

Coversheet: Moving to a low emissions light vehicle fleet

Advising agencies	Ministry of Transport
Decision sought	Agreement to introduce legislation for the Clean Car Standard
Proposing Ministers	Minister of Transport

Summary: Problem and Proposed Approach

Problem Definition
What problem or opportunity does this proposal seek to address? Why is Government intervention required?

Problem

Transport accounts for 21 percent of gross domestic greenhouse gas emissions, with light vehicles accounting for two-thirds of these emissions. Transport is also New Zealand’s fastest growing source of emissions. Between 1990 and 2018, transport emissions increased by 90 percent and, within transport, road emissions more than doubled. Emissions across the whole economy grew by 24 percent.¹

In its report *Low-emissions economy*, the Productivity Commission concluded that current policy settings will be inadequate to support a transition to a low emissions light vehicle fleet.² It recommended that additional measures be put in place to realise the benefits from low emission vehicles sooner rather than later.

Despite a progressive reduction in the greenhouse gas emissions from vehicles as new electric technology comes on stream, the Ministry of Transport’s (the Ministry) vehicle modelling forecasts total road transport emissions will still increase until around 2023 before they plateau, and then make a slow decline. This increase is because of expected growth in population, vehicle kilometres travelled, the numbers of vehicles being imported and the trend towards larger vehicles.

New Zealand’s first Paris Agreement target for reducing net emission is to be 30 percent below 2005 levels by 2030. However, there is considerable uncertainty around the rate of emissions reduction. The most optimistic status quo result still has transport emissions 9 percent above 2005 levels by 2030. It would take to 2038 to reach the target of a 30 percent reduction from 2005 levels³, a further decade beyond the Government’s agreed target. This is a significant under-achievement of the Government’s commitment.

This slow rate of change has embedded supply and demand issues. Suppliers are hesitant to bring in low emission vehicles where there is uncertainty around government policies, where demand is low at current pricing points, and where supporting infrastructure and

¹ New Zealand’s Greenhouse Gas Inventory 1990-2018, Ministry for the Environment. <https://www.mfe.govt.nz/sites/default/files/media/Climate%20Change/new-zealands-greenhouse-gas-inventory-1990-2018-vol-1.pdf>

² Passenger cars, SUVs, commercial vans, utes, and small trucks under 3.5 tonnes gross mass. New Zealand’s light vehicle fleet exceeds 4.1 million vehicles.

³ Vehicle Fuel Efficiency Standard and Feebate Scheme: Cost- Benefit Analysis. Ministry of Transport. 2018.

services are limited. For other suppliers, the problem is gaining a greater supply of low emission models from vehicle manufacturers.

Internationally, CO₂ standards are instrumental in driving emission reductions

The light vehicles entering our fleet are more emissions-intensive than in most other developed countries. In 2019, the average vehicle entering our fleet emitted around 170 gCO₂/km. In Europe in 2016, the average car and SUV was 118 gCO₂/km and light commercial vehicle was 164 gCO₂/km.

The Productivity Commission has noted New Zealand is one of three developed countries without a CO₂ or vehicle fuel efficiency standard. The other two countries are Russia and Australia. As a result, New Zealand has become a market that readily accepts high-emitting vehicles. This results in vehicle suppliers making a less fuel efficient selection of vehicles available to our market, than to other markets. For example, across the top-selling 17 new light vehicle models, the most efficient variants available in New Zealand have, on average, 21 percent higher emissions than their comparable variants in the United Kingdom.

Fuel efficiency or CO₂ standards are in place in approximately 80 percent of the global light vehicle market, including the USA, EU, Canada, Japan, China, South Korea and India. These standards require manufacturers to deliver improvements in vehicle efficiency beyond those that could reasonably be expected under market forces alone. For example, the EU has set new mandated emission targets for passenger vehicles and vans that will apply from 2025 and 2030. These are defined as a percentage reduction from the 2021 starting points (targets of 95g CO₂/km for cars and 147g CO₂/km for vans):

- Cars and SUVs: 15 percent reduction from 2025 and 37.5 percent reduction from 2030
- Vans: 15 percent reduction from 2025 and 31 percent reduction from 2030.

When considered in annual percentage reduction terms, China has been achieving a reduction of around 5.3 percent and South Korea around 5.8 percent.

New Zealand motor vehicle distributors lack leverage in their supply negotiations with manufacturers as we are a small market with no regulation or upfront incentive to require, or encourage, low emission vehicles. This is reflected in the fact that the used vehicle sector out-performs the new sector in the supply of low emission vehicles. New vehicles are roughly half of our vehicle imports. However, in 2019, 60 percent of the electric vehicles (EVs) and 69 percent of the petrol hybrids imported into New Zealand were used-vehicles⁴.

As a result, the used-import sector is reducing its average vehicle CO₂ emissions at a faster rate than the new sector. Over 2016-2019 in New Zealand, the used-import sector achieved a 13 percent reduction in average CO₂ emissions, compared to 4.2 percent for new vehicles⁵.

Ideally the CO₂ standard would be complemented by the feebate scheme

Ideally, it is desirable to address both supply-side and demand-side issues in one policy package. To this end, the Government consulted on its two preferred policy options from July to September 2019:

⁴ Roughly a half of all the vehicles that are imported into New Zealand are used-imports, the other half are new vehicles.

⁵ The data for this comparison has been sourced from the Motor Vehicle Register.

- a feebate scheme to stimulate demand (the Clean Car Discount)
- a CO₂(vehicle fuel efficiency) standard to drive the supply of low emission vehicles (the Clean Car Standard).

With the Clean Car Discount, vehicles with low emissions, including electric vehicles, would receive discounts, while vehicles with higher emissions would incur fees. Mid-range emitting vehicles would face neither a discount nor a fee. It would complement the CO₂ standard by making it easier to buy a low emissions vehicle, the supply of which will increase through the Standard.

In the Ministry's view, the CO₂ standard should be combined with the Clean Car Discount. This would lead to greater emissions reductions than either policy would achieve on their own.

A Cabinet paper and associated RIA for the Clean Car Discount have been completed. The Cabinet paper is with Ministers for consultation but no decision has yet been made.

The risk of delayed action to reduce transport emissions is the high level of locked-in emissions that arise from the fact the New Zealand's vehicle fleet turns over slowly. Once a new vehicle enters our fleet, it is driven until it is around 20 years old. The average age of the light vehicle fleet is 14 years.

Scope of this Regulatory Impact Assessment (RIA)

This RIA has been prepared to support the Government's intention to introduce legislation to support a CO₂ standard (the Clean Car Standard). This is the ambit of the Cabinet paper supported by this RIA.

The Clean Car Standard is a supply-side intervention. This analysis and commentary is focused on supply-side options.

This scope is narrower than:

- the preliminary RIA prepared to support the release of the discussion document that served for consultation. The discussion document covered the proposal for the Clean Car Discount (feebate scheme) and the Clean Car Standard (CO₂ standard)
- the RIA prepared to support the Clean Car Discount, which looked at a range of demand-side options as well as including the Clean Car Standard
- the broader range of policies being considered by government in the context of the cross-government low emission vehicles work programme and on climate change.

This RIA does not assess policy options that have the objective of directly increasing the demand for low emission vehicles into New Zealand, or the removal of higher emitting vehicles from the existing domestic fleet.

As a decision has yet to be made regarding the Clean Car Discount scheme, this RIA (and associated Climate Implications of Policy Assessment attached to the Cabinet paper) reports the estimated effects relative to the baseline (no action). The Clean Car Discount is not included in the baseline, nor is it an element of the counterfactual.

Opportunity

Although the change required in transport is substantial, there are tangible opportunities to reduce transport emissions. We have already changed the direction of transport investment, through the Government Policy Statement on Land Transport 2018, to achieve mode shift from private vehicles to walking, cycling, ride-share, and public transport.

There are growing opportunities to have vehicle models imported into New Zealand that have various forms of electric energy motive power (pure electric vehicles (BEVs), plug-in hybrid electric vehicles (PHEVs) and hydrogen powered vehicles). The Ministry recognises that now is the right time for New Zealand to accelerate the supply of low emission light vehicles.

If vehicle suppliers are directed to supply low emission vehicles, this will increase the range of low emission vehicles for New Zealanders to buy.

Why is government intervention required?

New Zealand's 2030 Paris Agreement target is to reduce emissions to 30 percent below 2005 levels by 2030. Government passed the Climate Change Response (Zero Carbon) Amendment Act in November 2019, which provides a framework by which New Zealand can develop clear and stable climate change policies. It sets a new domestic greenhouse gas emissions reduction target of net zero emissions (except biogenic methane) by 2050, and requires the Government to develop and implement policies for climate change adaptation and mitigation

Incentivising the demand for and supply of low emission light vehicles entering the New Zealand fleet presents the greatest opportunity to rapidly reduce transport emissions.

We consider government intervention would be best to start with the vehicles entering the fleet and then address the removal of high emitting vehicles already in the New Zealand fleet. This provides a simple strategic approach for New Zealand to transition the light vehicle fleet in favour of low emission vehicles.

Impact of the COVID-19 response

The analysis in the RIA predates COVID-19. It is unclear the extent to which the benefits of the Standard may be delayed by the economic recession caused by the lockdown.

The earliest the Standard will be in effect is 2022 and vehicle suppliers will not face any charges for exceeding CO₂ targets until 2023. If the economic recovery is slow, there is the potential for the benefits of the Standard to be delayed as people put off vehicle purchases.

However, if the New Zealand economy recovers over the next 18 months–30 months COVID-19 may have no impact on the outcomes assessed by this RIA. It is even possible that the pent up demand for vehicle replacements caused by the recession could result in a greater level of vehicle purchases occurring from 2022 when the Standard comes into effect. If this occurs, the benefits of the Standard could be greater than estimated.

Already, international experience suggests that where the lockdown has eased the vehicle market can rebound quickly. Chinese vehicle sales rebounded strongly in April 2020 to reach 80 percent of the level registered in April 2019.

As well, demand for low emission vehicles has tended to hold-up compared to other vehicles. Globally EV sales have not been as dramatically affected as overall vehicle sales, and are likely to have a record share of the market in 2020. In the largest European vehicle markets combined (France, Germany, Italy and the UK), sales of EVs in the first four months of 2020 were 90 percent higher than in the same period last year. Sales of battery EVs in the UK almost tripled in March 2020 compared to 2019. In Italy and France, they

increased by almost 50 and 20 percent respectively.⁶ In Norway, the number of EVs sold between January and April 2020 was about the same as in the same period in 2019.

Summary of Preferred Option or Conclusion (if no preferred option)

How will the agency's preferred approach work to bring about the desired change? Why is this the preferred option? Why is it feasible? Is the preferred approach likely to be reflected in the Cabinet paper?

All newly imported light passenger and light commercial vehicles, whether new or used, will be subject to a regulated CO₂ standard, the Ministry's preferred supply-side policy. Its purpose is to drive importers to bring into New Zealand new and used vehicles with lower CO₂ emissions by regulating CO₂ targets. Year-on-year the targets get progressively more stringent. The measurement of grams of CO₂ per kilometre (gCO₂/km) of emissions is used because it is the manufacturer's method for measuring fuel efficiency and ensures all fuel types, for example petrol, diesel, biofuels, electricity, and hydrogen are treated in an equitable manner.

The standard would be implemented in two ways:

- 1) all suppliers of new vehicles, and used vehicle importers that meet certain criteria, can apply the standard on a fleet-averaging basis where compliance is determined at the end of the year by comparing the fleet's average actual emissions with the fleet's target based on the average tare weight of the fleet. The non-compliance charge, if any, is paid on the difference between the fleet average and the fleet target multiplied by the total number of vehicles in the fleet.
- 2) for used vehicles, the default application is that at vehicle entry certification, each vehicle's CO₂ emissions are compared to the applicable target for that vehicle's tare weight. There would be a "CO₂ account" for each importer that is analogous to a bank account. The currency of the account is grams CO₂/km. Credits from vehicles with emissions below their targets are deposits into the account. If an importer's account contains sufficient credits, those fleet credits offset the debits of vehicles that exceed their applicable emissions targets. If an importer's account contains no credits, then no offset is possible, and the full charge is payable on the high emission vehicle before it is able to be registered for use on New Zealand's roads.

Whether applying the Standard on a vehicle-by-vehicle basis, or on a fleet-averaging basis, it still allows higher emission vehicles to be imported, but discourages this via the non-compliance charge.

Further flexibility is provided by enabling the options of:

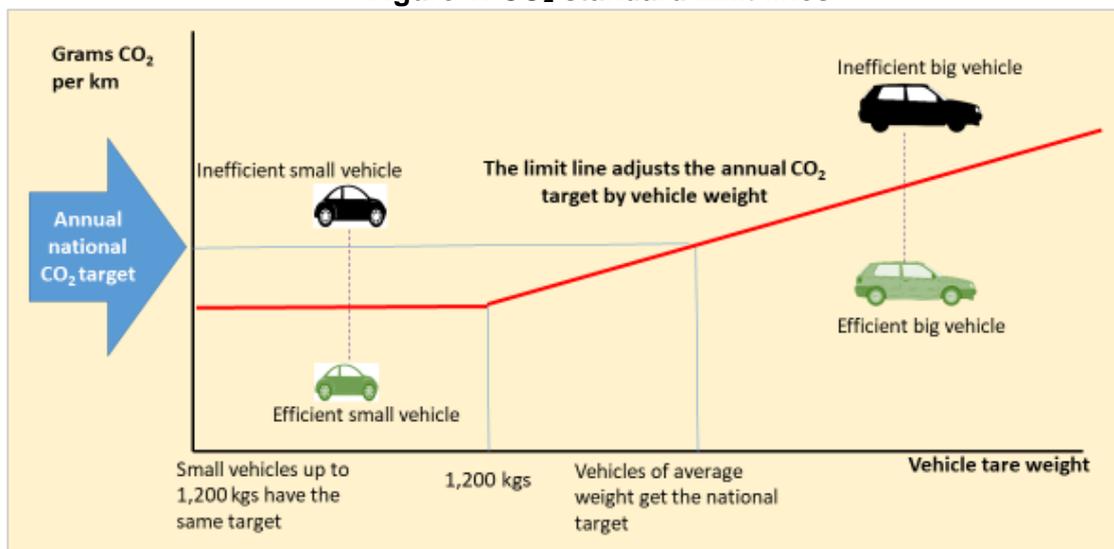
- grouping with other suppliers to form a larger fleet of vehicles to balance emissions
- banking the overachievements and utilising them over the next 3 years (only where fleet-averaging is used)
- borrowing in anticipation of overachievements in the following year (only where fleet-averaging is used).

In line with international best practice, the national CO₂ emissions target would be adjusted by vehicle weight. This recognises that heavier vehicles require more fuel to move and have more emissions. Weight adjusted targets allow an appropriate target for the wide range of vehicles in the light fleet, from small cars to large utility vehicles.

