Ministry of Transport
TE MANATŪ WAKA

Improving the fuel economy of vehicles entering the New Zealand fleet

A DISCUSSION PAPER FOR PUBLIC COMMENT

January 2008

DISCUSSION DOCUMENT

MINISTERIAL FOREWORD

It is vital that New Zealand takes a lead role in the global effort to combat climate change, which is why this Government has the aspiration of New Zealand becoming a truly sustainable nation.

To get there, we are adopting two transport related targets; to halve per capita transport greenhouse gas emissions by 2040 and to be one of the first countries in the world to widely deploy electric vehicles.

A vehicle fuel economy standard is outlined in this discussion document. Its aim is to reduce our CO_2 emissions by improving the fuel economy of vehicles entering the New Zealand fleet. This will support our climate change objectives and better equip New Zealanders to thrive in a world of fluctuating oil prices.

A final *Update of the New Zealand Transport Strategy*, due out this year, will set a vision for New Zealand to have an affordable, integrated, safe, responsive, and sustainable transport system by 2040. Alongside this, the *New Zealand Energy Strategy,* released in October 2007, sets out the Government's vision for a sustainable, low emissions energy system.

The Energy Strategy contains the following action areas that aim to create a resilient and low carbon transport system in New Zealand:

- managing demand for transport
- shifting to more environmentally friendly transport modes
- improving the fuel economy and efficiency of the vehicle fleet
- developing and adopting future fuels.

We are proposing a vehicle fuel economy standard as one of a raft of measures that will improve the fuel economy of our fleet over time.

I see a vehicle fuel economy standard as an important initiative to assist us in achieving our transport strategy goals, our *New Zealand Energy Strategy* goals and our climate change goals.

Hon. Judith Tizard
Associate Minister of Transport

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Front cover: Top left image sourced from Land Transport New Zealand. Bottom right image sourced from Ministry for the Environment New Zealand.

MAKING A SUBMISSION

We welcome and encourage your submission on the proposed vehicle fuel economy standard for light vehicles entering the New Zealand fleet. Questions have been provided to assist your submission. General comments are also welcome.

Please include in your written submission:

The title of this document

Name

Organisation Name (if applicable)

Title (if applicable)

Postal or email address.

Please refer to the questions asked in each section of this report when making your submission. Comments on other aspects of the proposed fuel economy standard are also encouraged.
The deadline for receiving submissions is **Friday 28 March 2008**.

Please send your submission to:

Attention: Vehicle Fuel Economy Standard Project

Land Transport Environment & Safety Group

Ministry of Transport

PO Box 3175

WELLINGTON 6140

You can also email your submission to: fuel.economy@transport.govt.nz or use the online submission form at www.transport.govt.nz

CONFIDENTIALITY

Submissions will be subject to the provisions of the Official Information Act 1982. The Act requires information to be made available on request unless there is good reason to withhold information.

If you do not wish any material provided in your submission to be released, please specify the material that you wish to be withheld and the grounds (as set out in the Act) for withholding it. The decision on whether to release the material under the terms of the Act rests with the Ministry of Transport. Any decision to withhold information is subject to an appeal to the Ombudsman.

REGULATORY IMPACT ANALYSIS

This discussion document includes the substantive elements of a regulatory impact analysis as required by Cabinet.

EXECUTIVE SUMMARY

Light vehicles make a significant contribution to New Zealand's greenhouse gas emissions. They represent 93 percent of the total vehicle fleet in New Zealand and are responsible for approximately 80 percent of the CO_2 emissions from road transport and approximately 13 percent of our total greenhouse gas emissions. Improving the fuel economy of the vehicles entering this country will contribute to efforts to reduce our CO_2 emissions, and will help ensure a sustainable transport system for New Zealand. It will be supported by a range of other government measures, such as the recently announced emissions trading scheme, and the fuel economy star-rating labelling scheme for vehicles.

In the *New Zealand Energy Efficiency and Conservation Strategy* (NZEECS), the Government announced a fuel economy target of 170g of CO_2/km by 2015 for light vehicles entering the fleet. Our current average is about 210g of CO_2/km. Without further intervention we can expect the average emissions intensity of light vehicles entering the fleet to be 190g of CO_2/km by 2015.

A number of options have been considered to improve the fuel economy and CO_2 emissions of vehicles entering New Zealand. These include:

- undertaking more education and information initiatives
- applying additional fees for vehicles with poor fuel economy when they are first registered in New Zealand
- legislating a minimum fuel economy standard
- legislating a fuel economy standard.

Our preferred approach is legislating for a vehicle fuel economy standard (fuel economy standard). We believe this provides us with the best way to achieve the fuel economy improvements we need, while ensuring vehicle choice and availability is maintained as much as possible.

This discussion document seeks your comments and thoughts on the proposal to legislate a fuel economy standard, and how best to implement it.

We have proposed three possible implementation options:

a) **tradable credits scheme** - importers are given a tradable certificate or credit for each vehicle that is better than the fuel economy standard. Importers who fail to achieve a compliant annual average would be required to pay a penalty

b) **vehicle levy scheme** - each vehicle entering the fleet is assessed against the fuel economy standard and a charge is paid for every vehicle that does not meet or better the standard

c) **industry code of compliance** - companies sign-up to an industry code of compliance administered by an industry representative group. Penalties would be based on the expected carbon footprint for vehicles that do not meet the standard.

The benefits of a regulated fuel economy standard extend beyond helping to alleviate climate change. The reduction of our reliance on non-renewable fuel sources is particularly important in the face of a fluctuating, and potentially increasing world oil price. Health benefits will accrue from the reduction of fuel consumption and its associated harmful emissions. In addition, New Zealand needs to keep up with international trends, in particular technology that improves fuel economy. This standard will encourage greater use of electric vehicles and biofuels which will contribute to a cleaner and more sustainable New Zealand.

We seek your feedback on the options discussed in this paper. We also seek your help in identifying all of the possible benefits and costs that a fuel economy standard might deliver, so that we can develop an option that best suits the needs of New Zealanders, now and in the future.

INTRODUCTION

LAND TRANSPORT AND CLIMATE CHANGE

In order to reduce greenhouse gas emissions from land transport, we need to lower our demand for, and reliance on, non-renewable fossil fuels as an energy source for our vehicles. To do this we need to:

- improve the fuel economy and efficiency of the vehicle fleet, and
- reduce our travel in fossil fuel-powered vehicles.

This discussion document focuses on the improvement of the fuel economy of the vehicle fleet. The Government has many initiatives underway that focus on the reduction of travel in fossil fuel-powered vehicles.

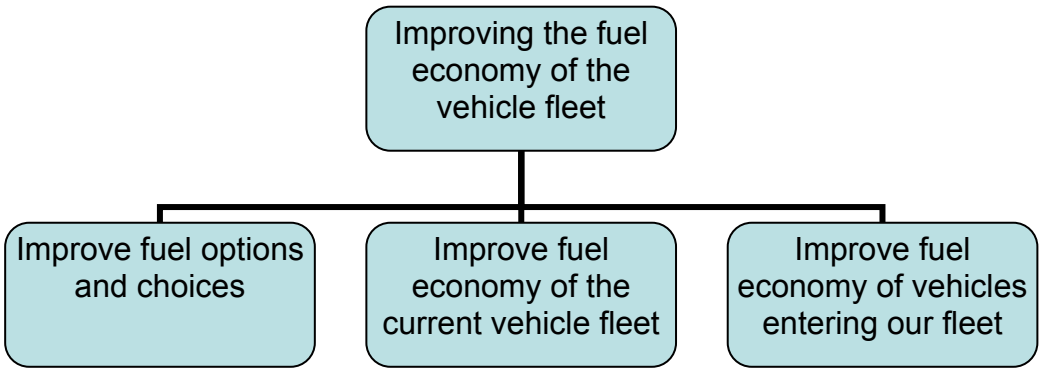
New Zealand's vehicle fleet is currently highly reliant on non-renewable fossil fuels. New Zealand is a 'technology taker' - we don't manufacture vehicles in New Zealand instead we import new and used vehicles. The light vehicle fleet[1] has grown significantly over the past decade; there has been a 22 percent increase in light vehicle numbers between December 2000 and December 2006[2]. There were 2.9 million light vehicles registered in New Zealand in December 2006[3]. The average age of vehicles in the light fleet is 12 years, which is old by international standards[4]. New Zealanders are also increasingly purchasing larger-engined vehicles that have relatively poor fuel economy. These factors need to be addressed because:

- burning fossil fuels produces CO_2, which is a greenhouse gas
- more cars on our roads mean the contribution of land transport to climate change is going to increase unless we can change the vehicle fleet's reliance on fossil fuels
- larger vehicles tend to be heavier and therefore have relativly poor fuel economy
- retaining old vehicles for longer slows the uptake of newer technology.

The light vehicle fleet comprises 93 percent of the total vehicle fleet and contributes to approximately 80 percent of the CO_2 emissions from road transport. It represents approximately 10 percent of New Zealand's total greenhouse gas emissions[5].

We have identified three areas of focus for improving the fuel economy of the vehicle fleet in New Zealand. These are listed in Illustration 1.

Illustration 1: Ways to Improve Fuel Economy



[1] The light vehicle fleet comprises light passenger and light commercial vehicles (cars, vans, utes, four wheel drives and sports utility vehicles (SUVs under 3.5 tonnes).
[2] Refer to page 4 of the Ministry of Transport's report: *The New Zealand Light Vehicle Fleet, Light Vehicle Fleet Statistics, September 2006* at http://www.transport.govt.nz/assets/NewPDFs/NZ-Light-Vehicle-Fleet-7.pdf
[3] ibid.
[4] Refer to page 8 of the Ministry of Transport's report: *The New Zealand Light Vehicle Fleet, Light Vehicle Fleet Statistics, September 2006* at http://www.transport.govt.nz/assets/NewPDFs/NZ-Light-Vehicle-Fleet-7.pdf
[5] Light vehicles represented 8.9 mega tonnes of CO_2e of a total of 77.2 mega tonnes of CO_2e in 2005. The light vehicle number can be obtained from:
http://www.transport.govt.nz/assets/Downloads/NZ-Light-Vehicle-Fleet-Graphsv2.xls#'1.10'!A1.
New Zealand's total greenhouse gas emissions can be found on:
http://www.mfe.govt.nz/publications/climate/greenhouse-gas-inventory-overview-jul07/html/page2.html

Improving fuel options and choices are the subject of a separate work programme that aims to improve fuel specifications and increase the availability and use of alternative fuels including biofuels.

Improving the fuel economy of the current vehicle fleet, as shown in the second limb of illustration one, is the focus of a government work programme that includes:

- the Fuel Saver website
- the RightCar website which features information on safety, emissions and fuel economy of vehicles
- the fuel economy labelling scheme that will give star-ratings to vehicles, clearly indicating fuel economy values, and provide consumers with more information on which to base their purchase decisions
- the emissions trading scheme that will result in increased petrol costs, and in turn encourage vehicle choices and driving behaviour that take fuel economy into consideration
- the promotion of vehicle maintenance and fuel-efficient speed and vehicle use.

