



14 May 2021

OC210328

Hon Michael Wood
Minister of Transport

UPDATE ON THE DEVELOPMENT OF A NATIONAL ELECTRIC VEHICLE CHARGING INFRASTRUCTURE PLAN

Purpose

Provide an update on ongoing interagency work on the development of a national electric vehicle (EV) charging infrastructure plan, which will provide long-term strategic direction as New Zealand's EV charging infrastructure expands.

Key points

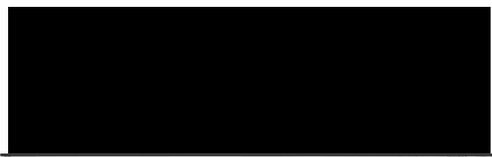
- To date there has been significant work on EV charging infrastructure for light passenger vehicles in New Zealand.
- At present, our EV charging infrastructure network provides reliable coverage for the existing light passenger EV fleet. However, EV uptake and usage levels are expected to increase rapidly.
- Expansion of our EV charging infrastructure network will play a critical role in stimulating these increased levels of EV uptake, and ensuring future EV charging demand is sufficiently met.
- A comprehensive national EV charging infrastructure plan is needed to provide strategic direction as New Zealand's EV charging infrastructure expands. This plan will coordinate and support EV charging objectives and barriers over the short-term (next five years) and long-term (beyond five years). It will also:
 - provide industry leaders and businesses with greater certainty around the Government's vision for EV charging and the role the Government intends to play;
 - help to ensure the roll-out of EV charging infrastructure is accessible to all New Zealanders and is made in the context of a Just Transition; and
 - help to mitigate existing and future barriers to EV uptake.
- A national EV charging infrastructure plan is also consistent with the Climate Change Commission's (the Commission's) 2021 Draft Advice recommendations for accelerated EV uptake and equitable access to EV charging infrastructure.

Recommendations

We recommend you:

- 1 **note** a comprehensive national EV charging infrastructure plan is needed to provide strategic direction as New Zealand's EV charging infrastructure expands
- 2 **note** the Ministry of Transport and relevant agencies will continue working to develop a comprehensive national EV charging infrastructure plan
- 3 **note** a national EV charging infrastructure plan is also consistent with the Commission's 2021 Draft Advice recommendations for accelerated EV uptake, and will support wider pathways towards transport decarbonisation
- 4 **note** officials will provide a high-level update on the development of a national EV charging infrastructure plan to Climate Change Ministers in June 2021
- 5 **refer** this briefing to Hon Megan Woods.

Yes / No



Ewan Delany
Manager, Environment, Emissions and Adaptation
14/05/2021

[Signature]
Hon Michael Wood
Minister of Transport
21/9/21

Minister's office to complete:

- Approved
- Declined
- Seen by Minister
- Not seen by Minister
- Overtaken by events

Comments *I want this to be part of a broader piece of work involving a clear plan for fleet transition, targets, and sector leadership. To discuss.*

Contacts

Name	Telephone	First contact
Ewan Delany, Manager, Environment, Emissions and Adaptation	[Redacted]	✓
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Need to discuss: **Personal contact details**
- Timelines
- High level objectives.

Personal information

UPDATE ON THE DEVELOPMENT OF A NATIONAL ELECTRIC VEHICLE CHARGING INFRASTRUCTURE PLAN

Background

New Zealand's current electric vehicle (EV) charging infrastructure network for light passenger vehicles is well placed to meet existing demand, but will need to expand

- 1 New Zealand's public EV charging network has grown to the point that we now have fast/rapid direct current (DC) charging stations at least every 75 kms across over 96 percent of our state highway network. Government has supported this by co-funding the installation of over 600 public and over 400 private EV chargers through the Energy Efficiency & Conservation Authority's (EECA's) Low Emissions Vehicle Contestable Fund (LEVCF).
- 2 With the implementation of the Clean Car Import Standard and the Clean Car Discount (Clean Car Policies), EV uptake is likely to accelerate. Increased EV uptake and usage levels are also central to the Government's transport decarbonisation pathway towards net-zero by 2050. This is outlined in both Hīkina te Kohupara and the draft transport chapter of the Emissions Reduction Plan (ERP).
- 3 These projected increases in EV uptake indicate New Zealand's existing EV charging capacity and supporting infrastructure will need to expand concurrently or even ahead of EV uptake.