⁶ International Transport Forum (2020). *Electric mobility: Taking the Pulse in Times of Coronavirus*. COVID-19 Transport Brief, 27 April 2020. <https://www.itf-oecd.org/sites/default/files/electric-vehicles-covid-19.pdf>

As a result of industry consultation, there would be a single target for small vehicles up to 1,200 kilograms. This is because the weight adjusted targets are likely to be too stringent and the supply of small vehicle supply could be constrained. The diagram illustrates the CO₂ standard.

Figure 1: CO₂ standard limit lines



Along with weight adjustment, there would be targets set for passenger vehicles (cars and SUVs) and separate targets for light commercial vehicles (vans, utes, light trucks).

The overall national average target would be 105 gCO₂/km by 2028. There would be different targets set for light passenger vehicles and light commercial vehicles (vans, utility vehicles, light trucks) of 102 gCO₂/km and 132 gCO₂/km in 2028, respectively. Stricter targets would be set beyond 2028 to continue the move to a low emissions vehicle fleet.

Waka Kotahi New Zealand Transport Agency (Waka Kotahi) will administer the Standard and develop a register for all vehicle importers and other systems necessary to implement standard. Waka Kotahi's registration of all persons importing vehicles and the criteria for used vehicle importers to shift to a fleet-averaging basis will work to prevent phoenix traders (those who evade targets by closing their business and setting up a new one) and so help prevent gaming and rorting.

Section B: Summary Impacts: Benefits and costs

Who are the main expected beneficiaries and what is the nature of the expected benefit?

A CO₂ standard is a significant policy supporting our climate goals and international commitments to reduce emissions.

The Ministry's indicative assessment of the Standard indicates that it has a benefit-cost ratio of 2.22:1 and a net present value of \$221.5 million. That is, for every \$1 of costs it would provide \$2.22 in benefits. It is estimated to save 1.07 million tonnes of CO₂ over 2021-2050.

The main beneficiaries are vehicle consumers, who would enjoy significant fuel savings from being able to purchase from a broader selection of more fuel efficient vehicles, including EVs and petrol hybrids. Recent studies indicate the total cost of ownership is lower for EVs than fossil fuelled vehicles. Globally, as EVs and other low emission vehicles become more mainstream, unit costs will decrease and prices will become similar to equivalent fossil fuelled variants.

The main non-monetised benefits would be:

- business in the electricity infrastructure and service industries will benefit from increased demand
- improved security of supply from the reduced importation of fossil fuel and increased use of locally generated electricity
- road safety improvements from a more modern fleet
- lower vehicular noise and air pollution, leading to public health benefits
- reduced vehicle maintenance costs (EVs have around 20 moving parts compared with 2,000 to 4,000 for a fossil fuelled vehicle).

Where do the costs fall?

The main cost with the standard is the welfare impact borne by consumers who opt to buy a vehicle that is different from their preferred one as a result of changes in vehicle prices, or unavailability. The extent to which any welfare loss occurs will depend on a number of factors, including consumers' response to vehicle price changes, how importers alter their purchase profiles following changes in consumers' purchasing preferences, and how vehicle manufacturers respond to meet demand for low emission vehicles.

Government revenue from GST and fuel excise will also decline proportionally as fuel consumption is reduced. This will be balanced by GST on increased electricity sales and the lost fuel excise could be compensated by the application of Road User Charges to EVs.

Fuel suppliers would be expected to incur a fall in sales and revenue as a result of the fuel savings enjoyed by consumers.

There would also be continuing costs associated with EV charging infrastructure. Infrastructure is developing, but must continue to do so ahead of EV uptake. Infrastructure costs will also include EV owners and corporates who choose to install charging units at their residence, vehicle depots or offices.

The remaining costs are incurred by government to implement, regulate and enforce the standard, and by industry in compliance costs.

What are the likely risks and unintended impacts? How significant are they and how will they be minimised or mitigated?

Potential impact on vehicle supply and price

If the supply of vehicles needed for vehicle importers to meet the target is constrained, there is a risk of:

- a reduction in the range of vehicles supplied to our market
- vehicle price rises because of the supply constraint and/or the charges imposed under Transport regulation from importers not meeting their CO₂ targets
- some vehicle distributors withdrawing from New Zealand if the additional cost of charges makes their operations marginal.

It is uncertain whether or by how much vehicle prices may rise. The available evidence suggests that if price rises do occur, they are likely to be minimal and over time will reduce. This is based on a number of factors.

A meta-analysis of CO₂ standards in OECD and non-OECD countries suggests they do not necessarily lead to noticeable price increases⁷.

Additionally, by forcing manufacturers to produce more low emission vehicles sooner, other jurisdictions' CO₂ targets are helping to reduce the price of these vehicles. The Ministry's projections expect the price of EVs and petrol hybrids to fall over the period of both targets. The Ministry's base case projection sees the retail price of the average:

- new EV falling from around \$58,000 in 2019, to \$47,000 in 2025 and \$45,000 in 2028
- new petrol hybrid falling from around \$40,000 in 2019, to \$35,000 in 2025 and \$34,500 in 2028.

As well as the above mitigations, the risks of supply constraints and price rises will be reduced by the more aggressive CO₂ targets in the world's largest vehicle markets. These targets are driving manufacturers' research and the roll-out of emission reducing technologies. These improved technologies will increase the global availability of low emission vehicles. With the standard, new vehicle distributors will be better able to successfully negotiate the supply of larger volumes of these vehicles.

People and businesses who require vehicles such as utes, where emission reducing technology is less developed, could potentially face an increase in vehicle prices. However, globally the supply of low emission options across commercial vehicles is increasing and prices are expected to fall. For example, Ford expect to release a PHEV Ranger in 2022. The Ford Ranger is currently New Zealand's top-selling ute.

The risk of supply constraints and price rises is also mitigated by the design of the Standard. Its design has been substantially modified from the Standard that was consulted on.

The key design features that mitigate the risks are:

- asking Ministers to consider extending the time period for the 105 gram target from 2025 to 2028
- a review of the CO₂ targets in 2023
- having split targets for passenger and commercial vehicles
- having a single-target for small vehicles up to 1,200 kilograms (tare weight)
- allowing the used-vehicle sector to meet the target on a vehicle-by-vehicle basis
- having modest charges for exceeding a CO₂ target.

We expect any distributional impact to be a positive one

As we consider the risk of vehicle price rises to be low, we also consider that it would have little negative distributional impact. In fact, long-term evidence from the United States, over the period 1984-2014, suggests that the households that benefit the most from CO₂ standards/vehicle fuel efficiency standards are low-income households⁸. This is because as a percentage of income, savings from improved fuel efficiency are highest for households with lower incomes. The savings take account of the increase in vehicle prices.

The key conclusion from this American longitudinal study is that:

“Because lower income households typically spend more on motor fuel than on vehicles, fuel efficiency improvements should benefit them more than upper income

⁷ OECD/IEA (2017). International Comparison of light-duty vehicle fuel economy 2005-2015. Working Paper 15. Accessed from <https://www.globalfueleconomy.org/media/418761/wp15-ldv-comparison.pdf>.

⁸ http://bakercenter.utk.edu/wp-content/uploads/2016/09/Equity-Impacts-of-Fuel-Economy-Report_final.pdf

households. A detailed analysis of data from all Consumer Expenditure Surveys from 1980 to 2014 supports the conclusion that all income groups received substantial fuel savings and that the greatest *net* benefits relative to income have accrued to the lower income quintiles. According to our best estimates, the lowest income quintile's annual net savings averaged between 1.5% and 2.0% of their average annual income over the period".

Could the Standard slow-down the rate of turn-over of the vehicle fleet?

If vehicle prices rise this could result some households choosing to hold on to their existing vehicles for longer. For the reasons outlined above we consider this risk to be adequately mitigated by the design of the Standard.

As well, for used-vehicle imports a price impact from the Standard is less likely given the 1 March 2020 requirement for imported used vehicles to have Electronic Stability Control. We expect used-imports to be newer because of this requirement.

Overall, the Standard will force a change to the composition of the vehicle fleet. There will be more petrol hybrids, more fuel efficient conventional vehicles and more EVs in the fleet. It is not possible to indicate the exact shares that these vehicles will have as this will depend on the import decisions of suppliers.

We also expect there to be an increased uptake of diesel vehicles in the new sector and a resultant deterioration in air quality. This is because diesel vehicles tend to be relatively fuel efficient compared with petrol and they emit relatively lower levels of CO₂ emissions, but produce higher levels of air pollutants such as nitrates and particulate matter.

This risk can be mitigated by strengthening the exhaust emission standards to Euro 6 for new vehicles and (at least) Euro 5 for used-imports, which is under consideration. It will also be mitigated by the fact that 95 percent of used vehicle imports are sourced from Japan. Diesel light vehicles are not common in the Japanese domestic market.

Section C: Evidence certainty and quality assurance

Agency rating of evidence certainty?

The Ministry is confident of the evidence base it has used in its analysis. Vehicle weights, fuel efficiency and emissions of vehicle makes and models are specified and widely reported. International exhaust emission standards are known. CO₂ standards have been implemented internationally and their effects are well-proven. Our analysis has been informed by such information and:

- much has been critiqued by industry representatives
- supported by specific data requested from the New Zealand motor vehicle industry
- supported by specific data requested from the International Council on Clean Transportation (ICCT).

To be completed by quality assurers:

Quality Assurance Reviewing Agency:

An Independent Quality Assurance Review Panel chaired by a representative from the Ministry of Transport (Ministry) containing an additional representative from the Ministry and one representative from the Treasury reviewed the Regulatory Impact Analysis (RIA) for the proposed Clean Car Standard (CO₂ Standard). The Ministry developed the RIA.

The CO2 Standard is designed to bring forward the transition of the light vehicle fleet to lower emission vehicles.

Quality Assurance Assessment:

The panel considers that, overall, the RIA “partially meets” the quality assurance (QA) criteria.

Reviewer Comments and Recommendations:

This is a complex RIA, backed up with a separate Benefit Cost Analysis (BCA). Overall, despite its complexity, the RIA is clear and concise and contains extensive analysis to assist decision-makers. The RIA sets out the problem statement clearly and contains a robust set of options. The RIA also details extensive consultation undertaken by the Ministry with stakeholders when developing the proposed CO2 Standard in conjunction with a possible feebate scheme.

The RIA includes a relatively comprehensive overview of the issues and problems, but lacks detail in some areas. We have given the RIA a “partially meets” rating because the

RIA lacks sufficient information on the potential distributional impacts of the proposed CO2 Standard. The CO2 Standard will likely increase the prices of new and used vehicles and these increases will impact different groups of buyers. However, the RIA does not provide sufficient detail on these possible increases and, therefore, their potential impacts. The RIA points out that people could hold onto their existing vehicles longer, suggesting the distributional impacts may be significant.

We also wonder whether the possible impacts on the composition and age of the vehicle fleet are covered fully enough in the RIA. The RIA notes that turn-over of the vehicle fleet may well slow once the CO2 Standard is implemented. The downstream consequences of reduced vehicle fleet turn-over merits a fuller discussion, such as potential for increased safety and emissions’ costs.

Finally, we note that there is a general assumption that the market will respond by the supply of more electric vehicles (EVs). Should this not occur, the analysis of benefits and costs could change. EVs are only one of the possible options available for the lower emission vehicles that might come into the New Zealand market as a result of the CO2 Standard, including diesel vehicles.

Impact Statement: Moving to a low emissions light vehicle fleet

Section 1: General information

1.1 Purpose

The Ministry of Transport is solely responsible for the analysis and advice set out in this RIA, except as otherwise explicitly indicated. The purpose of this RIA is to assess the options to accelerate the supply of low emission light vehicles entering the New Zealand fleet.

This analysis and advice has been produced to inform:

- policy decisions to be taken by Cabinet
- legislative design that will be provided to Parliamentary Council Office.

1.2 Key Limitations or Constraints on Analysis

The Ministry consulted on both a CO₂ standard (Clean Car Standard) and feebate scheme (Clean Car Discount) from 9 July 2019 to 10 September 2019. Submissions were considered separately for both proposals.

Subsequent workshops and direction from the Associate Minister of Transport resulted in the acceleration of the feebate scheme. A Cabinet paper seeking Cabinet approval to develop legislation to implement the Clean Car Discount is with Ministers for consultation.

This RIA assesses the supply-side options pertinent to support the policy decisions being sought at this time to establish a CO₂ standard relating to imported light vehicles.

The Cost Benefit Analysis (CBA) that supports this RIA includes evaluation of the feebate scheme as a stand-alone scheme, the CO₂ standard with a target of 105 grams by 2025 as a stand-alone scheme, and options involving a coupled implementation of both feebate and CO₂ standard (with different emissions targets). An indicative assessment of the preferred option (a CO₂ standard alone with a target of 105 grams by 2028) was completed subsequent to the finalisation of the CBA using the same modelling approach. The CBA and indicative assessment results included in this RIA are the results for a CO₂ standard alone, using default assumptions. Since the CBA was completed, the design of the Standard has been improved by the changes suggested by the vehicle industry.

Assumptions

The general assumptions in the CBA are:

	Base case assumptions	Sensitivity analysis
Discount rate	6%	n/a
Evaluation period	2020 to 2050	n/a
Implementation cost (Source: NZTA)	Feebate CAPEX year 0	\$2.28 m
	Feebate OPEX year 0	\$3.04 m
	Feebate OPEX p.a.	\$5.21 m
	VFES CAPEX year 0	\$6.75 m
	VFES OPEX p.a.	\$1.50 m
Price level	2018 \$	n/a

Limitations on the quality of the data used for the Cost Benefit Analysis

Due to a lack of information, time and resources, the associated CBA does not include the following items:

- changes in social cost of crashes
- changes in social cost of air pollution (currently being investigated as a separate research assignment)
- longer term behavioural responses
- additional willingness-to-pay for CO₂ reduction above the carbon price
- effects on New Zealand's reputation if emission targets are not achieved
- cost of EV charging infrastructure
- a small positive impact on energy security due to reduced reliance on fossil fuels
- the difference in the life-time emissions impact between a conventional vehicle and an EV
- changes in carbon emissions in real world (as real world carbon emissions from conventional vehicles are generally higher than the test results, this means the CBA is likely to understate the actual carbon emission reductions).

The effect of the mandatory Electronic Stability Control (ESC) rule (which came into effect on 1 March 2020) has not been independently commented on as the implementation of the CO₂ standard will be well beyond the completed roll-out of ESC. As such, the New Zealand vehicle market would have adjusted to the mandated ESC environment.

The following impacts are implicitly included in the CBA through the use of price elasticity of demand:

- vehicle downsizing behaviours over and above the impacts predicted for the baseline
- new imports switching to used imports.

The CBA is subject to a high level of uncertainty regarding how vehicle importers and buyers would respond as the following assumptions are highly uncertain:

- price elasticity of demand for EVs (BEVs and PHEVs)
- vehicle prices for all vehicle types, emission bands and tare weights (including new versus used, light passenger versus light commercial)
- the extent to which vehicle importers would pass on any cost increases to vehicle buyers
- the availability of vehicle supply
- other macroeconomic conditions that might affect the demand for light vehicle imports.

