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NZ Automobile Association submission on:
**Improving the performance of
electric vehicle chargers**



SUBMISSION TO: Energy Efficiency & Conservation Authority
REGARDING: Improving the performance of electric vehicle chargers
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Executive summary

The New Zealand Automobile Association (AA) welcomes the opportunity to provide comment on EECA's green paper, Improving the performance of electric vehicle chargers.

The electrification of our light vehicle fleet will bring many benefits to society and the environment. However, the replacement of a large proportion of our light vehicle fleet by EVs will have significant impacts on our electricity systems. Smart charging can make charging EVs significantly cheaper and safer for EV owners and allows them to play a part in electricity demand response.

Our current grid will not handle these new loads in electricity caused by large scale EV charging. Currently our peak load occurs twice daily: once in the morning as people arise and turn lights and appliances on, and again in the evening when we return home and turn lighting and appliances on. This is further increased in winter when we heat the house as well. This leads to a surge in the power demand. To meet this demand, significant extra investments will be necessary to upgrade both the networks that supply electricity and our generation capacity to provide it. This could mean electricity prices increase for consumers. If EV charging continues to rely on regular charging points, which simply supply power at a standard rate until the vehicle is fully charged, this could cause real issues for EV owners.

The AA supports the adoption of EV smart chargers that are subject to regulated standards and supported by time-of-use pricing and demand response capability.

Further, the AA encourages an Emissions Trading Scheme-funded large scale investment in private and public EV charger infrastructure via the Low Emissions Transport Fund. Such an initiative could be co-funded by electricity suppliers with a contribution from the householder. This model has been successfully used by EECA in its Warm-Up New Zealand home insulation programme.

Consultation Questions

Q1 Engagement principles

EECA wants to ensure the costs and benefits of smart EV chargers are equally shared for both electricity providers and consumers. The AA is concerned the cost to upgrade the physical network will be passed on to consumers through an increase in line charges while the benefits of managing peak electricity demand will accrue to the electricity providers.

Traditionally electricity in the network flows in one direction, from generation to transmission lines on to lines companies then to the consumer. If vehicle to grid (V2G) is introduced, then the local lines and isolation points, as well as transformers, will need updating to handle the bidirectional flow of electricity. The cost of these upgrades will be passed onto all consumers, creating a situation where householders and industry will be cross subsidising infrastructure required for EV owners.

The AA agrees with the stated principles and challenges EECA to “ensure the costs and benefits of smart EV chargers are equally accredited to both electricity provider and consumers”.

Q2 Proposed specifications for smart chargers

The proposed specifications as outlined as potential characteristics of smart chargers appear appropriate. The most important characteristics are safety, reliability, compatibility and efficiency.

Q4 Information on location and use

Currently the Electricity Authority maintains a register of all meters, and each has a unique installation control point (ICP) number. Publicly viewable data about the type of meter, its certification expiry data and electricity supplier along with other information is available on the EA website. It would be easy to link the EV charger information to the ICP number to more easily allow multiple trader relationships or peer-to-peer trading. If linked, then a correctly configured smart meter may be able to provide the live consumption data and make the requirement for EV charger open access communication redundant.

Q5 Monitoring and recording electricity consumption

As noted above, this is an important feature for an EV owner and network operator. It could be achieved by measurements taken by the EV charger or an appropriately configured smart meter.

Q6 Mandating power quality

With the proliferation of EV chargers expected in the future and the additional load and impact on the network, it is imperative that the power quality be mandated to minimise any negative impacts on the network.

Q7 Regulating energy efficiency

The main barrier to regulating the energy efficiency of on-board chargers is that they are not a stand-alone device, rather a component in a vehicle. This would make it very difficult to regulate the on-board charger for two reasons:(1) The New Zealand new vehicle import market is treated by many manufacturers as a branch of the larger Australian market, making up 15% of the Australasian market. The Australian market is 5% of the Japanese export market and New Zealand adds a further 1%. Therefore, it would be extremely difficult to mandate specifications for on-board chargers supplied to our market as we have a small market share without influence. (2) In 2020 around 45% of new entrants to the fleet were used vehicles. By the nature of their age, the technology in these used vehicles is dated. Creating a Minimum Energy Performance Standard (MEPS) for in-board chargers that was applicable and fair to the new and used vehicle importation sectors would be problematic. Also, a MEPS usually removes a percentage of the worst performing appliance or product that was on the market. It would be counter-productive to New Zealand's climate change goals in the transport sector to remove the availability of some models of EV if their on-board chargers did not meet the required standards.

