Charging Our Future: a draft long-term electric vehicle charging strategy for Aotearoa New Zealand

The Government's long-term strategic vision for Aotearoa's national electric vehicle charging infrastructure system.

March 2023

Draft Strategy

This draft Strategy is intended to be read in conjunction with the associated *Charging Our Future: discussion document.*

Te Kāwanatanga o Aotearoa
New Zealand Government

Ko te pae tawhiti whaia kia tata. Ko te pae tata, whakamaua kia tina [The potential for tomorrow is determined by what we do today

TE MANATŪ WAKA
MINISTRY OF TRANSPORT

MINISTRY OF BUSINESS, INNOVATION & EMPLOYMENT
HĪKINA WHAKATUTUKI

Our vision for Aotearoa New Zealand's EV charging infrastructure

Our vision: Aotearoa's EV charging infrastructure supports the transition to and use of low-emissions transport by being accessible, affordable, convenient, secure and reliable.

This system-wide vision guides the Government's long-term strategy for our national electric vehicle (EV) charging infrastructure system for its expansion out to 2035.

The vision ensures the government's long-term strategic direction:

- considers both public and private charging infrastructure and charging behaviour, such as residential off-street, residential on-street, journey and destination charging
- includes an initial focus on charging for light EVs, while accommodating for and recognising areas where other vehicle modes and zero-emission energy sources may fall within scope, such as commercial heavy vehicles and green hydrogen
- includes a commitment to all New Zealanders (including current and future EV users from a range of backgrounds) to support an equitable transition.

Five long-term outcomes support the vision

The vision for Aotearoa New Zealand's EV charging infrastructure is supported by five proposed long-term outcomes. These outcomes reflect the urgent need to decarbonise Aotearoa's transport system, while acknowledging the need for an equitable transition which benefits all New Zealanders.

- Outcome 1: Aotearoa's EV charging system is underpinned by affordable, reliable, secure and safe power supply and infrastructure.
- Outcome 2: All EV users can safely access and use EV charging when and where needed.
- Outcome 3: Aotearoa's EV charging system is underpinned by integrated and streamlined cross-sectoral planning and standards.
- Outcome 4: Aotearoa's EV charging market functions effectively, can adapt and evolve over time, and is attractive to users, operators and investors.
- Outcome 5: Our national EV charging system supports the transition to, and use of, low-emissions transport modes across the wider transport system.

Each long-term outcome is supported by key focus areas

Each of these five long-term outcomes is supported by key focus areas, which will help to group areas of work underway and set out the further actions needed to achieve these outcomes.

The relationship between the vision, long-term outcomes and key focus areas is summarised by the figure on page 2.

Vision, scope, outcomes and focus areas

Our Vision

Aotearoa's EV charging infrastructure supports the transition to and use of low-emissions transport by being accessible, affordable, convenient, secure and reliable

Scope

- **Both public and private charging infrastructure and charging behaviour,** such as residential off-street, residential on-street, journey and destination charging
- **An initial focus on charging for light EVs,** while accommodating for and recognising areas where other vehicle modes and zero-emission energy sources may fall within scope, such as commercial heavy trucks and green hydrogen
- **A commitment to all New Zealanders** (existing and future EV users across demographic and geographic groups) to support an equitable transition.

Long-Term Outcomes

1. Aotearoa's EV charging system is underpinned by affordable, reliable, secure and safe power supply and infrastructure.

2. All EV users can safely access and use EV charging when and where needed.

3. Aotearoa's EV charging system is underpinned by integrated and streamlined cross-sectoral planning and standards.

4. Aotearoa's EV charging market functions effectively, can adapt and evolve over time, and is attractive to users, operators and investors.

5. Our national EV charging system supports the transition to, and use of, low-emissions transport modes across the wider transport system.