For light commercial vehicles, there are certain categories (by tare weight and emission band) with missing and insufficient price data. These gaps were replaced by the information for the combined light vehicle imports for the CBA.

General limitations for the Regulatory Impact Assessment

The key limitation on the analysis in this regulatory impact statement concerns data limitations. The specific limitations identified in the analysis include the following.

- There is a high level of uncertainty about the rate at which the range of low emission vehicles, including EVs, will expand globally and in New Zealand.

- The world's leading manufacturers of EVs are in countries (China, America, continental Europe) that are left-hand drive markets, and many models are not yet being manufactured in right-hand variants we drive in New Zealand.
- It is not known when New Zealand could expect to have low emission alternatives for the range of conventional vehicles currently available.
- It is not known how quickly vehicle suppliers will alter their fleet profiles following changes in consumers' purchasing preferences.
- There is also growing market intelligence that the suppliers of EV batteries are not currently able to keep up with the global burgeoning demand. The production of current leading batteries for EVs uses certain rare earth metals including lithium, nickel, manganese and cobalt. There are concerns regarding the future of the raw material supply and recycling of these metals.
- At the time of writing, some brands⁹ were reportedly slowing or suspending the manufacture of some EV and hybrid models. There are conflicting assessments of the true global supply potential of key raw materials and the opportunity for substitute resources, or whether reported supply limitations relate only to poor business arrangements by those concerned.
- Similar market uncertainty relates to hydrogen fuel-cell technology.
- For both EVs and hydrogen fuel cells, the provision of charging/fuelling infrastructure remains a limitation. The assumption is made that there will be adequate infrastructure funded and provided to match demand.
- Both EVs and hydrogen fuel cells require general vehicle servicing, and crash repair infrastructure and competency needs to further develop. The assumption is made that there will be adequate infrastructure/competency provided by the market to match demand.
- For both EVs and hydrogen fuel cells, specialised end-of-life wrecking and recycling infrastructure and competency needs to further develop. The assumption is made that there will be adequate infrastructure/competency provided by the market. No data or modelling has been done in regards to extent required and costs.
- The purchase price of EVs will be a key driver of uptake. However, it is not possible to project EV prices with confidence. In particular, there is a high level of uncertainty around when price parity will be achieved between EVs and their fossil-fuelled equivalents. Also it is not possible to measure the degree that any charges under the CO₂ standard will be absorbed by importers/traders or passed on to consumers.
- The Ministry's projections of EV uptake assume purchase price parity will occur in the late 2020s. This assumption is at the optimistic end, with some commentators seeing price parity occurring in the major vehicle markets towards the end of the 2020s¹⁰ while it would be later in a small right-hand drive market like New Zealand.
- The analysis has assumed that the charging infrastructure for EVs will match the rate of EV uptake. Infrastructure will be commercially funded – there is no allowance for home or public fast charging infrastructure funding by the Government in this analysis.
- There is a range of technologies that have been adopted by vehicle manufacturers to meet CO₂ standards in other countries. Consequently, it is difficult to obtain reliable estimates of the costs consumers will face in being supplied with vehicles with better fuel efficiency. This has been resolved by using the cost estimates that the Australian Department of Infrastructure and Regional Development used in its regulatory impact assessment of a CO₂ standard in

⁹ For example Jaguar, Audi, Mercedes-Benz

¹⁰ For example, Bloomberg New Energy Finance expect price parity to occur in major markets over 2025-2029. <https://about.bnef.com/blog/electric-vehicles-accelerate-54-new-car-sales-2040/>.

Australia¹¹. It is assumed that New Zealand consumers will face the same magnitude of costs.

- The baseline scenario used in the cost-benefit analysis reflects the mid-range growth scenario in the Ministry's Vehicle Fleet Emissions Model. This makes a number of projections on vehicle imports, including EVs and hybrids, the ratio of used and new vehicles, the average annual vehicle kilometres travelled (VKT), the rate of VKT decline as a vehicle gets older, the average economic life of a vehicle, and the proportion of total trips between different travel modes.
- The price of new conventional vehicles is assumed to remain constant and the price of hybrid vehicles is assumed equal to EVs. The own price and cross price elasticities are as estimated by Covec – Economic Consultants.
- The cost-benefit analysis assume that consumers only consider one year of fuel costs savings in their vehicle purchase decisions.

Stakeholder perspectives

Industry groups had concerns with the CBA and research underlying the discussion document, including the Automobile Association (AA), AutoTerminal New Zealand, the Motor Trade Association (MTA), the Motor Industry Association (MIA) and the Imported Motor Vehicle Industry Association (VIA).

The Ministry for the Environment considers the CBA to be overly conservative in its assumptions.

There was strong support from the public for a CO₂ standard. The industry submissions suggested a number of specific design modifications.

The Motor Industry Association (MIA) agreed that there should be a CO₂ standard but considered the proposed standard in the discussion document had serious issues.

The VIA does not believe the Clean Car Reforms will achieve the goal of reducing the overall level of CO₂ emissions of vehicles entering the New Zealand fleet. Its primary position is that the Clean Car Discount should be sufficient in stimulating a reduction in light fleet emissions.

The AA supported the goals of the Clean Car Reforms but had a number of concerns. Its main concern is that the rate of change proposed is too ambitious.

The VIA and MTA proposed that the standard be modified in its implementation for the used-import sector. This is in response to specific uncertainties that the used-import industry will face. Certainty of charges is a key design feature of the modified implementation.

More detail about the views of the vehicle industry, and subsequent workshops following the consultation, is included in section 2.4.

¹¹ Improving the efficiency of new light vehicles, Commonwealth of Australia, December 2016.

1.3 Responsible Manager (signature and date):



Glen-Marie Burns
Environment, Emissions & Adaptation
Ministry of Transport

15 May 2020

Section 2: Problem definition and objectives

2.1 What is the current state within which action is proposed?

The Government is committed to taking action on climate change

- 1) In 1990, New Zealand's gross greenhouse gas (GHG) emissions were 63,590.9 kt CO₂-e with net greenhouse gas (GHG) emissions being 35,293.9 kt CO₂-e.
- 2) Between 1990 and 2018, gross emissions increased by 24 percent (15,271 kt CO₂-e) to 78,862.3 kt CO₂-e and net GHG emissions increased by 20,174.3 kt CO₂-e to 55,468.2 kt CO₂-e (57.2 percent).
- 3) In 2018, transport was responsible for 21.1 percent of New Zealand's gross national greenhouse gas emissions.
- 4) Between 1990 and 2018, transport emissions increased 90 percent. Road transport emissions increased 101.6 percent between 1990 and 2018.
- 5) Road transport accounts for around 91 percent of total transport emissions and it is New Zealand's fastest growing source of emissions¹².
- 6) Light vehicles account for two-thirds of total transport emissions and about 13 percent of total gross domestic emissions.

Climate change poses significant risks to New Zealand's economic, cultural, social and environmental prosperity. Like other countries, New Zealand is highly vulnerable to the impacts of climate change, which include sea-level rise, ocean acidification and the increased frequency and severity of flooding, wildfires and droughts¹³.

New Zealand is already beginning to experience significant costs and disruption from previously 'locked-in' climate change. More frequent and extreme weather events pose a significant risk to important infrastructure and assets. Climate change also presents a magnified security and economic threat in terms of increasing disaster risk management and migration pressures in the wider Pacific region¹⁴.

The specific economic costs of climate change impacts are difficult to estimate. However, a report, commissioned by the Treasury, found that climate change-related floods and droughts have cost the New Zealand economy at least \$120 million for privately insured damages from floods and \$720 million for economic losses from droughts over the last 10 years.

The Ministry for the Environment has estimated the economic impact of climate change on New Zealand and Australia, combined, is a one to two percent reduction in gross domestic product levels by 2060¹⁵.

The only way New Zealand can minimise these impacts and costs is by playing its part to ensure there is collective and effective global action to reduce GHG emissions.

As a party to the Paris Agreement on Climate Change, New Zealand has endorsed the decision that the world reach net zero GHG emissions by the second half of this century. Net zero means that GHG emissions are reduced to a level where the total amount emitted is no greater than the amount that can be removed from the atmosphere.

¹² Source: <https://www.mfe.govt.nz/sites/default/files/media/Climate%20Change/new-zealands-greenhouse-gas-inventory-1990-2018-vol-1.pdf>.

¹³ Reisinger et al, Climate Change (2014). Impacts, Adaptation, and Vulnerability. Part B: Regional Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge and New York: Cambridge University Press. pp 1371-1438.

¹⁴ Ministry for the Environment, Regulatory Impact Statement, Zero Carbon Bill

¹⁵ Ministry for the Environment (2018). Zero Carbon Bill Economic Analysis: A Synthesis of Economic Impacts. Wellington: Ministry for the Environment.

Under the Paris Agreement, New Zealand has an interim target to reduce emissions to 30 percent below 2005 levels by 2030.

To bring New Zealand further in line with the global ambition set out in the Paris Agreement, Cabinet agreed to the Climate Change Response (Zero Carbon) Amendment Act in November 2019. The Act sets a new 2050 reduction target in law that is consistent with New Zealand becoming a net zero emissions economy.

Lowering emissions from transport is critical to meeting the net zero challenge

Transitioning to a net-zero emissions economy will require significant economic change. The transport sector is expected to play a large part in this change. It accounts for 21 percent of New Zealand's domestic emissions and it has been New Zealand's fastest growing source of emissions.

Between 1990 and 2018, transport emissions increased 90 percent and road transport emissions increased 101.6 percent. This compares with 24 percent for gross emissions across the total economy.

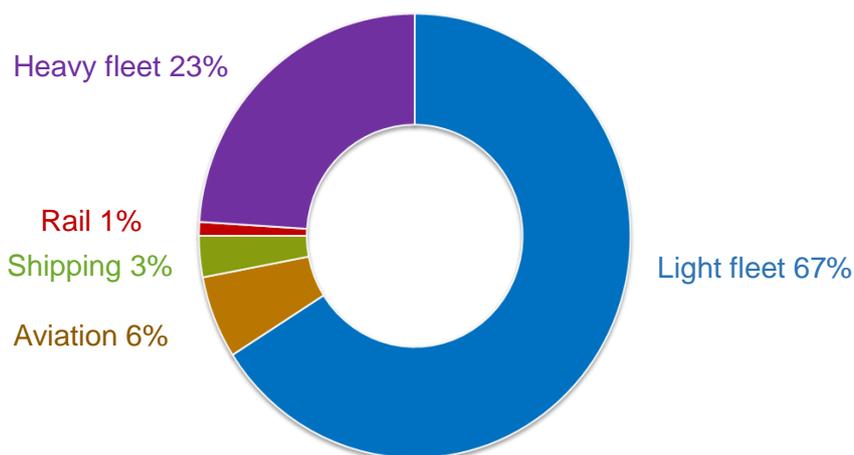
New Zealand's use of transport is very emissions intensive when compared internationally. New Zealand's per capita transport emissions are the fourth highest in the OECD and the ninth highest of all countries with a population over one million.

Road transport is the main contributor to emissions from the transport sector

New Zealand's high per capita transport emissions largely reflects the fact that our transport system is dominated by private road transport for moving people and freight.

Road vehicles are the primary cause of transport emissions growth, contributing over 90 percent of transport emissions.

Figure 2 – GHG emissions by transport mode



The travel done in light vehicles accounts for two-thirds of transport emissions. This is about 13 percent of New Zealand's total gross emissions. To illustrate the significance of light vehicles, over the next 5 years over 1.2 million light vehicles are likely to enter New Zealand's fleet. If powered by fossil fuels, these vehicles will lock-in up to 50 megatonnes

of CO₂ emissions over the next two decades¹⁶. This is the equivalent of over half of New Zealand’s annual gross emissions.

Emissions will not decline fast enough if no action is taken

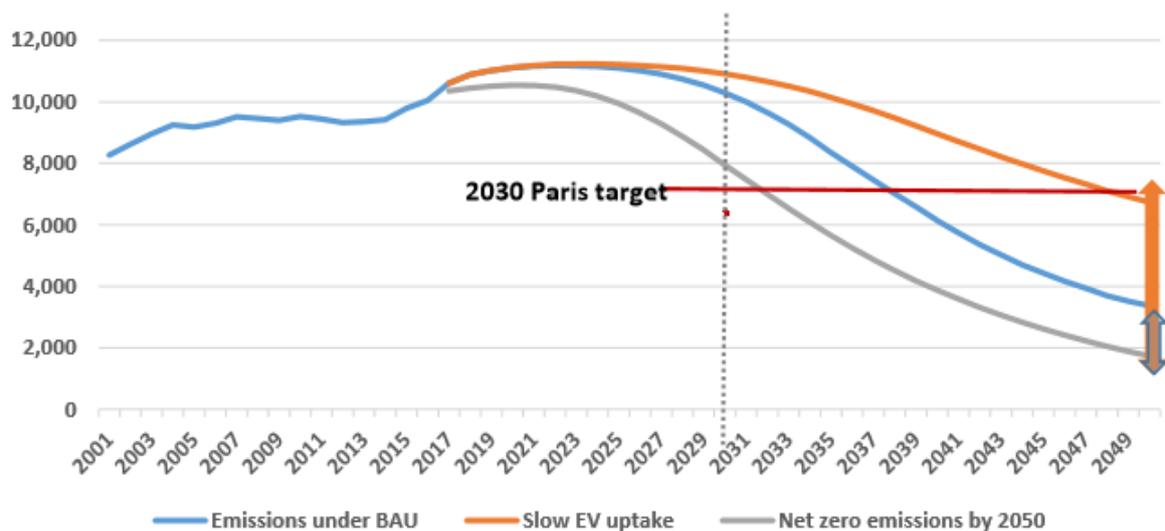
Without any new road transport policies aimed at reducing emissions, light vehicle GHG emissions are projected to peak and plateau around 2023 before falling¹⁷. There is considerable uncertainty about the pace of this eventual decline.

Even the best case projections for EV uptake result in emissions 9 percent above 2005 levels in 2030. It would take until 2038 to reach 30 percent below 2005 levels. It is unlikely that our 2030 or 2050 climate targets will be met¹⁸. A regulatory solution is required in the public interest, taking account of costs, benefits, and other implementation issues.

The CBA that supports this RIA uses a mid range projection¹⁹. The best case projection, however, strongly illustrates the inadequacy of the status quo.

Figure 3 compares the projected emissions trajectory for the light vehicle fleet, with the path that is consistent with New Zealand achieving net zero emissions by 2050 and transport’s reduction share that is in line with the 2030 climate target. The blue line, emissions under business-as-usual (BAU), is the counterfactual for the CBA supporting this RIA.

Figure 3: GHG emissions (kilo tonnes CO₂-e) from New Zealand’s light vehicle fleet



Source: Ministry of Transport (2019). *Moving the light vehicle fleet to low-emissions: discussion paper on a Clean Car Standard and Clean Car Discount*, July 2019, Wellington.

