Submission on the Climate Change Commission Advice to Government

27 March 2021

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THE STRUCTURE OF THIS SUBMISSION IS:

Quote from the CCC consultation materials

Our discussion

Transportation Group recommendation(s) to CCC

# Introduction

The Transportation Group welcomes the opportunity to provide input on the 2021 Draft Advice for Consultation, produced by the Climate Change Commission He Pou a Rangi (CCC).

The Transportation Group is a Technical Interest Group of Engineering New Zealand, with over 1,100 members. The Group was formerly known as the IPENZ Transportation Group. More information about the Transportation Group is [available online](https://www.transportationgroup.nz/about-us/). Please note that this submission has been prepared by a special subcommittee established for that purpose It has been approved by the Chair (Jeanette Ward) and Vice Chair (Bridget Burdett) of the Group but has not been reviewed or endorsed by the entire membership.

Due to the focus of our membership, we provide our feedback on:

* Draft Advice Executive Summary – Transport
* Draft Advice Chapter 3: the path to 2035 section 3.8.1 Transport
* Draft Advice Chapter 6: Direction of policy in the Government’s emissions reduction plan section 6.1.1 Transport
* Evidence report Chapter 4b (Reducing emissions – opportunities and challenges across sectors Transport, buildings and urban form) and within that chapter, restrict ourselves to **transport** and **urban form**. Section 4b. 3 Buildings are outside our area of expertise.

We commend the CCC for the quality of the consultation document and the depth of the analysis undertaken. Our submission follows this formatting structure:

Quote from the CCC consultation materials

Our discussion of the issue(s)

Transportation Group recommendations to CCC (shaded green)

# Executive summary – transport

## Overall structure

The CCC executive summary states

We recommend 17 critical actions the Government must take to reach its climate goals. (p.12)

The summary does not mention that these actions are not included in the summary. The Table of Contents is lengthy and readers may have skipped it. It is only when the reader has made it through to later parts of the document that the structure of the document becomes clear.

1. To improve readability, reference the relevant full action text within each sector and clarify the difference between recommendations and actions. The document structure should be outlined in the summary.

The summary has three recommendations for transport (p.14-15) as follows.

## CCC Transport Recommendation 1

An integrated national transport network should be developed to reduce travel by private car. There needs to be much more walking, cycling and use of public and shared transport. (p.14)

The Transportation Group supports the aim of “much more” walking, cycling, public and shared transport. However, the “integrated national transport network” proposal is ambiguous. At present, many councils are producing “integrated transport strategies” that may or may not have sufficient detail for walking and cycling. They also may not sync with mandated Regional Public Transport Plans and Regional Rail Plans.

The Ministry of Transport is using a “mode neutrality” approach:

As a guiding principle for making transport decisions, 'mode neutrality' means considering all types of transport when planning, regulating and funding transport. Rather than favouring a specific type of transport, decisions are based on delivering positive social, economic and environmental outcomes (Ministry of Transport)

This approach is insufficient to meet the challenge of climate change. After decades of motorised road transport, we must “favour” sustainable modes of transport in order to “catch up”, not just put them on a level playing field.

1. Better define “integrated national transport network” and help readers navigate the advice by referencing Necessary Action 2 (section 6.1.1)
2. CCC should recommend that Government explicitly favour sustainable modes rather than maintain “mode neutrality”

## CCC Transport Recommendation 2

Electric vehicles are key and need to be widely adopted. We want to see the majority of the vehicles coming into New Zealand for everyday use electric by 2035. The government will need to provide support and incentives to make this happen. (p.15)

The Transportation Group generally agrees with this recommendation, but as with the first recommendation, the Executive Summary should reference the place in the CCC report where the details for this are contained.

1. Reference where in the body of the advice the details are given (section 5.2.4)

The Transportation Group notes that the supporting evidence says:

There are also challenges of relying on electrification. Prioritising electric vehicle uptake continues to encourage car dependency and contributes to demand for low density development. (Evidence Report Chapter 4, p.14)

We agree with this point and therefore believe that EVs are one key, not the key.

