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Submission Cover Sheet

Inquiry into Renewable Energy Innovation in the Australian Capital Territory

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Inquiry into Renewable Energy Innovation in the ACT

The ACT as an Active Transport Powerhouse

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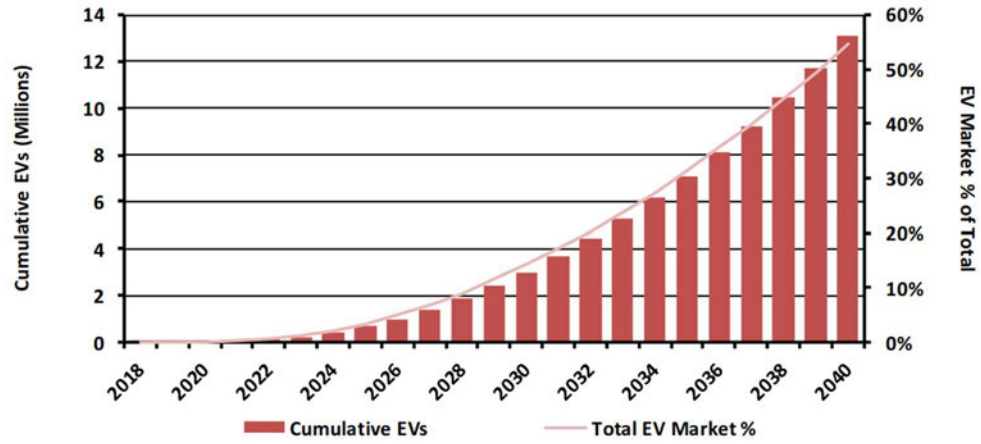
Introduction

The ACT is the first jurisdiction outside of Europe to achieve 100% renewable energy as part of its net zero emissions target. This incredible achievement has set the benchmark for other Australian states and territories. Notwithstanding this achievement, the transport sector is now the largest source of emissions in the ACT[1] and offers a prime opportunity for the ACT to continue setting the benchmark and leadership roles amongst the states, territories and the world. The ACT government has already introduced several financial incentives for the uptake of private zero emissions vehicles[2], as well as the procurement of electric buses to replace retiring diesel buses.

Two thirds of all transport emissions in Australia come from light vehicles[3]. In 2017, driving a car accounted for 75% of commuting journeys in Canberra[4]. The transition to zero emissions vehicles aims to cut emissions in this sector drastically. However recent analysis suggests this transition will take a number of decades to complete; forecasts predict only 50% of vehicles will be zero or low emissions by about 2040 (Figure 1).

Figure 51 – PEVs on the Road (Moderate Intervention)



Source: Energeia Modelling

Major hurdles to zero emission vehicle uptake include their high upfront cost and slow deployment of charging infrastructure. There are alternative technologies currently available that address these issues

[1] https://s3.ap-southeast-2.amazonaws.com/hdp.au.prod.app.act-yoursay.files/6915/1305/0361/2017_ACT_Climate_Change_Strategy.pdf

[2] https://www.environment.act.gov.au/cc/zero-emissions-vehicles

[3] https://www.climatechangeauthority.gov.au/reviews/light-vehicle-emissions-standards-australia/opportunities-reduce-light-vehicle-emissions

[4] https://www.abs.gov.au/ausstats/abs@.nsf/mediareleasesbyreleasedate/7DD5DC715B608612CA2581BF001F8404

if the ACT wishes to hit their net zero emissions target before 2050. Not only do these alternatives reduce emissions; they align with the ACT Government's active travel strategy in providing positive health and societal outcomes.

The Case for E-Bikes

A detailed study investigating the impact of replacement of car journeys with e-bikes in Wellington, New Zealand concluded[5]:

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*"If car users switch to E-bikes, there will be **one twentieth** of the GWP [Global Warming Potential] associated with those journeys on a cradle-to-grave per kilometre basis."*

A 95% reduction in the emissions of each journey would be an incredible step towards the ACT reducing its emissions in the transport sector. E-bike surveys have shown that there is immense potential for e-bikes to act as car replacements for commuting and errands. One survey concluded[6]:

The majority of the utilitarian trips (i.e., errands and commutes) being made by e-bike are replacing motor vehicle trips

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Considering that physical discomfort, distance, and time are often significant barriers to the use of bicycles, e-bikes, which are generally more comfortable and can take passengers further distances more quickly with minimal physical output, have the potential to vastly increase the pool of cycle travelers. This will reduce the territory's emissions without the need for costly technological changes associated with other zero emission vehicles.

