

Submission on New Zealand Productivity Commission (2017) Low-emissions

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Dear Sir/Madam

I would like to make a submission on this Issue Paper as I consider Climate Change from emissions to be a serious threat to any living organisms on our planet and our planet itself. Given my interest in this topic, my Masters dissertation from 2014 at the University of Auckland focussed on the role of electric vehicles in reducing carbon emissions. The following were the recommendations and conclusions that I reached after my analysis of literature and data. The following might answer some of the questions within the report especially in regards to Electric Vehicles (EV's) under Transport section. From the Productivity Commissions Issue paper, I note that there has been substantial increase in the number of EV's from 2014 to 2017.

Most of the information below is directly taken from my analysis, recommendations and conclusions in my dissertation and includes minor amendments where required in terms of context. and includes the following with associated references where relevant:

Framework for implementation of electric mobility strategies in New Zealand and Auckland

The following framework is proposed for New Zealand based on the analysis of literature and experiences of Berlin, London and other countries in encouraging and promoting the uptake of EVs. Both public and private agencies were identified, including the actions that they should take and their corresponding duties for successful implementation of electric mobility strategies in New Zealand and Auckland.

Important public and private stakeholders, their roles and responsibilities.

Agency/ Organization	Actions	Duties
Ministry of Transport	<i>EVs in Government Policy Statement on Land Transport Funding (GPS). Funding for the installation of charging infrastructure. Providing monetary incentives. Pilot projects. Pilot project initiation with the help of private sector.</i>	<i>Identifying the importance of electric vehicles and providing adequate funding</i>
NZTA	<i>Giving effect to GPS, Investment and Revenue Strategy, funding for the installation of charging infrastructure.</i>	<i>Planning and investing for outcomes, framework, working with stakeholders</i>
Auckland Transport	<i>Installation and maintenance of EV charging infrastructure. Leading public-</i>	<i>Parking enforcement, fines for non-EVs driving in bus lanes, EV</i>

	<i>private partnership. Providing non-monetary incentives such as preferential or free parking, access to bus lanes, waiver from congestion charging if implemented in the future. Pilot project initiation with the help of private sector.</i>	<i>signage for EV parking, access to bus lanes, T2 and T3 lanes¹. Provision of preferential parking, waiver of congestion pricing if implemented. Awareness creation among consumers.</i>
New Zealand government	<i>Investment in new markets. Sharing deployment costs. Amending building code. Incentives for installation of PV on rooftops.</i>	<i>For provision and installation of EV charging infrastructure during construction stage of a building including houses, commercial, retail public and private buildings.</i>
NZ Bus	<i>Could introduce Hybrid and Electric buses</i>	
Auckland Council	<i>Strategies and funding, coordination. Compact urban form through district plans, transit-oriented development</i>	
EECA	<i>Engagement with private market. Engagement with public to create awareness and advantages of EVs.</i>	<i>Cost-benefit analysis, stimulate the uptake of EVs, providing information and advice</i>
APEV	<i>Advocacy, coordination, engagement of public-private partnership</i>	
Auckland Tourism, Events and Economic Development (ATEED)	<i>Creating EV precincts to foster EV sales, awareness among the public and research and development.</i>	
Special centres	<i>For research and development of technology and innovation</i>	
Energy utilities companies	<i>Vector Energy and its subsidiaries</i>	<i>Provision of electricity for EV charging infrastructure</i>
JuicePoint	<i>Electric vehicle charging infrastructure manufacturer</i>	<i>Manufacturing, maintenance and installation of charging infrastructure</i>
Let's Carpool	<i>The carpool scheme could incorporate electric fleet.</i>	<i>Auckland Transport could encourage the use of EVs for Let's Carpool scheme in Auckland.</i>
Low Volume Vehicle Technical Association (LVVTA)	<i>National Technical guidelines</i>	<i>Updating the guidelines with advancement in technology.</i>

Source: Auckland Council, 2012b; APEV, 2012a; 2014e; EECA, 2014d; NZ Bus, 2014; letscarpool, 2014.