1. Rephrase Recommendation 2 as: “As an interim measure before mode shift to sustainable transport is widespread, electric vehicles need to be widely adopted…”

## CCC Transport Recommendation 3 (p.15)

Use of low carbon fuels, such as biofuels and hydrogen, needs to increase, particularly in heavy trucks, trains, planes, and ships.

As we will discuss in our response to section 6.1.1 and Evidence Report Chapter 4b, biofuels should not come at the expense of land for food production and hydrogen has serious limitations. The Transportation Group notes that many other potential outcomes and actions could have a larger impact on emissions such as travel demand management and therefore should be prioritised.

1. Given the negative impacts of biofuel production and the significant technical limitations of hydrogen for private and commerical land transport, consider highlighting other recommendations with potentially greater impact such as Travel Demand Management (including but not limited to new models of road pricing and denser land use development).

# Chapter 3: what a path to 2035 looks like in transport (3.8.1)

…no further internal combustion engine light vehicles imported after 2032. This would mean more than half of all light vehicle travel would be in electric vehicles by 2035 and 40% of the light vehicle fleet would be electric vehicles by 2035 (Figure 3.10).

In our path medium and heavy trucks are slower to electrify. This is because the current battery technology does not allow for the greater daily distances they need to travel. Of the trucks imported in 2030, 15% of medium trucks and 8% of heavy trucks would be electric. By 2035, these would increase to 84% and 69% respectively. (p.57)

Current vehicle classes (<https://www.nzta.govt.nz/vehicles/vehicle-types/vehicle-classes-and-standards/vehicle-classes/>) do not clearly indicate whether the most popular (current) new vehicles, the Ford Ranger, is a light vehicle or not. It appears that this goal allows a substantial number of light trucks like the Ford Ranger to continue being imported (assuming that manufacturers are still producing ICE light trucks). The Toyota Hiace and the Ford Ranger 3.2 have emissions of 214g/km and 216g/km, respectively. Ten years ago, New Zealand tradespeople did not predominantly drive very large 4x4 double cab trucks that are increasingly common in our fleet now. Using smaller more compact vehicles still allowed tradespeople to undertake their work, travelling and storing tools in vehicles that take less road and parking space, and caused less harm to pedestrians and cyclists in the event of a collision (with lower bonnets both reducing the risk of pedestrians being dragged underneath, and providing better forward visibility to reduce the likelihood of collision in the first place). Larger vehicles are threatening to people walking and riding bicycles, so are one of many barriers to more people traveling in more sustainable ways.

1. Clarify the term “light vehicle”
2. Remove incentives and exceptions favouring the heaviest vehicles; introduce an emissions-based taxation scheme to encourage the uptake of more efficient and low emission vehicles.

We assume the average household travel distance per person can be reduced by around 7% by 2030, for example through more compact urban form and encouraging remote working. We also assume that the share of this distance travelled by walking, cycling and public transport can be increased by 25%, 95% and 120% respectively by 2030 (p.58)

Between ongoing school consolidations and urban sprawl, it is considered unlikely that New Zealand’s per capita travel distances will reduce and urban form will become more compact. The TG will comment on the actions required to achieve the 7% reduction in the respective sections.

It would be simpler for readers to understand if the resulting mode share values were presented along with the target percent increases.

1. Add resulting mode share values to the assumed percent increases

Emissions from freight can be reduced by switching some freight movements from road to rail and coastal shipping. Our path assumes 4% of freight tonne-kilometres can switch by 2030. Further reductions in freight emissions could be achieved by completing the electrification of the Auckland to Wellington railway line and electrifying the Hamilton to Tauranga railway line (p.59)

We support advice related to emissions from freight. As professionals, we see that promoting active travel, EVs, micro-mobility, and TDM (to help offset the growth in VKT that naturally follow population growth) are *all* needed as part of the ‘keys’ to address our growing demand for carbon consumption in the transport sector, but these steps will also offer the enduring positive benefits of realising equity, liveability and health outcomes for all citizens. There are many mechanisms needed and many benefits to be seen, so integration and collaboration are critical.