Nature of the vehicle market in New Zealand

New Zealand imports around 300,000 vehicles into the fleet each year. About 60 percent are used imports, which are mainly purchased by private individuals. Businesses, including leasing and rental companies, purchase about 60 to 70 percent of new vehicles.

¹⁶ New Zealand Productivity Commission (2018), Low-emissions economy: Draft report.

¹⁷ Ministry of Transport (2016). Transport Outlook, <https://www.transport.govt.nz/mot-resources/transport-outlook/transport-outlook-future-state-model-results/transport-outlook-updated-future-state-model-results/>.

¹⁸ Ministry of Transport (2019). Vehicle Fleet Emission Model.

¹⁹ Note that the preliminary CBA that supported the discussion document used a slow EV uptake as the counterfactual. This assumption has been changed.

As previously noted, New Zealand is a right-hand drive market, limiting vehicle options. About a third of the world's population drive on the right. The largest EV market is China, and other significant markets such as the USA are left-hand drive. To date, this has limited the range of EVs and other low emission models being made available to New Zealand.

Demand

In recent years, New Zealand has experienced an increasingly strong demand for large, high tow rated, load-carrying, ute and SUV type vehicles. Agricultural, contractors/trades businesses, and tourism industries rely on these types of vehicles for specific applications. New Zealand's topography, terrain, relatively low urbanisation, and limited public transport (especially in rural areas) system means driving distance between recharging is an important concern for many EV owners.

New vehicle supply

The suppliers of new vehicles negotiate with their parent companies for the models and volumes to be committed to the New Zealand market. Suppliers continually revise their product mix to stay in line with consumer demand. For most, New Zealand is seen as part of an Australasian market, so the model range can reflect the demand from Australia as well as New Zealand. For some technologies and models, the relatively low quality of the fuels in Australia limit the model variants that can be supplied.

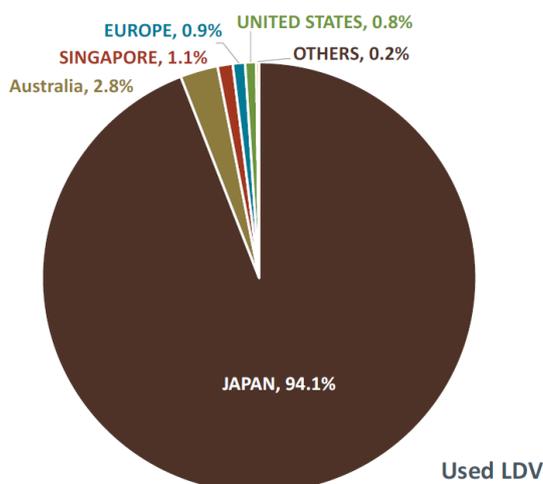
Improvements in CO₂ of new vehicles occur in model updates, which generally incorporate technology improvements. Model lifecycles are typically in the order of five years. This means that there is a relatively slow but steady progression of technology adoption across new vehicle models. For example, in 2019 Toyota released the hybrid RAV4 in New Zealand. This was later than in other markets and New Zealand will not see another improvement in this model for around 5 years.

Used imported vehicles

The Motor Vehicle Traders (MVT) register does not record how many traders are importers of used vehicles. The market is characterised by well-established relationships between Japanese exporters, auctioneers, logistic managers, and established New Zealand traders. There are a large number of small traders of new used-imports (some not MVT registered). The small businesses are often transient.

Figure 4 shows that 94 percent of vehicles imported to New Zealand come from Japan. These are sold in a few large auction floors in Japan, where the importer places orders and agents bid on their behalf. These auction floors are competitive open markets with agents working for importers from many countries. New Zealand importers cannot guarantee they will win any particular vehicle bid and so there is always an element of uncertainty around the planning of make/model selection for used vehicles.

Figure 4: Source of used light duty vehicles (passenger plus commercial) imported to New Zealand



Used vehicle importers need about six to eight weeks lead-time to select, inspect, repair, and ship a vehicle to New Zealand. This includes about one to two weeks for importation certification and clearance requirements. The importer needs upfront capital or a good line of credit (often provided by the Japanese exporter) to make purchases and secure various services along the way.

The majority of EVs in the New Zealand fleet have come in as used imports from Japan. This source of EVs and other low emission models/variants will continue to be a crucial enabler of reducing GHG emissions from light vehicles.

2.2 What regulatory system(s) are already in place?

New Zealand Emissions Trading Scheme (ETS)

The ETS is New Zealand's principal policy tool for reducing GHG emissions. It establishes a price on GHG emissions that flows through to the cost of petrol and diesel. An objective of pricing GHG emissions is to moderate demand for transport fuel. This includes encouraging individuals and businesses to opt for more fuel-efficient vehicles.

The point of obligation for transport emissions sits with fuel importers and producers, however, the majority of the ETS cost is passed through to consumers. At the current New Zealand Unit price of around \$25 per tonne, the emissions component of fuel prices is just under 5 cents per litre for petrol and around 5.5 cents per litre for diesel²⁰.

However, relying solely on the ETS to reduce transport emissions is unlikely to be effective and raises equity concerns. There would need to be a significant increase in the current carbon price to deliver an increase in fuel prices sufficient to bring about meaningful changes in vehicle purchase patterns. While a higher carbon price would

²⁰ New Zealand Productivity Commission, Low-emissions economy: Draft report, April 2018.

raise fuel costs,²¹ research shows this would not necessarily encourage people to buy more fuel efficient vehicles. This is because people significantly discount future fuel costs in their vehicle purchasing decisions²².

The measures analysed and supported by this RIA are designed to work with the ETS to lower emissions from light vehicles. The CO₂ standard will incentivise increased supply of low emission light vehicles. It will also send a clear message to the motor vehicle industry that Government is serious about New Zealand's pathway to a low emission economy.

Vehicle fuel economy labelling

Motor vehicle traders are required to display fuel economy labels on all vehicles they are selling. The objective of the labels is to encourage vehicle consumers to consider fuel efficiency in their vehicle purchase decisions.

The labels use a star rating system and provide indicative fuel costs per year to help buyers easily compare the fuel efficiency of one vehicle to another. There is a star rating scale for all vehicles, with six stars for vehicles that are the most fuel efficient, and the least number of stars for the most fuel inefficient vehicles. Fuel efficiency information also has to be displayed on trading websites if the vehicle is being sold online.

Some consumers may be aware that there is a direct correlation between fuel efficiency and tailpipe CO₂ emissions, while others may not. The vehicle fuel economy label, as currently prescribed, is intended to be expanded to include consumer-facing information about emissions and feebates.

Electric Vehicles Programme

The EVs Programme was launched in March 2016 to help address barriers to EV uptake. Its key regulatory measure is exempting EVs from road user charges (RUC) until December 2021 for light vehicles and December 2025 for heavy vehicles, or until they make up 2 percent of their respective vehicle fleets²³.

²¹ If the carbon price were to increase to \$100/tonne, the petrol price would increase by 18 cents/litre. It is estimated this would reduce transport emissions by 11 percent.

²² Green, D 2010, *Why the Market for New Passenger Cars Generally Undervalues Fuel Economy*, Joint Transport Research Centre Discussion Paper No. 2010-6, Oak Ridge, United States.

²³ This policy is currently under review.

2.3 What is the policy problem or opportunity?

Policy problem

The policy problem is how to most effectively increase the supply of low emission light vehicles.

The Ministry considers that accelerating New Zealand's transition to a low emission light vehicle fleet is best approached in a strategic manner. The strategy is to start with the vehicles entering the fleet:

- first, with demand-side incentives
- second, with supply-side interventions.

Then it would be desirable to address the removal of high emitting vehicles already within the New Zealand fleet.

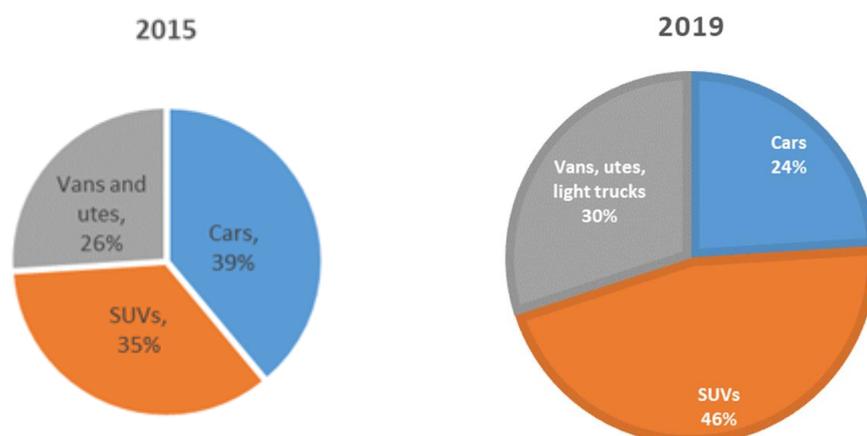
The Clean Car Discount is a demand-side incentive. This RIA focuses on supply-side initiatives as the next step in the process to accelerate the transition to low emission light vehicles.

This will help New Zealand meet its 2030 and 2050 Paris Agreement emissions targets.

The following challenges are limiting the supply of low emission light vehicles (see the problem definition in the summary for more detail):

- **The transition is not happening fast enough**
- **The light vehicles entering our fleet are more emissions-intensive than in most other developed countries**
- **New vehicle distributors face significant challenges in getting low emission vehicles from their overseas manufacturers**
- **New Zealand is one of three developed countries without a CO₂ standard.** As a result, we risk becoming a dumping ground for high-emitting vehicles from other countries
- **A limited variety of EVs available in New Zealand.** This range has to compete with a much wider choice of conventional vehicles
- **Availability of public charging infrastructure.** To date, there has been a relatively strong response to the provision of public charging infrastructure. However, EV fast charging units are not in the numbers or at the locations to be considered a mainstream network, yet
- **The burgeoning demand for a heavier type of vehicle.** Analysis of vehicle purchasing decisions shows that while fuel efficiency is valued by consumers, its benefits are less immediate and tangible than other considerations such as vehicle price, size, functionality, performance, and safety. There is also the effect of vehicle tax treatment (fringe benefit tax and depreciation). The trend to heavier vehicles can be seen in the changing vehicle mix (see Figure 5).

Figure 5: Composition of new vehicle sales



2.4 What do stakeholders think about the problem?

Early consultation

The Ministry gained some information on the industry's perspectives on a CO₂ standard from the public submissions on the New Zealand Productivity Commission's *Low-emissions economy: Draft report*. We considered these in the preparation of the public discussion document but greater weight was placed on the Productivity Commission's advice on policy design.

Formal public consultation

The Ministry released a discussion document on 9 July 2019. The document proposed two Clean Car Reforms: the Clean Car Standard and the Clean Car Discount. Consultation involved three processes:

- a) a public online survey with questions linked to the discussion paper
- b) substantive written submissions on the discussion paper
- c) stakeholder workshops.

Submissions, including the online survey, closed on 20 August 2019. An extension to 10 September was allowed for core stakeholders including the MIA, the VIA, the AA, and the Motor Trade Association (MTA) to allow them time to provide data in evidence of their views.

The Ministry received 860 online submissions, 196 email submissions and 1,644 emails from the National party's *Campaign Now* petition. The *Campaign Now* petition did not comment on the CO₂ standard.

For the online survey, 87 percent of respondents support a CO₂ standard for New Zealand. For the 110 email submissions that clearly indicated support or opposition, 72 percent supported a standard. Specific comments covered matters like the emissions target, the treatment of light passenger and light commercial vehicles, emissions testing measurements, and the level of charges for non-compliance.

A number of individual submitters evidently represented those with a strong concern about the environment and global warming. These submitted that the standard should have a stronger target (stricter, sooner, or both).

Initial views of the vehicle industry

The industry submissions suggested a number of specific design modifications for the standard.

The MIA agreed that there should be a CO₂ standard but considered the proposed standard in the discussion document had serious issues. In its view:

- the proposed standard was ambitious and the timeline for its achievement very short
- the proposed weight bandings and charges would lead to retail price increases and could lead to some distributors leaving the market
- there was no clear policy rationale for the application of a single standard covering both passenger vehicles and light commercial vehicles, and no other country with a vehicle emission standard has such a policy
- the proposed weight-adjusted emissions target would discourage the supply of smaller, lighter vehicles.

The VIA believed the Clean Car Reforms would not achieve the goal of reducing the overall level of CO₂ emissions of vehicles entering the New Zealand fleet, as the proposals had too many loopholes and unintended consequences to be effective. In addition, the VIA was concerned the proposals did not address the high levels of fuel consumption and CO₂ emissions of the existing vehicle fleet.

The VIA also considered there was a conflict between the Government's goals for low emissions vehicles and safe vehicles. Lighter vehicles generally produce lower emissions and tend to be less safe, and heavier vehicles are generally safer but produce higher levels of emissions. This view was shared by the AA.

While the AA supported the goals of the Clean Car Reforms, it considered:

- the proposals were unlikely to reduce vehicle CO₂ emissions significantly
- the rate of change required to meet the emissions target was too ambitious
- the proposal raised serious equity issues ("those possessing fuel efficiency technology are likely to be wealthier than those who do not")
- it would be more fruitful to explore biofuel technology in seeking to meet New Zealand's obligations under the Paris Agreement
- the charges proposed in the discussion document were excessive, being equivalent to a carbon price of around \$500 per tonne CO₂.

Post-consultation and workshops

Following formal consultation, the Ministry held three workshops in October 2019 with vehicle industry representatives, including MIA, VIA, AA, MTA, the Energy Efficiency and Conservation Authority (EECA), and Waka Kotahi to discuss specific design principles of the standard. The main topics of discussion were:

- the national average emission target
- separate targets for light passenger vehicles and light commercial vehicles
- using a formula to adjust suppliers' targets rather than weight bands
- reviews of targets and setting future targets
- charges for exceeding emission targets
- banking, borrowing and grouping
- data accuracy
- preventing gaming and rorting
- super credits and off-cycle credits

- phase-in of the national average target
- which weight measurement to use.

The Ministry held a further meeting on 28 February 2020 to discuss the different ways the CO₂ standard could be applied.

VIA and MTA modified approach based on total charge payable

The VIA and MTA proposed that the standard be simplified in its implementation for the used-import sector. This is in response to specific uncertainties that the used-import industry will face. Certainty of charges is a key design feature of the modified implementation.

With their initial proposal, actual used vehicle import data from the year would be used to determine the total sector charge payable. It would then spread the charge across each vehicle imported in the following year. Charges would be based on a vehicle's emission levels and would be paid as part of vehicle certification. This would prevent a vehicle being released until the charge is paid.

Complying on a vehicle-by-vehicle basis

The Ministry and Waka Kotahi worked with VIA in an endeavour to find a pragmatic solution. One of the main considerations of officials was to ensure that all vehicles (new or used) imported were covered by the CO₂ standard. This means that an importer of even a single vehicle would be covered. After considering several ideas, it became apparent that a vehicle-by-vehicle pay at the border approach was a feasible and simple solution.

