- Collaborative fleet procurement opportunities with councils
- Short-term exemption of stamp duty
- Consumer incentives (financial/non-financial)
- Investment in electric vehicle charging infrastructure
- Incentives to encourage industry investment

Heavy vehicles, trucks, and buses

Under current regulation, mass limits limit the load capacity of buses and heavy vehicles. Electric buses and trucks require large lithium ion batteries, making the vehicles heavier than their petrol and diesel equivalents. Due to current regulation, this results in a reduced payload for an electric truck or bus.

A reduced payload decreases the economic viability for councils, government and corporates to transition to electric heavy road vehicles, trucks and buses, as a reduced payload requires companies to purchase more vehicles to operate as normal. Instead of procurers and suppliers working to meeting payload requirements for operational purposes, attention is focused on meeting payload regulation- ultimately discouraging the transition to electric heavy vehicles, trucks and buses.

Government leadership will stimulate uptake and reduce transport emissions from the heavy vehicle and public transport sector. Policy to support the uptake of heavy vehicles, trucks and buses includes:

- Mass limit exemptions for electric trucks and buses to encourage their uptake in the public transport and road freight sectors.
- Update government public transport procurement processes to prioritise electric vehicles to drive the transition to electric buses and other heavy road transport.

Now is the time to catalyse electric bus adoption in Western Australia. There are already governments trialling the use of electric buses in the public transport sector including:

- New South Wales is currently conducting a trial of four electric buses, and announced intentions to electrify the whole bus fleet
- Victoria is trialling the first Victorian produced electric bus to shape future zero emissions transport programs
- The Australian Capital Territory recently completed an electric bus trial to inform their plan for a zero emissions public transport fleet by 2040

Micromobility, on demand and CAVs

The future of mobility will see a reduction in private vehicle ownership that preferences easy access to public transport. There are several trials in Australia currently being undertaken to measure the functionality and usability of on demand or connected and automated vehicles. Both mobility options provide links for commuters between their homes, community centres and public transport hubs.

It should be noted that Connected and Autonomous Vehicles are electrically powered and therefore zero emissions. Electric buses should be prioritised for on demand public transport.

The benefits will be twofold:

1. Encouraged use of public transport
2. Reduced emissions due to electric on demand transport

Innovative approaches include:

- Karragarra Island, QLD: Driverless bus (CAV) trial to address unique transport challenges and make life easier for residents who previously had to rely on private vehicles[12]. The project is a partnership between RACQ, Easy Mile and Redland City Council.
- Coffs Harbour, NSW: Regional automated vehicle (CAV) trial.
  The project is a partnership between Transport for NSW, Coffs Harbour City Council, Easy Mile, Via and Southern Cross University.
- Northern Beaches, NSW: On demand bus trial success has seen the trial extended to June 2020, six months beyond the initial trial period of two years[13].

The Western Australia Government should facilitate partnerships with local councils to support on demand and electric transport.

Waste reduction

Western Australia is uniquely placed to benefit from a domestic circular lithium economy, that promotes sustainable resource recovery and recycling practices. The Western Australia Climate Change Strategy should identify the opportunities for the lithium battery waste recovery and recycling industry in Western Australia as a result of electric vehicle uptake.

The electric vehicle industry acknowledges that there is a need to ensure sustainable management of end of life lithium batteries. Failure to manage lithium batteries would counteract the environmental benefits of zero emissions vehicles. Currently, car manufacturers each have their own internal processes for management of end of life batteries.

Large lithium batteries were listed under the Product Stewardship Act in 2016/2017 and COAG Environment Ministers agreed in December 2018 for large batteries to be included as part of the Battery Stewardship Scheme[14], an industry-led scheme that is currently being developed through the Battery Stewardship Council. The Battery Stewardship Council is currently consulting with the electric vehicle industry on whether to include electric vehicle batteries in this scheme. The Electric Vehicle Council is a member of the Battery Stewardship Council to ensure that any regulation of electric vehicle battery stewardship is harmonised with other States and Territories. The Western Australian

[12] Redland City Council (2019) *Redland Coast Smart Mobility Trial*.

[13] Manly Daily (2019) *Trial of on-demand bus service, Keoride extended following overwhelming response.*

[14] Battery Stewardship Council (2019) *Proposed Stewardship Scheme for batteries November 2019*

Government approach to electric vehicle batteries should be complementary to the work being undertaken through the Battery Stewardship Council.