# Chapter 6: Direction of policy in the Government’s emissions reduction plan: transport

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| --- |
| Consultation question 14Transport |
| Do you support the package of recommendations and actions for the transport sector? Is there anything we should change, and why? |

The Transportation Group broadly supports the CCC’s recommendations and actions. The changes we suggest are numbered in green shading throughout this submission.

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Necessary action 2 is the first transport-related action (p.106):

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| --- |
| Time-critical necessary action 2Accelerate light electric vehicle uptake |
| Light electric vehicle uptake needs to be accelerated as fast as possible. To meet our proposed emissions budgets and be on track for 2050, at least 50% of all light vehicle (cars, SUVs, vans and utes) and motorbike imports should be electric by 2027 (both battery EV and plug-in hybrid EV). To achieve this, we recommend in the first budget period the Government:1. Place a time limit on light vehicles with internal combustion engines entering, being manufactured, or assembled in Aotearoa, other than in specified exceptional circumstances. The limit should be no later than 2035 and, if possible, as early as 2030.
2. Introduce a package of measures to ensure there are enough EVs entering Aotearoa, and to reduce the upfront cost of purchasing light electric vehicles until such time as they are cost competitive with the equivalent ICE vehicle.
3. Improve the efficiency of the light vehicle fleet and stop Aotearoa receiving inefficient vehicles by introducing an emissions target for light vehicles new to Aotearoa of 105 grams CO2 per kilometre by 2028.
4. Develop a charging infrastructure plan for the rapid uptake of EVs to ensure greater coverage, multiple points of access and rapid charging, and continue to support the practical roll out of charging infrastructure.
 |

Shifting towards electric cars is but an interim measure towards emissions reduction. The potential of electric micro-mobility devices should not be overlooked as it has proved to be an accepted alternative form of travel and is outselling EVs 10 to 1 (ViaStrada 2017, Beca 2021). Promotion of electric micro-mobility is also a means to shifting more rapidly towards better street design, because their popularity can increasingly be used to dispel political arguments against reallocating roadspace to sustainable transport. We argue that the action statement to accelerate the use of light electric vehicles should include the acceleration of the use of electric micro-mobility devices.

1. Action 2 should incorporate the acceleration of electric micro-mobility devices such as e-bikes and e-scooters, accompanied by a national support towards mode shift.
	1. Extend the package of measures (b) with encouraging measures for the import, manufacturing, and sales of electric micro mobility devices. This should include separate classification for e-bikes and e-scooters in the Customs Tariff document.
	2. Include the development of charging infrastructure for micro-mobility devices alongside the development of charging infrastructure for EVs.
	3. Develop supportive measures for behavioural change by means of mass communication and workplace travel planning initiatives, including extending Waka Kotahi’s e-bike purchase support scheme.
2. Clarify how the CCC has assessed action 2 to be time-critical but the other actions as not time-critical.

EV cost-competitiveness should be defined. The up-front cost is expected to reach parity by 2030, while life-cycle costs are already less for EVs (refer to our submission section 5.2.4).

1. Define cost-competitiveness (purchase price or yearly running cost?) for EVs

|  |
| --- |
| Progress indicators |
| 1. Government to have consulted, no later than 30 June 2022, on preferred policy options for accelerating EV uptake (including a date for placing a time limit on the import of ICEs).
2. Cabinet decisions on preferred policy options to be made, as soon as possible but no later than 31 December 2022, on accelerating EV uptake.
3. Government to have implemented regulations on improving the fuel efficiency by 30 June 2022.
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Supported by Transportation Group.

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| --- |
| Necessary action 3Accelerate light electric vehicle uptake |
| We recommend that, in the first budget period the Government make progress on the following:1. As part of a policy package introduce a fiscal incentive, such as a feebate or subsidy, to reduce the upfront cost of EVs until such time as there is price parity with ICEs.
2. As part of an equitable transition, evaluate and support interventions such as leasing, hire and sharing schemes to remove barriers and address some of the upfront capital costs of EVs.
3. Investigate ways to bulk procure and ensure the supply of EVs into Aotearoa and work with the private sector to do so.
4. Evaluate how to use the tax system to incentivise EV uptake and discourage the purchase and continued operation of ICE vehicles.
5. Work with the private sector to roll out EV battery refurbishment, collection and recycling systems to support sustainable electrification of light vehicle fleet.
6. Evaluate the role of other pricing mechanisms beyond the NZ ETS, such as road pricing, can play in supporting the change to a low emissions and equitable transport system.
7. In setting these policies the Government needs to mitigate impacts for low-income households and people with disabilities, regional and remote access, and with limited access to electricity.
 |