Recommendations

Legislative changes

Christiana Figueres, the Executive Secretary for the UN Framework Convention on Climate Change, asserted that “Domestic legislation on climate is the absolutely critical, essential linchpin between action at the national level and international agreements. It is absolutely at the centre.” (Dawson & Young, 2014, p. 15). In one of the reports by Generation Zero titled “The Big Ask: One Key Step for Real Climate Action”, the report recommended that the New Zealand government should take a strong stance on climate change by implementing Climate Change Act legislation that would require

¹ T2 and T3 lanes are for vehicles with 2 or more people (T2) or 3 or more people (T3). The ‘T’ stands for transit so they are also called transit lanes (Auckland Transport, 2014)

mandatory reduction of at least 50% emissions below 1990 levels, which is also the current target of the government (Dawson & Young, 2014a). Furthermore, to guarantee advancement, there need to be “binding periodic carbon budgets” set (Dawson & Young, 2014a, p. 16). It was found that “an independent Climate Commission” needs to be established to direct the government regarding policies and carbon budgets, and holding them liable (Dawson & Young, 2014a, p. 16). The commission should also be tasked to conduct feasibility studies “on pathways for New Zealand to achieve 100% renewable energy (including transport, heat and industry) by 2050” (Dawson & Young, 2014a, p. 16).

Electric cars would play an important role in reducing a significant amount of emissions and tackling climate change in Auckland and New Zealand. But a mix of various measures would be necessary to regulate and reduce the emissions from residential, commercial and other sectors. In terms of reducing emissions from transport sector, measures such as, improving the efficiency of public transportation supported by transit-oriented development would to some extent change the behaviour of people and encourage them to use public transportation (Bristow et al., 2004 cited in Chapman, 2007). Following are some of the measures suggested by Lemon & Miller in their paper (2013), which includes the following broad categories: economic, suasive, regulatory and organisational.

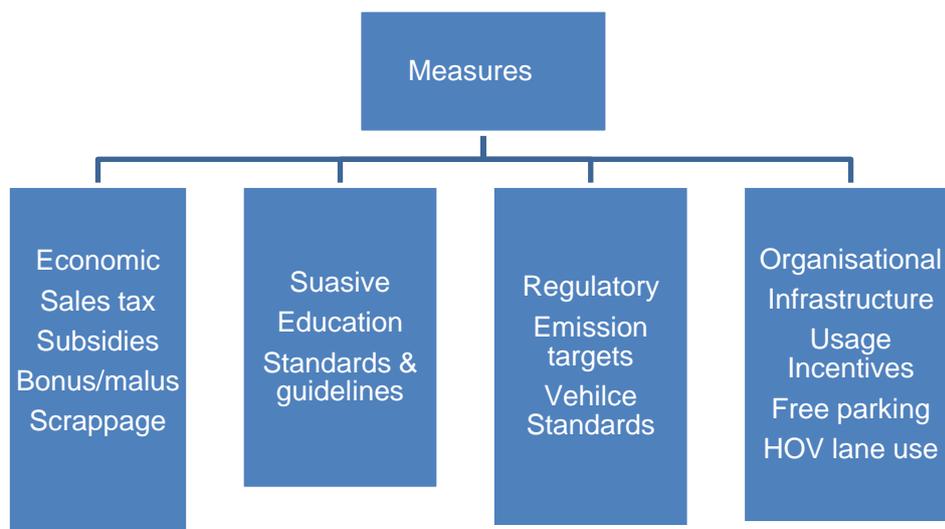


Figure 1: Various types of measures in terms of policy and regulations.

Source: adapted from Lemon & Miller, 2013a

The above measures were identified by Lemon & Miller (2013), but for them to be successful, there needs to be strong support from central and local governments in terms of policy and legislative mechanisms to foster and promote the uptake of EVs in New Zealand. A dedicated plan that identifies and paves way for legislation and polices that would support the uptake of electric vehicles is needed. This issue was also raised by the stakeholder survey that was conducted by APEV. The Plan should also identify stakeholders and their roles in the uptake of EVs.

The following are some of the monetary incentives that could be pursued by central government; subsidies for capacity to install EVSE or charging infrastructure during the construction of new

buildings and also providing for EV charging infrastructure in existing dwellings. This is important as there are multiple unit dwellings in the Proposed Unitary Plan through Terraced Housing and Apartment Buildings and high intensity constructions in local and metropolitan town centres (Auckland Council, 2013d). One way to get this done is through the amendment of the Building Code and Building Act of 2004. Providing subsidies for installation of PVs on roof tops by local and central governments would also provide electricity to charge the electric cars, resulting in sustainability. This was justified by the research of Hugh Byrd (2012).