Focus Area 1a
Minimising stress on the electricity network

Focus Area 2a
Improving the equity of, and access to, safe residential/home charging

Focus Area 2b
Accommodating for geographic variation in charging needs and energy supply

Focus Area 3a
Improving standardisation and interoperability

Focus Area 3b
Optimising data capture and use

Focus Area 3c
Consideration of housing and urban development planning, where appropriate

Focus Area 4a
Accelerating commercial investment

Focus Area 4b
Enabling innovation in new technology and business models

Focus Area 5a
Progressing work on heavy vehicle charging (buses and trucks)

Focus Area 5b
Decarbonising other modes across the system and ensuring a coordinated investment approach

Outcomes

Outcome 1: Our national EV charging system is underpinned by affordable, reliable, secure and safe power supply and infrastructure

Focus area 1a. Minimising stress on the electricity network: relevant considerations

- EV uptake increases pressure on electricity infrastructure but also provides an opportunity to better manage demand through smart charging.
- The Energy Efficiency and Conservation Authority has recently published a discussion document to consider options to improve the energy performance of private EV chargers. Options being explored include the current use of voluntary guidelines, financial incentives to install 'smart' chargers and regulation using EECA's Minimum Energy Performance Standards regime.
- In early-2023, Cabinet will clarify whether EECA can set requirements for technology capable of responding to electricity demand (sometimes known as 'smartness') as part of its energy performance standards and labelling functions. If adopted, this would enable EECA to regulate EV chargers for demand response capability.
- The Electricity Authority oversees regulatory settings for distribution networks, including exploring settings necessary to facilitate distributed energy resources, including smart EV chargers. The Authority also promoted the idea to offer a separate load control tariff for EV chargers, to help encourage consumers away from charging during peak demand.
- The Commerce Commission is currently reviewing the rules and processes that underpin key aspects of information disclosure and price-quality regulation, including matters related to this outcome.

Further actions which could help meet Focus area 1a. Minimising stress on the electricity network

- Use vehicle and electricity supply data to identify and plan for electricity network requirements (i.e. avoid inefficient network upgrades).
- Publish detailed electricity network capacity data so public and private infrastructure planners can see where constraints are to encourage efficient investment.
- Investigate emerging technologies that can prevent the need for additional power generation, with the aim of encouraging innovative technologies that will make a positive difference.
- Promote the benefits and support the uptake of smart chargers for EVs.
- Work with lines companies to identify opportunities, mitigate risks, and clarify responsibilities in developing EV charging infrastructure.

Outcome 2: All EV users can safely access and use EV charging when and where needed

Focus area 2a. Improving the equity of, and access to, safe residential/home charging: relevant considerations

- As New Zealanders' living arrangements diversify, we need to consider access to home charging.

Further actions which could help meet Focus area 2a. Improving the equity of, and access to, safe residential/home charging

- Improve our understanding of the issues for access to chargers at home, using data and evidence. Specifically looking at:
  - rental accommodation
  - locations with challenging topography
  - living in multi-unit dwelling
  - social housing without access to off-street parking.
- Explore solutions to increase the provision of public charging infrastructure (i.e. slow AC charging) in locations with limited access to off-street parking.
- Partner with iwi and hapū to identify needs and possible solutions for EV charging on marae.
- Review current regulations relating to residential EV charging to ensure they remain fit for purpose.
- Ensure policies and interventions target an equitable transition to meet the specific needs of different communities. This may mean targeted government investment or intervention where gaps are identified in market provision.
- Investigate the case for a 'right to charge' policy for renters.

Focus area 2b. Accommodating for geographic variation in charging needs and energy supply: relevant considerations

- EECA's Roadmap and support through the Low Emission Transport Fund is helping to identify and address critical regional public charging coverage gaps, but further Government intervention may be needed to improve charging provision and service quality at the local level in rural areas.
- EV charging needs vary heavily with local factors, including population density, renting patterns, public transport access and supply, and parking patterns.

Targets

- We propose a target of **having a journey charging hub every 150 – 200 kms on main highways by 2028**. Hubs will charge many more vehicles and at faster speeds than the current national network of EV chargers that are currently spaced every 75km along our highways.
- In urban areas with limited off-street parking (generally in central Auckland and central Wellington) we could **aim to have one public charger for every 20 – 40 EVs**.
- We propose a target that **all settlements with a population of 2000 or more should have public charging at municipal or community facilities by 2025**.
- We propose to do further research on regional requirements, including consultation with groups and individuals in regional New Zealand, to inform targets and approaches to deployment across the country.

