



Drive Electric Submission: EECA Consultation paper on developing a short term roadmap for the public electric vehicle charging network

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Introduction

Drive Electric is a not-for-profit advocacy organisation supporting the uptake and mainstreaming of e-mobility in New Zealand, a key part of decarbonising transport.

Drive Electric represents a member base comprising new car OEMs, used car importers and distributors, infrastructure organisations (electricity generators, distributors and retailers, electric vehicle service equipment suppliers), e-bike/scooters, heavy vehicle importers, finance, fleet leasing and insurance companies, along with electric vehicle users.

Executive Summary

Today the number-one questions for EV-curious drivers are about adequate charging infrastructure, including charging times. Consumer concerns are shifting from upfront price and range anxiety.

Therefore, investment in charging infrastructure must lead the transition to light Electric Vehicles to give buyers the confidence that they can charge their vehicles, as easily (if not more easily) as they can fill their petrol tanks at a petrol station. This is a critical component to how we rethink transport in New Zealand.

We recommend that the delivery of a national EV infrastructure plan be accelerated with a view to commencing implementation by mid-2022 at the latest. The key objective of any plan is to enable the roll out of an effective charging system that builds confidence in EVs and meets consumer demands.

When it comes to the provision of public charging infrastructure, the government has a role to set the national direction, ensure competition, ensure collaboration within the ecosystem, and kick-start investment. Long-term, however, we would expect that the private sector should be delivering most EV charging infrastructure and services in New Zealand, unless there are market failures.

To start this, the first roadmap needs to articulate further what are the roles and responsibilities of the government, local government and the private sector in delivering charging over the next five years, and then into the future. It also needs to outline how this collaboration will occur.



The roadmap also needs to consider what other barriers, besides cost, that exist are to deliver public charging infrastructure, and detail what these are and how they will be overcome. This includes education of businesses that could provide charging, and ensuring the regulatory settings are right.

It is also essential that charging infrastructure is rolled out in an integrated way with urban planning and development, commercial developments and future public transport investment.

We also recommend that a similar, and integrated, strategy be developed for encouraging the uptake of private charging in homes and kerbside, and integrated with this one. This could include co-investment and mandating installation in certain buildings etc.

The UK has just mandated that new homes and buildings such as supermarkets and workplaces, as well as those undergoing major renovation, will be required to install electric vehicle charge points from next year.¹

1. Do you agree with the scope described above in sections 3.1, 3.2, 3.3, and 3.4? Can you suggest any changes?

We agree with the scope of the document. However there are some areas where the roadmap could go further:

- It is essential that charging infrastructure is planned in an integrated way with urban development, commercial developments and future public transport investment.
- We note that this document focuses on public charging. Drive Electric analysis suggests that at least 80 per cent of EV charging will be done at home. Therefore it is important that there is a similar strategy developed for encouraging the uptake of private charging in homes and kerbside, and integrated with this one in time.
- The roadmap needs to articulate further what are the roles and responsibilities of the government, local government and the private sector in delivering charging roadmaps over the next five years, and then into the future. We envisage this will shift over time. The government will be required to take an active role investing in the short-term, but less of a role in the long term. The government also needs to consider its regulatory role, and what enabling policy needs to be put in place to allow for the rapid scaling of public charging infrastructure that meets the needs of its users.

¹ <https://www.gov.uk/government/news/pm-to-announce-electric-vehicle-revolution> PO Box 3899 Auckland

2. Do you agree with objectives 1 to 6? Please provide comment on if we have missed anything or if you consider there are higher priority objectives.

We agree with the objectives 1 to 6. Feedback regarding specific objectives are:

Objective 1: more emphasis needs to be placed on communicating the availability of public charging in New Zealand, and how to use this infrastructure. This is an important part of giving consumers confidence in a new technology. For example, range anxiety is slowly giving way to charging speed as the critical metric among EV-curious consumers.

Objective 4: a well defined roadmap will assist Electricity Distribution Businesses (EDBs) with long term planning for the future requirements of key electricity infrastructure assets, for example, sub-transmission level substations and distribution network strengthening including upgrades to MV Switchgear and Distribution Transformers. Relevant data also needs to be able to be shared from government agencies to EDBs, e.g. from NZTA and EECA.

Objective 5: we support the objective to encourage new entrants and competition as this will drive innovation, lead to new business models and provide better outcomes for consumers. We believe the government should detail roles and responsibilities between the private sector and public sector in rolling out EV charging in a national charging strategy. The government has a role to set the national direction, ensure competition, ensure collaboration between the ecosystem, and kick-start investment. Long-term, however, we would expect that the private sector should be delivering most EV charging infrastructure and services in New Zealand.

Objective 6: we support the objective to enable innovation as this could help to develop solutions for specific use cases. For example, new technologies are in development that could help to solve some of the technical and commercial challenges associated with providing EV Charging Infrastructure in remote off-grid or grid constrained locations (e.g. Hydrogen Fuel Cell powered DC Fast Chargers).