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5 https://www.sciencedirect.com/science/article/pii/S2352550918301428?casa_token=EbbsHUcMKBoAAAAA:FTmJ3jbPez6VSQn-O6EtO4DWw8VJTQW5NxprH4mgAJeBhK4x-xU4ZKoqKHgGH6eQlXWxuyQg8bc

6 https://ppms.trec.pdx.edu/media/project_files/NITC_RR_1041_North_American_Survey_Electric_Bicycle_Owners.pdf

What can be done?

Infrastructure

Canberra has the potential to become a truly active transport-centric city. With a relatively mild climate and suitable geography, appropriate investment in cycling infrastructure will promote the long-term growth of active transport for Canberrans. With the growing range of more affordable electric transport options, the potential to create a seismic shift away from Canberra's car culture is a very real possibility in the coming years. However, to facilitate this shift, investment in the following areas is required[7]:

Route Infrastructure

The government's additional infrastructure development and maintenance undertaken as part of its Fast Track[8] initiative is applauded. One of the main hurdles to e-bike commuting is the lack of segregated cycling paths, which is the preference of all types of cyclists[9]. Segregated bike paths improve safety, travel times, and provide a less stressful commute experience for cyclists. The ACT should endeavor to convert remaining sections of the cycling network to segregated paths.

To make commuting by e-bike an option on par with driving, 'Cycling Freeways' should be established between the town centers of Canberra. These direct routes would be segregated, well-lit paths that have minimal interaction with motor-vehicle infrastructure such as traffic lights and road crossings[10]. Under/over passes and cyclist-right-of-way crossing (such as those employed on the Sullivan's Creek bike path) can be used to provide minimal interaction with road traffic. With such infrastructure, the commute time for e-cyclists could be comparable to drivers between town centers.

An upgrade to the lighting along the major cycling routes would provide a feeling of safety for cyclists[11]. People are more likely to cycle during daylight hours, or on well-lit paths after dark[12], so during the short winter days, and for those working non-standard hours, cycle path lighting is essential for continual e-bike commuting.

End-of-trip Facilities

The upgrade of end of trip facilities, such as shower, change rooms and secure parking, would be beneficial to e-bike riders as well as other forms of commuting (cycling, running, walking etc.) Undercover electric vehicle charging stations, secure parking facilities as well as adequate showering facilities should be considered during the construction of new buildings as well as major building refurbishments.

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[7] A more in-depth analysis can be found at https://www.tandfonline.com/doi/full/10.1080/21650020.2014.955210
[8] https://www.act.gov.au/fasttrack
[9] https://www.sciencedirect.com/science/article/pii/S1361920912000363
[10] https://www.tandfonline.com/doi/full/10.1080/21650020.2014.955210
[11] https://journals.sagepub.com/doi/full/10.1177/1477153514524587
[12] https://journals.sagepub.com/doi/full/10.1177/1477153517738306

Education

As seen in the popularity of See-Change's electric bike library initiative[13], interest in cycle transport, and particularly e-bike transport, is growing. This popularity points to a surge in demand for education around the benefits and practicalities of e-bike use. Expanding this initiative could provide additional consulting services for businesses looking to reduce emissions through the use of cargo (e-)bikes.

Education opportunities should also be extended to the ongoing maintenance of these vehicles, through the subsidising of bicycle maintenance courses.

Accessibility

The creation of bicycle highways and the bicycle network map[14] are a step towards the recognition of the bicycle as a significant transport option. More prominent signage, similar to the treatment of bus network maps, and the incorporation of bike maintenance facilities, would further improve the accessibility of the network.

The ACT journey planner[15] hints at the potential for a truly integrated active travel planning tool for the region. An integrated transport app, incorporating share bikes, scooters, as well as better planning tools for e-bikes (preferencing segregated paths, lower gradients and well-lit paths) would also improve the visibility and accessibility of all active transport options.

The positive impact of a shift to e-cycling extends to economic benefits, with studies repeatedly demonstrating the correlation between cycle journeys and small business viability. An integrated transport app could integrate business, tourism and events, and would dovetail well with the government's post-COVID recovery strategy for small businesses.

Financial Incentives

While, in the longer term, infrastructure is the ultimate determinant in creating an active transport culture in the city, shorter-term incentives will also reduce these barriers to active transport to help facilitate this behavioural change. The following incentives will reduce barriers to adoption, while recognizing the positive communal benefits the territory will accrue.

There are two crucial points at which financial incentives should be applied. The first promotes the purchase of an e-bike, and the second promotes the continuing use of the e-bike.