Provision of charging infrastructure

Identifying priority locations for provision of charging points. Locations include: company car parks; on-street parking spaces in compact residential areas; public car parks that are owned both by Auckland Transport and private businesses; private car parks that are provided in malls, recreation, public spaces, retail and commercial areas, minimum parking time car parks in local centres, town centres, metropolitan centres; city centres for taxis and commercial vehicles; along key routes like Dominion Road, Great North Road, Great South Road. This approach was also followed in London, through the Electric Delivery Plan. All existing public and private car parks can be upgraded and provide some proportion of parking spaces with charging infrastructure, through local government funding.

I note that there are free EV charging stations for customers in the Northlands mall in Christchurch. Providing this infrastructure in bigger malls across New Zealand will also encourage people to use EV's and act as an incentive.

Potential role of Auckland Tourism, Events and Economic Development (ATEED) and Economic Development Strategy 2012; EV precincts, education, apprenticeships, fostering Innovation in EVs and charging technology (Auckland Council, 2012a).

Pilot Projects in New Zealand

A pilot project in New Zealand and preferably Auckland would provide a very good opportunity for the government to showcase the potential benefits of electric vehicles in the medium and long term. This would have the potential to create awareness among people and trigger the uptake of EVs. To do this there need to be partnerships built in public and private sectors.

Establishing the Auckland Electric Vehicle Partnership

A strategy similar to the London Electric Vehicle Partnership could be established by the Auckland Council along with Auckland Transport and other stakeholders to lay a specific path for electric mobility.

Fundamental elements of the strategy

- 1. Infrastructure: Developing a widespread network of electric charging points across the city*
- 2. Vehicles: Increase the uptake of EVs on Auckland's streets*
- 3. Incentives, Marketing and Communications: Encourage the market*

Source: Adapted from Greater London Authority, 2009

Auckland Council and Auckland Transport especially, along with the other council-controlled organisations, could use electric cars and promote the use of electric cars in Auckland. A similar approach is currently being followed by Hamburg where 60 EVs are in place and are used by various municipal and state departments with a vision of rolling out 500 EVs/PHEVs by 2015 (IEA, 2012b).

Other measures

Introduction of measures such as congestion pricing² in the Auckland Central Business District could also lead to decreased car usage and consequently increased uptake of EVs. According to LSE Cities (2013), London saw an increase of EVs, as the EVs were waived from the congestion pricing in London's CBD. This would act as a non-monetary incentive. Although there has been research done on the feasibility of congestion charging in New Zealand and Auckland (see Auckland Council, 2012a; Auckland Regional Council, 2010; Consensus Building Group, 2012; Hill Young Cooper Ltd, 2008; MoT, 2006e: 2008f; Utley et al., 2011), there has been no progress made on introduction or implementation of the scheme.

Bandivadekar & Heywood (2007 cited in Utley et al., 2011, p. 25) argue that "even small changes made sooner would result in larger benefits than more aggressive actions taken later" (p. 49). Utley et al., (2011) argue that adoption of new technologies such as EVs would take a long time, without any substantial policy interventions. Bandivadekar & Heywood (2007 cited in Utley et al., 2011) argue that it is better to act now, while a delay in taking any action would require radical changes in the future to reduce or stabilise emissions. Further, as identified by MR Cagney's findings in 2012, it can be concluded that low carbon fuels such as synthetic diesel, biodiesel and biogas would make a substantial impact on creating sustainable transportation systems in New Zealand. Lemon & Miller (2013) argue that in the short term New Zealand could introduce regulations to control emissions. Research indicates that along with incentives there also needs to be awareness and information available for consumers to make rational choices (Kurani et al. 2007; Turrentine et al. 2007; Hefner et al. 2007; Turrentine & Kurani 2007 cited in Utley et al., 2011).

Conclusions

In terms of perspectives of various cities on the importance of green technology and green growth that were analysed and presented. The analysis suggested that most cities recognise the role of technology in reducing emissions and that they are willing to invest, but are constrained by budgets (LSE Cities, 2013).

Through the analysis of Berlin and London's electric mobility programmes at both the national level and local levels, my dissertation identified the reasons as to why they were successful and the challenges that they faced before, during and after their implementation. One of the many reasons were the strong public-private partnerships that were established among the central and local governments along with various stakeholders such as energy utility companies, research and

² Referred in New Zealand as road pricing, congestion charging

development, universities and the private sector (LSE Cities, 2013). These partnerships have played an important role in facilitating, funding and successful implementation of strategies in Berlin and London.