It is important to address the aspects of inclusion in this statement. Aotearoa New Zealand can only make these targets if they are developed for the whole population (Ministry for the Environment 2018). Therefore, it is important that the measure to increase adoption of electric vehicles and electric micro-mobility are accessible for all. It is known that are other barriers to EV leasing and sharing than cost and range, such as lower digital literacy or credit card ownership (McLaren and Agyeman 2015).

Further, there are ways to promote cleaner, more equitable transport choices beyond subsidies and incentives for people to purchase electric cars. Supporting volunteer and not-for-profit community groups with transport, for example by providing grants to community groups for electric vehicles, would support climate change and equity goals simultaneously, by reducing peoples’ overall reliance on cars (Burdett 2018).

1. Include actions that address accessibility to the use of EVs and electric micro-mobility devices.
2. Include action to support community and non-government sector with grants for electric vehicles such as minivans, to reduce reliance on cars by low-income groups.

# Evidence Report Chapter 4b.1 Transport

Given that transport emissions are the main driver for New Zealand’s growing contribution on greenhouse gas emission, our group feels a deep responsibility to respond to the situation. Our membership supports a faster reduction in transport emissions than what is envisaged in the consultation document, so that we can undo the damage caused by the carbon–consumption of the sector. We will reflect on this for the various options where we see potential to drive down emissions faster.

Members agree with the report’s vehicle type categorisation, e.g. that conventional hybrids are to be classed as internal combustion engine (ICE) vehicles.

An overarching comment about the options for reducing emissions is that the interventions applied individually will not be as effective as when they are implemented together. We note that MRCagney undertook modelling for Auckland [MRCagney (2020) *Auckland’s Transport Emissions.* Viewed on 24 February 2021 <https://transport2030.org/>] and *The New Zealand Herald* reported on it [Wilson, Simon (4 December 2020) Simon Wilson: How to cut Auckland transport emissions by 70 per cent in just 10 years. *The New Zealand Herald*, [https://www.nzherald.co .nz/nz/simon-wilson-how-to-cut-auckland-transport-emissions-by-70-per-cent-in-just-10-years/7ZFVY6VSSDAEBWPPRZ6FH77Q4U/](https://www.nzherald.co.nz/nz/simon-wilson-how-to-cut-auckland-transport-emissions-by-70-per-cent-in-just-10-years/7ZFVY6VSSDAEBWPPRZ6FH77Q4U/)]. It is thus important that the interventions not be regarded as individual actions, but as a set of interventions applied as a set of coordinated measures.

## 4b.1.1 Focus on Auckland

CCC suggests that the solutions for Auckland apply to the rest of New Zealand, however it appears that there is more willingness for road building in the Auckland context. This will lock in future motoring and emissions through induced demand (Simic, Bartels et al. 2013). The term ‘induced demand’ is not included in the CCC advice or supporting material.

1. Include consideration of induced demand in the CCC advice, in particular with regard to Auckland

## 4b.1.2 Options for reducing emissions

### Reducing travel

We regard this option as the most effective but suggest a different way of achieving it. We suggest that key to change is to adopt an explicit policy across all levels of government to **reduce traffic**, i.e. to tackle the problem of ever increasing emissions head-on by stating that we intend to reverse the trend. It is important to formulate this goal explicitly because much of the activity of the transport sector is based around “keeping traffic moving”. The moment we are explicit about the opposite, we expect that goals for alternative transport initiatives will be much easier to achieve (e.g. prioritisation of other modes at traffic signals) and cheaper to implement (e.g. utilisation of existing road space for other transport modes).