There is also scope for onshore battery recycling. Currently, Australia currently only recycles 2% of lithium batteries, with 98% sent offshore for processing or to Australian landfill sites. The estimated potential recoverable value of cobalt, lithium and other critical metals is between AUD $813 million and $3 billion (by 2036).[15] The Western Australia Government's *Future Battery Industry Strategy Western Australia* notes that Western Australia has 'the minerals, the expertise, the standards, the infrastructure and the research capability to become a key player of the global battery value chain.'

A CSIRO report, *Lithium Battery Recycling in Australia,* concluded that 'an onshore, local LIB recycling industry is economically and environmentally achievable' where 'dedicated policies, regulations, standards and certifications relating to LIB and their waste will support technology development and industry investment in LIB recycling'. The Western Australia Government should implement policies that support onshore materials recovery, by signalling to the mining sector, recycling industry and car manufacturers that they are supportive of movements across the lithium supply chain.

Policies to support a strong lithium battery value chain include:

- Developing relationships with investors and manufacturers in global battery and electric vehicles supply chains.
- Assessing recycling needs, opportunities and regulatory requirements.
- Exploring manufacturing opportunities associated with the demand for niche battery products
- Pro-recycling policies governing waste sent to landfill

Safe and healthy communities

The safety and health of Australians is a key driver of Climate Change policy. Policy that supports lower carbon emissions will result in happier, healthier and cleaner communities. The transition to green and clean transportation models will save lives and money. The narrative around climate change should talk to protecting the environment and communities. Given that Western Australia is a high-risk area for extreme weather events, climate change policy that includes reference to the health risks of extreme weather events is necessary to comprehensively address the issue.

The health risks associated with climate change

A transition to electric vehicles will see a reduction in carbon emissions and therefore transport emissions related deaths. An Electric Vehicle Council report, *Cleaner and Safer Roads for NSW 2019,* found that 60% more people die from vehicle emission than car crashes.[16] The same report found that electric vehicles could save approximately $2,400 in NSW public health costs for each EV that replaces an internal combustion engine vehicle in the Sydney-Newcastle-Wollongong region.[17]

Climate Change policy and EV strategy should recognise the public health savings when considering EV investment and incentives. The Electric Vehicle Council would be willing

[15] CSIRO (2018) *Lithium battery Recycling in Australia.*
[16] Electric Vehicle Council (2019) *Cleaner and Safer Roads NSW.*
[17] Electric Vehicle Council (2019) *Cleaner and Safer Roads NSW.*

to work with, or on behalf of, the Western Australian Government to deliver a similar report for the state to accurately measure the public health benefits of transport electrification.

In terms of vehicle safety, all new electric vehicles have received a five-star rating under the Australasian New Car Assessment Program (ANCAP). They include the latest safety technology and automated control systems. Consumer awareness programs should educate the public on the facts of electrification, including the safety of vehicles and public health and environmental benefits. Ensuring that the public is aware of these is essential to electric vehicle uptake.

The health benefits of electrification have already been realised in a number of sectors, including mining and resource recovery:

- BHP has plans to expand the Olympic Dam electric vehicle trial to other mines in Australia, with a global aim to eliminate all diesel-powered machines from mine sites[18]. Driver feedback has been positive for noise reduction and driving performance in BHP's trial.[19]
- The Western Australian Mining Department has itself recognised the dangers of diesel operated machinery in underground mines, with a government committee currently drawing up recommendations. .

Given that up to 40% of a mine's energy costs are tied to ventilation systems to siphon particulate matter out of tunnels, electric vehicles also provide the opportunity for cost savings[20] as they reduce the need for ventilation systems.

Liveable towns and cities

While prioritising mobility options that are 'people first' such as cycling and walking, there is a need to prepare towns and cities for future mobility and transport infrastructure needs.

As the uptake of private electric vehicle ownership rises, so will the need for electric vehicle charging infrastructure. It is important for the WA Government to plan and prepare for the advent of zero emissions electric vehicles in towns, cities and regional areas. Despite that between 85-95% of charging is done in the home, range anxiety is one of the main barriers to electric vehicle adoption. International research shows that successful EV uptake is not possible without prominent availability of charging infrastructure.[21] If electric vehicle uptake does not increase, it is hard to see how transport emissions will decline, and climate change impacts managed.

Charging infrastructure

Co-investment models between the state government, local councils and the private sector will provide the necessary destination charging infrastructure to support electric vehicle uptake. It is important for the Government to work with councils to support implementation and planning controls for public EV charging infrastructure. This infrastructure must be supported by renewable energy generation.

