

OC220183

14 April 2022

Tēnā koe 

I refer to your email dated 21 March 2022, requesting the following under the Official Information Act 1982 (the Act):

*“a copy of any submissions and all feedback provided by MoT to the Climate Change Commission and/or NZTA on the Climate Change Commission’s Draft Advice for Consultation (31 January 2021)?”*

Four documents fall within the scope of your request and are enclosed in full. The documents are listed in Annex 1, attached. No information has been withheld under the Act.

Te Manatū Waka Ministry of Transport (the Ministry) did not provide formal feedback to the Climate Change Commission’s (CCC) Draft Advice for Consultation (31 January 2021). However, some informal feedback was provided; both written (enclosed) and through informal meetings.

The written feedback enclosed, was prepared based on the relevant information at the time and may have changed since this date.

Ministry and CCC officials met on multiple occasions to discuss the draft content for the transport section of the consultation material. However, the Ministry was not given a copy of it to formally provide feedback on. The purpose of these touch-base meetings was to keep the Ministry informed of the CCC’s direction and to discuss any issues that may be controversial. A Ministry official also met with the CCC transport lead on 31 March 2021 to discuss the informal feedback provided, as detailed in document one.

Waka Kotahi New Zealand Transport Agency (Waka Kotahi) provided a formal submission to CCC as a Crown Entity. This was released to you by Waka Kotahi in response to a separate request under the Act on 13 April 2022.

You have the right to seek an investigation and review of this response by the Ombudsman, in accordance with section 28(3) of the Act. The relevant details can be found on the Ombudsman’s website [www.ombudsman.parliament.nz](http://www.ombudsman.parliament.nz).

The Ministry publishes our Official Information Act responses and the information contained in our reply to you may be published on the Ministry website. Before publishing we will remove any personal or identifiable information.

Nāku noa, nā



Jemima de Lacey

**Kaiwhakaneke, Te Rōpū Taiao me tōna Oranga**

**Programme Manager, Environment, Emissions and Adaptation**

## Annex 1 - Document Schedule

Doc#	Date	Document	Decision on release
1.	29 March 2021	<b>Email and feedback</b> RE: MoT feedback on draft report	Released in full
2.	30 March 2021	<b>Email and feedback</b> Comments on CCC First Package of Advice March 2021  Material for Directors on Transport's response to The Climate Change Commission's (CCC) modelling	Released in full
3.	1 April 2021	<b>Waka Kotahi CE Letter Ref NZT-6012</b> from Nicole Rosie, Chief Executive of Waka Kotahi, to Dr Roderick Carr, Chair of the Climate Change Commission	Not included. This was released by Waka Kotahi as part of a separate OIA request on 13 April 2022
4.	17 May 2021	<b>Email</b> charging infrastructure (time-critical necessary action 2.d)	Released in full

**From:** [Ewan Delany](#)  
**To:** ["Alexandra Aimer-Seton"](#); ["Kennie Tsui"](#); ["Antonia Burbidge"](#)  
**Subject:** RE: MoT feedback on draft report  
**Date:** Monday, 29 March 2021 6:03:00 pm

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Got this done a bit sooner than suggested in my last email. Informal comments from MoT below, happy/keen to discuss:

### Modelling

- On page 59 the advice states “*Our path assumes 4% of freight tonne-kilometres can switch by 2030.*” It would be good to know more about the modelling underpinning this.
- Reiterating that we consider the **model for electric vehicle uptake too optimistic**, even if you assume that all recently proposed policy measures are adopted. It is inconsistent with the Ministry of Transport’s (MoT) own modelling. We understand MoT and the CCC modelling groups are in discussions around this issue.
- The modelling for heavy vehicles does not appear to include hydrogen trucks. It would be good to know if this is because your model assumed they would not be cost competitive, or if it is because hydrogen was not considered in the modelling.
- The modelling assumes a seven percent reduction in demand for transport by 2035.
  - There is an opportunity here to include more discussion on how road pricing initiatives might help achieve this (see road pricing feedback).
- It would be good to know what evidence is being used to suggest that a 95 percent increase in walking and a 120 percent increase in cycling by 2030 is achievable. How does this compare to historical trends and trends observed in other countries which have made large investments in walking and cycling infrastructure? (see further walking and micromobility feedback).

### Urban planning and transport

Draft advice from the Climate Change Commission does not have a significant focus on the role of urban form and design in reducing transport emissions. We think this is a **really important area** to lower transport emissions.

*The CCC recommendation: Develop a consistent approach to estimating the long-term emissions impacts of urban development decisions and continually improve the way emissions consequences are integrated into decision making on land use, transport and infrastructure investments.*

- We agree there needs to be further work to understand the connections between the transport sector and other sectors – including land use planning, urban development, building and construction, and the energy sector. We need to build the evidence base in this area and ensure that we are taking a joined up approach across sectors that takes advantage of the combined impacts of sector-specific policies on emissions.
- To better integrate decision-making on land use, transport, and infrastructure investments, comprehensive emission impact assessments for major transport infrastructure investments will likely be needed.

*Ensure a coordinated approach to decision making is used across government agencies and local councils to embed a strong relationship between urban planning, design, and transport so that communities are well designed, supported by integrated, accessible transport options, including safe cycleways between home, work and education.*

- We agree with the Commission about the need for coordinated decision making across local and central government.
- We believe the Commission should emphasise that the RMA reform is a crucial opportunity for the Government to embed spatial planning – which provides a long term and integrating approach to land use and infrastructure planning. By mandating spatial

plans that integrate land use, urban development and transport planning to achieve quality, compact, mixed-use urban development, the RMA reform could have a significant impact on emissions over the long term.

- In addition, we would emphasise that accelerating widespread street changes to support walking, cycling and public transport is critical for increasing transport mode shift and supporting higher density living.