This solution modifies the application of the proposed Clean Car Standard, by enabling an importer's fleet emissions position to be assessed on a vehicle-by-vehicle basis.

The per-vehicle payment of any charge would be the default regime for the used import sector. Suppliers could choose to opt out of this default if they meet certain criteria. This includes the ability to form a group with other importers and collectively meet the annual average emissions target for the group's fleet.

The VIA prefers this as the default application for used vehicle importers because its members:

- get certainty about the maximum price they can bid on each vehicle so they can manage their cash flows
- cannot ensure which vehicle bids they will win, or lose, so they cannot easily forecast average fleet emissions
- are concerned about compliance and recognise that some transitory traders may actively evade their obligations to meet annual emissions targets and pay any charges, for example, by dissolving their businesses and establishing new ones.

Further detail on this approach is included in the summary of the preferred option above and in section 3 (option identification).

Other pertinent matters commented on but not directly related to the CO₂ standard (this is not an exhaustive list)

Taxation incentives

Tax exemptions were seen as a way to support EV uptake. These covered modifying fringe benefit tax so that it supports EVs and not large commercial vehicles, targeted tax

credits, retaining the RUC exemption long term, a GST exemption, and accelerated depreciation rates for EVs.

It was also suggested that Kiwisaver funds could be drawn down to buy an EV. The VIA submitted on the ETS pointing out the need to have a more realistic price for carbon. The AA recommended extending the exemption from RUC for EVs be extended to 2025.

Existing domestic light vehicle fleet

A number of submitters covered a range of policy options for improving the emissions of the existing fleet and opening the way to accelerate the demand for newly imported low emission vehicles. The most popular policy was for a nationwide scrappage scheme to get older, high emission vehicles off the road. Other suggestions included having registration fees based on a vehicle's emissions profile or age – the higher emitting vehicles/older vehicles costing more to register – and that WOF checks should become more stringent and cost more for older vehicles.

Infrastructure

The submissions raised matters such as subsidies for home EV chargers, the provision of more public fast-chargers, and the provision of hydrogen infrastructure. The need for infrastructure to cover battery refurbishment, battery recommissioning, battery disposal, wider EV servicing capacity (mechanical and body repair) was also mentioned.

Modal shift

Several submissions encouraged Government to be more active in encouraging modal shifts to active forms of transport and to help public transport to be more available and less costly.

2.5 What are the objectives sought in relation to the identified problem?

- Objectives must be clear and not pre-justify a particular solution. They should be specified broadly enough to allow consideration of all relevant alternative solutions.
- Where there are multiple policy objectives it should be clear how trade-offs between competing objectives are going to be made and the weightings given to objectives – not just those in direct conflict.
- For further guidance, see 2.3 of the Guidance Note on Best Practice Analysis <https://treasury.govt.nz/sites/default/files/2018-03/ia-bestprac-guidance-note.pdf>

The primary objective of the Clean Car Standard is to improve the emissions profile of new and used light vehicles entering the New Zealand fleet. In turn, this will help reduce overall transport emissions and contribute to New Zealand's achievement of agreed emission targets.

Secondary objectives include:

- improving the energy efficiency of the light vehicles supplied to New Zealand. This could lead to productivity gains and better economic performance as businesses and households would require less fuel to transport goods and people
- reducing New Zealand's reliance on fossil fuels
- improving the fuel economy and emissions information available in the market, and so encourage purchase and supply choices that value fuel efficiency
- low compliance costs.

The assessment criteria is discussed in section 3.2.

Section 3: Option identification

3.1 What options are available to address the problem?

As a result of the extensive consultation and international research, including direct communications with the ICCT, we were able to rule out a number of options as inferior to a CO₂ standard and hence these were not considered further (refer to section 3.3).

The options considered were the counterfactual (status quo), a CO₂ standard alone with two different dates for the national average emissions target (options 1-2), introducing a maximum fuel efficiency limit and age limit on used-imports (option 3), and regulating an end-date for the import of fossil-fuelled vehicles (option 4).

Status quo

This option would see a continuation of the policies already in place (refer to section 2.2), but no further supply-side incentives at this time.

Regulate a CO₂ standard, with a national headline target of 105g CO₂/km by 2025 (option 1)

All newly imported light passenger vehicles (LPV) and light commercial vehicles (LCV), whether new or used, would be subject to their own separate CO₂ standard.

In line with international best practice, each of the LPV and LCV national CO₂ emissions targets would be adjusted by vehicle weight.

The overall national average target (the national headline target) would be 105 gCO₂/km by 2025. There would be different targets set for LPV and LCV (vans, utility vehicles, light trucks) of 102 gCO₂/km and 132 gCO₂/km in 2025, respectively. This reflects international best practice and adjusts for structural, technology and functionality differences.

A single target will apply for vehicles with a tare weight up to and including 1,200kg. For these vehicles, a single target would apply each year irrespective of the weight differences between them.

Stricter targets would be set beyond 2028 to continue the move to a low emissions vehicle fleet. These future CO₂ targets align with the timing of the Climate Change Commission's proposed emissions budgets.

For used vehicles, the default application is that when each vehicle is cleared for entry into New Zealand its emissions are compared to the applicable weight adjusted LPV or LCV target. If emissions are lower than the target, the vehicle can be cleared. But if emissions are higher, then the importer must pay a charge before the vehicle is released from border services.

The table below provides an example of how this would work. In this example, a used vehicle importer imports seven vehicles in the order in the table. It builds up emissions credits initially with the import of two Toyota Prius's (a plug-in hybrid) and a Nissan Leaf. The next four imports are of vehicles with actual emissions that exceed their target emissions. A simple way to think of this is that each importer has an emissions credit account, where they build credits by importing low emission vehicles and use credits when a vehicle exceeds its weight adjusted emissions target.

Across this consignment of seven vehicles, the importer is liable for a charge once its cumulative emissions debits exceed its credits. This is reached on the sixth vehicle, at which point the importer a charge of \$3,120 (\$40 x 78) for the Range Rover. This payment would be made at the time of vehicle certification. On payment of the charge, the cumulative balance resets to zero. The importer then pays a charge of \$1,120 (\$40 x 28) for the Nissan Tiida.

Make	Model	Weight Adjusted Target	Actual Emissions	Difference (+ve Debit) (-ve Credit)	Cumulative Balance	Penalty (\$40/gram)
Toyota	Prius	103	65	-38	-38	nil
Toyota	Prius	103	65	-38	-76	nil
Nissan	Leaf	103	0	-103	-179	nil
Toyota	Wish	122	127.3	5.3	-173.7	nil
Audi	Q5	122	168.1	46.1	-127.6	nil
Nissan	X-Trail	122	170.2	48.2	-79.4	nil
Land Rover	Range Rover	141	298.4	157.4	78	\$3,120
Nissan	Tiida	122	150	28	28	\$1,120

The suppliers of new vehicles would apply the standard using the fleet-average approach. There would be no criteria or other limitation.

Used vehicle importers would be able to opt for a fleet-averaging approach where specified criteria are met. The criteria would be designed to confirm that an importer is expected to have an ongoing presence in the market and has a sound reputation of compliance with regulation. The proposed criteria would include that the vehicle importer:

- is registered as a vehicle importer with Waka Kotahi New Zealand Transport Agency
- has been operating continuously for at least 5-years and can reasonably be expected to remain in the business of importing vehicles and trading as the same company for the coming 2-years
- has not been convicted under the Fair Trading Act 1986 or the Motor Vehicle Sales Act 2003 in the past 5-years
- has not been convicted of a criminal offence involving dishonesty in the past 5 years.

The ability to group with other importers would be available under all options. The only restriction is that used vehicle importers could not group with new vehicle importers. Grouping provides flexibility by allowing the balancing of emission debits and credits between the importers in the group, thus reducing the overall charge liability. Groups will register with Waka Kotahi and set their own operational rules.

Waka Kotahi will administer the standard and develop a register for all vehicle importers and other systems necessary to implement standard. Waka Kotahi's registration of all persons importing vehicles and the criteria for used vehicle importers to shift to a fleet-averaging basis will work to prevent gaming and rorting.

Other key design aspects of this option are:

- a formula to adjust suppliers' targets by vehicle weight, rather than the proposed approach of weight bands
- annual targets from 2022 that progressively lower to the 2028 target levels
- a review process of emissions targets and associated annual targets, with the first review in 2023, followed by reviews every 5 years to align with emission budgets
- the first year of the standard only impose reporting obligations
- banking – the ability for vehicle importers doing fleet-averaging to carry forward any annual overachievement of emissions targets for 3 years
- borrowing – the ability for vehicle importers doing fleet-averaging to underachieve an annual emissions target and make it up in the following year by overachieving

- for importers complying on a fleet averaging basis, charges for exceeding emissions targets of \$50 per gram for new vehicle suppliers and \$25 per gram for used vehicle importers
- for importers complying on a vehicle-by-vehicle basis, charges for exceeding emissions targets of \$40 per gram for new vehicles and \$20 per gram for used vehicles
- offences for administrative misconduct, with penalties not exceeding \$15,000 for an individual or \$75,000 for a person or organisation other than an individual
- the sanction of disqualification from the importer register if an importer deliberately attempts to evade their responsibilities under the standard
- exemptions for light vehicles already in the fleet, non-road registered vehicles, heavy vehicles²⁴, power-assisted pedal cycles, mopeds, motorcycles, motor tricycles, vintage and veteran vehicles²⁵, special interest vehicles²⁶, scratch built and modified vehicles certified by the Low Volume Vehicle Technical Association Incorporated, and vehicles designed solely for military operational purposes
- no super credits or off-cycle credits
- using tare weight
- classifying light commercial vehicles using existing classes NA, MC, MD1, MD2 and MB²⁷.

To assist suppliers comply, Waka Kotahi will develop an online tracking and forecasting tool. This tool will help importers monitor how their actual average fleet CO₂ emissions are tracking against their fleet targets or how their CO₂ accounts would be affected if they purchase particular vehicles in international auctions. It would be populated with vehicle data obtained in the vehicle certification process.

It is envisaged that this tool will provide real-time information to suppliers, enabling them to see:

- their to date actual average fleet emissions versus target average fleet emissions
- their to date charge liability (if any)
- how their fleet averages and any charge liability would be affected if they purchase a given set of vehicles at auction.

The online tool would be adapted to facilitate administration of the vehicle-by-vehicle approach for used-imports. It would be populated with vehicle emissions data obtained in the vehicle certification process and the data will be logged against individual importers. When a vehicle is being certified for entry, the online tool will be able to display the immediate net actual emissions credit, or debit, situation for an individual importer.

The VIA proposed that the online tool be used to allow a vehicle certifier to apply a charge when the latest vehicle causes a net emissions debit situation. The resultant charge would have to be paid for that vehicle to be released.

²⁴ Vehicles with a gross vehicle mass over 3,500kg.

²⁵ Veteran vehicles are motor vehicles constructed before 1 January 1919. Vintage vehicles are motor vehicles constructed on or after 1 January 1919 and are at least 40 years old on the date they were registered.

²⁶ A special interest vehicle must have historic value, or meet three of the following four requirements: it is identified as a collector's item by a reputable magazine; the make and model has been manufactured in annual volumes of 20,000 units or fewer; it is manufactured as a two-door coupe or a convertible; and/or, was manufactured as a high-performance vehicle. A maximum of 200 special interest vehicles are allowed to be imported in any calendar year. Between 140 and 150 such vehicles enter New Zealand each year.

²⁷ MC is an off-road passenger vehicle, MD 1 is an omnibus that has a GVM not exceeding 3.5 tonnes and not more than 12 seats, MD 2 is an omnibus that has a GVM not exceeding 3.5 tonnes and more than 12 seats, MB is a passenger vehicle that has not more than nine seating positions and in which the centre of the steering wheel is in the forward quarter of the vehicle's total length.

Having consistent CO₂ values across vehicles is key to the integrity of the standard. Currently, New Zealand accepts vehicles assessed through five different drive-cycle tests. To provide consistency, conversion formulas will be used to convert vehicle CO₂ emissions derived from the different tests to the three-phase Worldwide Harmonised Light Vehicle Test Procedure. The Ministry engaged the International Council on Clean Transportation to derive these formulas and to recommend the best test cycle to use for the standard.

Regulate a CO₂ standard, with a national headline target of 105g CO₂/km by 2028 (option 2)

This option is the same in its design as option 1, but with a less stringent national headline target. The national fleet target of 105g CO₂/km is pushed out from 2025 to 2028. Both options have separate targets for passenger and commercial light vehicle imports. See the description of option 1 above for more detail on its design.

Introduce a maximum CO₂ limit and age limit for used vehicle imports (option 3)

This option applies a maximum CO₂ limit and age limit to the used-import sector. A CO₂ standard would still be applied to the new sector. The CO₂ limit would mean that no used-imports with CO₂ emissions over a specified limit could enter the country. If vehicles arrive with an emissions profile exceeding the maximum limit, they would be re-exported. Potentially we could have a combined approach where used-import suppliers would face a maximum CO₂ limit unless they opted to comply with a fleet average target.

This option would be very easy to enforce and overcomes all concerns about the used-sector rorting the system. Although both limits would be relatively easy to implement, they are blunt tools for transitioning the vehicle fleet to be low emissions. Especially for the age ban, there is only a weak relationship between vehicle age and an internal combustion engine vehicle's emissions profile, as demonstrated by Figure 6.

For the CO₂ limit to be fairly applied across all light vehicles imported into New Zealand, several limits would be needed to allow for the large variation in vehicle weights. A single maximum CO₂ limit runs the risk of substantially restricting the supply of utes, people movers, larger SUVs, vans, and light trucks. These vehicles offer desired functionality for particular uses.

It would also be important not to set the weight-adjusted limits too high that there would be little impetus for reducing the light fleet's emissions profile.

Similarly, the rolling age ban would restrict entry of used vehicle imports to vehicles that are at, or younger, than a set age. Vehicles that arrive that do not meet the age requirement would be re-exported. The age ban supports the maximum CO₂ limit because generally the more modern the vehicle the more energy efficient its engine. Currently, the average age of used imported vehicles is 10.4 years.

Results of air pollutant monitoring in Auckland shows that increased vehicle age and mileage are associated with a higher level of harmful emissions²⁸. In general, newer models of a vehicle tend to be more fuel efficient, emit less air pollutant emissions and are safer than earlier models. This reflects improvements in engine and fuel technology, materials and aerodynamics.

For the CO₂ limit to be fairly applied across all light vehicles imported into New Zealand, several limits would be needed to allow for the large variation in vehicle weights. This is

²⁸ New Zealand Transport Agency. (2016). *Understanding trends in roadside air quality*, Research Report 596, September 2016, <https://www.nzta.govt.nz/assets/resources/research/reports/596/596.pdf>.