The AA does however support MEPS for fixed chargers.

Q8 Labelling aftermarket AC EV Chargers

No Comment

Q9 Labelling aftermarket AC EV Chargers

No Comment

Q10 Do nothing option for EV Chargers

The AA welcomes government intervention to set international agreed standards and protocols for smart charging EVs in New Zealand. The failure to do so early will be a lost opportunity to cost-effectively manage over investment in the electricity network. Waiting will ultimately be more costly to consumers and slow the uptake of EVs.

Q11 Information, education and labelling

A marketing campaign and information on websites will inform potential owners of smart chargers, of their potential benefits and features. However, as they are installed by an electrician and more than likely purchased as part of the total service, equipment and installation for a price, then labelling would have limited impact.

Q12 Incentives to encourage the uptake of smart EV chargers

In 2021 to 2022 only \$4m was allocated to the Low Emissions Transport Fund to co-fund the adoption of public EV charging infrastructure. In future years this level of funding will be insufficient to meet the growing demand for public charging stations. As well as increasing public charging infrastructure, there is also the need to rapidly increase the installation of private charging infrastructure at scale.

Timing of Investment is Critical

A December 2021 report from Concept Consulting, funded by a group of energy providers and automotive interests (including the AA Research Foundation), estimated that approximately 85% of EV charging will occur at home, but there is also a need for significant public and community charging infrastructure. This infrastructure requires large-scale public funding to overcome the “chicken and egg” situation that arises with new technologies. Public charger investment needs to be leading, not lagging EV uptake. With uncertainty over the uptake rate of EVs, private investors tend to under-invest rather than over-invest. Concept Consulting’s analysis around the outcomes from under- or over-investment calculated that bringing forward investment two years too early would cost \$165m. Delaying the investment and impeding EV uptake by two years would increase transport costs by \$4.2bn, twenty-five times as much. This shows the importance of government investing to help stimulate action at the right time.

Changes to Planning Rules Increase the Need for Public Charging Infrastructure.

The National Policy Statement on Urban Development (NPSUD) prevents councils in Auckland, Wellington, Tauranga, Christchurch, and Hamilton from imposing height restrictions of less than six-storeys. They also remove the need for developments to provide car parks. Further, for other urban areas with more than 10,000 people, district plans must not include minimum car parking requirements, other than for accessible carparks.

This densification of housing without car parks will create a much greater need for community EV charging stations as although it is envisaged that these large-scale apartment complexes will be serviced by good public transport, there will still be a need for private vehicles, and to meet our carbon reduction targets, these vehicles need to be electric.

Provision of Private Charging Infrastructure

WorkSafe NZ guidelines strongly discourage allowing an employee with an employer-owned vehicle from charging the vehicle at home using Mode 2 charging with an in-cable control and protection device. This is because it relies on the safety and integrity of the home's wiring, something that the employer has little control over.

To address this issue, when home charging a vehicle used for business purposes is considered appropriate, a dedicated charging station should be installed at home. Currently, these guidelines promote the safe use of EV domestic charging to limit the liability of the employer, but they could also act as a disincentive for companies to purchase EVs for work purposes. Any barriers such as this to purchasing EVs need to be removed. Given fleet buyers are the biggest purchasers of new vehicles, they are able to become the biggest purchasers of new EVs as long as any disincentives like this are removed.

Therefore, the AA proposes that EECA should significantly scale up the Low Emission Transport Fund so that there is a much greater investment in both public and community EV charging infrastructure, and also investigate the development of a scheme to co-fund private smart EV charging installations. These domestic charging points could be co-funded with electricity suppliers with a contribution from the householder. This model has been successfully used by EECA in its Warm-Up New Zealand home insulation programme.