## Electric Vehicles

*On charging infrastructure to support the Commission goal of a 40 percent electric fleet by 2035:*

- Significant investment in charging infrastructure would be required to support a transport system in which more than 40 percent of the light vehicle fleet is electric by 2035.
- The report briefly mentions the challenges of charging infrastructure in apartments, but there are also challenges in areas where there is no off street parking, and installing chargers in rental properties. (roughly half of the population are renting, and renters will be reluctant to purchase an EV if there is no certainty that their next property will have a charging point).

*Increasing EV uptake for 'high kilometre vehicles'*

- The report could note the importance of prioritising policies to increase EV uptake on 'high kilometre vehicles', where appropriate. The emissions payoff from electrifying these vehicles (trucks, taxis etc) will often be higher than electrifying an EV owned by a household or individual.

*Limited discussion around car-sharing*

- Car-sharing can be an opportunity to accelerate electrification while at the same time reducing travel and promoting uptake of alternative modes (because people pay closer to the full cost of driving for each trip).
- Another consideration is that car-sharing could be an enticing option for larger, lower-income households who are choosing between upgrading their van to transport their families or outlaying a significant portion of their weekly income for the per-head cost of public transport. There would be likely cost savings for households that choose to use car-sharing over car ownership, given the sunk costs in the initial outlay, as well as licensing, maintenance and fuel

## The impact of electric vehicles on revenue

*The report states:*

*"The climate transition will also impact on taxation and spending. The Government will need to plan for this. For example, revenue from fuel excise duties and road user charges – that is ring fenced to be spent on land transport – will change over time, though is something that is routinely monitored by the Government."*

- Pure electric vehicles are unlikely to pose much of a threat to land transport revenue under current settings. This is because we already have a system of distance-based road user charges, and we have made a conscious and temporary decision to exempt electric vehicles from our charging regime. We do not have to create a new mechanism to charge electric vehicles to use our roads.
- It is expected that electric vehicles will eventually become subject to road user charges. We do not expect revenue to decrease from the greater uptake of pure electric vehicles in the long term, assuming that they contribute at the same rate as other vehicles. At present, around 40 per cent of revenue comes from road user charges and the percentage is increasing with the growing number of diesel vehicles.
- Improving the efficiency of petrol vehicles does pose some threat to our land transport funding system. However, efficiency improvements are minimal at this time (less than 1 per cent improvement in fleet fuel efficiency per year). Unless there are substantial changes in efficiency, revenue is not expected to decline at a rate that increased charges cannot meet for at least the next twenty years.

## Low carbon fuels

*The CCC recommends in the first budget period, the Government take steps to support the use of low carbon fuels for heavy vehicles such as trucks, planes, ships, and off-road vehicles to meet emissions budgets.*

- We agree with the intent of this recommendation. However, we also note that as a low carbon fuel, biofuels could be a transition fuel for the existing fleet of light internal combustion vehicles, thereby lowering emissions from these vehicles until they are replaced with EVs.
  - This transition role is important. New vehicles bought in New Zealand are driven until they are, on average, 20 years old. For today's new vehicles, it will not be until

2041 that there is another opportunity to replace them with electric models.

*The CCC recommends that to encourage the use of biofuels that a target be set that at least 140 million litres of low carbon liquid fuels are sold in Aotearoa by 31 December 2035.*

- We do not favour having a volume based target. Internationally, newer mandates requiring specified emissions reductions are proving to be superior to volume mandates in emissions abatement from transport. Emissions reduction mandates require fuels suppliers to lower the emissions of the fuels they sell through the supply of biofuels.
- By focusing on the outcome sought, fuel suppliers are encouraged to source biofuels with low lifecycle emissions, rather than to simply increase the volume of biofuels sold. This is important because there is significant variation in the lifecycle emissions of biofuels, and some biofuels do not reduce emissions at all.
- If a volume mandate was put in place, setting a target for **140 million litres by 2035 is a very low level of ambition**. The scale of transport emissions reductions required suggests a higher ambition level is needed. An increase in biofuel supply could come from domestic production and imported biofuel.

*The CCC recommends that a low carbon fuel standard or mandate be implemented to increase demand for low carbon fuels, with specific consideration given to aviation.*

- We support applying a mandate or standard across the transport sector, including aviation. It is certainly the case that once operational efficiencies are exhausted by aviation operators they have few, if any, other ways of reducing emissions.
- New Zealand will not see an increase in the use of biofuels unless a measure like a mandate or standard is implemented. Currently, New Zealand's use of biofuels is low by international standards and we have little production capacity. Liquid biofuels make up less than 0.1 percent of our total liquid fuel sales. This compares with about 4 percent globally. Some countries, typically those with biofuels mandates, have achieved higher shares.
  - For instance, the share of biofuel in Sweden's transport sector was 18 percent in 2017. Finland plans to lift the share of biofuels blended in transport fuel from the current level of 13.5 percent [1] to 30 percent by 2030.

*The CCC recommends having incentives to establish low emissions fuel plants, such as bio-derived sustainable aviation fuel, to make those fuels more competitive with traditional fossil fuels.*

- We support this recommendation. International experience indicates that biofuels mandates (or standards) in isolation are insufficient to sustain domestic production.
- Domestic biofuel production has already reduced, and is likely to reduce further because of high international demand for feedstocks.
  - For example, Z Energy was producing biodiesel from animal tallow without government support. However, earlier this year it hibernated its plant as it could not afford to continue meeting the rising prices of international tallow, which have been steadily inflated due to high demand from international producers of renewable diesel operating with government subsidies. Fulton Hogan's GreenFuels faces similar challenges in maintaining access to domestic sources of vegetable oil.