Plus: We recommend an additional Objective: Identifying and overcoming barriers which will hamper the transition:

The roadmap needs to consider what barriers there are to delivering the objectives, and detail what these are and how they will be overcome. These barriers could include:

- Policy and regulatory settings (including access to the grid, competition settings).
- Capability and capacity to install the charging and resolve other operational, communications, and technological challenges.
- Adequate access to land for charging stations (and access to electricity for charging stations).
- Capacity of the grid and managing demand.

3. Do you think that the Government should prioritise its public charging investment in high power ultra-fast chargers?



We believe that the government should prioritise its investment in high power ultra-fast chargers due to the following reasons:

1. Ultra-fast chargers will provide the greatest public benefit for journey charging.
2. Due to the relatively large capital investment required for these types of chargers and associated infrastructure, government co-funding will be required to encourage private investment, particularly in the short-term.

A data-led approach, with data drawn from a range of sources, may from time-to-time lead to decisions to invest in different types of chargers or associated activity. It is acceptable to adopt a fit-for-purpose approach. For example, investment could also include education and information campaigns for business owners to overcome barriers to invest themselves in charging infrastructure for employers and customers.

4. Are there risks or benefits that you can see regarding the three options for the basic spatial approach (reducing distance between chargers, increasing the number of charging heads at existing locations or prioritising journey charging)? Can you suggest an alternative option?

We believe that the government should prioritise options 2 and 3, namely increasing the number of charging heads at existing locations and prioritising journey charging.

As the number of EVs on the road increases, it will be essential to increase the number of charging heads to keep queuing times to a minimum. Installing more chargers or single chargers that can charge multiple vehicles at once will help to achieve this. This will also create critical mass enabling the development of complimentary services which will enhance the user experience. We have to think about user experience here. Waiting for a charging head is a turn-off. Charging locations also need to be located in safe places, particularly for people who need to use them during the night.

Additionally, in order to create a robust network of journey chargers, we strongly recommend the government to avoid a single source EV charger supplier strategy and encourage the government to employ a strategy that utilises EV chargers from at least 2 to 3 reputable suppliers. This approach will help to secure a certain level of system redundancy and is consistent with the approach applied in countries such as Norway and Netherlands. Specifically, it will help to mitigate the following risks:

1. Systemic hardware and/or software faults related to single supplier
2. Manufacturing or supply chain constraints related to a single supplier
3. Cyber security vulnerabilities related to a single supplier

5. Do you agree with the proposed approach for developing a data driven or digital twins based public EV charging roadmap? Can you suggest any improvements?

We agree with the conceptual framework in Figure 7.

In the short-term, as the government determines where best to invest in charging infrastructure, sophisticated models may be useful. Longer term, we would like to see a shift to a market-led model, whereby consumer demand and real-time insights



inform the development of the charging infrastructure market through a diverse range of sources.

Feedback:

1. Furthermore, the development of 'digital twins' to understand the impact increase in number and capacity/demand of EV charger locations will require significant coordination of data across the EV ecosystem (specifically those in the infrastructure provision space like EDBs, Transpower, and local councils). The government will need to determine how best to enable this collaboration, while maintaining competition. This may require legislative change.
2. Maximum demand and occupancy of publicly available EV chargers is a useful data point however in time, we would expect these models to accommodate a more dynamic perspective as to when the chargers are being used (Time of Day) and what charging modes do they support (convenience/top-up vs destination/fast etc.)
3. One of the key input factors to monitor is the development of the "kWh/distance travelled" of the next generation EVs from the major vehicle manufacturers as this is a lead indicator for EV charging infrastructure requirements.
4. The data needs to be gathered to give enough signals that this is the best way forward about what type of charger should be installed. Sometimes a fast charger may not be what is required.

6. Has your organisation undertaken any work in this area or do you have data sources that could be used as inputs?

We have produced a couple of relevant white papers. These are a few years old now, but there is some valuable information which is still relevant:

<https://driveelectric.org.nz/whitepaper/peakpressure/>

<https://driveelectric.org.nz/whitepaper/charging-ahead/>

The UK's plan to [decarbonise transport](#) provides some useful insights, pp 97 - 99. The government is supporting the market-led development of a charging infrastructure network to meet drivers' needs. This will ensure motorists can charge wherever they need to – at home, at work, on longer journeys and make sure our towns and cities are ready for the transition. Already, a driver is never more than 25 miles away from a rapid (50 kilowatt) chargepoint anywhere along England's motorways and major A roads. The UK made further [announcements in November](#).

McKinsey has produced some useful insight into the future of charging:

<https://www.mckinsey.com/business-functions/operations/our-insights/the-future-of-ev-charging-infrastructure-executive-perspectives>

<https://www.mckinsey.com/business-functions/operations/our-insights/shaping-the-future-of-fast-charging-ev-infrastructure>