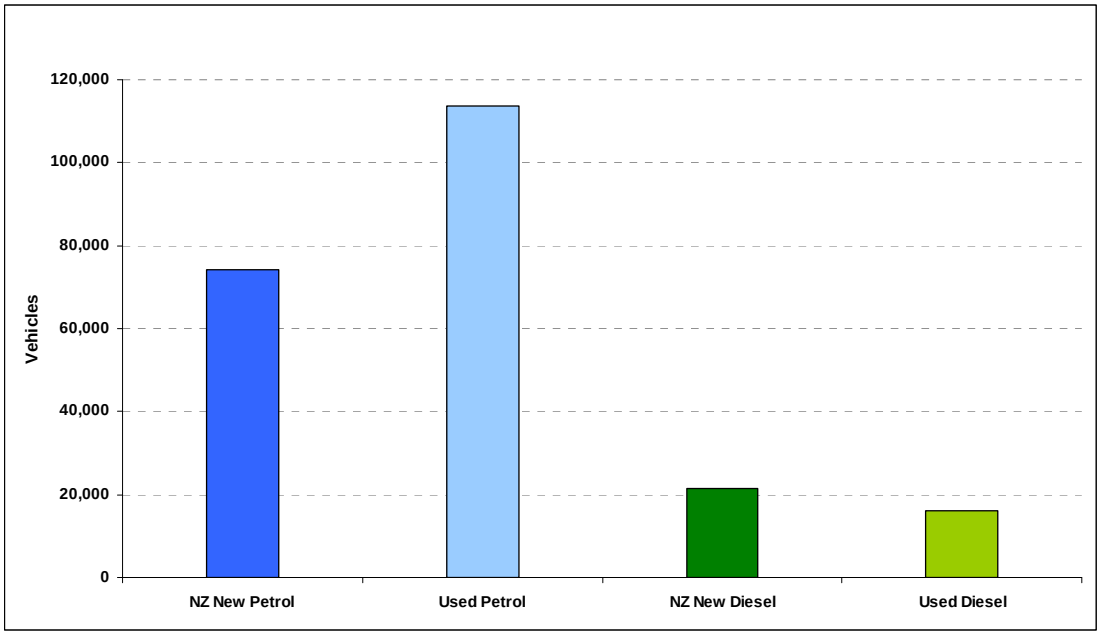
Please refer to Appendix 8 for a diagram showing the full spectrum of measures being employed to reduce land transport greenhouse gas emissions.

THE PROBLEM WE'RE ADDRESSING

Over the last decade New Zealanders have shown a trend towards purchasing bigger-engined cars, which has resulted in a light vehicle fleet with a growing average engine size[6]. On average, bigger-engined vehicles will use more fuel than vehicles with smaller engines[7].

This discussion document focuses on improving of the fuel economy of vehicles entering New Zealand which will, over time, contribute to a reduction in CO_2 emissions.

Illustration 2: Light vehicles first registered in 2006

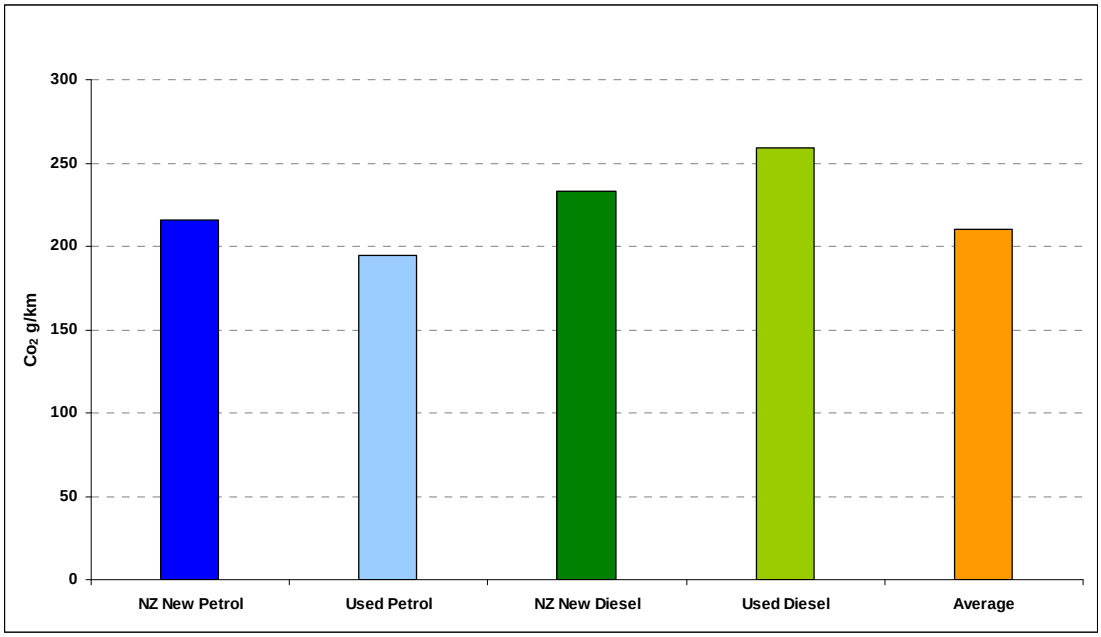


Source: Complied by the Ministry of Transport. Data sourced from the New Zealand Motor Vehicle Register.

[6] Refer to page 29 of the Ministry of Transport's report: *The New Zealand Light Vehicle Fleet, Light Vehicle Fleet Statistics, September 2006* at http://www.transport.govt.nz/assets/NewPDFs/NZ-Light-Vehicle-Fleet-7.pdf

[7] However, as engine technology is improving, an increase in the average engine size of vehicles entering the fleet does not automatically imply an increase in average fuel consumption. Conversely, reduced average engine size of new or used vehicles entering the fleet implies improved average fuel economy. (Refer to page 56 of the *New Zealand Energy Efficiency and Conservation Strategy* for more information).

Illustration 3: Fuel economy of light vehicles first registered in 2006[8]



NB: In Illustration 3 – all values are shown in European drive-cycle test values or converted from Japanese drive cycle test values where no European value is available.

Illustration 2 shows the number of vehicles that entered the New Zealand fleet in 2006 by new petrol, used petrol, new diesel and used diesel. Illustration 3 shows the average CO_2 emissions per kilometre for new petrol, used petrol, new diesel and used diesel vehicles, and the average for vehicles entering the fleet in 2006.

Used petrol cars in New Zealand have, on average, better fuel economy because many of the used cars we import have smaller engines. This does not necessarily mean that we need to import more used vehicles. Rather, it means that smaller cars, which have engines with lower cubic centimetre capacity (cc), generally have better fuel economy than bigger cars with large cc engines. A fleet comprising, on average, smaller cars, will emit less CO_2.

The diesel fuel economy, for new and used, looks quite high comparatively, because at present in New Zealand diesel is predominantly used in vehicles with larger engines, such as commercial vehicles. However, increasing the number of light diesel vehicles in New Zealand is a good opportunity for CO_2 emission reduction. This is due to the fact that diesel vehicles use less fuel than a petrol equivalent. In addition, there is advanced harmful emission control technology now available in light vehicles from Europe (Euro 4+ Standards).

Please refer to Appendix 3 for a summary of the fuel economy standard schemes employed overseas to improve fuel economy.

OUR OBJECTIVE

Our objective is to improve the fuel economy of light vehicles entering New Zealand, and reduce the CO_2 emissions that contribute to climate change. This means we want to reduce the carbon emission intensity of vehicles being imported and introduced to our fleet.

We want to ensure that any measures we take are effective and fair, and that we make a valuable contribution to reduce the effects of climate change.

The Government has made a number of significant recent announcements, through the NZES, on measures to reduce New Zealand's carbon footprint and to ensure we become a sustainable nation. This discussion document focuses on one important element of this broader work programme.

[8] Data sourced from the New Zealand Motor Vehicle Register, Land Transport New Zealand.

While a number of government measures will contribute to improving the fuel economy of vehicles entering the fleet and reducing CO_2 emissions - on their own they won't achieve our *New Zealand Energy Efficiency and Conservation Strategy* (NZEECS) target of 170g of CO_2 /km on average for vehicles entering the fleet by 2015.

Other measures that will also contribute to vehicles with better fuel economy entering New Zealand include the emissions trading scheme and the fuel economy labelling scheme. The emissions trading scheme will ensure the costs of carbon emissions from the fossil fuels we consume are paid for. The fuel economy labelling scheme will provide star-ratings for consumers wishing to purchase vehicles with good fuel economy.

This discussion document considers the options for achieving the target of 170g of CO_2 /km on average for vehicles entering the fleet by 2015, and proposes that a regulated fuel economy standard be introduced.

The benefits of a regulated fuel economy standard extend beyond helping to alleviate climate change. The reduction of our reliance on non-renewable fuel sources is particularly important in the face of a fluctuating, and potentially increasing world oil price. Health benefits will accrue from the reduction of fuel consumption and its associated harmful emissions. In addition, New Zealand needs to keep up with international trends, in particular technology that improves fuel economy. We expect this standard to encourage the import of more hybrid and electric vehicles, which reflect emerging world trends.

OUR PROPOSED WAY FORWARD

We have considered a number of options to improve the fuel economy of light vehicles entering New Zealand. The anticipated reduction of CO_2 emissions for each option is presented in Appendix 1.

OPTION 1: STATUS QUO

This option means continuing to:

- educate and inform consumers and importers about the importance of reducing CO_2 emissions and choosing to purchase cars with better fuel economy e.g. through the fuel economy labelling or star-rating scheme
- accept choices made by New Zealand importers of the range of vehicles available based on their assumptions about consumer demand
- let the price of fuel, including the impact of the emissions trading scheme, affect consumer vehicle choice.

Under this option, we would not intervene in any additional way. However, in our view this is not an acceptable option to choose. We know that land transport is increasingly contributing to New Zealand's greenhouse gas emissions and under this business as usual scenario we would not achieve the government's target of 170g of CO_2/km on average by 2015. The expected CO_2 emissions from vehicles entering the fleet under this business-as-usual scenario are explored further, in the section entitled 'Expected benefits and costs of the standard' on page 22 of this document.

OPTION 2: ADDITIONAL EDUCATION AND INFORMATION FOR CONSUMERS

This option means doing more, than is currently planned, to educate and inform consumers to influence demand for cars with better fuel economy. This option is unlikely to be effective as consumers' choices in private vehicles are often influenced by personal or individual emotion and image more than better environmental outcomes. In general, consumers do not place as much value on future benefits, such as reducing the effect of climate change[9]. Education measures also take longer to be effective and make real change. In our view stronger mechanisms are required, in addition to further education and information, to make an immediate and effective impact on greenhouse gas emissions. We estimate that additional education and information measures will not, on their own, be enough to achieve the Government's target of 170g of CO_2/km on average by 2015.