## Working from home

- Working from home is a significant, multi-faceted opportunity, but there is limited discussion on it in the report. We would like the commission to acknowledge this is a multi-sectoral challenge, not just a transport issue.

## Walking and cycling (and micro-mobility)

- When discussing walking and cycling, the report only really refers to infrastructure. If growth of 95 percent/120 percent is achieved, then other initiatives should also be considered including options to reduce the cost of purchasing bikes/e-bikes/e-scooters.
- On page 106 the report talks about the importance of 'secure car parking near PT'. It should refer to parking for bikes and scooters as well (generally the cost of getting someone to walk/cycle/scoot to a PT station will be much lower than building additional park and ride facilities).
- More generally, throughout the report, rather than referring to 'walking and cycling', it should refer to 'walking and micro-mobility'. NZ has seen significant uptake of electric scooters, which attract a different demographic to cycling. E-scooters have the potential to play a significant role in increasing achieving the growth targets mentioned in the report but are currently ignored.

### Mode shift to rail/shipping versus low carbon fuels

*There is strong emphasis in the executive summary (p18) on mode shift for freight from road to rail/shipping.*

- We support this mode shift generally but our view is that the shift to low carbon fuels/vehicles (e.g. EV/hydrogen/biofuels) for road freight is a more substantive and feasible approach to reducing emissions. We suggest this is emphasised more in the executive summary and throughout the document.
- The challenge of over-relying on mode shift from road to rail/shipping is that only a small portion of domestic freight can realistically be transported by rail/ship. This is because of Aotearoa's geographical characteristics, limited access to rail and shipping for rural users/suppliers, infrastructure constraints (e.g. fixed tunnel heights for rail), the characteristics of the cargo, the relative short distances travelled with much road freight (rail/coastal is usually only economical over long distances), and market expectations around timeliness and costs. Some shift is possible, but the biggest wins will be in the shift of road freight to low carbon fuels/vehicles.

### Electrification of rail

*Electrification of rail is listed as a 'key transition' for budget one (2022-2025) (p55).*

- Our view is that in the short term there are better value for money options to reduce emissions, and that in the longer term (budget 3) the use of low carbon fuels (EV/hydrogen/biofuels) are likely to be more cost-effective than overhead electrification for rail freight.
- There is no discussion around the cost of electrification of key rail lines or whether they represent value for money from an emissions perspective compared with alternative options.
- The cost of electrifying the rail network is likely to be well into the billions, which should be assessed against the cost of waiting until alternatives are available (e.g. hydrogen rail units).
- On page 81 the report outlines the impacts on cost of living of the transition. This is focused on energy and petrol costs to households. We think the proposed options for decarbonising freight may significantly increase the cost of freight transport, at least for a while. This will likely lead to flow on cost-increases for consumer goods. It may be worthwhile noting this.

*Similarly, page 105 says that '... this requires communities around the country to have access to safe, convenient, well-integrated, affordable, and accessible public or shared transport*

*(including national public transport like trains and coaches).'*

- Other than in a few specific locations or routes between certain regions, we don't believe this kind of rail network usage would be a value for money proposition if costed.

## Road pricing

*The term "road pricing" appears once in the Commission's draft report at page 109:*

*"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."*

- We think the reference to road pricing and its role in reducing emissions needs to be fleshed out. People mean different things by the term road pricing, and road pricing to reduce carbon emissions may look quite different from road pricing to reduce congestion.
- Road pricing could potentially worsen emissions by implementing a distance charge (a kilometre charge) for all vehicles. This is a complex subject, and we can assist in fleshing out what is meant by "road pricing" and its potential role in meeting climate change objectives.

## Age bans and vehicle scrappage schemes may not be a cost-effective way to reduce emissions

*Chapter 17 of the report suggest a policy response to achieve our climate change objectives could include: "Setting limits on the age of used imports to encourage vehicles with newer, more energy-efficient technology and introducing measures to shorten the lifespan of the vehicles in the fleet, such as scrappage schemes."*

*Chapter 4b states:*

*"Internationally there are many examples of schemes which provide substantial support for electric transport such as providing financial support to scrap old fossil fuelled cars, depending on income level and either provide funding for replacement low emissions vehicles, or public transport or car sharing services."*

- A simple age ban would not be likely to be an effective tool to reduce emissions because age and emissions are separate variables. There are new vehicles (that would not be subject to an age ban) that are high emitting, and there are older vehicles that are low emitting that would be banned.
- Vehicle scrappage schemes have shown mixed or poor results, in terms of being cost-effective ways to reduce emissions. They are unlikely to be a primary tool for reducing transport emissions, but may have a role if carefully designed and target multiple outcomes.
- There have been vehicle scrappage trials in New Zealand, both of which the Ministry of Transport has administered. Waka Kotahi has recently evaluated vehicle scrappage trials and schemes (including international schemes). The evaluation found more cost-effective ways for the transport sector to decrease carbon dioxide than implementing a scrappage scheme.

## From a resilience perspective

*In reference to principle 6: Increase resilience to climate impacts*

- The New Zealand transport system is a critical system enabler, ensuring communities are connected, as well as moving vital resources around and in and out of the country. Climate change will increase the exposure of existing transport infrastructure to meteorological hazards (as the hazards increase in frequency and/or severity); to sea level rise; and also to landslides caused by meteorological hazards.
- The overall risk profile however, can be managed by managing exposure (e.g. building seawalls next to transport infrastructure); managing vulnerability (e.g. strengthening existing infrastructure against high river flows); and managing criticality (e.g. by improving alternative routes). Transport infrastructure is often implicitly depended on to provide resilience to other infrastructure (eg defending a coastal road, and in doing so protecting residential property behind it).
- The Ministry of Transport works with its transport sector partners, and National Security System partners, on a broad range of hazards – this includes meteorological hazards. This work includes how we can work together to better understand risks, consequences and mitigations.