The Ministry of Transport (the Ministry) has convened a group of government agencies to build off previous work on EV charging in New Zealand

- 4 In 2019, an EV charging sub-committee (the sub-committee) of the EV interagency working group¹ was convened to work through issues that could arise with EV charging in New Zealand in the short, medium and long-term.
- 5 In its 2020 report back to Ministers, the sub-committee provided a summary of key EV charging related issues, including generation capacity, transmission implications, effects on the distribution network of public and private charging infrastructure, safety and new charging technologies.
- 6 In March 2021, the Ministry held an inaugural workshop to revisit discussion around EV charging infrastructure, and to conduct a stocktake on EV charging related policies and initiatives underway across government. Officials from the Ministry of Business, Innovation and Employment (MBIE), Waka Kotahi New Zealand Transport Agency (Waka Kotahi), and EECA attended.

¹ The EV inter-agency working group comprised of officials from the Ministry, the Ministry for the Environment, MBIE, EECA, Waka Kotahi, the Ministry of Foreign Affairs and Trade, the Electricity Authority, and Fire and Emergency NZ. It was designed to provide a forum for discussion between officials, and to provide oversight on the implementation of EV policies agreed to in 2016.

We consider that a national EV charging infrastructure plan is needed to provide strategic direction as New Zealand's EV charging network expands

- 7 A comprehensive national EV charging infrastructure plan will provide strategic direction for a short-term action plan and a long-term EV charging strategy, and support coordinated implementation of EV charging infrastructure at a national and regional level.
- 8 Clear Government direction on the future of New Zealand's EV charging infrastructure will support policies designed to promote EV uptake, such as the Clean Car Policies, and our wider transport decarbonisation pathway.
- 9 A national EV charging infrastructure plan will also help to:
- 9.1 *provide industry leaders and businesses with greater certainty* and enhance their ability to prepare for, and meet, future demand for EV charging. This could indirectly encourage conventional fossil fuel suppliers to begin to transition their business models.
 - 9.2 *ensure the roll-out of EV charging infrastructure is accessible to all New Zealanders and is made in the context of a Just Transition*. Even as the EV charging market matures, the Government will continue to have an ongoing role in helping to address potential coverage gaps in the national EV charging network. Some regions and/or demographics may not be met by market players and will require direct Government intervention and/or market subsidisation.
 - 9.3 *mitigate existing and future barriers to EV uptake*. Perceived lack of EV charging infrastructure is currently a leading barrier to EV uptake. A national plan should help to not only create the right supply of EV charging infrastructure but also to mitigate barriers to their uptake. An EV charging infrastructure plan could do so by setting goals and principles informed by key barriers that future EV charging implementation must give effect to, thus prioritising their mitigation. This could then be delivered through specific policies (such as standards or non-regulatory interventions like guidelines).
- 10 A national EV charging infrastructure plan will also support future-proofing New Zealand's EV charging network. At present, government has focussed primarily on roll-out of EV public charging in the short-term. However, the consideration of short-term charger roll-out needs to sit within a longer term plan to ensure we can meet broader EV charging infrastructure objectives and requirements beyond the next five years. For example, if we only plan for short-term consumer preferences and services, such as EV chargers for the light passenger vehicle fleet, we risk future stranded assets that are unable to service future needs, such as charging for heavy vehicles.

A national EV charging infrastructure plan is also in line with the Climate Change Commission's (the Commission's) 2021 Draft Advice for Consultation

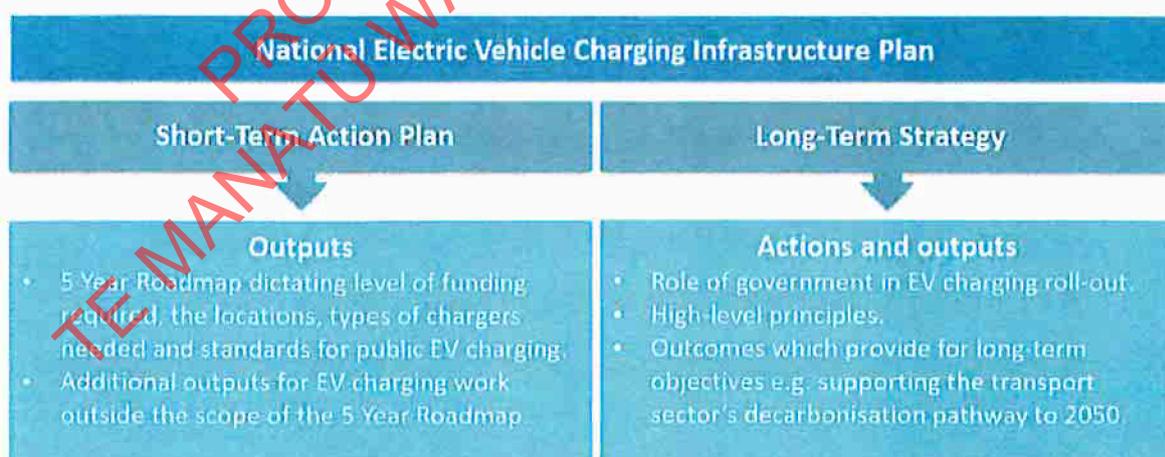
- 11 To support the rapid uptake of EVs, the Commission recommends developing a comprehensive national charging infrastructure plan. The Commission considers this will help to ensure greater coverage of EV chargers, with multiple points of access