An important aspect that sustains car travel is cheap (often free) parking and it needs to be recognised that local government will not be able to bring about fundamental change to parking management, as the status quo is seen as a normal. If the intention is for people to make conscious decisions about their mode of travel, charging for parking on a public road will be an effective tool. Central government should consider funding models whereby a Road Controlling Authority’s Financial Assistance Rate is tied to the amount of parking revenue, thus incentivising RCAs to introduce parking charges. We predict that commuters would react most quickly to such a measure and consider alternatives; we note that you state that this user group is responsible for around 13% of current transport emissions.

The CCC draft mentions longer term travel reduction through land use changes and we will discuss this in the section on urban form.

### Transport type shift to walking, cycling, public transport

The CCC advice recognises the potential impact of active travel and lower emission travel modes. We strongly agree with this argument however argue that the set targets are too low (Auckland: a mode share of 7% cycling in 2030 and 9% in 2050; National level: recommendation by health research of 15% of trips by bike). Almost two thirds of the trips New Zealanders make are less than 2 km long. These trips alone can often be travelled on foot or by bike. The bicycle can be used for wider range, providing a viable alternative for trips up to 10-15 km. The e-bike, for which ownership is increasing, can be considered an alternative mode for trips up to 25 km. The combination of active travel and public transport, given the right facilities are in place (bike parking, sharing schemes, bikes on the bus), can provide people with alternative travel options for distances that are comparable to or even exceeding distances suitable for private vehicle trips.

1. New, higher targets should be calculated based on the continuously increasing amount of infrastructure and services.

### Conventional vehicle improvements

[Current rules](https://www.nzta.govt.nz/roads-and-rail/highways-information-portal/technical-disciplines/air-quality-climate/vehicles/exhaust-emission-standards/) include the Vehicle Exhaust Emissions Rule 2007 prohibiting tampering with vehicle emissions control systems and the Road User Rule, which prohibits a vehicle from emitting visible smoke. Neither is practically enforced. The Transportation Group is aware that this has been discussed in New Zealand but discounted due to the cost of procuring testing equipment. In our view this is not an acceptable excuse. Numerous countries and jurisdictions have emissions testing, with one of the most comprehensive being the State of California.

1. The CCC advice should include:
	1. Roadside Inspection Programme similar to [California’s program](https://www.bar.ca.gov/Roadside_Inspection_Program) to establish baseline and ongoing monitoring datasets
	2. Emissions testing as part of the WOF system similar to California’s [Smog Check](https://www.bar.ca.gov/Consumer/Smog_Check_Program)

### Electrification of light vehicles – cars, SUVs, utes and vans

The evidence states:

The main challenge currently is the upfront cost of purchasing an electric vehicle, which is more expensive than the internal combustion engine equivalents” (p.11)

The CCC does not appear to acknowledge the rapid move towards price parity for EVs. UBS Investment Bank and General Motors (GM) predict EV/internal combustion (IC) parity will be achieved by 2024 and 2030 respectively; the world’s largest automaker, GM, will offer 30 EV models by 2025 and phase out IC vehicles production by 2035 <https://www.gm.com/commitments/electrification.html>

Further issues include the environmental footprint of EVs compared to ICE vehicles and the fact that prioritising EV adoption may stand in direct opposition to other goals such as compact urban forms (an EV takes up the same space as an ICE vehicle)[[1]](#footnote-2),[[2]](#footnote-3)

There are also challenges of relying on electrification. Prioritising electric vehicle uptake continues to encourage car dependency and contributes to demand for low density development. (p.14)

TG strongly supports this point. A systems-based solution is needed; if all the policy “eggs” are placed in the EV transition basket, then it is less feasible to achieve land use development patterns that support reduced trip distances, public transport services, walking and cycling.

Electrification and EV transition could be one of the solutions, but it is not economic for all vehicles and at least for present scenarios.

1. The Evidence report acknowledges EVs aren't 'silver bullet' but this should be made clearer throughout the advice document

Throughout the advice and supporting material, there is discussion of barriers to adoption of EVs, which is self-sustaining. Media and sector members are part of the reason why the barriers are front of mind. The conversation should be about opportunities (Ministry for the Environment 2018).