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**From:** Ewan Delany

**Sent:** Monday, 29 March 2021 5:13 PM

**To:** Alexandra Aimer-Seton <Alexandra.Seton@climatecommission.govt.nz>; Kennie Tsui <Kennie.Tsui@climatecommission.govt.nz>; Antonia Burbidge <Antonia.Burbidge@climatecommission.govt.nz>

**Subject:** MoT feedback on draft report

Hi team,

We will send a few MoT comments on the draft report tomorrow morning (not a formal consultation submission). These supplement the conversation that has been going on re modelling and projected EV uptake trajectory.

It would be good to talk through these with you; I'm happy to make time for that this week if that suits you? Next week I'm away and Jo Pohatu is acting for me so it would probably be a conversation with her.

Cheers,

Ewan

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**From:** [Joshua Lee](#)  
**To:** [Paul.Young@climatecommission.govt.nz](mailto:Paul.Young@climatecommission.govt.nz); [Alexandra.Seton@climatecommission.govt.nz](mailto:Alexandra.Seton@climatecommission.govt.nz)  
**Cc:** [Joanne Leung](#); [Haobo Wang](#); [Dan Jenkins](#); [Sandy Fong](#); [Mieke Welvaert](#); [Joanna Pohatu](#)  
**Subject:** Comments on CCC First Package of Advice March 2021  
**Date:** Tuesday, 30 March 2021 2:47:31 pm  
**Attachments:** [Comments on CCC First Package of Advice March 2021.docx](#)

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Hi Paul and Alexandra,

Thanks for the opportunity to comment on the first package of advice released in January 2021.

The Ministry's modelling team and economics team reviewed the methodology and modelling used in the CCC report and provided feedback in the attached file. We understand that the policy team will provide their feedback on the policies separately.

Please let us know if you need any clarification. We would welcome the opportunity to further discuss any related assumptions and methodology with the CCC.

Ngā mihi  
Joshua

**Joshua Lee**  
**Adviser**  
Domain Strategy, Economics & Evaluation  
**Ministry of Transport – Te Manatū Waka**

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## Material for Directors on Transport's response to The Climate Change Commission's (CCC) modelling

Instruction from MfE: We're after key dot point summary, 1- 1.5 pages max would be ideal (email dot points also fine). Ideally we would have this by COB next Tuesday 13<sup>th</sup>, (or whatever you have at that point), so that we can compile in a table, discuss at our next Director meeting, and then circulate to all DepSecs, then Jo Hendy (CCC CE) later next week.

The Ministry of Transport (MoT) provided written comments to the CCC (please see Appendix A), which provides more details to your questions 1 & 2. Please note we have checked with the CCC about sharing these with the wider Government agencies, and that is fine. It is not for wider sharing outside of Government.

### 1. Any significant differences of view (including data, assumptions, modelling and/or conclusions) with the CCC draft advice and evidence base

A number of differences are discussed in Appendix A, but the key differences are outlined below:

#### Baseline related assumptions

- CCC had lower average vehicle kilometres travelled (VKT) per vehicle assumptions than MoT, this results in a lower baseline GHG emissions hence lessens the requirement for intervention.
- CCC had higher uptake of electric vehicles for all vehicle types than MoT, and hence a lower baseline GHG emissions (this affects in particular baseline emissions projections to 2050).

#### Pathway to 2035

- CCC assumed phasing out of ICE vehicles by 2032 and this being highly effective in accelerating the uptake of EVs (MoT assumes 2035 due to supply constraint, choice shortages and range anxiety that limit the speed at which the fleet electrifies even with the phase-out policy)
- Due to the lower baseline GHG emissions, the amount of VKT reduction needed is lower in CCC's model (13.8%) compared to 20% in Pathway 1 and 39% in Pathway 4 in Hīkina te Kohupara (HtK). Note that only Pathway 4 (a recently assembled HtK pathway) achieves the same level of GHG emissions by 2035 as that of the CCC.

### 2. A bottom-line estimate of the total gap that remains (tCO<sub>2</sub> and percentage terms) for each key sector for each of the three emissions budget periods (or at least an indication of which budget period any concerns relate to)

- Baseline related assumptions have resulted in a gap of 0.4Mt by 2035, increasing to 3.5 Mt by 2050. These are equivalent to 2.4% and 21% of emissions for 2018 (of 16.6 Mt).
- As HtK's Pathway 4 has since been created to achieve the required 47% reduction in the CCC's Pathway 2035 (or 8.8Mt remaining emissions) – there is no gap with the 2035 target. However, Pathway 4 requires a 39% reduction in VKT and 27% of the light passenger vehicle fleet being electric (compared to CCC's estimate of 13.8% and 42% respectively). The level of changes required with Pathway 4 is extremely high and will be very difficult, if not impossible, to achieve. In our opinion, a more realistic pathway would be Pathway 2 (or a 37% reduction from 2018 or 10.5Mt remaining emissions by 2035).

### 3. The interactions agencies have had with the CCC team to clarify and resolve these differences (including any significant stakeholder input and/or submissions to the CCC)

- Prior to MoT submitting our modelling comments to the CCC, there were several inter-agency and MoT/CCC meetings to discuss the data, assumptions and modelling approaches. Some of these meetings (in particular discussion on baseline estimates) also involved MBIE, Waka Kotahi and MfE.
- Our understanding is that these discussions have improved CCC's confidence in adopting MoT's VKT projections.