OPTION 3: DIFFERENTIAL FIRST REGISTRATION

Under this option the price of a vehicle's first registration in New Zealand, would reflect the vehicle's relative fuel economy. The registration fee would be higher for vehicles with poor fuel economy, and would scale down to a lower fee for vehicles with good fuel economy.

[9] OECD International Transport Forum, *Examining Fuel Economy and Carbon Standards for Light Vehicles, Discussion Paper No 2007-1, December 2007*.

This option has not been pursued to date as it focuses on influencing consumer demand rather than directly influencing the decisions of vehicle importers to supply vehicles with better fuel economy. More information about this option and why it has not been pursued is presented in Appendix 6.

OPTION 4: A VOLUNTARY STANDARD

This option involves agreeing on a voluntary standard with the vehicle industry that would apply to all vehicle importers. This option has not been pursued as it would not guarantee the supply of vehicles with better fuel economy. International experience shows that mandatory standards are more effective. A combined voluntary and regulatory approach is discussed as an implementation option later in this document.[10]

OPTION 5: REGULATE A MINIMUM FUEL ECONOMY STANDARD

This option involves regulating to prohibit the import of vehicles above a specified fuel economy standard, or carbon emission intensity standard. This option has not been pursued as it restricts consumer choice by removing the availability of some vehicles such as some light utility vehicles and vans. It also removes potentially safer vehicle options from the market. This option also fails to 'incentivise' the import of vehicles that exceed the standard.

OPTION 6: REGULATE A FUEL ECONOMY STANDARD

This is our preferred approach. It involves regulating a standard for the average fuel economy that vehicles entering the fleet must attain. The standard would be applied to vehicle importers or applicants for vehicle certification[11], to influence the supply of vehicles entering New Zealand. It wouldn't prevent vehicles with poor fuel economy entering the fleet, but it would make these vehicles relatively more expensive and may reduce supply. This approach aims to improve the overall average fuel economy of light vehicles entering New Zealand.

QUESTIONS

1. What other options might exist that will influence the fuel economy of light vehicles entering New Zealand?
2. Our preferred approach, option six, is a regulated vehicle fuel economy standard. Are there any factors we may not be aware of that might influence this preference?

WHAT WILL THE STANDARD BE?

GRAMS OF CO_2 PER KILOMETRE

We propose to express the standard 'in grams of CO_2 per kilometre' as opposed to litres of fuel per 100 kilometres travelled. This reflects the intention and objective of the proposal, which is to reduce CO_2 emissions.

Vehicle fuel economy ratings, as supplied by manufacturers, are often expressed in terms of 'litres/100km'. These ratings can be converted to 'grams of CO_2/km'. Our carbon calculations for petrol vehicles are based on the 2005 regular and premium petrol mix, and would need to be normalised to that year, or another appropriate year, when enacted in legislation. Periodic reviews of the regulated standard would be carried out to ensure the petrol mix is not affecting the actual improvement rates. More information on the conversion of 'litres/100km to grams of CO_2/km' is located in Appendix 4.

[10] Although a voluntary standard is not being considered, one of the implementation options for the preferred regulatory approach would involve a voluntary industry code of compliance agreement with the Government, with a fall-back to a preferred regulatory approach if the code of compliance failed to meet certain requirements within a certain timeframe.

[11] Applicants for certification that their vehicles meet New Zealand standards and can enter the New Zealand vehicle fleet.

APPLIES TO LIGHT VEHICLES

The proposed standard would apply to all passenger and light goods vehicles of 3.5 tonnes gross vehicle mass, or less. More information on applicable light vehicle classes is listed in Appendix 5. The standard will not apply to cycles, mopeds or motorcycles.

While vehicles designed solely for military operations will be excluded from this policy it is not proposed to exempt any other vehicles.

A STANDARD THAT SEEKS AN IMPROVEMENT OVER TIME

The proposed standard will reduce in steps over time. This means the fuel economy of the vehicles entering our fleet will be required on average to improve over time. The standard will reflect the target for fuel economy expressed in the NZEECS that by 2015, the average fuel economy of light vehicles entering New Zealand will be 170g of CO_2/km. This broadly reflects a 20 percent reduction from current levels.

However, as a transitional measure, the initial standard will be 213 g of CO_2/km, which is shown in illustration four. There are three steps down to 170g CO_2/km on average for vehicles entering the fleet in 2015. The standard beyond 2015 will be established by Government at a later date.

A SEPARATE STANDARD FOR EUROPEAN TESTED VEHICLES AND JAPANESE-ONLY TESTED VEHICLES

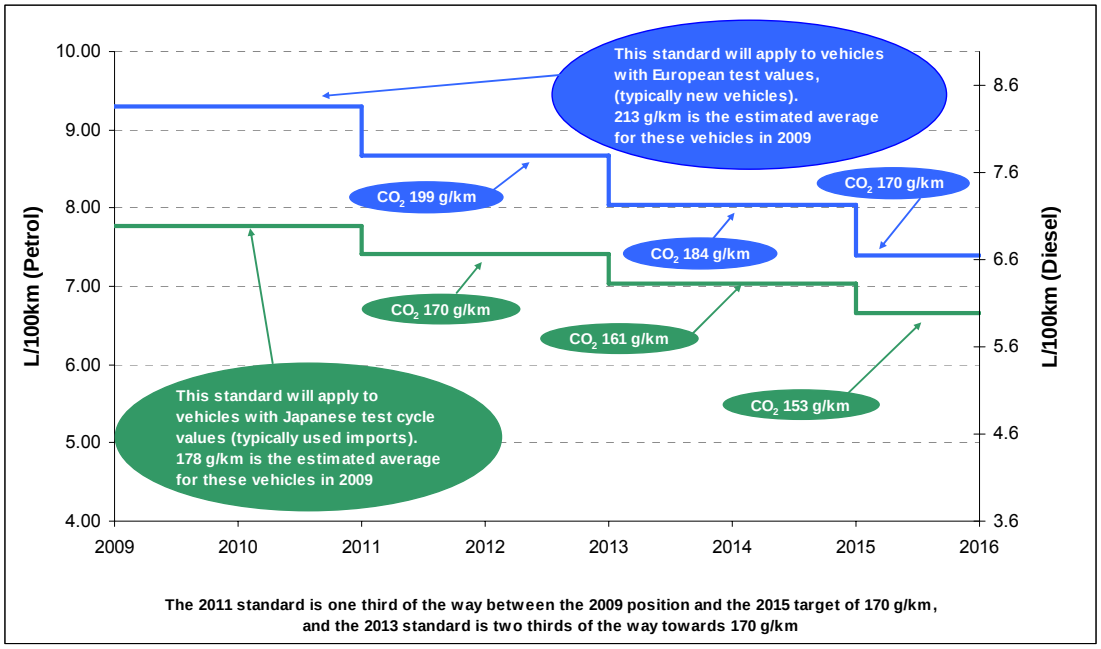
There are two standards shown in illustration four – one standard is for vehicles that have been tested to the European drive cycle test and have a valid European test cycle value[12]. The other is for vehicles that only have a Japanese drive cycle test value[13]. The Japanese test cycle standard is lower at 2015 because of the difference in the way the fuel economy is tested in the Japanese drive cycle.

However, the Japanese test standard in 2015 of 153g of CO_2/km is directly equivalent to the European standard of 170g of CO_2/km in 2015, taking into account the difference in test methodology. Changes are proposed for how vehicles are tested in Japan which means that we will need to revise the standard, for vehicles that only have a Japanese fuel economy value, when these changes take affect.

Most new vehicles, including Japanese new vehicles, entering New Zealand have a European drive cycle test value, so the European standard will apply. For vehicles that do not have a European drive cycle test value, mostly Japanese used imports, the Japanese standard will apply.

[12] Largely New Zealand new vehicles.
[13] Largely used Japanese vehicles.

ILLUSTRATION 4: PROPOSED FUEL ECONOMY STANDARDS



The European starting point for the standard of 213g of CO_2/km has been determined by estimating the average fuel economy ratings of vehicles entering New Zealand with a European test cycle value, typically new vehicles, in 2009. The starting point for the Japanese standard of 178g of CO_2/km has been determined by estimating the fuel economy ratings for those vehicles entering New Zealand with a Japanese test cycle value only in 2009. These are typically used Japanese import vehicles.

These two different starting points are appropriate, as used Japanese imports have, on average, better fuel economy than new car imports. This is because they typically have smaller engine sizes. By 2015, however, the fuel economy standard will be the equivalent of the European test value of 170g of CO_2/km.

FUEL ECONOMY VALUES FOR VEHICLES WITHOUT A EUROPEAN OR JAPANESE TEST VALUE

The fuel economy standard is reliant on every vehicle that is imported into New Zealand, having fuel economy information in an accepted format.

Although fuel economy information is currently being obtained for the majority of vehicles, implementing a fuel economy standard will require a mandatory system to obtain fuel economy information for all vehicles entering the fleet. A work programme is currently in place to develop a Land Transport Rule that will make fuel economy information mandatory for all imported vehicles.

It is expected that fuel economy information will be provided for all new and all used vehicles manufactured since 2000. However, there will still be a small number of vehicles for which no fuel economy data can be obtained. The proposed Land Transport Rule will not prohibit the entry of these vehicles and a field designated ‘not available’ will satisfy the mandatory collection criteria if this information cannot be provided.

For the purposes of the fuel economy standard, a value of ‘not available’ will have a standard fuel economy attributed to it. It is proposed that this value be set at a high penalty rate such as 400g CO_2/km. This will act as a significant disincentive against bringing vehicles into New Zealand that do not have fuel economy information, without prohibiting their importation.

Standards for other test cycles including the United States Federal Test Procedure and the Japanese JC-08 mode will be included into the proposed fuel economy standard framework as results from further technical work become available.

ALTERNATIVE FUELS

Hybrids and electric vehicles
In line with the announcement in the New Zealand Energy Strategy (NZES), the Government will work towards positioning New Zealand to be one of the first countries in the world to widely deploy electric vehicles.

TABLE 1: TYPES OF HYBRID AND ELECTRIC VEHICLES	
Hybrid electric vehicles	The vehicle's internal combustion engine, which uses petrol, is supplemented by an electric motor. The electric motor does not obtain electricity from the grid to recharge its batteries instead it is recharged through regenerative braking i.e. the vehicle in motion produces kinetic energy that is used to charge the battery during braking or directly from the engine. Some hybrids can drive short distances on the battery only, but none are able to work purely on electric power.
Plug-in hybrid vehicles	Plug-in hybrid vehicles are the same as hybrid electric vehicles except that the batteries can also be recharged through connection to the electricity grid. This enables the internal combustion engine to be used as a back-up power source.
Full electric vehicles	Full electric vehicles are powered by a battery that must be recharged through connection to the electricity grid. They don't have an internal combustion engine. As these vehicles run purely on electric power, they are said to produce 'zero CO_2 emissions' from the vehicles themselves. Although the electricity source may generate CO_2 emissions through the electricity generation process.