To promote the initial purchase of an e-bike, the following financial incentives could be used:

- Government subsidies of initial purchase
- Government reduction of tax on e-bikes

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[13] https://www.see-change.org.au/cbrebikelibrary

[14] https://www.transport.act.gov.au/__data/assets/pdf_file/0006/1611627/DRAFT_CBR_Cycle_Routes_Current_Network_Map_297x420_v9.pdf

[15] https://www.transport.act.gov.au/getting-around/journey-planner

- Co-ordination with employers to allow for salary sacrifice on e-bike purchases

Once an e-bike is purchased, it is imperative that there are incentive structures in place to promote their continuing use. Such incentives could include:

- A per-trip reward mechanism for e-cyclists. Rewards could include vouchers to local businesses (enhancing the post-COVID recovery) or discounts on public transport and other public services.
- Rates reductions for businesses providing end-of-trip facilities, in recognition of the reduction in infrastructure required to support cycling as a means of commuting for employees and customers.

Metrics for Success – Gender Equity

Among conventional metrics for cycling participation as a measure of success in promoting active transport, gender equity is perhaps the strongest indicator. One study determined that the key indicator of the cycling friendliness of city is the rate of female participation in cycling[16]:

> *"Female rates of cycling and total cycling mode share of transportation are so closely linked that Baker (2009) suggests that gender equity in cycling is a key barometer of a cycling-friendly environment." (Figure 2)*

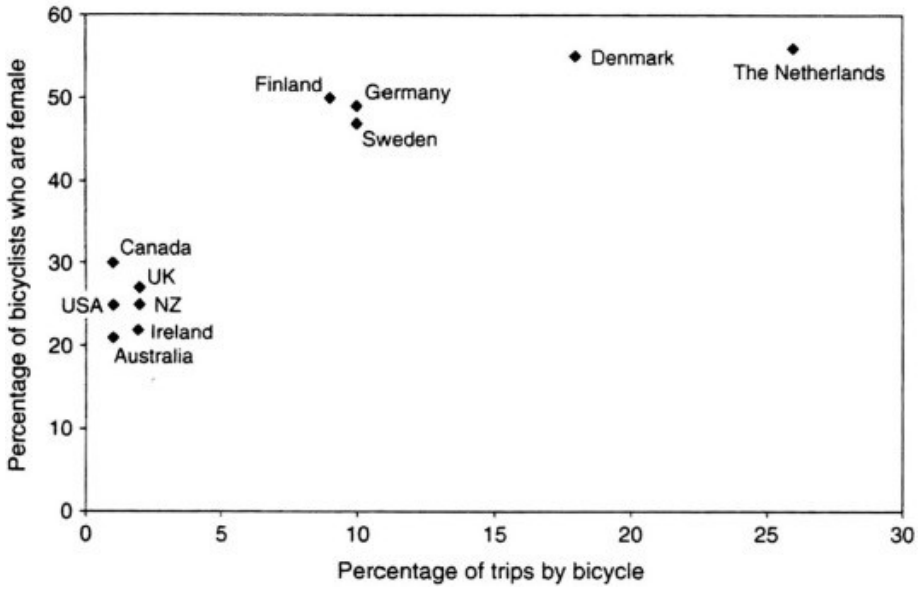

Figure 1: The relationship between gender equity in cycling and the percentage of total trips made by bicycle[17].

[16] https://www.sciencedirect.com/science/article/pii/S2214367X18300036

[17] https://books.google.com.au/books?hl=en&lr=&id=226mCyz9JaEC&oi=fnd&pg=PR2&ots=ldUqb-iJ9I&sig=XFy2fUK-TZAZ9JGYbBv1QNff0QE&redir_esc=y#v=onepage&q&f=false

This conclusion is drawn because[16]:

> *"Whilst many UK cities have had some success increasing overall cycling numbers in recent years, women are still far less likely to cycle, often because of concerns with journey quality related to traffic safety and societal safety."*

A healthy, vibrant cycling community with well-utilised cycling infrastructure will be indicated by the percentage of women cycling as a means of transport and commuting. Periodic surveys of cycling participation can provide an ongoing means to assess the project's impact on the ACT community and participation rates.

Conclusion

Incentivising the adoption of e-cycling in the Canberra region will provide a significant fraction of the emissions reductions required for the ACT to reach its net zero carbon emissions. The adoption of e-bike technology can be done now and provide emissions reductions almost immediately, unlike electric vehicle adoption. Cycling infrastructure upgrades and financial incentives have been identified as the crucial steps towards a vibrant and inclusive e-cycling culture in the ACT. In this submission, the major components of each of these steps have been highlighted. There is extensive literature available on how to identify and implement each step in particular contexts, as well as how to identify when such a project is successful.