**4. The current state of play on what has been resolved or is resolvable, and what is considered likely to remain as a significant difference in the final advice**

- We understand CCC will be adopting MoT's VKT estimates. We believe this change will almost close the gap in the baseline GHG emissions projections to 2035 (but there will still be a gap to 2050 due to differences in the assumed EV uptake rates).
- We understand CCC is revising a number of assumptions underpinning their Pathway 2035 projections, these include but are not limited to:
  - Updating the baseline assumptions based on the outputs from MoT's latest Vehicle Fleet Emissions Model (including fuel efficiency changes)
  - Revisiting heavy vehicle scrappage rate assumptions and hence the fleet replacement rate
  - Sensitivity testing different EV supply impacts (particular used imports) and relative uptake rates between EVs and hybrids vehicles
  - Revisiting the mode share assumptions
- As CCC is still working on these changes over the next fortnight, it is uncertain what the impacts of these revisions may have on the CCC's final advice and whether there is any significant gap between our respective pathways.
- An area that is likely to show some differences is the speed at which the fleet electrifies. Since the CCC used a very different approach to determine the EV uptake compared to MoT, it will be very difficult to resolve any discrepancy between the two. Should the CCC's revised pathway show a higher level of electrification than a chosen HtK pathway, the level of VKT reduction in the HtK pathway will need to be much higher than that of the CCC in order to achieve the same percentage reduction in emissions.

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## APPENDIX A

### Comments on Climate Change Commission's first package of advice draft report released in January 2021

#### Combined feedback from Domain Strategy, Economics and Evaluation and Analytics and Modelling teams, Ministry of Transport

March 2021

Thanks for the opportunity to comment on the draft first package of advice released in January 2021. Below summarises our comments under three headings:

- Baseline and counterfactual
- Travel demand and modal shifts in pathways to 2035
- Pathways of vehicle electrification to 2035

We look forward to the opportunity to working with the CCC to refine and revisit the necessary assumptions and methodology.

#### Baseline and counterfactual

- We noted a marked difference in the baseline road transport emissions projections between MOT estimates and that of CCC's, with CCC's estimate in 2035 being 0.36 Mt lower than those of MOT with the gap<sup>1</sup> widening to 3.5 Mt by 2050. The gap for 2050 is more than 20% of the total road transport emissions projected by MOT. Based on evidence collected and analysis completed recently to update our baseline projections, we believe the CCC's estimates grossly overstated the reduction in the road transport in the baseline. This results in understating the size of the GHG emissions reduction policy problem.

On establishing the baseline road transport emissions, MOT develops a series of models to estimate and project the likely changes in the volume, type and mix of vehicles being imported and being scrapped as well as vehicle travel. These analyses consider a range of data sources with required assumptions carefully chosen and tested. This bottom up process, which aims to ensure the robustness of the results, involves working with a range of internal and external stakeholders, mainly WK and additional review provided by an experienced external modelling provider. Latest evidence and development (e.g. sharp increase in hybrid vehicle uptake) have been taken into account in our most recent update.

We understand two key reasons for CCC's estimates to show a lower emissions baseline are that **(a)** CCC has used MBIE's VKT projections which assume a sustained reduction in the level of travel post-COVID recovery, and **(b)** CCC has a more optimistic outlook on how quickly the light commercial and heavy vehicle fleets electrify. The Ministry disagrees with both of these assumptions. We discuss these briefly below.

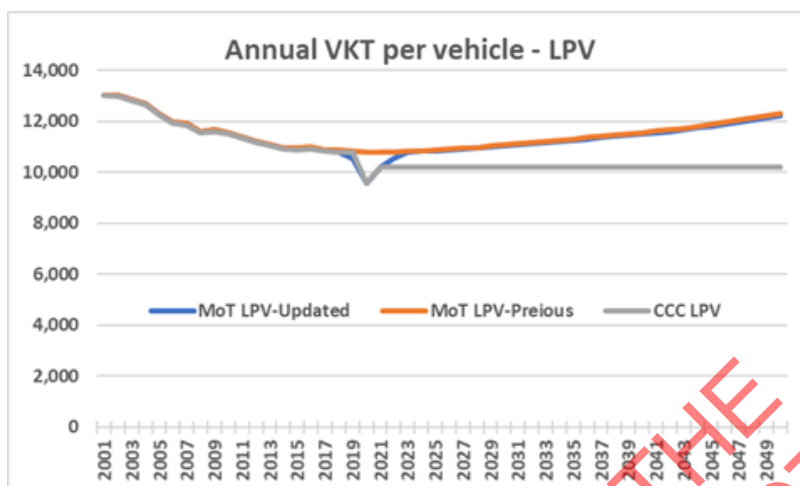
- **(a) Baseline VKT estimates** - There are a number inherent uncertainties in defining the counterfactual and the ability to control for these requires careful consideration of the evidence available. As such, we do not support any arbitrary chosen adjustment to MOT estimates without the support of evidence, as appears to be what MBIE might have done to establish their VKT estimates. Data collected for updating the National Land Transport Funds (NLTF) revenue model shows the level of travel by all modes has mostly recovered as the lockdown restrictions lift. As the economy recovers, we anticipate the level of travel to fully recover to the pre-COVID levels by around 2023.

One of the arguments for the assumed step-change in VKT in MBIE's estimates appear to be related to the outlook for increased working from home. However, we believe the allowance for the VKT reduction (-5.4% compared to 2018) due to any change in working from home has been exaggerated.

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<sup>1</sup> The gap increases to 3.6 Mt when emissions from non-road transport are added.

The likely impacts from increasing working from home is affected by several factors: (i) the share of VKT that is commuting related; (ii) the share of jobs that could be carried out remotely; (iii) the proportion of work force that has the technology to work from home; and (iv) any substitution effect (e.g. from travel to CBD to local areas).



Data from 2015-2018 Household Travel Survey shows around 11% of all passenger distance travelled (by all modes) was related to commuting to work, accounting for the return journey<sup>2</sup> means at most 22% and is less than 20% if non-car journeys are excluded. In addition, rough analysis of the combined effects of (ii) and (iii) by MBIE and by MOT is between 25% and 40%.