Studies done worldwide, in terms of what various countries are doing in addressing the climate change issues, suggested that New Zealand is far behind when compared to developed nations in terms of having policies and legislation to tackle climate change (Germanwatch, 2013; REN21, 2013 cited in Dawson & Young, 2014). International evidence suggests that central government can play an important role in terms of funding and implementation of strong policy and regulations, while the local councils could provide incentives such as free parking and access to high occupancy lanes to encourage the uptake of EVs.

The detailed analysis in my dissertation of planning opportunities and implementation barriers was undertaken in New Zealand in terms of the uptake of EVs. In terms of incentives, New Zealand is only limited to exemption from the Road User Charges tax, which is insufficient to encourage people to use EVs. Hence, as a result, there are only 611 EVs in New Zealand (MoT, 2014). I understand this has increased to 3800 as of June 2017 (New Zealand Productivity Commission, 2017). On the other hand, a survey by EECA (2014e) suggested that New Zealanders rated EVs highly desirable. This shows that strong monetary and non-monetary incentives along with information availability could result in the potential uptake of EVs in New Zealand.

In the New Zealand Energy Strategy of 2007, New Zealand aspired to become a world leader in the deployment of EVs (MED, 2007). However, an analysis of the national, regional and local policies suggested that there are no strong policy mechanisms in place in New Zealand to promote electric vehicles, with only an incentive limited to exemptions from Road User Charges (EECA, 2014c).

In terms of implementation barriers, the stakeholders that were surveyed by APEV (2014b), identified the following barriers; lack of support from central government, lack of strong monetary and non-monetary incentives, lack of any pilot projects and lack of political will. The examination suggested that the barriers can be addressed through strong policies by central and local government, along with monetary and non-monetary incentives. Pilot projects would play an important role in promoting the uptake of EVs in New Zealand and Auckland as the research from Berlin and London's electric mobility strategies suggest (LSE Cities, 2013). It can be concluded that not only public-private partnership could be used to fund electric mobility strategies in New Zealand and Auckland, but also for the successful implementation and running of the strategies. This is especially important as most cities are constrained by budgets and is one of the main reasons the cities are struggling to implement electric mobility strategies as identified by LSE Cities (2013) study.

The most significant opportunities in New Zealand in terms of adopting electric mobility are 75% of the electricity generated is from non-renewable sources of energy, and research suggests that solar energy potential can be utilised in Auckland not only to charge EVs but meet the energy needs of a detached house (APEV, 2014: 2014c; Byrd, 2012; MBIE, 2014a). Research suggested that there would be a relatively small impact on the electricity demand to meet the needs of the EVs in the future

in New Zealand (CAENZ, 2010). Comparisons of running a conventional car and EVs in New Zealand show that, EVs are more cost effective in the long run (Lemon & Miller ,2013; JuicePoint, 2014). My dissertation also highlighted the importance of green growth and the economic opportunities and jobs it would create in New Zealand. It can be concluded that EVs would not only encourage green growth in terms of economic output but also create jobs at the same time. The above opportunities would allow New Zealand to become a world leader in the adoption of EVs (Auckland Council, 2012a: 2014; Greenpeace, 2013; LSE Cities, 2013).

Although, there are many opportunities in New Zealand for the uptake of EVs, evidence suggest that penetration of electric vehicles usually take a very long time. It can be concluded that, to decrease emissions from the transport sector, technology alone would not be an answer. It would be considered ambitious, if not impossible, to have a 100% electric vehicle passenger fleet in any country or city due to various constraints such as costs, infrastructure provision, and the need for behavioural changes. In Auckland, public transportation patronage has seen an increasing trend over the years and looks encouraging. Introduction of schemes like congestion charging would also result in reduction of car usage and, optimistically, increase uptake of EVs similar to London (LSE Cities, 2013). However, research suggests that adoption of EVs would take a long time and hence, other measures such as traffic demand management, transit-oriented development, improving public transportation, electrifying rail network, promoting and facilitating active transportation choices like cycling would help facilitate reduction in carbon dioxide emissions in Auckland from the transportation sector (Bristow et al., 2004 cited in Chapman, 2007; Utleby et al., 2011). This would not only help in reducing car usage but consequently reducing emissions and promoting sustainable transportation.

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