Like insulation, a domestic EV charger would be a legacy asset for a home because it would remain installed even when a home changes ownership.

The AA favours the participation of the electricity suppliers in this, so that they know where chargers are located and can therefore forward plan demand profiles, the size of transformers, and facilitate a two-way smart grid where the householder is potentially a buyer and seller of electricity. This could further encourage and increase the uptake and utility of renewable electricity. Concept Consulting calculate that large-scale smart charging could avoid \$1.7bn in peak and generation investment.

The AA supports revenue from the Emissions Trading Scheme levy on mineral fuels being hypothecated towards funding projects that reduce transport emissions, which could include establishing EV Charger Standards and subsidies to accelerate the installation of EV chargers at scale. Currently the government is collecting about \$950m a year in ETS revenue from transport.

We encourage the use of hypothecated revenue from the Emissions Trading Scheme allocated to the Climate Emergency Response Fund to be used to increase the funding of the Low Emission Transport Fund.. Transport emissions are recognised as low hanging fruit in the Emissions Reduction Plan. Therefore, the AA strongly supports the Low Emissions Transport Fund be significantly

expanded with ETS funds to provide greater public EV charging infrastructure, commence a home EV charger installation scheme modelled and scaled on the Warm-Up New Zealand programme.

Q13 Regulating EV chargers

The AA supports regulating the smartness of EV chargers so that the full benefits of load management and time-of-use pricing be attained. The opportunity to do this early is important and issues like safety, cyber security, communications, time-of-use variability and energy efficiency should be addressed.

The AA believes that New Zealand should adopt an approach similar to that employed in the UK so as to unlock the full potential of EV ownership.

About the New Zealand Automobile Association

The NZAA is an incorporated society with over 1.8 million Members, representing a large proportion of New Zealand road users. The AA was founded in 1903 as an automobile users' advocacy group, but today our work reflects the wide range of interests of our large membership, many of whom are cyclists and public transport users as well as private motorists.

Across New Zealand, the motoring public regularly come into contact with the AA through our breakdown officers, 36 AA Centres and other AA businesses. Meanwhile, 18 volunteer AA District Councils around New Zealand meet each month to discuss local transport issues. Based in Wellington and Auckland, our professional policy and research team regularly surveys our Members on transport issues, and Members frequently contact us unsolicited to share their views. Via the AA Research Foundation, we commission original research into current issues in transport and mobility. Collectively, these networks, combined with our professional resource, help to guide our advocacy work and enable the NZAA to develop a comprehensive view on mobility issues.

Motorists pay over \$4 billion in taxes each year through fuel excise, road user charges, registration fees, ACC levies, and GST. Much of this money is reinvested by the Government in our transport system, funding road building and maintenance, public transport services, road safety work including advertising, and Police enforcement activity. On behalf of AA Members, we advocate for sound and transparent use of this money in ways that improve transport networks, enhance safety and keep costs fair and reasonable.

Our advocacy takes the form of meetings with local and central government politicians and officials, publication of research and policy papers, contributing to media on topical issues, and submissions to select committees and local government hearings.

Total Membership

1.8+ million members

Just over 1 million are personal members

Over 0.7 million are business-based memberships



% of licenced drivers

At least 29% of licensed drivers are AA Members

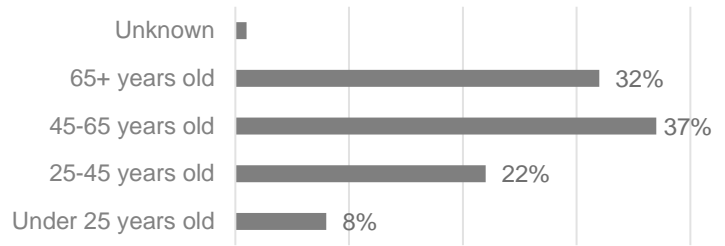
Gender split

54% Female

46% Male

Age range & Membership retention

Age of AA Members



Half of AA Members have been with us for 10 years or more.