Therefore, the combined effect of (i) to (iii) is less than 10%. During the COVID lockdown, MR Cagney estimated the effects of working from home on the overall level of travel for Auckland. They estimated that for a 2-day a week working from home scenario (i.e. 40% reduction in commuting), vehicle journeys of those who used to travel by car could reduce by 27%. This means for an average of 1 day a week (i.e. 20% reduction) working from home (for everyone who can to do so), we could achieve at most a 1% reduction in total VKT<sup>3</sup>.

Contrary to MBIE's projections, MoT modelling suggests not only would the average travel per vehicle to recover by 2023, it would increase slightly over time due to decreased travel cost and resulting increased demand of shared mobility (including on-demand ride sharing and car sharing programmes) over time. The difference between the assumed annual VKT by light passenger vehicles between the CCC's and the MoT's increases from around 3% (2022), 9% (2035) to over 15% by 2050 (see chart above).

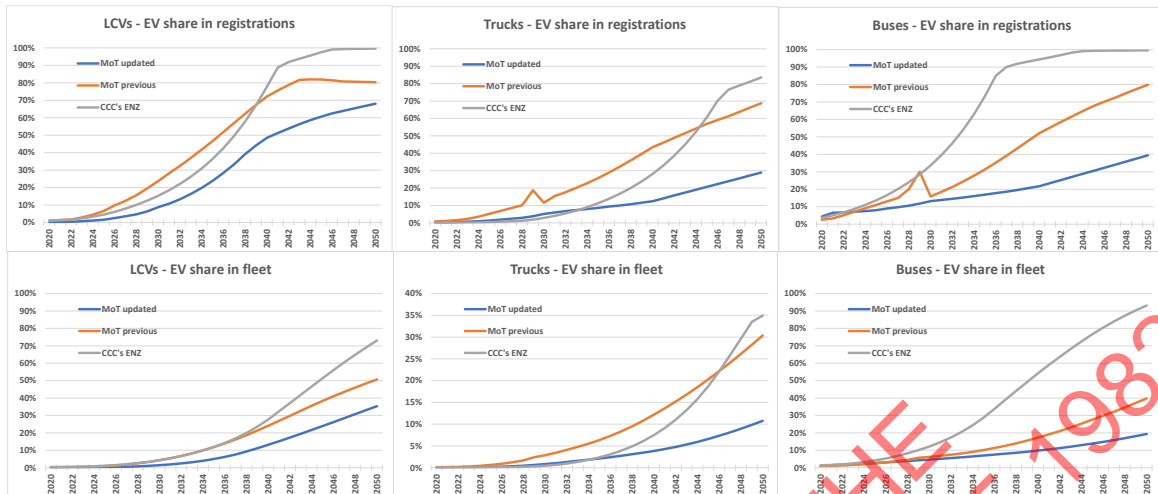
- **(b) Electrification of vehicle fleets in baseline** - MoT's outlook on the electrification of the light passenger vehicles is slightly slower than those of the CCC's in the short to medium terms. However, as shown in the following diagrams, the differences for light commercial, trucks and buses between the two set of estimates are substantial (blue lines versus the grey lines).

To-date, we have not found sufficient evidence to suggest there will be enough supply of electric commercial vehicles, trucks and buses, let alone those that do not attract large price premium to result in the level of uptake estimated by the CCC. Reliable information on electric commercial vehicles outlook is difficult to source. One frequently cited source (Interact Analysis)<sup>4</sup> suggests global battery electric (including *hybrid, fuel cell and battery electric*) commercial vehicle market will account for over 2.5 million annual registrations of commercial vehicles by 2030, out of a total of over 20 million. This is about 12.5% (and likely to include further expansion in China's electric bus fleet).

<sup>2</sup> This is likely to overstate the share of distance that could be removed due to working from home because many return home journeys are often combined with other trip purposes (eg shopping), which might still be required irrespective of the work location.

<sup>3</sup> This is based on the following calculation: 22% (% VKT commuting related) \* 40% (max suitable and capable) \* 20% \* (27% / 40%).

<sup>4</sup> Green Fleet (2020), [Growth in Battery-Electric Trucks & Buses by 2030 - Green Fleet - Work Truck Online](#), November 2020.



- Defining the counterfactual is a crucial step in all policy development, modelling and analysis. If inappropriately defined, it can significantly affect our ability to identify the size of the policy problem; the scale of interventions required and hence the potential impacts from mitigation. We believe the CCC's baseline projections have understated the size of the transport emissions reduction challenge facing New Zealand and accordingly CCC has under-estimated the range and scale of policy actions needed to achieve the target as outlined in the Paris agreement.
- We recommend the CCC to replace MBIE's baseline VKT estimates by those of the MOT's as the latter already incorporated evidence from recent traffic counting and NLTF revenue data.
- We also recommend the CCC to revisit the baseline EV projections by tightening the assumption around supply constraints, particularly for commercial vehicles, trucks and buses.