Further actions which could help meet Focus area 2b. Accommodating for geographic variation in charging needs and energy supply

- Monitor the expansion of the public EV charging network in line with EV uptake forecast levels across regions to inform investment.
- Implement a consistent, practical planning and approval process for new EV chargers across councils.
- Introduce high-level targets for new EV chargers that correspond to EV uptake projections and regional factors based on research and data.
- Provide additional government support (financial or otherwise) to assist the planning and installation of public charging infrastructure that specifically meets the needs of rural communities.
- Explore the role of existing vehicle service suppliers in improving regional/rural EV charging provision.
- Support vehicle-to-load technologies that increase resilience to fluctuations in supply from the national grid.
- Investigate the role of stationary battery storage and other charging innovations for rural locations. These measures can help to address seasonal EV charging demand peaks in more remote tourist areas and/or provide a lower-cost option for those areas facing costly electricity network upgrades due to regional energy supply barriers. The Low Emission Transport Fund is already actively encouraging applications of this technology.

Outcome 3: Aotearoa's EV charging system is underpinned by integrated planning and standards across multiple sectors

Focus area 3a. Improving standardisation and interoperability: relevant considerations

- As the EV charging market expands, standardisation and interoperability can improve participant experience.
- EECA is exploring options to improve the energy efficiency, interoperability, and connectivity of private EV chargers, including the current use of voluntary guidelines, financial incentives to install 'smart' chargers and regulation using EECA's Minimum Energy Performance Standards regime.
- Standards New Zealand published voluntary guidelines for residential and commercial EV charging in 2021, known as PAS (Publicly Available Specifications). The PAS will be updated in 2022/23 to reflect the latest technological developments and advice.

Further actions which could help meet Focus area 3a. Improving standardisation and interoperability

- Promote national consistency and reliability of service and a customer-centred approach to EV charging.
- Explore policy options to ensure chargers are efficient and safe.
- Support and enable data sharing where appropriate (e.g. EV charger and/or network providers) to support standardisation and interoperability.
- Support local authorities to implement the required public charging infrastructure.
- Develop systems and support networks to share best-practice between local authorities, industry and central government to ensure guidance and regulations are feasible and proportionate.

Focus area 3b. Optimising data capture and use: relevant considerations

- There are opportunities to use data capture and sharing to improve charging services.
- Currently EVRoam (a live database of Aotearoa's EV charging infrastructure) collects real-time information from all safe and monitored public chargepoints around New Zealand, and freely distributes it through apps and websites to inform EV drivers of charger location and availability.
- EECA is working on 'demand flexibility' across a number of initiatives, with EV chargers being one component of a flexible demand system. A functional system will require device registration (to enable visibility and control over the electricity network), data capture, and robust cybersecurity.

Further actions which could help meet Focus area 3b. Optimising data capture and use

- Explore the value of mandating real-time broadcasting of the location, type and availability of public chargers (e.g. through EVRoam).
- Investigate other user information the market would want EVRoam to capture, e.g. nearby services, price, etc.

Focus area 3c. Consideration of housing and urban development planning, where appropriate: relevant considerations

- There may be an opportunity to explore regulatory change in the housing and urban development sector to encourage charge-ready infrastructure or installed charge points in new builds.
- Auckland Council is investigating mandating electricity connections to enable smart EV chargers to be installed where developers choose to provide on-site parking.

Further actions which could help meet Focus area 3c. Consideration of housing and urban development planning, where appropriate

- Explore the costs and benefits of introducing charging infrastructure requirements for new developments (residential, commercial, and industrial).
- Investigate potential changes to planning strategies (for local and regional councils, e.g. minimum numbers of EV parking bays in certain locations).
- Provide guidance material for local councils, landowners and developers (e.g. in regard to "licences to occupy" granted to charging providers to place charging on council land).

Outcome 4: Aotearoa's EV charging market functions effectively, can adapt and evolve over time, and is attractive to users, operators and investors

Focus area 4a. Accelerating commercial investment": relevant considerations

- We seek to maximise the opportunity for a market-led rollout to support our vision for our national charging network.
- EECA continues to co-invest in the public EV charging network to support commercial partners, with a focus on high-speed journey charging.
- The Electricity Authority is assessing and addressing any significant first mover disadvantage issues facing customers connecting to distribution networks. The Authority also recently issued guidance to distributors on how to appropriately pass-through charges under the new transmission pricing methodology, including to new and expanding connections.
- The Commerce Commission can apply rules and processes for information disclosure and price-quality regulation to electricity distribution businesses (EDBs). The review of price-quality regulation for EDBs will consider any barriers to EDBs creating new connections in a timely and cost-effective manner.
- The Publicly Available Specification, *Electric vehicle (EV) chargers for commercial applications* is designed to become a single touch point document containing all relevant general EV charging information to inform investors of all requirements.