Hybrid electric vehicles typically have fuel economy values attributed to them. Because the electric motors are used to improve the fuel efficiency of the vehicle, the fuel economy values reflect this and are generally lower than the values for similar petrol or diesel-fuelled vehicles. We are not proposing to assign any further incentive, in terms of the fuel economy value, for these vehicles.

It is expected that plug-in hybrid vehicles will be available in the mass vehicle market ahead of full electric vehicles . Plug-in hybrids can be propelled by either fossil fuel or electricity. This makes it difficult to apply a fuel economy standard fairly to the vehicle, as it is impossible to determine the amount of time the vehicle will spend being driven on electric power. Driving longer solely on electric power will result in significantly fewer CO_2 emissions than if the vehicle was driven on petrol. Because of this capability we wish to provide incentives for this technology to be introduced into New Zealand. Therefore, we propose to assign all plug-in hybrid vehicles with the same or a similar value as for full electric vehicles.

Full electric vehicles can be said to produce no CO_2 emissions from the vehicle itself, but because they source electricity from the electricity grid, the vehicle's carbon footprint depends on how the electricity it uses is generated. Electricity from gas or coal generation produces CO_2 emissions whereas electricity from hydro generation produces no CO_2.

We have made a 'best estimate' of the appropriate fuel economy value to attribute to full electric vehicles, and plug-in hybrids, for the purposes of the fuel economy standard. Peak electricity demand CO_2 emission factor is used because we assume that vehicles[14] will probably be recharged at peak times. Peak electricity used by a full electric vehicle would result in approximately 75g of CO_2/km. This will also apply to plug-in hybrid vehicles for the purposes of consultation on this proposal.

Biofuels
The Government has signalled its intention to promote the use of biofuels in New Zealand by introducing a biofuels sales obligation. It is proposed that the percentage blend of biofuel a vehicle can accept, as is publicly stated by the manufacturer, will be a factor in determining what overall CO_2 rating the vehicle receives under the standard. This could then encourage the uptake of biofuel compatible vehicles into the fleet.

[14] This assumes that the vehicle does not have 'smart metering' technology.

Liquefied petroleum gas and CNG
These fuels typically produce less CO_2/km than conventional fossil fuels. It is envisaged that our proposed policy will take into account the CO_2 footprint of this fuel.

Emerging technologies
In the future, hydrogen and other emerging fuels will be developed and may become commercially available. Further consideration will be given, to how we treat vehicles that use these fuels for the purposes of the fuel economy standard, at a time when their availability in New Zealand is considered likely.

QUESTIONS

3. The NZEECS sets a target for the average fuel economy of light vehicles entering the New Zealand fleet by 2015 to be 170g of CO_2/km. We are proposing to base our standard on this target. Bearing in mind the current fleet average, for both new and used vehicles, is approximately 210g of CO_2/km, is 170g of CO_2/km by 2015 an appropriate level to be aiming for? If not, why not?

4. The proposed standard for the years 2009 to 2011 is proposed to be 214g of CO_2/km for vehicles with a European test value, and 180g of CO_2/km for vehicles with only a Japanese test value. This is based on the current average fuel economy for vehicles entering the fleet and estimating the average in 2009. What do you think is the most appropriate standard for the years 2009 to 2011? Why?

5. We are proposing that the standard starts at the estimated actual average vehicle fuel economy in 2009 and that it steps down three times to a standard of 170g of CO_2/km by 2015. Are the proposed steps to 2015 set at reasonable and fair intervals? If not, why not?

6. We are proposing that the standard should apply to all light vehicles i.e. vehicles of a gross vehicle mass of 3.5 tonnes or less, except for cycles, mopeds and motorcycles. What sorts of vehicles do you believe the standard should apply to?

7. What exemptions, if any, should apply?

8. How do you suggest that we deal with vehicles that cannot provide a European or Japanese fuel economy test value?

9. We are proposing that full electric and plug-in hybrid vehicles be attributed a fuel economy value of 75g of CO_2/km. Given that full electric vehicles do not produce carbon emissions, other than from the electricity generation, what do you consider is the appropriate fuel economy rating, in grams of CO_2/km, which we should attribute to these vehicles?

10. Given that plug-in hybrid electric vehicles can be powered solely from a battery, what is the appropriate fuel economy rating (in grams of CO_2/km) that we should attribute to these vehicles?

11. Given that biofuels produce less CO_2 per kilometre than fossil fuels, and that the Government wishes to encourage biofuel compatibility, how should we treat publicly stated biofuel-compatible vehicles for the purposes of the proposed fuel economy standard?

OPTIONS FOR IMPLEMENTATION OF THIS STANDARD

Three options are proposed for implementing the fuel economy standard.

These are:

- a tradable credit scheme
- a vehicle levy scheme
- an industry code of compliance with regulatory fallback.

A fourth implementation option, a registered importer scheme, has been identified but is not considered further because of its complexity. Under this option all importers would need to be registered, pay a bond, and forfeit that bond if they fail to meet the standard, on average, in any one year. More information about how this option would work and why it has been dismissed is presented in Appendix 7.

We are interested in learning which of the three options, discussed in the following pages, you think will work best and most fairly, and if there are any other options that could be explored.

The first two options would apply a stated fuel economy standard to vehicles entering the New Zealand fleet, and any penalties or charges that apply for failing to meet this standard would be paid by the vehicle importer or vehicle certification applicant.

Tradable credit
This option would apply the standard to each vehicle importer's import fleet. It would require that the average fuel economy, grams of CO_2/km, of all light vehicles imported by each importer meets the standard.

Vehicle levy
This option would charge a levy on each vehicle entering the New Zealand fleet that does not meet the fuel economy standard.

Industry code of compliance
This option would establish a voluntary and self-regulating arrangement between industry or formal groupings of companies, and the Government. A provision would be included that companies transfer into the regulatory regime if certain requirements are not met.

OPTION 1: TRADABLE CREDIT SCHEME

Under this scheme, importers are required to meet the fuel economy standard by means of either:

- ensuring the fuel economy, grams of CO_2/km, of their vehicles, as attributed to each vehicle on entry to New Zealand, 'meets' or 'betters' the standard on average over one year
- or, providing credits to make up the difference between their average fuel economy and the standard.

Failure to comply will incur a penalty. The fine will increase in proportion to the amount, in grams of CO_2, that the importer's average fuel economy, exceeds the standard. In other words, the penalty would apply per unit of non-compliance so that the more an importer failed to meet the standard, the higher the penalty. Penalties and the appropriate penalty levels are discussed in more detail in this document.

Importers will be attributed a credit for every gram of CO_2/km value for each vehicle that is better than the standard. Importers can trade these credits between themselves to ensure their annual average meets the standard.

Example *Using the data in table two, the total emissions intensity, grams of CO_2/km, of the importer would be:*

(*75 vehicles x 240g) + (75 vehicles x 170g) + (75 vehicles x 130g) = 40,500g of CO_2.*

This compares to the requirements under the 170g/km standard proposed for 2015 of 225 vehicles x 170g = 38,250, a difference of 2,250 g of CO_2.

This number of credits could be achieved from an additional 45 vehicles imported with an emissions intensity of 120g/km,[15] or 90 vehicles with an emissions intensity of 145g/km.

Table 2: Emissions intensity of imported vehicles (two options)

	Option One			Option Two[16]	
Vehicle	**Number of vehicles**	**Emissions Intensity (g CO_2/km)**		**Number of vehicles**	**Emissions Intensity (g CO_2/km)**
A	75	240		50	240
B	75	170		75	170
C	75	130		100	130
Total/**Average**	225	**180**		225	**168**

The value of the credits would be determined in the market by buyers and sellers. The market ensures that the average is met through the price of credits. The price is influenced by the cost of obtaining vehicles with fuel economy that is lower than the standard and it is capped by the non-compliance penalties.

Each imported vehicle, with fuel economy that is better than the standard, yields a credit that has a market value. The value of the credit can be used to offset the cost of the vehicle and result in vehicles with fuel economy that are better than the standard, being effectively subsidised. In contrast, importers of vehicles with fuel economy that is above the standard will be required to purchase credits. The cost of supply would increase and market prices for these vehicles may increase.

One possible variant on the tradable credit option is that an importer be restricted from importing vehicles that fail to meet the standard if they do not have the required credits. In other words, the importer will need to purchase smaller vehicles first in any one year, and have the requisite number of credits to show for it, or have purchased credits from another importer, before bringing in vehicles with poorer fuel economy. Under this variant a penalty would not apply nor be required, because it would not be possible to fail to achieve the required standard, on average, for that year.

OPTION 2: VEHICLE LEVY SCHEME

Under the vehicle levy scheme, the fuel economy standard would apply on a 'vehicle by vehicle' basis, rather than on an average basis. This scheme is intended to encourage the importation of vehicles that meet the standard, and discourage the import of vehicles that don't meet the standard.

Importers or vehicle certification applicants would be charged a levy for each vehicle that does not meet the standard. The size of the levy would increase with the extent of the difference from the standard.

Example *Under a standard set at 170g CO_2/km and a levy of $x/g, a car with an emissions intensity of 200g/km (30g/km above the standard) would pay a total charge equal to 30 times $x. Vehicles that met or did better than the standard would pay no levy.*

OPTION 3: INDUSTRY CODE OF COMPLIANCE

This option is based on a proposal developed by the Motor Industry Association (MIA). This proposal has been included as option three in this discussion document on the basis that:

- a similar arrangement could be reached with other industry groups
- any agreements reached with industry groups would be based on achieving the same level of fuel economy as the legislated standard i.e. a standard starting at the expected average fuel economy in 2009 and decreasing in steps to 170g of CO_2/km by 2015
- companies who are unable to consistently meet the standard would fall back into the regulatory regime i.e. either the tradable credit or vehicle levy schemes.

[15] 45 x (170 – 120) = 2,250.
[16] Option two is referred to in Appendix 7.

The MIA's proposed motor industry climate code would include the following features:

- companies agree to achieve the fuel economy standard i.e. make a reduction in the average CO_2grams/km of their vehicles being introduced to the New Zealand fleet
- companies failing to meet the standard would pay a penalty equivalent to off-setting the additional CO_2 emissions that the relevant vehicles would be responsible for during their life-expectancy i.e. a penalty based on the grams of CO_2 in excess of the applicable standard and an expected vehicle-life of 150,000 kilometres
- the penalty would be directed towards purchasing carbon offsets
- the code would be audited and administered by the MIA, in a fully transparent way.