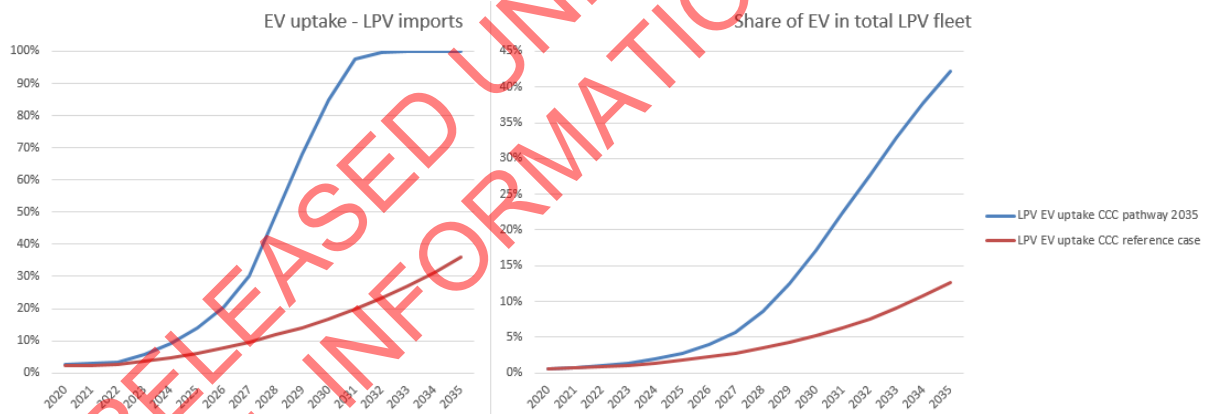
### Travel demand and modal shifts in pathways to 2035

- Below discussion focuses on comparing the CCC's 2035 pathway with Hikina te Kohupara – Kia mauri ora ai te iwi: Transport Emissions – Pathways to Net Zero by 2050 (HtK) Pathway 1, the only pathway that achieves the level of GHG emissions that is closest to the CCC's. The CCC's pathway achieves a 47% reduction from the 2018 level (from 16.6 Mt to 8.8 Mt), whereas HtK's Pathway 1 only achieves a 40% reduction (to 10.1 Mt), the gap is 1.3 Mt.
- Based on the assumptions and data provided, the implied total VKT changes in the CCC's 2035 pathway appear to be similar to that of the HtK Pathway 2 (13.3% in HtK's versus 13.8% in CCC's in 2035) but higher for HtK's Pathway 1 (20%). However, the two models have different assumptions on how to achieve this level of change.
- Over half of the CCC's effect was due to a reduction in the level of personal travel (which can be translated into VKT changes) resulting from more compact urban form and increased working from home. The remainder of the reduction was resulting from modal shifts (to PT, walking and cycling). The HtK modelled changes in land use, public transit and the use of various pricing strategies (parking, congestion and distance pricing) as a package due to these measures need to work alongside to each other to achieve the kind of VKT change and modal shifts required. The HtK places a lot of emphasis on the role of pricing strategies in Theme 1 (avoid and shift measures) in achieving the required VKT change and mode shifts. How quickly these pricing strategies can be implemented will depend on the level of public support and pricing technology development. We believe the level of assumed effects in the HtK is already optimistic.

- Modelling of modal shifts in the CCC appears to be based on explicit assumptions on mode change and the percentage increase in distance travelled by walking (25%), cycling (95%) and public transport (120%). By comparison, HtK ties the reduction in VKT to increase in vehicle distance for public transport (mainly buses) considering a range of data sources including Household Travel Survey data on mode shares and the regional average passenger kilometres travelled per bus recently collected for the Domestic Transport Costs and Charges (DTCC) study.
- Our analysis suggests after accounting for a net reduction in the level of travel (eg due to density changes and working from home) and shift to other modes (rail, ferry, walking and cycling), the increase in public transport use would require more than doubling (+260% or 10,600 more buses) the PT bus fleet by 2035 in the HtK model. By contrast, the CCC's model estimated less than 20% increase in bus fleet (or 3,700 more buses). We do not believe this level of change in bus fleet would be sufficient to achieve the emissions reduction needed.
- HtK assumes there is no GHG emission from increased walking and cycling<sup>5</sup>, we have not worked out the percentage increase in the distance travelled by walking and cycling.
- Due to the interlinkages between modal shift, PT uses, PT bus fleet and electrification requirements, we recommend the CCC to double check the PT change assumptions and how the model links the modal shift effects with them.

### Pathways of vehicle electrification to 2035

- **Light passenger fleet** - Apart from the high baseline EV uptake assumptions across different vehicle type, the CCC also has very high increase in the uptake of EVs from the phasing out the importation of ICE light vehicles policy (ICE ban) (as can be seen from comparing the EV uptake assumptions between the CCC's reference case and its 2035 pathway below).

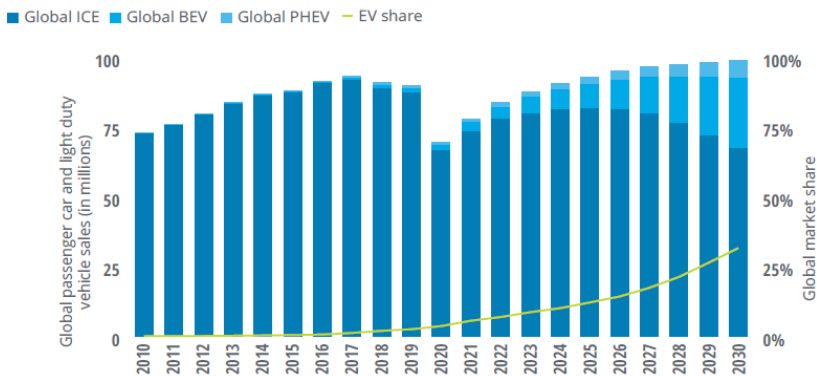


- There are different projections of global light EV sales, below diagram shows those estimated by Deloitte (2020). While the current outlook for EVs supply is increasing over the next decade, ICEs remain dominant for global light vehicle sales over the next decade. Therefore, it seems overly optimistic to assume the large increase in the imports share of EV from around 2026.

<sup>5</sup> There could be some increases from increased use of e-bikes but the level of emissions would be very low to have any material impacts on the overall results.