Further actions which could help meet Focus area 4a. Accelerating commercial investment

- Work with investors, charge point network operators and providers, and other key parties to support investment in public chargepoints.
- Enable data access and sharing where appropriate and needed to accelerate commercial investment.
- Ensure public funds are targeted at areas where commercial investment is unable to fully deliver.
- Ensure the network connection process and pricing for firms wishing to connect public EV chargers to distribution networks is efficient and enabling. Investigate changes to the current system that could reduce 'first mover disadvantage'. This barrier is explored in further detail under Outcome 5.

Focus area 4b. Enabling innovation in new technology and business models: relevant considerations

- The government and the market should enable innovative solutions to manage potential impacts from an increase in demand and permit new types of charging behaviour and technology.
- EECA's Low Emission Transport Fund demonstrates innovative solutions to stimulate wider replication of successful projects in the transport sector.

Further actions which could help meet Focus area 4b. Enabling innovation in new technology and business models

- Continue to co-fund the demonstration of innovative charging technologies and work with industry to address barriers to uptake where benefits exist.

Outcome 5: Our national EV charging system supports the transition to, and use of, low-emissions transport modes across the wider transport system

Focus area 5a. Progressing work on heavy vehicle charging (buses and trucks): relevant considerations

- Heavy EVs have specific charging needs that make it harder to provide charging infrastructure.
- At the 26th UN Climate Change Conference (COP26) the Government signed a Memorandum of Understanding (MOU) committing to increasing the sales of zero emissions heavy vehicles to 30 percent by 2030, and 100 percent by 2040.
- Te Manatū Waka is developing New Zealand's first Freight and Supply Chain Strategy. Part of the work from the Strategy includes ptimizing the freight network to enable freight to shift to lower emission transport modes, and developing better data and modelling approaches to support strategic decision-making, including in low emissions infrastructure.
- The recent funding round to prototype public EV charging hubs (administered by EECA's Low Emission Transport Fund) set minimum specifications for these hubs, including that potential projects would need to be able to accommodate light trucks or light vehicles with trailers.

Further actions which could help meet Focus area 5a. Progressing work on heavy vehicle charging (buses and trucks)

- Where appropriate, provide for heavy vehicle charging in new light vehicle charging developments.
- Research and engage with the sector to understand how a public journey charging network for heavy vehicles might look (based on critical freight infrastructure networks).

Focus area 5b. Decarbonising other modes across the system and ensuring a coordinated investment approach: relevant considerations

- This focus area looks at a range of vehicles that have particular charging needs, either because of their size and electricity requirements (e.g. ships and planes), or because they have specialist offroad uses and generally operate away from charging infrastructure (e.g. tractors and harvesters).
- Wellington is home to East by West's first fully electric ferry (Ika Rere), and another ordered from the Wellington Electric Boat Building Company. Auckland Transport have two hybrid ferries on order and are expected to be the biggest in the Southern Hemisphere. These ferries require shoreside infrastructure to recharge. The East by West electric ferry is currently charged from a 300kW charger at its overnight berth using the same specification as the high-power EV chargers used by ChargeNet in Taupō and the Bombay Hills.
- Sounds Air has ordered three 19-seater electric planes for later this decade, and intend to convert to a fully-electric fleet in future. Air New Zealand also expect to make use of electric aircraft on some shorter domestic routes by 2030. Two-seater electric planes have already taken flight in Aotearoa, and are likely to play a part in reducing emissions of pilot training.

Further actions which could help meet Focus area 5b. Decarbonising other modes across the system and ensuring a coordinated investment approach

- Research the present and future system-wide charging needs for heavy vehicles, planes, trains, and ships, including opportunities for co-location of journey and destination charging.
- Reforms in electricity pricing consider the needs of EV charging.
- Reform the approach for the cost-recovery of local network upgrades triggered by investment in public and private chargers.

Ngā Uara Te Manatū Waka
Te Manatū Waka Values

WHAKAPAKARI
IMPROVING OUTCOMES

AKO
CAPABILITY DEVELOPMENT

MAHI TAHI
WORKING TOGETHER

RANGATIRATANGA
EMPOWERING
AND LEADING

KAITIAKITANGA
GUARDIANSHIP AND
PROTECTION

WHANAUNGATANGA
COLLABORATION
AND UNITY

MANAAKITANGA
CARING FOR AND
VALUING OTHERS

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