It is proposed that the MIA code (or a similar arrangement reached with industry groups) include a commitment from companies to aim to meet the fuel economy standard and as a result achieve fuel economy improvements. Companies that only pay a penalty, rather than achieving the fuel economy improvements, will not be contributing to the intended outcomes of the fuel economy standard initiative.

Therefore, it is also proposed that any company that pays the agreed carbon cost penalties and does not achieve any CO_2 reductions, will be transferred into the legislated regulatory regime i.e. either the tradable credit or vehicle levy schemes. This will depend on the outcome of government decisions on the most appropriate scheme.

While further consideration is required on how to determine when a company should transfer into the regulatory regime, it is proposed for the purposes of this discussion document, that this could be based on a failure to meet the standard in any three years not necessarily successively.

PENALTIES OR CHARGES

Different penalties or charges would apply depending on the implementation option chosen:

1. Under the tradable credit scheme, a penalty would apply to importers who fail to meet the standard, on average, for vehicles they import in any one year, or who fail to provide enough credits, obtained by trading with other importers, to compensate for the extent to which their average is above the standard.

2. Under the vehicle levy scheme, vehicle certification applicants would be charged for every vehicle they import that fails to meet the standard.

3. Under the industry code of compliance scheme, companies would pay a penalty equivalent to the cost of off-setting carbon for vehicles that did not meet the standard, and would default to one of the regulatory regimes, listed previously, if they don't consistently meet the standard on average.

The level of any charge depends on the extent to which the importer or certification applicant exceeds the standard in terms of the number of grams of CO_2. Possible levels for these charges are discussed in more detail in this discussion document under the heading for each scheme. These levels are presented for consultation purposes only.

TRADABLE CREDITS – PENALTIES

The penalty will need to be set at a level to ensure compliance. In other words, the penalty will need to be greater than the cost to an importer who is purchasing credits from another importer to ensure compliance with the standard i.e. bring the importer's average down to meet the standard.

It is difficult to determine what the level of this charge will be, as the market will set the price of a credit. However, for the purposes of consultation, it is proposed that the fine be set at $200 per gram of CO_2/km.

Example *Let's assume we're in the year 2015, and the applicable fuel economy standard for that year is 170g of CO_2/km. If Importer A imports 50 cars for that year and the average fuel economy for these cars is 180g, then Importer A will have exceeded the standard by 10 grams per vehicle.*

The penalty would be (10g x 50 cars) x $200 = $100,000.

Table 3: Penalties for a tradable credit scheme				
	Importer A Imports and trades	**Importer A compliance costs**	**Importer B** Imports and trades	**Importer B compliance costs**
Vehicles imported	50		50	
Average $gC0_2$	190g		160g	
Total $gC0_2$ under/over 170g standard	**1000g**		**-500g**	
Less/plus credits purchased/sold (@ $150/g)	-500g	$75,000	+500g	-$75,000
Average $gC0_2$ inclusive of credits purchased/sold	180g		170g	
Total $gC0_2$ over for penalty charge (@$200/g)	**500g**	**$100,000**	**Nil**	**Nil**
Total compliance cost		**$175,000**		**-$75,000**

This charge might not be the only cost of compliance to Importer A as shown in table 3 and in the example below.

Example *Importer A purchases 500 credits from Importer B.*

The purchase of credits brings Importer A's average down from 190g of CO_2/km to 180g of CO_2/km.

The cost of these credits will be determined by the market. If we assume the price of a credit in 2015 is $150, then the cost to Importer A of reducing their average from 190g to 180g would be $150 x 500 credits = $75,000.

The cost then of reducing Importer A's potential penalty charge from $200,000 (at 190g) to $100,000 (at 180g) is $75,000.

The cost to Importer A for bringing in a fleet for one year that averaged 190g CO_2/km has in this example been $75,000 (credits) + $100,000 (charges) = $175,000.

VEHICLE LEVY – PENALTIES

The proposed charge for every imported vehicle that does not meet the standard is $100 per gram of CO_2/km. The proposed charge is less than the proposed penalty for the tradable credit option because there is no ability in this option for an importer to trade for being over the standard. There is also no way to achieve a benefit for bringing in more vehicles better than the standard. The charge applies on a vehicle by vehicle basis, as opposed to an average of all vehicles imported during a year.

Example *Under this option, a vehicle with a CO_2 rating of 250g in 2016 would be 80g above the standard and would attract a charge of $8,000. A vehicle with a CO_2 rating of 180g would be 10g over the standard and attract a charge of $1,000. A vehicle with a CO_2 rating of 140g would be 30g better than the standard and no charge would apply.*

INDUSTRY CODE OF COMPLIANCE – PENALTIES

Under this option, companies would agree to pay a penalty if they fail to meet the standard, on average, in any one year, and would face the likelihood of being transferred into the regulatory regime if they are forced to pay the penalty more than three times.

The penalty would be in the form of emission units, which would reflect the price of carbon as determined by the international market. The penalty under this scheme does not need to be as high as the penalty proposed under the tradable credit or vehicle fuel economy standard options already discussed. This is because the 'industry code agreement' with the Government would be based on the industry commitment to achieving the standard rather than paying penalties.

The number of emission units that would be needed to meet the agreement, as proposed by the MIA, would be based on an expected CO_2 emission for a vehicle over the period of its life. The MIA has suggested the expected life of vehicles is on average 150,000kms.

This means that an importer averaging 190g of CO_2/km for 100 vehicles introduced in the year 2015 would pay a carbon offset penalty of 20g x 150,000kms = 3,000,000 grams, or 300 tonnes, of CO_2 for each of its 100 vehicles imported. Based on the current cost of emission units, the cost of the penalty would be calculated as follows: 300 tonnes x $15 = $4,500. The cost of emission units is determined by the market, and will change over time.

COMPARISON OF PENALTIES/CHARGES UNDER EACH IMPLEMENTATION OPTION

A summary of the charges or penalties that are proposed under each implementation option are listed in table 4. This table compares the charges or penalties that would apply to two different importers (Importer A and Importer B). In the table, Importer A has achieved an average of 190gCO_2/km for the 60 vehicles imported and Importer B has achieved an average of 160gCO_2/km for the 60 vehicles imported. The table assumes it is 2016 and that the 170gCO_2/km standard applies.

Under the *tradable credit scheme*, the table assumes that the market has set a price for credits of $150/g, and that importer A is able to successfully trade with importer B. Importer A has paid a penalty of $120,000, and has also paid $90,000 to importer B for the purchase of 600g of credits. The total compliance cost to Importer A is $210,000. Importer B pays no penalty, and makes $90,000 by trading with importer A.

Under the *vehicle fuel economy standard scheme*, importer A is charged for each vehicle that does not meet the standard, and given the mix of vehicles, has been charged $140,000. Importer B is only charged $60,000 for the 20 vehicles introduced into New Zealand.

Under the *industry code of compliance scheme*, the table assumes that the cost of carbon has increased to $50/tonne by 2016. Importer A pays a penalty of $9,000 for not meeting the standard, while importer B does not pay any penalty.

Table 4: Comparison of penalties/charges for each implementation option

Tradable credit scheme		**Importer A**		**Importer B**
		Compliance cost		Compliance cost
Vehicles imported	60		60	
Average gCO_2/km	190		160	
Total g over/under 170g standard	1200g		-600g	
Credits sold/purchased at $150/g	600g	$90,000	-600g	-$90,000
Average gCO_2 after trading	180		170	
Total gCO_2 over for penalty (@$200/g)	600g	$120,000	Nil	Nil
Total compliance cost		**$210,000**		**-$90,000**
Vehicle fuel economy standard scheme		**Importer A**		**Importer B**
Vehicle mix:				
220g/km	20	100,000		
200g/km			20	60,000
190g/km	20	40,000		
160g/km	20	Nil		
150g/km			20	Nil
130g/km			20	Nil
Total vehicles imported	60		60	
Average gCO_2/km	190		160	
Total compliance cost (@$100/g)		**$140,000**		**$60,000**
Industry code of compliance scheme		**Importer A**		**Importer B**
Vehicles imported	60		60	
Average g CO_2/km	190		160	
Tonnes of CO_2 over 170g over 150,000km life of vehicle	180		Nil	
Compliance cost (@$50/tonne)		**$9,000**		**Nil**

USE OF ANY REVENUE RECEIVED BY THE CROWN

As is discussed previously, an option that involves penalty charges or a levy for failure to meet a fuel economy standard could result in additional revenue to the Crown. However, it is expected that the scheme will also see a reduction in Crown revenue from fuel excise duty as vehicles with better fuel economy get purchased.

If additional revenue is received by the Crown, the revenue could be used to support climate change objectives such as improving levels of public transport, and walking and cycling. Alternatively it could be directed to the general Crown account and have the potential to contribute to a reduction in other costs to the Crown or taxes imposed by the Crown.

ADMINISTRATION AND MONITORING OF COMPLIANCE

All of the implementation options that have been discussed in this document so far require additional monitoring and compliance activities, on the part of vehicle importers and the Government.

Vehicle importers will need to have systems to monitor and track their compliance against the standard i.e. track the number of vehicles they've imported or are planning to import, and where they'll then stand in comparison to the standard. Under the tradable credit option, importers may also need to establish agencies to work on their behalf, and will need to monitor progress in a more complex way i.e. across a number of importers towards achieving the standard. Importers will want to track and monitor the purchase of credits between importers.

The Government, through an agency such as Land Transport New Zealand, will also need to:

- record fuel economy ratings for each vehicle as they arrive
- make changes to the Landata System to enable it to record importer details
- track any credits traded
- monitor and potentially audit an importer's annual compliance
- ensure compliance and track and seek payment for any charges due.

The Government may also look to develop an online system to enable importers to access details of how well they are tracking towards compliance with the standard.

QUESTIONS

12. What other implementation options should we consider?

13. What is your preferred implementation option and why?

14. Under the tradable credit option, vehicles that fail to meet the standard would be banned from import unless the importer can show a requisite number of vehicles that meet the standard. Do you prefer this scenario or the penalty option? Why?

15. Do you believe the penalties or charges for each option are likely to be effective? If not, why? What would an appropriate penalty or charge level be?

16. If any additional Crown revenue does result from the implementation of any of the outlined schemes, how should this be used?

17. Some suggestions have been made that an additional incentive, rather than a penalty or charge, should apply in the vehicle fuel economy standard scheme. How could such an incentive work effectively?

18. Do you believe the industry compliance code is a workable option? If not, why not?

EXPECTED BENEFITS AND COSTS OF THE STANDARD

CONTRIBUTION TO CO_2 REDUCTIONS, FUEL ECONOMY AND HEALTH

Table 5 shows the current CO_2 emission levels of light vehicles entering the fleet currently and the expected levels under a business-as-usual scenario in 2015.