and rapid charging, and that there is continued support of practical roll-out of charging infrastructure.

- 12 While the Commission acknowledges that EV charging infrastructure is relatively well developed in New Zealand, it stresses that more publicly accessible charging stations will be needed to ensure access for people who cannot charge at home.

The EV charging infrastructure plan will link a short-term action plan and a long-term strategy for EV charging

- 13 Barriers and objectives for EV charging differ in the short- and long-term. For example, levels of public understanding and familiarity with EV charging are likely to be lower in the short-term. This means that EV roll-out over the next five years may prioritise objectives like visibility and ease of use. In comparison, long-term EV charging may place greater weight on having enough charging capacity to meet levels of EVs needed to meet future emissions budgets. Annex 1 provides a comprehensive list of the barriers and objectives for EV charging infrastructure for both the short- and long-term.
- 14 A dedicated short-term action plan and a long-term EV charging strategy will accommodate these differences, and ensure barriers and objectives are prioritised and addressed appropriately with respect to each timeframe.
- 15 Other EV charging considerations such as modal coverage (light vehicles versus heavy freight), grid capacity requirements, and public versus private charging will also play different roles and be of differing priority in the short- and long-term. The scope of the EV national infrastructure charging plan is a critical factor that the EV charging working group will need to work through.
- 16 The below diagram illustrates how a national EV charging infrastructure plan would provide overarching guidance and direction for both a short-term action plan and a long-term EV charging strategy. Each would then produce differing actions and/or outputs.



- 17 A set of cross-cutting principles will underpin the overarching EV charging infrastructure plan. These principles will help to guide EV charging infrastructure and supporting policies in the short- and long-term, ensuring their consistency. This mirrors international best practice. For example, the Netherlands National Charging

Infrastructure Agenda² sets out multiple pillars to ensure an integrated approach to respond to the charging needs of the future.

EECA is delivering a 5 Year Roadmap which will primarily guide the short-term roll-out of public EV charging infrastructure

- 18 EECA's 5-year Roadmap (the Roadmap) will provide guidance on the level of funding required, the locations and types of chargers needed and standards of charging required over the next five years. It will also include information to help optimise investment, encourage new competition and address future changes that should be considered. The proposed overall vision for the Roadmap is that by 2025, New Zealand road users can be confident that they will be able to recharge light EVs when needed.
- 19 EECA's Roadmap would form a significant part of the Government's action plan for EV charging roll-out in the short-term. However, additional outputs may be needed to address gaps in the Roadmap's intended coverage. For example, charging for heavy EVs, the home and the workplace are out of scope of the existing EECA Roadmap.
- 20 A long-term overarching EV charging infrastructure plan would support the development of these additional outputs.
- 21 EECA will continue to work on the Roadmap, with support from the Ministry, MBIE, Waka Kotahi and other relevant government agencies and industry bodies. The Roadmap will be key to ensuring public charging infrastructure rollout is well supported in the short-term.

A long-term strategy for EV charging infrastructure is also needed

- 22 While EECA's Roadmap is underway and guiding the short-term roll-out of EV charging infrastructure there is presently no long-term strategy for EV charging infrastructure. A long-term strategy is therefore also needed to focus on objectives and barriers for EV charging beyond the next five years.
- 23 Developing a long-term strategy for EV charging will be difficult given the greater levels of uncertainty compared to the short-term. Technological advancements and divergence from projected and realised EV uptake mean that this strategy will need to be flexible and adaptive to accommodate for these, and other, shifts.
- 24 A long-term strategy will nonetheless be essential to ensure that future EV charging infrastructure can meet increasing levels of demand. Objectives may include:
 - 24.1 supporting the transport sector's decarbonisation pathway to 2050;
 - 24.2 promoting flexibility to allow for changes in technology and emissions budgets; and
 - 24.3 helping businesses and industry bodies better plan for EV charging beyond the next five years.