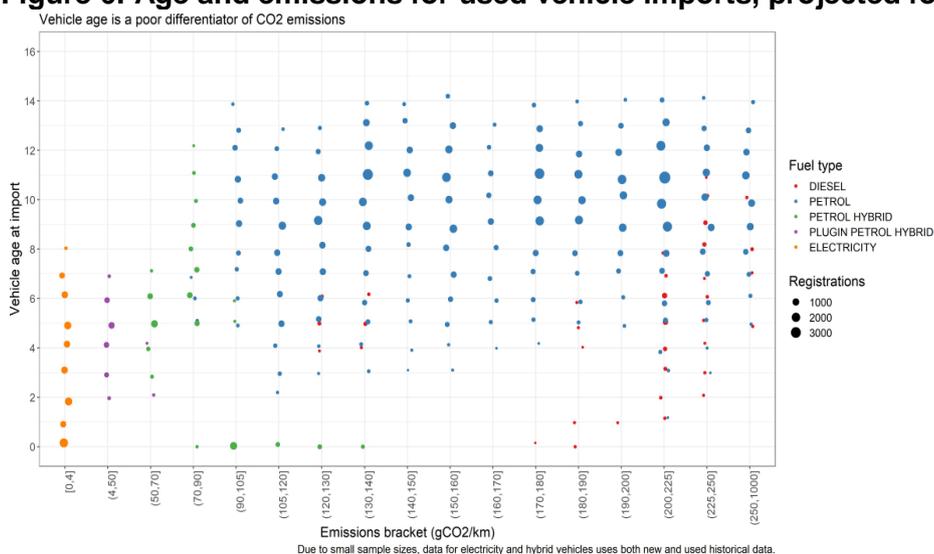
because a single maximum CO₂ limit runs the risk of substantially restricting the supply of utes, people movers, larger SUVs, vans, and light trucks. These vehicles offer desired functionality for particular uses. It would also be important not to set the weight-adjusted limits too high that there would be little impetus for reducing the light fleet's emissions profile.

Internationally, a maximum CO₂ limit is not common. The ICCT considers Saudi Arabia to be the only example. China had one for all vehicle imports but subsequently moved to the globally common fleet average CO₂ target.

New Zealand is unlike other developed countries in having around half of vehicles entering the fleet being used vehicle imports. There are several examples of countries that import used vehicles where age restrictions apply. For example, to register an imported used vehicle in Hong Kong, it must be less than 7 years old²⁹. We note that many of these countries have moved towards younger fleets over time.

In relation to the age ban, considering the average age of our used import fleet and the markets we buy from, setting the age limit too low might significantly impact on price and supply, so careful modelling would be needed. It is likely that stakeholders will want to see and test this modelling analysis as there will be concerns around an age ban and its impact on costs/prices, changes in vehicle demand and supply availability.

Figure 6: Age and emissions for used vehicle imports, projected for 2025



Both the age and CO₂ limits would inherently be arbitrary and there are likely to be perverse effects from both limits. Inevitably they will be set on what makes sense from a fleet-wide perspective. In many cases there will be individual vehicles that are banned even though that vehicle may have been preferable to the alternative vehicle choice forced by the regulation.

Regulate a 2035 end-date to the import of fossil-fuelled vehicles (option 4)

This option would legislate that by 2035, all light vehicles entering New Zealand must be capable of being driven without fossil fuels. This means that all light vehicles entering the fleet will be zero or low emissions, for example pure EVs or plug-in hybrid EVs. An end-date of 2035 supports New Zealand's goal of being a net zero emissions economy by 2050. The Ministry's projection is that around 40 percent of vehicles entering New Zealand will be electric in 2030. A 2035 end-date would require the supply of low or zero

²⁹ <https://info.japanesecartrade.com/content-item/80-hong-kong-import-regulation-for-japan-used-cars>

emission vehicles sooner than might otherwise happen, speeding the uptake of EVs and other low emission vehicle technologies.

This direction provides certainty to the vehicle and energy industries. It gives them greater confidence to transition to low or zero emission vehicles and renewable energy sources for transport. This certainty will speed up the widespread provision of EV charging infrastructure. It will also provide certainty to consumers that they can confidently switch to low emission vehicles and put impetus on the government to work to meet the 2035 target.

The end-date of 2035 is a suitable goal for New Zealand. The Ministry's fast uptake scenario in its EV uptake model projects that light vehicle registrations will be over 80 per cent in 2035. This scenario assumes that there are no barriers to the supply of EVs to New Zealand.

A number of countries have announced goals or targets for ending the sale of conventional petrol and diesel vehicles, including France, the United Kingdom, Norway, India, and the Netherlands.

In its final report on a low emissions economy, the New Zealand Productivity Commission supported signalling an end to the import of fossil-fuelled vehicles but cautioned against having a legislated end-date³⁰. This could disincentivise the development of drop-in biofuels and restrict the import of other ICE technologies that may be important for uses where EVs are not suitable. There is also the risk of choosing the wrong year, where the range of low emission vehicles is limited and the purchase prices are still higher than fossil-fuelled vehicles. In this situation, an end-date could cause:

- costs to rise for business and households
- people to hold on to their existing vehicles for longer.

3.2 What criteria, in addition to monetary costs and benefits have been used to assess the likely impacts of the options under consideration?

In analysing the options, we have used the objectives for climate change policy development and decision-making in the framework that Cabinet agreed in May 2018 [CAB 18 M0218 refers]. This framework is centred on the following three pillars:

1. **Leadership at home and internationally.** This includes placing primary reliance on domestic measures to reduce our emissions out to 2050 and beyond, and to meet our commitments under the Paris Agreement.
2. **A productive, sustainable and climate-resilient economy.** This includes encouraging innovation, diversification and the uptake of new technologies and identifying the best-value opportunities to reduce emissions.
3. **An equitable and inclusive society.** This includes considering the optimal speed and pathways for transition. As well as supporting the transitional shift to lower emissions and resilient sectors, and recognising and mitigating impacts on workers, regions, iwi/Māori rights and interests and wider communities.

These pillars are reflected in the criteria used to assess the options.

Leadership at home and internationally

³⁰ New Zealand Productivity Commission (2018). Low-emissions economy: Final report

1. **Extent to which the initiative reduces emissions.** The initiative must achieve a significant reduction in carbon emissions from light vehicles and contribute to a reduction in air pollutant emissions.
2. **Extent to which the initiative supports a transition to a low emissions light vehicle fleet.** The primary objective of the Clean Car Reforms is to help transition the light fleet to being low emissions. Any initiative must facilitate long-term change in the vehicle market by improving New Zealand's access to vehicle technology that reduces emissions. This includes increasing the supply of low emission vehicles and/or encouraging demand for those vehicles.

A productive, sustainable and climate-resilient economy

3. **Extent to which the initiative is a relatively efficient way to reduce emissions.** The initiative offers a cost-effective way of reducing transport emissions and provides co-benefits that are important to economic productivity, such as increased fuel efficiency, diversified fuel use, and reduced vehicle maintenance costs.
4. **Extent to which the initiative provides predictability and certainty to the vehicle market and energy suppliers.** The initiative improves business planning and facilitates investment in the vehicle and energy markets through predictable and certain regulation.
5. **The extent to which the initiative speeds the adoption of low emission vehicle technologies and responds to consumer demand.** The initiative increases the pace at which low emission technologies are adopted in the fleet. It is also consistent with a vehicle market that responds to the diverse vehicle demands of consumers and businesses. This includes by offering a range of vehicles that are affordable to consumers.
6. **Extent to which the initiative has low implementation, compliance and administration costs.** The initiative must be as simple and low cost as possible to implement, comply with and to administer.

An equitable and inclusive society

7. **The extent to which the initiative's costs and benefits impact across society.** Consistent with an equitable and inclusive transition, the initiative's costs and benefits do not disproportionately impact, or focus, on any one group. If they do have disproportionate impacts that are unavoidable, there is a way that their impact can be managed or minimised.

3.3 What other options have been ruled out of scope, or not considered, and why?

Demand-side interventions

Demand-side interventions are outside of the scope of this RIA.

A voluntary fuel efficiency standard operated by the vehicle industry

The Ministry ruled out a voluntary industry CO₂ standard because Australian (1978-2010) and European Union (1999-2008) experience shows voluntary standards are not effective. Manufacturers tend not to comply with voluntary standards.

In both jurisdictions, the agreements failed to deliver the expected emission reductions. There were improvements in fuel efficiency but there is no evidence that the improvements were greater than business-as-usual trends. Consequently, the European Union regulated a CO₂ standard in 2009.

Additional information for consumers

Providing more information to consumers to influence their demand for low emission vehicles was ruled out of scope. Ongoing work on consumer information is being considered by the Ministry, Waka Kotahi and EECA and so need not be formally considered as a new or separate policy option.

Continue the Road User Charges (RUC) Exemption for EVs beyond 2021

The RUC exemption for light EVs is due to finish on 31 December 2021. Ministerial consideration of the value of extending this will be considered separately as it relates to newly imported vehicles as well as those already in the fleet. This is beyond the consideration of this analysis as it is an existing policy.

GST exemption for the purchase of EVs and other taxation changes

The option to encourage consumer demand for EVs through a GST exemption, or to alter taxation depreciation, or to make changes to Fringe Benefit Tax has been treated as outside of the policy scope of this RIA. Taxation reform that might impact on the demand for EVs has been considered in previous budgets and we consider this will remain the context for any future consideration of such matters.

Variable emission-based RUC or registration fees

These options were considered to be outside of the scope of this analysis. This is because the policy focus is on the vehicles entering the New Zealand fleet. It is possible that a future Government will look more closely at the need to introduce such policies to help drive out older, higher emission vehicles from the vehicle fleet.

Scrappage Scheme

This option is outside of the scope of this analysis. This is because the policy focus is on the vehicles entering the New Zealand fleet.

Section 4: Impact Analysis

Marginal impact: How does each of the options identified in section 3.1 compare with taking no action under each of the criteria set out in section 3.2? Add or subtract columns and rows as necessary.

If possible, use this table to provide information on monetary, as well as qualitative costs and benefits for each of the options under consideration. Give evidence supporting your judgements, including stakeholder feedback where relevant.

Try to keep this table to a single side. If you find that you are having to write a lot to explain your assessment of whether each option is better or worse than taking no action under each criterion, add text under the table rather than filling the table with words.

	No action	Option 1 (CO ₂ standard with a target of 105g CO ₂ /km by 2025)	Option 2 (CO ₂ standard with a target of 105g CO ₂ /km by 2028)	Option 3 (maximum CO ₂ limit and age limit for used vehicle imports)	Option 4 (regulate a 2035 end-date to the import of fossil-fuelled vehicles)
Reduces emissions	n/a	++++	+++	++	+
Supports a transition to a low emissions light vehicle fleet	n/a	+++	++++	++	+
Is an efficient way to reduce emissions	n/a	+++	++++	0	+++
Predictability and certainty to the vehicle and energy markets	n/a	++++	++++	++++	+++
Speeds adoption of low emission technologies	n/a	+++	+++	++	+
Implementation, compliance and administration costs	n/a	----	---	-	-
Costs and benefits are neutral in their distributional impact	n/a	--	-	--	--
Overall assessment	n/a	++++	+++++	++	+

Benefit-cost ratio		2.98	2.22	n/a	2.74*
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* Note: the benefit-cost ratio for option 4 is based on a draft preliminary CBA conducted in October 2018. It is not published.

Key:

- +++++** much better than doing nothing/the status quo
- +** better than doing nothing/the status quo
- 0** about the same as doing nothing/the status quo
- worse than doing nothing/the status quo
- much worse than doing nothing/the status quo

	Reduces emissions	Supports a transition to a low emissions light vehicle fleet	Is an efficient way to reduce emissions	Predictability and certainty to the vehicle and energy markets	Speeds adoption of low emission technologies and is responsive to consumer demand	Implementation, compliance and administration costs	Costs and benefits are neutral in their distributional impact
No action	<p>New Zealand's 2030 target is for emissions to be 30 percent <u>below</u> 2005 levels by 2030.</p> <p>If no policy action is taken, road emissions are projected to be 9 percent <u>above</u> 2005 levels by 2030.</p>	<p>Pace and scale of change is too slow.</p> <p>The average emissions of vehicles entering the fleet of 182g CO₂/km are projected to decline to 155 grams CO₂/km by 2025.</p> <p>To achieve a fully electric light fleet, nearly all the vehicles entering in around 2030 need to be EVs. The Ministry's projection is that around 40 percent of vehicles entering New Zealand will be electric in 2030.</p>	<p>The status quo is not achieving cost-efficient reductions in emissions.</p>	<p>There would be no change to the regulatory environment.</p> <p>However, as time progresses without effective emissions reductions, the uncertainty of markets will increase as stakeholders and consumers would likely have growing expectations that the Government must eventually act to reduce GHG emissions.</p>	<p>New Zealand would continue to lag most other developed countries in accessing improved low emission vehicle technologies.</p>	<p>There will be no additional implementation, compliance and administration costs.</p>	<p>There will be no additional distributional effects.</p>
CO₂ standard with a target of 105g CO₂/km by 2025 (option 1)	<p>Would contribute to a reduction in GHG emissions through an increase in the supply of EVs and</p>	<p>Directly supports a shift in supply, but the degree of response is highly dependent on the targets set under</p>	<p>The risk is that the consumers simply do not choose to buy low emission vehicles because they continue to consider range</p>	<p>The per-vehicle payment of charges provides more certainty of charges for importers, which is particularly</p>	<p>Would speed the adoption of vehicles with better low emission technologies. It does this directly.</p>	<p>This scheme is assessed as having significant compliance costs. These are associated with implementation, particularly for the</p>	<p>The cost impact is directly on the importers, but it is likely that some or most of this cost imposition will be</p>

	<p>other low emission vehicles.</p> <p>The weakness of the standard is that it is not demand-led. If consumers are prepared to pay a little more for high emission vehicles (the cost increment of the charge), the importers would continue to provide high emission vehicles.</p>	<p>this policy and the level of charges.</p> <p>The risk is that targets that are too aggressive may see some manufacturers struggle to stay in the New Zealand market.</p> <p>The differentiation between the LPV and LCV means that this option best supports the necessary transition to a low emission fleet.</p>	<p>anxiety, charging infrastructure, and other challenges as barriers. The standard does not guarantee the saleability of low emission vehicles.</p> <p>Having separate targets for LPVs and LCVs is a more efficient way to reduce emissions as technology change tends to start with passenger vehicles and then to commercial vehicles if appropriate. No other jurisdiction has a standard with a single target for both LPVs and LCVs.</p>	<p>important for the used-import sector.</p> <p>The risk is that the consumers simply do not choose to buy low emission vehicles because they continue to consider range anxiety, charging infrastructure, and other challenges as barriers. The standard does not guarantee the saleability of low emission vehicles.</p>	<p>The standard is not a scheme that is responsive to consumer demand. Rather, it drives supply.</p>	<p>importers of used vehicles where there a potential difficulties in forecasting supply, and determining whether the fleet average is going to meet the emissions target.</p> <p>The standard is also associated with high charge costs. It has been argued that it is the charges that provide the stick for industry supply changes.</p> <p>There is a risk that if the targets are too stringent and the fees are too high, the standard could have a very detrimental impact on the vehicle industry.</p>	<p>passed onto consumers.</p> <p>Those who opt for EVs or low emission vehicles will experience benefits in terms of reduced running costs and maintenance costs.</p>
<p>CO₂ standard with a target of 105g CO₂/km by 2028 (option 2)</p>	<p>Would not reduce GHG emissions as much as option 1.</p>	<p>The headline targets of this option are more achievable by industry.</p>	<p>Same as above.</p>	<p>Same as above.</p>	<p>Same as above.</p>	<p>As above, but the later target date has lower compliance costs for the vehicle industry as it will be easier to achieve than the target in option 1.</p>	<p>As above, but this option will have lower distributional impacts than option 1, as the target is more achievable. This minimises the risk of a reduced range of vehicles being supplied, vehicle prices increasing, and importers exiting the market.</p>