If we do nothing, we can expect to see some improvement in the average CO_2/km of light vehicles entering the fleet through the impact of:

- accepting new technology as the overseas manufacturing industry responds to the standards set in their countries for fuel economy
- education and information programmes that encourage consumers to choose vehicles with better fuel economy, including the fuel economy labelling scheme
- other interventions such as the emissions trading scheme.

Our overall average grams of CO_2/km for vehicles entering the fleet will improve, but it won't improve to the level required to achieve the target of 170g by 2015.

Table 5: Estimated CO_2 emissions (Euro test level) in 2006 and in a business as usual (status quo) scenario in 2015

	New petrol	New diesel	Used petrol	Used diesel	Average petrol	Average diesel	Overall average
2006 Actual	216.1	233.1	194.8	258.7	203.2	244.1	**210.0**
2015 BAU	197.4	213.0	179.5	238.6	186.6	214.5	**190.0**

Achieving an average of 170g of CO_2/km for light vehicles entering the fleet through a regulated fuel economy standard will result in approximately a 10.5 percent reduction in the average CO_2 emissions intensity of vehicles entering the fleet by 2015, and approximately a 3.5 percent total reduction in CO_2 emissions from the light vehicle fleet, in service, for the period of 2008 to 2025.

The expected cumulative benefits of achieving by 2015 a 170g average of CO_2/km for light vehicles entering the fleet are:

- a saving of 600 kilo tonnes of CO_2 by 2015 or 4,658 kilotonnes of CO_2 by 2025
- a saving of 251 million litres of fuel by 2015 and 1,926 million litres of fuel by 2025
- an $8 million or 1 percent Kyoto compliance cost reduction by 2015 (at present value)[17]
- a $44 million or 2.9 percent Kyoto compliance cost reduction by 2025 (at present value)
- a saving of $176 million or 1 percent in fuel costs by 2015 or $1,085 million or 3.1 percent in fuel costs by 2025 (excluding taxes, and at present value)
- an associated health impact, n terms of reduced harmful emissions from reduced fuel consumption, of an estimated social cost reduction of $35 million by 2015 and $225 million by 2025.

In estimating these reductions, we have taken into account the following:

- forecast movements in world oil prices and the expected impact on domestic fuel prices
- forecast movements in exchange rates and the expected impact on both domestic fuel prices and on Kyoto compliance costs
- the likely impact of the emissions trading scheme on domestic fuel prices
- the likely impact of the Vehicle Emissions Rule, concerning harmful emissions, on the volume of used car imports and on health impacts from transport emissions
- the likely uptake of vehicles with better fuel economy due to other interventions e.g. the emissions trading scheme and fuel consumption labelling
- likely changes in travel patterns due to the changes in fuel costs, as a result of the emissions trading scheme, changes in fuel prices and the uptake of vehicles with better fuel economy etc
- variations in the likely level of achievement of the standard dependent upon the proposed option and implementation method, the assumed uptake levels are summarised in Appendix 1.

[17] The Kyoto compliance cost estimates are based on US$11.90 per tonne of CO_2 as currently valued by the New Zealand Treasury.

All of the estimates listed above are based on the 'fuel-cycle test levels' as opposed to the 'actual on-road emission levels' as there are many factors affecting actual.

As previously noted, the benefits of a regulated fuel economy standard extend beyond a reduction of greenhouse gas emissions. Other benefits include a reduction of our reliance on fossil fuels and a reduction of emissions that are harmful to human health. The standard will also encourage our uptake of international vehicle technology trends.

Moving to a regulated fuel economy standard sends a message to consumers, importers and the international community that New Zealand is serious about reducing CO_2 and its role as a signatory to the Kyoto protocol. In addition, New Zealand needs to keep up with international change, in particular technology that improves vehicle fuel economy[18]. This standard demonstrates that New Zealand is actually working to reduce CO_2 emissions rather than merely attempting to offset our emissions. It contributes to a cleaner and more sustainable New Zealand.

POTENTIAL COSTS OF A REGULATED FUEL ECONOMY STANDARD

PRICE AND CONSUMER IMPACT

The fuel economy standard is intended to work, under any of the implementation options, by raising the cost of vehicles with poor fuel economy. The standard is intended to make us choose our vehicles more wisely, and to encourage us to purchase the most CO_2 friendly vehicle for our needs.

While the standard is not intended to be harsher on any one group in society, larger-engined and heavier vehicles are likely to become more expensive and potentially harder to source. This will in turn impact on those people who have a genuine need for larger vehicles, such as trades people, courier or taxi companies, small good transporters and large families.

The impact on the price and availability of smaller engine vehicles is not easy to predict. The intention of the standard is that importers are encouraged to supply vehicles with better fuel economy. The price of these vehicles to consumers may go down, because of an over supply, compared to demand, at least in the short term. However, the price of these vehicles may also rise, as importers compete in the used car market in Japan to source enough smaller vehicles to supply to New Zealand.

IMPACT ON THE VEHICLE FLEET

If the prices of vehicles increase, some people may be inclined to hold on to their vehicles for longer, or purchase a second hand New Zealand vehicle rather than a new or used import. This will raise the age of our vehicle fleet, and mean we're slower to take up newer and safer technology.

If the price of small vehicles decreases, some people who do not currently own a vehicle may find it easier to buy a vehicle, which may also have the perverse effect of increasing the vehicle kilometres travelled on our roads and increasing CO_2 emissions. Similarly, improved fuel economy may mean people will travel more as it is comparatively cheaper to do so. It is important that other interventions designed to encourage sustainable transport decisions are pursued to counter this possible effect.

SAFETY IMPACT

With smaller vehicles entering the fleet, safety may be compromised. There is a concern that people will move to vehicles that have better fuel economy but are significantly less safe, as some smaller vehicles have fewer occupant protection features. It is important that adequate safety, fuel-economy and harmful emissions information is provided, to enable consumers to make sensible choices, and achieve the right mix of these characteristics when they purchase vehicles. The safety standards of smaller vehicles are improving, and reducing the instances where small vehicles collide with larger ones, by encouraging a more consistently smaller fleet and discouraging vehicles with poor fuel economy, may help to improve road safety. Another concern is that if vehicles become more expensive, some people may choose to use motorcycles instead, which are less safe than cars. In addition, if the age of the fleet gets older, safer technology will take longer to be introduced into the fleet.

[18] Appendix 3 shows what other countries are doing to set fuel economy standards.

IMPORTER IMPACT

Some importers will be affected more than others. This depends on whether they specialise in any one type of vehicle. Importers of larger or performance vehicles for instance, which typically use more fuel, will face greater costs, in terms of penalties or charges, than others.

In addition, importers will face the compliance costs associated with monitoring and tracking their imports, to ensure they do not exceed the standard, or cannot afford to pay for the costs of doing so.

GOVERNMENT COMPLIANCE COST

Administration, monitoring and auditing of the standard will require system development and a new team within a government agency to support the scheme.

BENEFITS AND COSTS OF THE THREE IMPLEMENTATION OPTIONS

TRADABLE CREDITS

A major benefit of the tradable credit option is that it provides options to importers who specialise in importing larger vehicles. Importers are able to trade with other importers to purchase credits to lower their fleet average. This option also provides an incentive for importers to bring in vehicles with better fuel economy, as opposed to merely bringing in vehicles that just achieve the standard and no more.

This option would be relatively costly to administer due to a need to track credits and monitor compliance, for importers as well as the Government. The value of the credits may determine whether importers are prepared to sell their credits, otherwise the incentive may be to hold onto the credits and limit a competitor's ability to supply vehicles in the market. The value of the credits will be determined by the market. Arguably there may be more likelihood, under this scheme, that importers will spread the value of credits or penalties across all vehicles in the importer's fleet. This could diminish the incentive for consumers to purchase more economic vehicles. However, the range of vehicles on offer to consumers may include an increase in the number of vehicles with better fuel economy than would have otherwise been.

The penalty level will influence compliance levels. A few importers may be willing to pay the penalty rather than meet the standard. Anticipating this effect, we have assumed 90 percent compliance rate at 2015. On this basis, the estimated benefits in terms of CO_2 and fuel reductions are:

- a 3.2 percent cumulative reduction in CO_2 emissions from business-as-usual levels by 2025
- a 3.1 percent cumulative reduction in fuel consumption from business-as-usual levels by 2025.

Further details are provided in Appendix 2.

VEHICLE LEVY SCHEME

The major advantage of this option is its simplicity. It is easy to understand and relatively easy to administer, monitor and ensure compliance. No loopholes will exist as all importers or vehicle certification applicants, even those bringing in one vehicle, will be subject to the standard.

The disadvantage is that some importers or applicants will be prepared to pay the costs, depending on the level of the charge. The level of the charge, the marginal cost of importing a high CO_2 emissions vehicle, will need to be quite high. Also, there is no benefit to bring in a vehicle that betters the standard, so it is anticipated that many will bring in vehicles to merely avoid the charge i.e. meet the standard and no better. For these reasons, it is difficult to predict whether we will achieve the standard, on average, for any one year. Because of the potential to accept the payment of a charge, as part of the vehicle cost and there being no need to better the standard, we have assumed a compliance rate of 80 percent by 2015. On this basis, the estimated benefits in terms of CO_2 and fuel reductions are:

- a 2.7 percent cumulative reduction in CO_2 emissions from business-as-usual levels by 2025
- a 2.7 percent cumulative reduction in fuel consumption from business-as-usual levels by 2025.

Further details are provided in Appendix 2.

INDUSTRY CODE OF COMPLIANCE

A major benefit of the industry compliance code option is that it enables industry to self-regulate and it reduces penalty costs. This option should reduce the Government's compliance cost burden. This would minimise the costs of the system, by reducing the duplication of system development and monitoring that the Government and importers would need to carry out. This option, like the tradable credit option, also provides an incentive for importers to bring in vehicles with better fuel economy.

One disadvantage of this option is that not all industry participants will belong to an industry representative group who can administer a system for them. Another disadvantage is that due to the lower penalty level for those who fail to achieve the standard, some companies will be tempted to 'buy their way out'. However, the incentive to avoid default into the regulatory regime will encourage compliance. There may be some incentive for companies with low averages to take part in the tradable credit scheme and sell their credits on the market. There will be no incentive for those companies who are forced to transfer to the vehicle fuel economy standard to better the standard as they will only need to meet it to avoid a penalty.

For these reasons we have assumed an 83 percent compliance rate, at 2015, with the standard if the alternative regulatory scheme is the tradable credit scheme, and an 80 percent compliance rate, at 2015, if the alternative regulatory scheme is the vehicle fuel economy standard scheme. On this basis, the estimated benefits in terms of CO_2 and fuel reductions are:

- a 2.4 - 2.5 percent cumulative reduction in CO_2 emissions from business-as-usual levels by 2025
- a 2.4 - 2.5 percent cumulative reduction in fuel consumption from business-as-usual levels by 2025.

Further details are provided in Appendix 2.