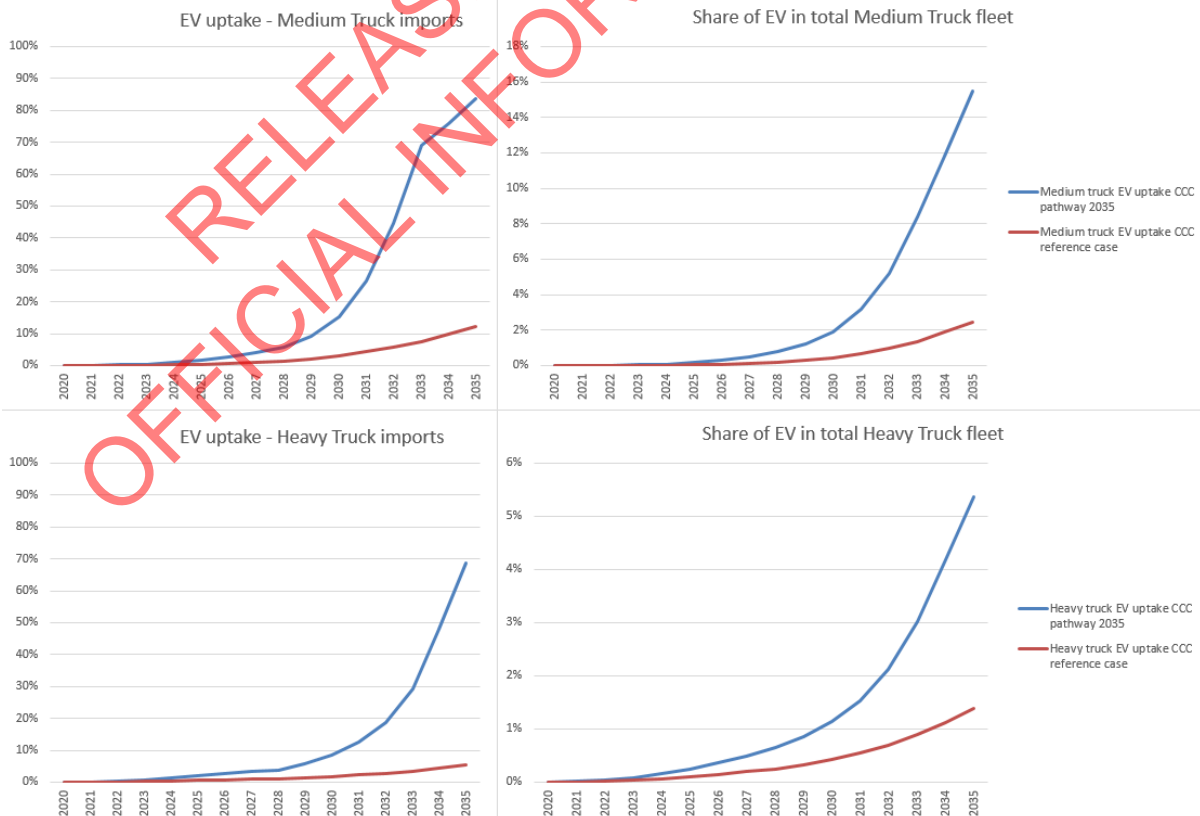


## Outlook for annual global passenger-car and light-duty vehicle sales, to 2030



Source: Deloitte analysis, IHS Markit, EV-Volumes.com<sup>16</sup>

- We believe the CCC has overstated the effectiveness of the ICE ban policy. With supply constraint and high cost premium, the ban would likely to reduce the import volume as car buyers hold on to existing vehicles for longer during the initial years of the ban. We recommend the CCC to revisit related assumptions accordingly.
- **Commercial fleet (including light and heavy duty trucks and buses)** – The same comments for light vehicles also applies to the commercial fleet. In particular, the speeds of electrification assumed for medium and heavy truck fleets are exceptionally fast. The current price premium for an electric truck is several hundred thousand dollars per vehicle (even after accounting for any net whole of life savings in energy costs) and for the level of uptake to occur would require the cost premium to reduce dramatically within the next decade. With the high cost of purchasing electric trucks, freight service providers could switch to other modes (rail or coastal shipping). The implied shift (with heavy truck fleet shrunk by 28% by 2035 in the CCC 2035 pathway is very high. It is almost the same as what HtK modelled for Pathway 1 for 2045 and not 2035.
- We recommend the CCC to revise electric vehicle uptake assumptions and modal shift assumptions for freight transport.



## Summary

- The CCC's proposed 47% reduction (relative to 2018) in transport emissions by 2035 will be difficult, if not impossible, to achieve. The key reasons are that the CCC has understated the baseline emissions level (resulting from optimistic choices of assumptions around mode shift and VKT change and how quickly the vehicle fleet electrify without further intervention) and hence understated the scale and scope of policy interventions required to cut transport emissions. It also understated the EVs supply constraint and therefore overstated the effects of the ICE ban.
- We recommend the CCC revisits a range of assumptions and methodology as outlined in this note above. We would welcome the opportunity to further discuss the above and any related assumptions with the CCC.

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**From:** [Ewan Delany](#)  
**To:** [Alexandra Aimer-Seton](#); [Antonia Burbidge](#)  
**Subject:** charging infrastructure (time-critical necessary action 2.d)  
**Date:** Monday, 17 May 2021 2:01:00 pm

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Kia ora.

For the final report, it would be helpful if the reference to charging infrastructure planning could be as clear as possible (time-critical necessary action 2.d)

There has been some debate between agencies about the necessary scope of this work: my team think it should include planning for private (ie home and business) charging infrastructure, inc for heavy vehicles, not just the on-street, public fast-charger type.

Not sure if CCC shares that view but if so, it would be helpful if it could be clearer that the recommendation relates to broader EV infrastructure ☺

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