<p>Maximum CO₂ limit and age limit on used vehicle imports (option 3)</p>	<p>Depends on the choices of consumers. If consumers choose to replace like with like, for example replacing an internal combustion engine vehicle with a vehicle of the same weight and power, then it could reduce GHG emissions.</p> <p>Would contribute to a reduction in air pollutant emissions through an increase in the uptake of younger vehicles.</p> <p>Emissions from older vehicles are generally higher than newer vehicles of equivalent fuel type and servicing. However, if the initiative extends the lives of vehicles already in the fleet, air pollutant emissions could increase.</p>	<p>Generally, the more recent the year of manufacture of a vehicle the more fuel efficient the vehicle. This is achieved through technology advancements in engine design and transmissions. If consumers replace an older vehicle with a newer vehicle than they otherwise would, then an age limit on used imports could help reduce overall emissions.</p> <p>In addition to modernisation, any measure that shifts consumer demand to smaller, less powerful vehicles would contribute to a low emissions fleet.</p>	<p>Is too indirect a mechanism to be an efficient way to reduce emissions. It has to be assumed that consumers will maintain their vehicle preferences, or ideally move away from the current trend of preferring heavier, more powerful vehicles.</p> <p>A vehicle age limit sufficient to achieve the same results as feebates and the standard would affect a significant proportion of used light vehicle imports. A less stringent age limit would affect a much smaller share of vehicles but would have a negligible effect on emissions.</p> <p>The CO₂ limit need to be set a low level for lighter vehicles to avoid having a disproportional impact on heavier vehicles.</p>	<p>Would not diminish predictability and certainty as a rolling age ban is simple to understand and give effect to.</p>	<p>Would help to speed the adoption of vehicles with better low emissions technologies.</p>	<p>Would result in a trivial increase in government implementation and administration costs as it would utilise the existing processes for vehicles to gain customs clearance. It would have low compliance costs.</p>	<p>Would increase the average price of used vehicle imports. This increase would be significant as an 8-year age ban would impact around 67% of the current used internal combustion engine vehicles imported. The resultant increase in vehicle prices could reduce access to used vehicles for low income households. Could lead to a level of rationalisation in the used segment of the vehicle market. Dealers specialising in cheaper older vehicles would be most at risk.</p> <p>A CO₂ limit would restrict heavier light used vehicles, such as large cars, large SUVs, vans, and utes from being imported. This would be a significant welfare loss to New Zealand businesses and consumers.</p>
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<p>End-date of 2035 for the import of fossil-fuelled vehicles (option 4)</p>	<p>An end date of 2035 supports the goal of New Zealand being a net zero emissions economy by 2050.</p>	<p>Would ensure only low or zero emission vehicles are imported at a time necessary to help meet climate change targets.</p>		<p>Gives the vehicle and energy industries greater confidence to transition to low or zero emission vehicles. It would also provide certainty to consumers that they can confidently switch to low emission vehicles.</p>	<p>The Ministry's projection is that around 40 percent of vehicles entering New Zealand will be electric in 2030. A 2035 end-date would require the supply of low or zero emission vehicles sooner than might otherwise happen, speeding the uptake of EVs and other low emission vehicle technologies.</p>	<p>Small increase in government implementation and administration costs.</p> <p>With supporting policies, the majority of vehicles entering the fleet would be low or zero emissions by 2035, meaning compliance costs would be low.</p>	
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Section 5: Conclusions

5.1 What option, or combination of options is likely to best address the problem, meet the policy objectives and deliver the highest net benefits?

- *Have Maori interests and Treaty of Waitangi implications been taken into account? - <https://www.justice.govt.nz/maori-land-treaty/>*
- *What do stakeholders think - in particular, those opposed? Why are they concerned? If it has not been possible to accommodate their concerns, why is that*

The Ministry's preferred policy for a supply-side intervention to increase low emission light vehicles into New Zealand's fleet is option 2.

For the purposes of the policy decision-making, legislative approval required, and work required for implementation, this RIA has first to compare the CO₂ standard with the maximum fuel efficiency limit and age limit for used-imports, and the end-date, as these represent viable alternative supply-side solutions.

Results for the supply-side options

The status quo is not considered a viable solution to continue. New Zealand's light vehicle fleet and emissions are increasing, and the status quo will not help us meet our emissions targets.

Option 1 is not preferred as the vehicle industry consider the emission target too aggressive for New Zealand. It is of the view that 2028 is the earliest they could achieve a fleet average of 105g CO₂/km. The new vehicle industry is concerned that the increasing demand for low emission vehicles in larger markets, like Europe, is outpacing supply. This creates the risk that even with the standard, overseas manufactures will not supply sufficient volumes of low emission vehicles to New Zealand for distributors to meet a target of 105 grams in 2025. This would be despite the best endeavours of our local distributors.

New vehicle distributors are also limited in how quickly they can adjust their vehicle fleets by the manufacturer's cycles of model updates planned for our market. Each vehicle model, for example a Toyota Corolla, has a major update around every 5 years. This is when significant technology improvements are incorporated. However, within the 5-year period a model's technology and its CO₂ emissions will stay the same.

Finally, New Zealand is strongly linked to the Australian market as many manufacturers view us within an Australasian market. Australia does not have a CO₂ standard and we are uncertain of their determinations to implement one. This Australasian context may ultimately limit the rate at which New Zealand new vehicle imports can achieve emission targets.

Option 3 is also not preferred as introducing a vehicle age limit that is sufficient to achieve the same results as having the standard for used-imports (10 years) would affect a significant proportion of used light vehicle imports, greatly impacting on the welfare of vehicle buyers. A less stringent age limit (12 years) would affect a much smaller share of vehicles but the effect on the average emission value of used-imports would be negligible.

The maximum CO₂ limit would likely have a disproportional impact on vehicles with a tare weight of over 2,000kg (including most vans, utes and SUVs) given the positive relationship between weight and CO₂ emissions. To lessen the effect on heavier vehicles but still achieve the same sales-weighted average vehicle emissions value for used-imports, the CO₂ limit for lighter vehicles would need to be set at a much lower level.

Option 4 (2035 end-date for importing fossil-fuelled vehicles) is also not preferred as it would be unlikely to reduce emissions as much as a CO₂ standard. It could disincentivise the development of drop-in biofuels and restrict the import of other ICE technologies that may be important for uses where EVs are not suitable. An unrealistic end-date could also raise vehicle prices, increasing costs for business and households, particularly low income households, and encouraging people to hold on to their existing vehicles for longer.

Option 2 is assessed as the most effective and efficient supply-side intervention for Government to implement to help increase supply of low emission vehicles. This is supported by positive cost-benefit analysis.

Analysis of the CO₂ standard with a national headline target of 105g CO₂/km by 2028 (option 2)

The analysis of this option was an indicative one. The Ministry completed a full cost-benefit analysis of option 1 and other target options for the CO₂ standard, including 105 grams by 2028. However, these alternative options were all combined with a feebate scheme from 2021-2028. The indicative analysis of option 2 without a feebate scheme was done subsequent to the finalisation of the CBA report using the same modelling approach. The CBA report is attached.

A summary of the Ministry's analysis of the CO₂ standard is provided below using the default assumptions from the 95 percent confidence interval of the estimated parameters.

The results below were based on a sales-weighted target of 105 grams CO₂/km by 2025 with a \$75 per gram penalty for new imports and \$38 per gram penalty for used-imports.

Since the CBA was completed, the design of the standard has been improved by the changes suggested by the vehicle industry. These changes will make the standard easier to comply with and increase the likelihood that the standard's targets will be achieved.

The level of uncertainty is likely to increase over the next two to three years, as the economy recovers from the impact of COVID-19. Given the impending global economic slowdown with consumers and businesses being less likely to take on additional risk, this could have a significant impact on vehicle purchase decisions, at least until the New Zealand economy recovers. As we do not know when this will occur, it may be that COVID-19 has little or no impact on the benefits of the Standard.

Benefits

A CO₂ standard with a national headline target of 105gCO₂/km by 2028 (with separate targets for private and commercial light vehicle imports), is estimated to have lifetime emissions reductions of 1.07 million tonnes of CO₂³¹.

Option 2 would also contribute to a reduction in the resource cost to vehicle owners (purchasing cost, maintenance cost, and energy (fuel) cost) and reduction in air pollutant emissions and noise pollution through facilitating an increase in the uptake of EVs. It would also improve our energy security through a reduction in reliance on fossil fuel.

It would have a marginal abatement cost per tonne of CO₂ of -\$207. This indicates that the benefits in fuel savings and CO₂ reductions are in the order of \$207 from every tonne of CO₂ avoided through the standard.

The increased supply of fuel efficient and electric vehicles is estimated to save the country about \$3.4 billion on fuel over the life of the vehicles affected by the scheme. This will

³¹ Note this is based on implementation in 2021. It is now proposed that the standard come into effect in 2022.

benefit our balance of payments, particularly at a time where the economy is earning fewer receipts. The average lifetime savings per vehicle are \$6,800.

Costs

Against these benefits, a CO₂ standard would have government implementation and administration costs. There would also be compliance costs to vehicle suppliers. These costs are mainly those in adjusting their fleets, and monitoring and reporting their vehicle sales, vehicle weights and CO₂ emissions to the regulator.

There may also be costs to local government and individual homeowners from EV charging infrastructure, and to our international reputation and climate change obligations if emissions targets are not met.

Fuel suppliers would be expected to incur a fall in sales and revenue as a result of the fuel savings enjoyed by consumers. However, this cost is likely to be addressed by the industry as it looks to future proof itself in the face of a move to low-carbon fuels. For example, ZEnergy is positioning itself as a transport energy company rather than an oil company. It has partnered with companies such as ChargeNet, to provide fast-charging facilities at some of its service-stations. It has also invested in Mevo, the EV car-share company.

Results

However, our analysis estimates that the value of the benefits would outweigh the costs. It suggests that a CO₂ standard with separate targets equivalent to a national headline target of 105g CO₂ by 2028 would have a cost-benefit ratio of 2.22, with an estimated net present value of \$221.5 million. The average emissions of light vehicle imports would decline to 146.9gCO₂/km by 2025.

Further gains would be achieved if progressively stronger emissions targets are set beyond 2028.

The cost-benefit ratio for the recommended option (2.22) is lower than option 1 (2.98). Option 1 also has a higher net present value (\$398.5 million) and is estimated to contribute to greater emission reductions (1.63 million tonnes).

However, option 2 is the preferred option as the vehicle industry views a target of 105g CO₂/km by 2025 as unachievable. The ability of the sector to comply with this more stringent target would be lower, increasing the risk of constrained vehicle supply and some importers exiting the New Zealand market.

Risks

The key risk with a CO₂ standard is that it could increase vehicle prices, as suppliers would expect consumers to pay more for vehicles with better technology. It is uncertain whether or by how much vehicle prices may rise. The available evidence suggests that if price rises do occur, they are likely to be minimal and over time will reduce. It could also pose a risk to road safety if people hold onto their older vehicles for longer. This will be a concern if they are 1- or 2-star (low safety rated) vehicles.

However, the design of the Clean Car Standard has been substantially modified to mitigate this risk. Further detail on the risks and mitigations is in section B.

It could also lead to a level of rationalisation in the used-import industry. There are over 400 traders importing between 4-20 vehicles each year. The costs of compliance with the standard for these traders could be prohibitive. If the emissions targets are too stringent, many of these operators could leave the industry.

We would expect emissions reductions to be greater if a CO₂ standard was combined with a feebate scheme. The CBA estimates that option 2 combined with a feebate scheme would reduce emissions by 1.62 million tonnes.

Additionally, weight adjusted targets provide no incentive for people to opt for smaller vehicles over larger one. Without the Clean Car Discount or other policy that influences consumers' vehicle decisions, a standard is unlikely to reverse the trend towards larger, high emitting vehicles.

Indicative assessment of the maximum CO₂ limit and age limit for used-imports (option 3)

The Ministry has undertaken an indicative assessment of impact of the maximum CO₂ limit and age limit for used-imports on the number of used-imports and the emissions reductions from this segment of the vehicle market.

Maximum CO₂ limit

Three CO₂ emissions limits were used to show their impacts on the average CO₂ emissions level of used-imports:

1. a single CO₂ limit of 225g CO₂/km for all tare weight bands
2. a single CO₂ limit of 225 gCO₂/km for all tare weight bands from 2020-2025, reducing to 200 gCO₂/km from 2026.
3. vehicle weights adjusted CO₂ limit – a CO₂ limit of 200 gCO₂/km for vehicles under 1,400 kg, 225 gCO₂/km for vehicles between 1,401 and 2,000 kg, and 250 gCO₂/km vehicles over 2,000 kg.

All three scenarios could achieve similar results up to 2025. However, by 2025 it would be necessary to set a more stringent limit to match the proposal for the standard. Only scenario 2 would deliver comparable results of the standard proposal for used-imports.

To achieve a comparable results as the standard for used-imports, a CO₂ limit would need to be gradually tightened over time. The CO₂ limit policy would likely have a disproportional impact on vehicles with a tare weight of over 2,000kg (including most vans, utes and SUVs) given the positive relationship between weight and CO₂ emissions. To lessen the effect on heavier vehicles but still achieve the same sales-weighted average vehicle emissions value for used-imports, the CO₂ limit for lighter vehicles would need to be set at a much lower level.

Age limit

Introducing a maximum vehicle age limit on used-imports is likely to have an impact on the total number of used-imports entering the fleet. Based on the baseline vehicle imports projections, the size of the impact increases as the age limit decreases.

For example, if the maximum vehicle age for internal combustion engine used-imports is limited to 8 years, and comparing to the baseline scenario, around 67% of internal combustion engine used-imports would be affected in 2020. As EV uptake is expected to increase over time, this share is expected to reduce over time to around 44% by 2030. These estimates exclude any market or behavioural responses.

The propensity for prospective vehicle buyers to switch to age-compliant vehicles is currently unknown but is expected to increase as the vehicle age limit decreases.