QUESTIONS

19. How well do you think the proposed schemes will contribute to CO_2 reductions?

20. What other benefits, costs and influencing factors should we consider?

21. What would be the implications of the proposed schemes for you? Please state whether you are an importer, consumer or motor trader etc.

22. How does the above assessment of the benefits and costs affect your preference or view of the proposed implementation options?

23. Do you have any other comments to make on the proposed standard and implementation options?

24. Do you have any other information that may assist us in assessing the options?

APPENDIX 1: ASSESSMENT OF THE OPTIONS TO IMPROVE THE FUEL ECONOMY OF VEHICLES ENTERING THE NEW ZEALAND FLEET

Scenario	Assumed uptake of 170gkm by 2015	Anticipated emission levels for light vehicles entering the fleet CO_2 emission level (Euro test level) by 2015						
		New petrol	New diesel	Used petrol	Used diesel	Average petrol	Average diesel	Overall average
A. Status quo or business as usual		197.4	213.0	179.5	238.6	186.6	214.5	**190.0**
B. Education only	**10%**	194.6	208.7	178.5	231.7	185.0	210.1	**188.0**
C. Differential first registration	**80%**	175.5	178.6	171.9	183.8	173.3	178.9	**174.0**
D. Voluntary standard	**20%**	191.9	204.4	177.6	224.9	183.3	205.6	**186.0**
E. Minimum Fuel Economy Standard (170g standard achieved)	100%	170.0	170.0	170.0	170.0	170.0	170.0	**170.0**
F. Fuel economy standard								
i. Tradable credits	**90%**	172.7	174.3	171.0	176.9	171.7	174.5	**172.0**
ii. Vehicle Fuel Economy Standard (VFES)	**80%**	175.5	178.6	171.9	183.8	173.3	178.9	**174.0**
iii. Registered importer	**90%**	172.7	174.3	171.0	176.9	171.7	174.5	**172.0**
iv. Industry code of compliance & alternative of Tradable Credit scheme	**83%**	174.8	177.6	171.6	181.3	172.9	177.8	**173.5**
v. Industry code of compliance & alternative of VFES scheme	**80%**	175.5	178.6	171.9	183.8	173.3	178.9	**174.0**

NB: Assumes no change in volume of import levels from business-as-usual.

APPENDIX 2: COMPARISON OF BENEFITS
(Source: Ministry of Transport 2007)

2006 Levels					
	Estimated CO_2 emission Kilotonnes	**Estimated fuel consumption Million litres**	**Estimated Kyoto compliance cost (@US$11.90/t$CO_2$) NZ$m**	**Estimated fuel cost (excl taxes) NZ$m**	**Estimated annual *social cost of health impact* NZ$m**
2006 levels	**7,303**	**3,102**	***$139***	***$2,722***	***$566***

Business as usual cumulative levels from 2008 to 2015 and 2025 (Scenario A)					
From 2008 to	**Cumulative CO_2 emission Kilotonnes**	**Cumulative Fuel consumption Million litres**	**Cumulative Kyoto compliance cost (US$11.90/t$CO_2$) (at PV) NZ$m**	**Cumulative fuel cost (excel tax) (at PV) NZ$m**	**Cumulative social cost of health impact (at PV) NZ$m**
2015	55,795	23,708	*$834*	*$17,613*	*$3,441*
2025	129,759	55,077	*$1,506*	*$34,827*	*$6,954*

- Fuel cost estimates are based on factor costs, exclusive of taxes and levies, and take into account forecasted movements in oil prices and exchange rates. The estimates have been converted to present values at a discount rate of 6 percent per annum.
- Kyoto compliance cost estimates are based on US$11.90 per tonne of CO_2, as valued by Treasury, and take into account forecasted movements in exchange rate. The estimates have been converted to present values at a discount rate of 6 percent per annum.

APPENDIX 2 CONTINUED…

OPTIONS: CUMULATIVE LEVELS FROM 2008 TO 2015 AND TO 2025

Estimates below include some increase in VKT or reduction in scrappage in order to maintain mobility.

From 2008 To	Cumulative CO_2 emission reduction Kilo tonnes	Cumulative fuel consumption reduction Million litres	*Cumulative Kyoto compliance cost reduction (at present value) NZ$m*	*Cumulative fuel cost reduction (excl taxes) (at present value) NZ$m*	*Cumulative reduction of social cost health impact (at present value) NZ$m*
	Scenario B: Education only				
2015	57	24	*$1*	*$17*	*$3*
	0.1%	*0.1%*	*0.1%*	*0.1%*	*0.1%*
2025	246	102	*$3*	*$61*	*$12.4*
	0.2%	*0.2%*	*0.2%*	*0.2%*	*0.2%*
	Scenario C: Differential first registration				
2015	478	199	*$6*	*$140*	*$28*
	0.9%	*0.8%*	*0.8%*	*0.8%*	*0.8%*
2025	3,537	1,462	*$34*	*$828*	*$171.7*
	2.7%	*2.7%*	*2.2%*	*2.4%*	*2.5%*
	Scenario D: Voluntary standard				
2015	117	49	*$2*	*$34*	*$7*
	0.2%	*0.2%*	*0.2%*	*0.2%*	*0.2%*
2025	571	237	*$6*	*$140*	*$28.6*
	0.4%	*0.4%*	*0.4%*	*0.4%*	*0.4%*
	Scenario F: Minimum fuel economy standard (170g)				
2015	600	251	$8	$176	$35
	1.1%	*1.1%*	*1.0%*	*1.0%*	*1.0%*
2025	4,658	1,926	$44	$1,085	$225
	3.6%	*3.5%*	*2.9%*	*3.1%*	*3.2%*

APPENDIX 2 CONTINUED…

Fuel economy standard implementation options: Cumulative levels from 2008 to 2015 and 2025

Below estimates include some increase in vehicle kilometres travelled or reduction in scrappage in order to maintain mobility.

From 2008 to	Cumulative CO_2 emission Reduction Kilo tonnes	Cumulative fuel consumption reduction Million litres	Cumulative Kyoto compliance cost reduction (at present value) NZ$m	Cumulative fuel cost reduction (excl taxes) (at present value) NZ$m	Cumulative reduction in social cost of health impact (at present value) NZ$m
	i. Tradable Credits				
2015	539	225	$7	$158	$31
	1.0%	*0.9%*	*0.9%*	*0.9%*	*0.9%*
2025	4,093	1,692	$39	$955	$198
	3.2%	*3.1%*	*2.6%*	*2.7%*	*2.9%*
	ii. Vehicle Fuel Economy Standard				
2015	478	199	*$6*	*$140*	*$28*
	0.9%	*0.8%*	*0.8%*	*0.8%*	*0.8%*
2025	3,537	1,462	*$34*	*$828*	*$172*
	2.7%	*2.7%*	*2.2%*	*2.4%*	*2.5%*
	iii. Registered Importers				
2015	539	225	$7	$158	$31
	1.0%	*0.9%*	*0.9%*	*0.9%*	*0.9%*
2025	4,093	1,692	$39	$955	$198
	3.2%	*3.1%*	*2.6%*	*2.7%*	*2.9%*
	iv. Industry Code of Compliance		**(with Tradable Credits as the regulatory alternative)**		
2015	362	151	*$5*	*$106*	$21
	0.6%	*0.6%*	*0.6%*	*0.6%*	*0.6%*
2025	3,291	1,360	*$31*	*$762*	$158
	2.5%	*2.5%*	*2.0%*	*2.2%*	*2.3%*
	v. Industry Code of Compliance		**(with Vehicle Fuel Economy Standard as the regulatory alternative)**		
2015	348	146	*$5*	*$102*	$20
	0.6%	*0.6%*	*0.6%*	*0.6%*	*0.6%*
2025	3,154	1,303	*$30*	*$730*	$152
	2.4%	*2.4%*	*2.0%*	*2.1%*	*2.2%*

APPENDIX 3: WHAT HAPPENS OVERSEAS?

Country / Region	Is it Voluntary (V) or Mandatory (M)?	What is measured?	How is it measured?	What is the target?	What drive cycle test is it based on?	How is it applied?
Japan	M	Fuel	km/ℓ	National passenger car fleet target: 2010: 23 percent over 1995 baseline (13.6 km/ℓ) 2015: 23.5 percent over 2004 baseline (16.8 km/ℓ)	JC08	Two tiered: 1. By manufacturer - average of vehicles in weight-class must not fall below stated target for the class 2. Average across new vehicle fleet 3. 16 classes for passenger cars; separate standards for small buses; mini/light/medium freight vehicles (up to 3.5 tonnes)
European Union	V→M	CO_2	g/km	2008: 140 g CO_2/km (M1) 2015: 125 g CO_2/km (M1) 160 g CO_2/km (N1)	NEDC	Average across new vehicle fleet in two vehicle classes: M1=passenger vehicles comprising eight seats or less N1=vehicles for carriage of goods, 3.75 tonnes or less
China	M	Fuel	ℓ/100-km	Phase I: July 2005 Phase II: Jan 2008 (Vehicles in production – one year delay)	NEDC	Standard is a *maximum* fuel consumption level for each vehicle in a weight class: 16 weight-based classes (curb mass) – separate for manual and automatic
California	M	Greenhouse Gases	grams/mile	Target shifts each year from 2009-2016, e.g. for <1.7 t vehicles: 2009 - 201 g CO_2/km 2013 - 141 g CO_2/km 2016 - 127 g CO_2/km For large light duty trucks and SUVs: 2016 – 208 g CO_2/km	US CAFE	By manufacturer to two vehicle classes: 1. passenger cars/small light duty trucks (<1.7 t) 2. large light duty trucks (including SUVs up to 4.5 t)
United States	M	Fuel	mpg	Cars: Since 1980s, 27.5 mpg (being extensively reviewed) Light trucks: Since 2004 (Based on vehicle footprint)	US CAFE	By manufacturer, by three vehicle fleet types: 1. imported 2. domestically produced 3. light trucks (now include SUV) – up to ≈4.5 t
Australia	V	CO_2	g/km	2010: 222 g CO_2/km	NEDC	Average across new vehicle fleet (up to 3.5 tonnes)
Taiwan, China	M	Fuel	km/ℓ	Eight vehicle classes Engine size-based/reference weight-based	US CAFÉ NEDC	By individual vehicle make and model, whether imported or locally manufactured

APPENDIX 3 CONTINUED...