1. CCC should recommend that the Government prioritise the opportunity-focused recommendations of the Ministry’s report on adoption of EVs.

### Electrification of trucks and buses

Electrification of public transport buses in Christchurch will reduce CO2 emissions from public transport in the area by 14% (Environment Canterbury 2020). As former CEO Bill Bayfield said in one of his speeches related to the bill, electrification of public transport would be a win-win-win emission solution in Christchurch and New Zealand in general.

However, it appears that this action is being led without the input of [Ms. Cobaleda](https://www.linkedin.com/in/margaritaparra/), who is one of the foremost experts in bus electrification and a current advisor to the US Biden Administration and who now lives in Christchurch.

1. CCC should recommend to Government that the implementation of the bus electrification actions include technical input from a broad range of experts, not just bus suppliers and service providers

### Biofuels for trucks and buses

Recent modelling shows that the cost-effectiveness of biofuel substitution for standard fossil fuels is marginal in the United States (Hossain and Serletis 2020) and may have more substantial benefits in a tropical environment such as Indonesia (Jupesta 2010). The authors of the Indonesian study note that their model did not incorporate land use change and deforestation impacts. For New Zealand, local biofuel production would necessitate some production shift for farmland which may have negative consequences overall (Hill 2009).

1. CCC should consider the limitations of biofuels cited here when setting emissions targets and in the discussion of their potential

### Hydrogen trucks and buses

Hydrogen fuel cell technology has the potential to reduce emissions without the battery density issues of EVs (Lee, Elgowainy et al. 2018). Hybrid trucks using hydrogen fuel cells are a purported solution that can increase fuel economy by up to 60% but may have adverse emissions impacts unless carefully implemented (Gao, Smith et al. 2015). In addition, the lack of cost-effective infrastructure is the main barrier to usage (Lahnaoui, Wulf et al. 2019).

Dr. Susan Krumdieck (formerly of the University of Canterbury) has researched these issues for the US Department of Energy and written extensively on them and could provide CCC with further guidance on the practicalities.

1. CCC should consider the limitations of hydrogen cited here when setting emissions targets and in the discussion of their potential

## 4b.2 Urban form

We support your discussion on urban form and the need to “grow up” as opposed to “grow out”. We observe, though, that current trends lend more support to “grow out”. There are two main drivers for this:

1. the transport infrastructure part of the New Zealand Upgrade Programme has its emphasis on building more roads and will consequently facilitate further sprawl.
2. the current trend of housing cost escalation is forcing most first-home buyers into buying far away from urban centres where land is more affordable, presenting the only chance of getting into home ownership through locking in long travel distances.

Taken together, these two drivers will see transport emissions increase in the short term to medium term, with little scope to reverse this effect later. This is a major concern.

We suggest that the roading focus of the New Zealand Upgrade Programme is irresponsible and indefensible. We further suggest that a drastic policy change is necessary to deflate the housing market and cannot avoid but draw attention to the fact house price speculation is the only area of wealth creation in New Zealand that, in practical terms, is not subject to taxation. The only logical conclusion is to address the taxation anomaly and that is an issue that goes well beyond the emissions increases through increasing travel distances caused by the current situation.

The frank laying out of facts related to transport emissions such as disproportionate growth is applicable here. CCC mention ‘underinvestment’ and ‘inequality’ a few times. Making transport equal and accessible (i.e., providing public transport access) could be one of the solutions to achieve the climate agenda, which would answer inequality issues as well, but it is achievable. Cities such as Curitiba have shown that high quality PT is feasible in a very short investment period (WRI 2010).

1. The required drastic policy changes can be formulated by having all contributing sectors (e.g. transport, urban planning, health, etc.) participate in a comprehensive workshop to discuss and set strategies for the issue.
2. Independently audit and recast recent spatial plans in light of the climate change targets

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1. <https://theconversation.com/climate-explained-the-environmental-footprint-of-electric-versus-fossil-cars-124762> [↑](#footnote-ref-2)
2. <https://www.cnu.org/publicsquare/2021/02/19/we-need-both-evs-and-15-minute-city> [↑](#footnote-ref-3)