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[18] The Wall Street Journal (2019) *BHP plans more electric Land Cruisers as trial expands.*
[19] BHP (2019) *Light Electric Vehicles in underground pilot.*
[20] Sydney Morning Herald (2019) *Leap of faith to electrified mining 'must start in the boardroom': report.*
[21] Sierzchula et al (2014) *The influence of financial incentives and other socio-economic factors on electric vehicle adoption.*

In addition to destination charging, a public fast charging network is necessary to alleviate range anxiety. Recognising that Western Australia is home to many remote communities, towns and cities, it is extremely important that a state-wide fast charging network is built to give electric vehicle drivers the confidence to travel to where they need to go.

The Electric Vehicle Council would like to commend the Western Australian Government and the RACWA for their early success in installing a public fast charging network of DC chargers in Western Australia. However, this early success must be supported by additional investment and installation of public fast chargers, given the size of the state and distance between towns and cities.

Given that the electric vehicle market and charging infrastructure technology has developed significantly in the last few years, the continued strategic placement of fast chargers will provide an electric highway that will reduce range anxiety for potential electric vehicle buyers and support the minimum range of low to mid-priced electric vehicles.

Policy measures to support the installation of public charging infrastructure include:

- Charging infrastructure targets
- Matched funding/co-investment models for local government and private industry
- Financial incentives to reduce the cost of home chargers
- Expedited charging infrastructure approvals processes

The Western Australian Government should work with the EV industry to identify locations for fast charging along key routes, with consideration given to how public investment may support tourism and local economies.

Public transport procurement processes should prioritise electric powertrains to lower carbon emissions and air pollution in towns and cities. Efforts should be made to reduce the number of petrol and diesel vehicles in public spaces, where poisonous particulate matter and exhaust fumes are pumped into schools and parks.

The built environment

In preparing our towns and cities for climate change and electric vehicles, considerations should be made to private, commercial and public development. The Western Australian government should adopt 'EV ready' development policy in buildings in the case of renovations or new developments.

The Electric Vehicle Council, in partnership with the Ai Group, held a forum in 2019 to discuss current electric vehicle development policy and the need to update the National Construction Code with 'EV ready' provisions. A working group was formed to develop a set of recommendations for policy makers based on issues raised at the forum.[22]

EV ready provisions should be included in Western Australia's Climate Change Policy to future proof the state and avoid costly upgrades to buildings in the future. It should be noted that there is already work underway to include EV ready provisions in the National

[22]Ai Group and the Electric Vehicle Council (2019) https://cdn.aigroup.com.au/Business_Services/Standards/2019_09_AiGroup_EVC_EV_Ready_recommendations.pdf

Construction Code. This can be developed further in line with the Ai Group and Electric Vehicle Council EV forum.

Building & development policy should include:

- A provision that mandates the necessary circuity for EV charging infrastructure be installed or upgraded at the time of development (or renovation where appropriate)
- Expedited planning and approvals processes for public charging infrastructure

Strengthening adaptive capacity

Government has a role in providing credible and accurate information, to allow consumers to make informed decisions about their energy use and vehicle purchasing. It is necessary that the Government provides measures to give Western Australians a better understanding of electric vehicles.

Given that electric vehicles can significantly reduce transport emissions in the state, promoting their benefits is necessary to give consumers a well-rounded understanding of the transport options available to them. The Western Australian Government should develop an electric vehicle consumer awareness campaign to draw attention to:

- Transport cost savings, including fuel, maintenance and running costs
- Public health benefits, including preventing deaths and lowering public expenditure
- Environmental benefits, including reduced carbon emissions and air pollution

Studies have shown that consumer familiarity with electric vehicles increases the likelihood that they will consider an electric vehicle in their next vehicle purchase.[23]

Concluding comments

The Western Australia Climate Change - Issues Paper highlights the increasing need to develop a cohesive Climate Change Strategy and transition to low carbon emissions technologies.

Electric vehicles are a key player in reducing Australia's transport emissions. Reducing Western Australia's transport emissions will decrease climate change impacts on the environment, facilitate cleaner and healthier air quality, promote connected and mobile communities, attract investment, create jobs and stimulate new industries.

It is essential that the Climate Change Strategy includes policy to accelerate the uptake of electric vehicles in Western Australia. Policy measures include commitment to developing fast charging networks, electric first public transport procurement policies, consumer awareness campaigns, 'EV ready' building and development policy, exploring the opportunities of an onshore circular lithium economy, and promoting future mobility models.

The Electric Vehicle Council will continue to work with the Western Australian Government as they develop policy to support the electrification of road transport in the state.

[23] Electric Vehicle Council (2019) *State of Electric Vehicles 2019*