² [https://english.rvo.nl/sites/default/files/2020/10/Factsheet The National Charging Infrastructure Agenda.pdf](https://english.rvo.nl/sites/default/files/2020/10/Factsheet%20The%20National%20Charging%20Infrastructure%20Agenda.pdf)

- 25 The Ministry will continue to work through a long-term strategy for EV charging, with support from MBIE, Waka Kotahi, EECA and other relevant government agencies and industry bodies.

Next Steps

- 26 The Ministry, along with MBIE, Waka Kotahi and EECA will continue to work through:
- 26.1 agency and ministerial roles and responsibilities within a national EV charging infrastructure plan;
 - 26.2 a set of cross-cutting principles for a national EV charging infrastructure plan;
 - 26.3 a long-term EV charging strategy; and
 - 26.4 additional outputs for EV charging infrastructure in the short-term.
- 27 EECA will soon undergo stakeholder engagement on the Roadmap. Feedback from this engagement will inform our understanding of what non-government stakeholders would like to see in a roadmap and what barriers they are currently facing. Stakeholders will also be consulted on the draft Roadmap in mid-2021.
- 28 EECA intends to use the roadmap to inform investment decisions in the next round of the LEVCF (to be renamed the Low Emission Transport Fund) in the second quarter of the 2021/22 financial year. Funding for EV charging infrastructure will remain a priority funding objective in the future LETF.
- 29 We will inform the Ministry of Housing and Urban Development and other relevant agencies of the progress to date on the EV charging infrastructure plan, and include them in future discussion where relevant.
- 30 Key industry bodies, such as Transpower and the Electricity Authority, will also be informed and involved on a case-by-case basis to ensure their input, while retaining opportunity for free and frank discussion between government agencies.
- 31 We will also provide the Climate Change Ministers with a high level update on this work in June 2021.

ANNEX 1: BARRIERS AND OBJECTIVES FOR EV CHARGING INFRASTRUCTURE

Table 1 – Short-term barriers and objectives

Barriers	Objectives
<p>Grid compatibility - EV chargers need to consider electricity demand and supply factors</p> <p>Non-profitability – the charging provider business model is unprofitable for some time until the EV fleet size reaches a critical mass.</p> <p>Project time is normally long with resource consents and local council approvals taking long time to approve application.</p> <p>Land owners negotiation and access to property is challenging</p> <p>Lack of information and co-ordination by government and industry is a barrier to setting future targets on the number, capacity and density of charging infrastructure (including not making the most of EVRoam).</p> <p>Gap in understanding the level of investment required in the near term to support adequate level of public charging infrastructure</p> <p>Standardisation across different charging providers such as interoperable open payment systems</p> <p>Most of the current light vehicle charging sites are not built to accommodate future commercial vehicle charging requirement</p>	<p>Remove barriers for uptake of EVs</p> <p>Consistent - Be consistent with Ministry of Transport's overarching long term charging infrastructure strategy and EV Roam, as well as other government policy, guidelines and needs</p> <p>Competition - Encourage new entrants and competition for provision of charging infrastructure and demand management</p> <p>Flexible - Be agile and flexible to respond to changes in EV technology and consumer behaviour</p> <p>Guidance - Provide information and guidance to better inform future planning and optimal investment (by government and private sector)</p> <p>Cost-effective - installation of chargers maximises use in proportion to upfront capital and installation costs</p>

Table 2 – Long-term barriers and objectives

Barriers	Objectives
<p>Flexibility - as EV charging technology and EV uptake changes over time, this strategy may need to address and adapt to these shifts</p> <p>A large percentage of the fast charging network consists of 50kW chargers that are capable of charging only one vehicle at a time, this will likely not be sufficient for accelerated EV uptake.</p> <p>Uncertainty regarding the pace of uptake for EVs</p> <p>Risks of failure of critical infrastructure due to integration with local distribution networks, for example the risk of uneven distribution of EV chargers</p> <p>Demand for electricity outstrips available supply, or is otherwise incompatible</p> <p>Development and spatial planning prevents installation of EV charging required - or is not integrated in an optimal manner</p>	<p>Cost-competitive - the supply market fosters competitive prices for consumers</p> <p>Long-term development and spatial planning takes into consideration and gives effect to long-term EV charging needs</p> <p>Remove barriers for uptake of electric vehicles</p> <p>Avoid future stranded assets</p> <p>Encourage more private sector investment and competition</p> <p>Support decarbonisation of the transport sector by 2050 - this may mean charging serves multiple transport modalities to allow greater emissions reductions</p> <p>Equity - access for all New Zealanders</p>