Introducing a vehicle age limit of 10 years could be sufficient to achieve the same results as having both the feebate and the standard for used-imports. However, this would affect a

significant proportion of used light vehicle imports, greatly impacting on the welfare of vehicle buyers (as they need to either pay more for a newer vehicle, delay vehicle purchase decisions, or switch to purchase from the used vehicles in the fleet).

A less stringent age limit (12 years) would affect a much smaller share of vehicles but the effect on the average emission value of used-imports would be negligible.

5.2 Summary table of costs and benefits of the preferred approach

Affected parties (identify)	Comment: nature of cost or benefit (eg, ongoing, one-off), evidence and assumption (eg, compliance rates), risks	Impact \$m present value where appropriate, for monetised impacts; high, medium or low for non-monetised impacts	Evidence certainty (High, medium or low)
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CO₂ standard with separate targets for light passenger and light commercial vehicles (option 2)

Additional costs of proposed approach compared to taking no action

Vehicle suppliers	Industry compliance cost	\$30.2 million	Medium
Regulator (Waka Kotahi)	Implementation cost	\$17.8 million	Medium
Vehicle consumers	Welfare loss borne by consumers who opt to buy a vehicle that is different from their preferred one	\$133.9 million	Low
Total Monetised Cost		\$181.9 million	
Non-monetised costs	Possible negative impact of increasing air pollutant emissions if there is an increase in the supply of diesel vehicles and the Euro 6 exhaust emission standard has not been regulated (Euro 5 for used-imports)	Low	Medium
	International obligations and reputation (if targets are not achieved)	Medium	Medium
	Electric charging infrastructure	Low	Medium

Expected benefits of proposed approach compared to taking no action

Vehicle consumers	Fuel savings from improvements in fuel efficiency (energy cost)	\$128.4 million	Medium
Vehicle consumers	Reduction in maintenance costs	\$191.0 million	Medium
Vehicle consumers	Reduction in vehicle ownership cost	\$32.7 million	Low

New Zealand	Reduced social cost of CO ₂ emissions of 1.07 million tonnes Marginal abatement cost of carbon per tonne is -\$207	\$51.4 million	Medium
Total Monetised Benefit		\$403.5 million	
Non-monetised benefits	Changes in social cost of crashes (reduced average age of imports, shift to smaller vehicles, existing vehicles held for longer)	Medium	Medium
	Lower air and noise pollution	High	High
	Improved security of supply from the importation of lower volumes of fuel	Medium	Medium
	Increased awareness of how vehicle choices affect fuel consumption and emissions	Low	Low
	Presence of additional altruistic values for current and future users	Low	Low

Note: Mean results refer to simple average of the results obtained from the simulation analysis. These are different from using the default assumptions because not all the default assumptions are set at the mid-point of the assumption range (e.g. the range of the price elasticity of demand for ICEVs is -0.4 to -1.0, with the default set at -0.54).

5.3 What other impacts is this approach likely to have?

The CO₂ standard will help increase the demand for low emission vehicles and in turn help New Zealand have a greater supply of EVs and hybrids. This change in motive power towards more EVs that plug in to a source of electricity, and possibly to alternative fuels such as hydrogen, requires supporting infrastructure from the public and private sectors.

Ensuring there is adequate EV charging infrastructure

To date, the provision of public charging infrastructure is largely staying ahead of EV uptake. However, there are some regions with inadequate infrastructure. Ideally, the public charging network will continue to expand as the number of EVs increases. Where it does not, there is a risk that the lack of infrastructure will limit the effectiveness of the standard.

It is also possible that the variety of charging formats and plugs creates a concern for EV motorists. While more and more public charging stations are appearing in New Zealand, courtesy of companies like ChargeNet, Juicepoint, and power providers like Vector, any particular fast charging unit may not offer the right plug for all EVs.

To mitigate this risk, additional Government investment is likely to be required to address gaps in the public charging network that are not commercially attractive for the private sector to fill. The infrastructure should ensure that:

- there is sufficient charging infrastructure in residential streets with on-street parking
- all new residential homes, non-residential buildings and carparks are built to be EV ready
- workplaces have adequate access to charging points.

Measures will be needed to encourage off-peak charging

The Productivity Commission highlighted that a large EV fleet would add significant load to the electricity grid and, depending on the time at which vehicles are charged, could lead to higher emissions from electricity generation. High EV uptake combined with greater use of fast chargers could put substantial pressure on electricity networks, particularly local networks. Power companies are aware of this and the Ministry of Business, Innovation and Employment and the Electricity Authority are working with them to understand the issues and how to prepare.

Smart metering and more cost-reflective pricing of electricity will be needed to address these issues.

A market needs to develop to provide for EV servicing

Consumers need to have confidence that their EVs can be serviced by skilled technicians. In particular, the transmission complexities of plug-in hybrids and extended range EVs may require vehicle technicians to receive significant training. Franchise dealers offering EVs will meet the demand for service provision. For many smaller New Zealand towns, the traditional mechanic at the local service station remains the only servicing option. It is unclear to what extent EVs will be able to be serviced by the generalist mechanics or even automotive electricians.

An extension of EV servicing could be the potential for businesses to develop in New Zealand that are able to convert fossil-fuelled vehicles to electric power. If a person was

looking at a fossil fuelled motor reconditioning or replacement, the option of converting to an electric power train might appeal.

EV damage repair servicing also needs to adjust. It is reported that EVs present a risk of electrocution and fire for panel beaters. EVs contain lithium in batteries, which is highly flammable, meaning that the vehicles cannot be put into spray paint booths. We understand the Collision Repair Association of New Zealand is bringing in new international, service quality standards that will see repairers commit to ongoing training, equipment upgrades, annual inspections, and audits including particular requirements for repairing EVs. The Motor Industry Training Organisation is also working with the EV sector on training needs.

Some countries have developed first-response vehicles with a tent-like device to encompass an EV and starve any fire of oxygen. Fire and Emergency New Zealand is upskilling its force to ensure it can respond to fires and other incidents involving EVs.

A market needs to develop to provide and recycle batteries

As half of all vehicles entering the fleet are used-imports, it will be important that a market for replacement batteries develop. Currently, it is difficult to source a replacement battery for an EV. We understand Nissan New Zealand does not offer replacement batteries because it does not import the used Nissan Leafs sold in New Zealand. However, importers of used EVs will eventually have to support the vehicles they sell by developing a market for replacement batteries and other specialised parts.

The increase in EVs will result in an increase in used lithium ion batteries. The Ministry for the Environment is working with industry stakeholders to develop a mandatory product stewardship scheme for lithium batteries, to ensure that spent batteries are recycled or reused instead of becoming hazardous waste.

Section 6: Implementation and operation

6.1 How will the new arrangements work in practice?

How could the preferred option be given effect?

The option to have a CO₂ standard would be implemented through legislative changes. The legislative amendments needed for the standard will be included in a bill to amend the Land Transport Management Act 2003 and the Land Transport Act 1998. Specifically, these amendments would allow regulations to be made which would set CO₂ targets for new and used vehicle importers, along with reporting obligations and any requirements around banking, borrowing or grouping emissions. The amendments would also seek to introduce a charge for importers who bring in vehicles that exceed the CO₂ targets. The Ministry will seek a priority of Category 2 for the 2021 Legislative Programme.

The Amendment Bill will be binding on the Crown. Regulations and rules will be required to give full effect to the standard. They will specify the administrative, compliance and enforcement responsibilities of the regulator, Waka Kotahi, and the operational details of the standard. The primary and secondary legislation would be drafted concurrently with the intention of both commencing at the same time.

The Ministry of Transport will work with the Parliamentary Counsel Office to develop the necessary legislation for the standard. Waka Kotahi will develop, build, test and implement the IT system and business processes to operationalise it.

Once implemented, who will be responsible for ongoing operation and enforcement of the new arrangements?

Waka Kotahi will be responsible for the ongoing operation and enforcement of the standard.

It would take 18 months to develop the project from the time funding is received, including the online tracking and forecasting tool to help importers comply.

When will the arrangements come into effect? Does this allow sufficient preparation time for regulated parties?

The intention is for the bill to be introduced in February 2021 and for the CO₂ standard to come into effect in 2022. Any charges would only apply from January 2023.

How will other agencies with a substantive interest in the relevant regulatory system or stakeholders be involved in the implementation and/or operation?

Given its role, it is likely that the Energy Efficiency and Conservation Authority would work with Waka Kotahi to raise industry awareness of the standard.

6.2 What are the implementation risks?

The CO₂ standard would be a significant regulatory change that would be new in the New Zealand context. This brings several implementation risks.

Risk of delayed implementation

In the discussion document, 2021 was originally proposed for implementing the standard. Some submissions expressly commented on the need to bring implementation forward. Environmental concerns focused on the fact that New Zealand is lagging well behind other

countries in reducing road transport emissions and the need to make a start immediately to address this.

Global or New Zealand economic performance

There is always a risk that a global or New Zealand centric economic downturn could cause the Government to reconsider the emissions objectives in light of the need to change macro-economic policy settings to stimulate growth as a priority over environmental outcomes. Such exogenous factors are a significant risk, but very hard to foresee and measure in terms of the domestic policy response.

The Climate Change Response (Zero Carbon) Amendment Act 2019 with embodied targets and the establishment of the Climate Change Commission gives evidence of strong multi-party support for enduring changes to support the reduction of GHG emissions.

Regulator risks if not adequately resourced

Waka Kotahi would have to regulate new parts of the transport sector that it does not regulate. Significant investment would be needed in its people capability, information technology systems, and business processes to ensure that it can fulfil the role of administering the standard. There is a time and cost for system testing needed to ensure that, when the scheme commences, the system and staff can handle the workload.

Policy development and implementation design have been working in parallel for several months leading up to the publishing of this RIA. This parallel work led to a high degree of confidence around policy development. It also means that, as the detailed legislation is drafted, it will be informed by real world implementation requirements.

Unless the implementation detail of the initiatives is well understood, there is a risk that the level of systems development and skills capability needed is not be adequately scoped and planned for. If this occurs, Waka Kotahi could be either under- or over-resourced to fulfil the new functions.

Waka Kotahi having discussions with regulators in other jurisdictions would mitigate this risk. These discussions focus on understanding how they administer their policies and the system and people resources involved.

Waka Kotahi has identified that initial resourcing of the scheme on day one will be a challenge as the actual market response is not known. Waka Kotahi could be either under- or over-resourced to meet the demands on the new functions. Good quality education material to support industry and consumers will help reduce the demand for direct involvement by Waka Kotahi.

Industry not compliant (do not understand their obligations)

Implementing the CO₂ standard will rely on a high level of compliance from the vehicle industry. Vehicle suppliers will have to accurately report their vehicle sales, along with the tare weights and CO₂ emissions of the vehicles they sold. They would also have to adjust the fleet of vehicles they are selling on the market to ensure that the average level of emissions across their fleet complies.

To ensure a high level of compliance, adequate information and guidance will need to be available to the industry.

Social impacts

The supply of low emission options is expected to continue to increase across all vehicle classes and prices are expected to fall.

It is uncertain whether or by how much vehicle prices may rise due to the standard. The available evidence suggests that if price rises do occur, they are likely to be minimal. CO₂ standards in OECD and non-OECD countries have not necessarily led to noticeable price increases³².

We expect any distributional impact to be a positive one. Long-term evidence from the United States, over the period 1984-2014, suggests that the households that benefit the most from CO₂ standards/vehicle fuel efficiency standards are low-income households³³. This is because as a percentage of income, savings from improved fuel efficiency are highest for households with lower incomes. The savings take account of the increase in vehicle prices.

The key conclusion from this American longitudinal study is that:

“Because lower income households typically spend more on motor fuel than on vehicles, fuel efficiency improvements should benefit them more than upper income households. A detailed analysis of data from all Consumer Expenditure Surveys from 1980 to 2014 supports the conclusion that all income groups received substantial fuel savings and that the greatest *net* benefits relative to income have accrued to the lower income quintiles. According to our best estimates, the lowest income quintile’s annual net savings averaged between 1.5% and 2.0% of their average annual income over the period”.

Preventing gaming and rorting by phoenix traders³⁴

The standard might be avoided by vehicle importers trading as a limited liability company who have been calculating emissions on a fleet-average basis. These businesses could import higher emission vehicles, run up compliance charges, and then voluntarily close their limited liability company. Then they could resume trading through a new limited liability company. The Motor Vehicle Sales Act 2003 (the Act) does not prevent this from occurring. Traders who voluntarily surrender their registration can immediately re-register as a new business entity.

Using a vehicle-by-vehicle approach removes this risk. Additionally, Waka Kotahi will establish a register of motor vehicle importers. The 'importer' will be the person or business entity required to comply with the standard. Every person who imports a vehicle will be required to be registered.

Suppliers, both individuals and companies, will face the sanction of disqualification from this register if they deliberately attempt to evade their responsibilities under the standard (i.e. meeting emissions targets). This type of offence would go through the Courts and Waka Kotahi would have to prove liability. The vehicle supplier would be liable on conviction if they were found to be deliberately evading targets. If a supplier is disqualified from the register, it can no longer import vehicles for commercial sale. This could be imposed with a duration that varies depending on the nature of the offending, allowing for reapplication.

³² OECD/IEA (2017). International Comparison of light-duty vehicle fuel economy 2005-2015. Working Paper 15. Accessed from <https://www.globalfueleconomy.org/media/418761/wp15-ldv-comparison.pdf>.

³³ http://bakercenter.utk.edu/wp-content/uploads/2016/09/Equity-Impacts-of-Fuel-Economy-Report_final.pdf

³⁴ “Phoenix traders” are new trading entities that rise from the demise of the former.

Section 7: Monitoring, evaluation and review

7.1 How will the impact of the new arrangements be monitored?

Waka Kotahi's monitoring would focus on ensuring individual vehicle suppliers comply with their required fleet average emissions targets.

The Ministry's monitoring will focus on the extent to which the vehicle industry as a whole is on track to achieve the national fleet target of 105 grams of CO₂ per kilometre in 2028.

This monitoring will inform the setting of subsequent national fleet targets that would be set in the early 2020s out to 2035, to ultimately achieve a low emissions vehicle fleet. The data used to administer and enforce the standard would be used to monitor its impact.

7.2 When and how will the new arrangements be reviewed?

There would be a biennial review of emissions targets and associated annual targets, with the first review in 2023, and an ongoing review period of 5 years to align with emission budgets reviews for the Climate Change Commission.

The effectiveness of the CO₂ standard in increasing the supply of low emission vehicles would be formally evaluated by the Ministry of Transport at the end of 2028. This would be in line with when the national fleet target of 105 grams of CO₂ per kilometre is to be achieved.

Prior to this, a review of the level and ease of industry compliance would be completed. Ideally, this would be done after the standard had been in operation for a year.

The Ministry of Transport anticipates it would do the review in 2028 with Waka Kotahi, the Motor Industry Association, and the Imported Motor Vehicles Industry Association. This would need to be confirmed closer to the time. The review would look at whether industry participants are aware of their obligations and are using cost-effective systems to monitor their fleets and report to the regulator. It would give stakeholders an opportunity to raise any concerns with the operation and administration of the standard.