Country / Region	Are there any exclusions or exemptions?	What compliance mechanism(s) are in place?	What are the penalties for non-compliance?	Comments
Japan	Vehicles using alternative fuels and other vehicles not type-designated (due to their small market shares)	**Debit/credit system** - Manufacturer can transfer 'excess' to another category	Public naming 'Orders' (nominal) charge	- tax on older vehicles (to discourage their retention in the fleet)
European Union	- Agreements signed with European, Japanese and Korean manufacturers - Small volume manufacturers (<2,000 vehicles produced per year *worldwide*) - two and three wheeled vehicles - 'special purpose vehicles': motor caravans; hearses and ambulances	V: none M: not decided	V: none M: not decided	- some countries have a graduated registration tax (higher tax for larger-engined vehicles)
China	None identified	Charges / penalties proposed	Proposed but not yet passed	
California	- Compliance waived until 2016 for small/low/intermediate volume manufacturers selling <60,000 vehicles and engines per year *in California* - light duty trucks certified to a specified NOx standard (intended to cover trucks used for commercial purposes) are excluded	**Tradable credit system:** **-** Credits / debits for exceeding / being below requirements - up to five years to erase 'debit'; - trading between classes and between manufacturers (not yet active)	Civil penalties under Health & Safety Code	
United States	Until recently, large passenger vehicles (up to 4.5t) were not included Manufacturers producing <10,000 vehicles per year may apply for exemption Provisions in statute for manufacturers to apply to exclude emergency vehicles from their fleet average, including ambulances, ambulance-hearses, vehicles used for law enforcement, and any other specially designated by Secretary or Transportation	**Debit/credit system**: - Credits for exceeding requirements - Manufacturer can apply credits up to three years forward or three years prior / back to reach compliance within particular fleet	$5.50 per tenth of a MPG under the target value times total volume of vehicles affected for given model year.	- currently considering having a single target for the combined passenger car and light truck fleets
Australia	None identified	None	None	
Taiwan, China	None identified	**De-certification:** Regular re-testing of vehicles – conformity certificate annulled if failed		

APPENDIX 4: PETROL TO CO_2 CONVERSION AND EURO FUEL CYCLE COMPUTATION

The standard will be calculated on the basis of 2296.1 gm CO_2/l for petrol, 2605.1 gm CO_2/l for diesel and 1581 gm CO_2/l for LPG only vehicles.

The LPG value computation is:

Factor	Source
MJ/litre = 26.44	The 2005 value from the MED Energy Data File Sept 2006
Kt CO_2/PJ = 60.4	MED Greenhouse Gas Report June 2007
Oxidation factor = 0.99	MED methodology, unpublished
gm of CO_2 per litre = 1581.0	MJ/litre x Kt CO_2/PJ x oxidation factor

The diesel value computation is:

Factor	Source
MJ/litre = 37.86	The 2005 value from the MED Energy Data File Sept 2006
Kt CO_2/PJ = 69.5	MED Greenhouse Gas Report June 2007
Oxidation factor = 0.99	MED methodology, unpublished
gm of CO_2 per litre = 2605.0	MJ/litre x Kt CO_2/PJ x oxidation factor

Petrol to CO_2 conversion
The petrol value is based on the 2005 regular and premium sales mix:

Factor	Source
Regular fuel	
MJ/litre = 34.86	The 2005 value from the MED Energy Data File Sept 2006
Kt CO_2/PJ = 66.2	MED Greenhouse Gas Report June 2007
Oxidation factor = 0.99	MED methodology, unpublished
2005 sales = 2570.3 m litres	
gm of CO_2 per litre = 2284.7	MJ/litre x Kt CO_2/PJ x oxidation factor
Premium fuel	
MJ/litre = 35.3	The 2005 value from the MED Energy Data File Sept 2006
Kt CO_2/PJ = 67	MED Greenhouse Gas Report June 2007
Oxidation factor = 0.99	MED methodology, unpublished
2005 sales = 647.3 m litres	
gm of CO_2 per litre = 2341.4	MJ/litre x Kt CO_2/PJ x oxidation factor
2005 petrol mix	
gm of CO_2 per litre = 2296.1	(2570.3 x regular gm/l + 647.3 x premium gm/l)/(2570.3+647.3)

Euro fuel cycle computation
The European Drive Cycle can be reported in terms of an urban drive cycle value and an extra urban drive cycle value. The methodology used to combine these values into a single combined European fuel cycle value is:
Euro FC = (4.052 x urban + 6.955 x FC exurban)/11.007

APPENDIX 5: APPLICABLE VEHICLE CLASSES

The proposed fuel economy standard would apply to all light passenger and light goods motor vehicles of 3.5 tonnes, gross vehicle mass, or less. It will not apply to cycles, mopeds or motorcycles.

This would include the following Land Transport New Zealand vehicle classes:

Class	Description
MA (Passenger car)	A passenger vehicle (other than a Class MB or Class MC vehicle) that has not more than nine seating positions (including the driver's seating position).
MB (Forward control passenger vehicle)	A passenger vehicle (other than a Class MC vehicle): • (a) that has not more than nine seating positions (including the driver's seating position) • (b) and, in which the centre of the steering wheel is in the forward quarter of the vehicle's total length.
MC (Off-road passenger vehicle)	A passenger vehicle, designed with special features for off-road operation, that has not more than nine seating positions (including the driver's seating position), and that: • (a) has four-wheel drive • (b) and, has at least four of the following characteristics when the vehicle is un-laden on a level surface and the front wheels are parallel to the vehicle's longitudinal centre-line and the tyres are inflated to the vehicle manufacturer's recommended pressure: (i) an approach angle of not less than 28 degrees (ii) a break over angle of not less than 14 degrees (iii) a departure angle of not less than 20 degrees (iv) a running clearance of not less than 200 mm (v) a front-axle clearance, rear-axle clearance, or suspension clearance of not less than 175 mm.
MD 1	An omnibus that has a gross vehicle mass not exceeding 3.5 tonnes and not more than 12 seats.
MD 2	An omnibus that has a gross vehicle mass not exceeding 3.5 tonnes and more than 12 seats.
NA (Light goods vehicle)	A goods vehicle that has a gross vehicle mass not exceeding 3.5 tonnes.

APPENDIX 6: DIFFERENTIAL REGISTRATION

This appendix details an alternative to a fuel economy standard. Instead of attempting to regulate the supply of vehicles, it would work by directly charging consumers of vehicles, or applicants for vehicle registration, for the purchase and subsequent registration of vehicles with poor fuel economy. This option has been considered by Ministry of Transport officials but has not been pursued for reasons provided below. It is presented here for the information of readers of this discussion document.

HOW THE SCHEME WOULD WORK

This option would add a charge to the price of a vehicle's first registration in New Zealand if the vehicle is determined to have poor fuel economy. The registration fee could be higher for the less economic vehicles, scaling down to a lower fee for more economic vehicles.

Light vehicles in New Zealand are currently already subject to fees at the time they are first registered (first registration) and an ongoing licence fee, renewed annually or for any period between three and 12 months. These fees are for the purpose of safety and enforcement. These fees could potentially be amended to also send a signal to consumers about the fuel economy, or CO_2 emissions intensity of the vehicles, they're intending to register.

WHY THE DIFFERENTIAL REGISTRATION SCHEME HAS BEEN DISMISSED

A review of international experience with differential pricing schemes such as the one suggested here, shows that these sorts of schemes are seen as an important part of government policy to improve the average fuel economy of vehicles being purchased. However, the ability of these schemes to work depends on the size of fee imposed.

Analysis of this option has shown that it would result in significant consumer welfare costs, particularly as the registration and/or licensing fees would need to be set at high levels to be effective. It would impose a direct cost on consumers who need to purchase a larger vehicle that has potentially poor fuel economy for family or business reasons.

A regulated fuel economy standard seeks to influence supply of vehicles into the fleet, and would impose a cost on vehicle importers who have a choice of the sorts of vehicles they can source from manufacturers or used vehicle markets.

Therefore this differential registration scheme has not been further pursued as a regulated fuel economy standard is seen as preferable. Differential registration would involve imposing a direct cost on consumers, some of whom have little choice in the sorts of vehicles available to them and that meet their needs. A regulated fuel economy standard imposes a cost on importers who can avoid that penalty, or charge, by means of taking advantage of the choice available to them.

APPENDIX 7: REGISTERED IMPORTER SCHEME

This appendix details a third implementation option which has been considered by officials but has not been pursued because of the complexity involved in making such a scheme work. It is presented here for the information of readers of this discussion document.

HOW THE SCHEME WOULD WORK

A registered importer scheme would require importers to be identified and registered. Registered importers would need to hold a licence to import, and the licence requirement would include the need to meet the fuel economy standard, in terms of grams of CO_2/km, by ensuring the vehicles they import to New Zealand achieve on average the fuel economy standard or better each year. An annual registration bond payment would be required.

At the end of each year registered importers would be assessed by means of averaging the fuel economy, grams of CO_2/km, ratings attributed to their vehicles on entry to New Zealand. The bond would be refunded if the standard was achieved, and withheld if the standard was not achieved, or partially withheld; depending on the amount the standard is exceeded. If a registered importer was required to forfeit its annual bond three times within any six years, the registration status and licence would be revoked.

This option would enable importers to group together to register as an importer, or work through a registered import broker.

The approach is illustrated in the main body of this discussion document. This shows an importer that imports three vehicle types: A, B and C, with emission intensities of 240g, 170g and 130g CO_2/km respectively. Columns two and three show the assumed starting position; the weighted average emissions intensity across 225 vehicles is 180g/km. The importer would face forfeiting their bond payment as their average emissions intensity does not meet the standard (by 10g). Columns four and five show how a change in the type of vehicles imported can ensure the standard (170g/km) is met. Reducing the number of ‘type A’ or 240g/km vehicles by 25 and increasing the number of ‘type C’ vehicles by the same number, results in the average emissions intensity falling to below the standard of 170g/km.

The registered importer scheme is based on the forfeiture of a bond for failure to meet the standard, and the loss of rights to import vehicles via the loss of registration status. The total bond payable up front, limits the extent of the potential loss to the importer in any one year.

The bond would be payable annually, and the size of the bond would be determined by the registered importer estimating the number of vehicles they will import that year. If the importer then determines during the year that they will exceed their original estimate, they will need to pay an additional bond amount, commensurate with the new estimate, before the additional vehicle(s) can be imported.

APPENDIX 7 CONTINUED…

If the importer does not import as many vehicles as originally expected and paid for in the bond payment, a refund would be provided at the end of the year to compensate for the bond payment made in excess of the actual number of vehicles imported.

Bond payments would be refunded at the end of the year if the average fuel economy for the importer's fleet meets or betters the standard.

The bond would be forfeited:

- in its entirety if the importer's fleet failed to meet the standard by more than 50g on average
- three-quarters of the bond would be forfeited if the standard was exceeded by between 30g and 50g
- half of the bond would be forfeited if the standard was exceeded by between 10g and 30g
- one quarter of the bond would be forfeited if the standard was exceeded by 10g or less.

Table 6: Bond forfeiture rate

Import fleet exceeding the standard	Percentage of bond forfeited
>50g	100%
31-50g	75%
11-30g	50%
1-10g	25%

If an importer failed to meet the standard in any three years within a six-year period, they would lose registration status and the right to import vehicles.

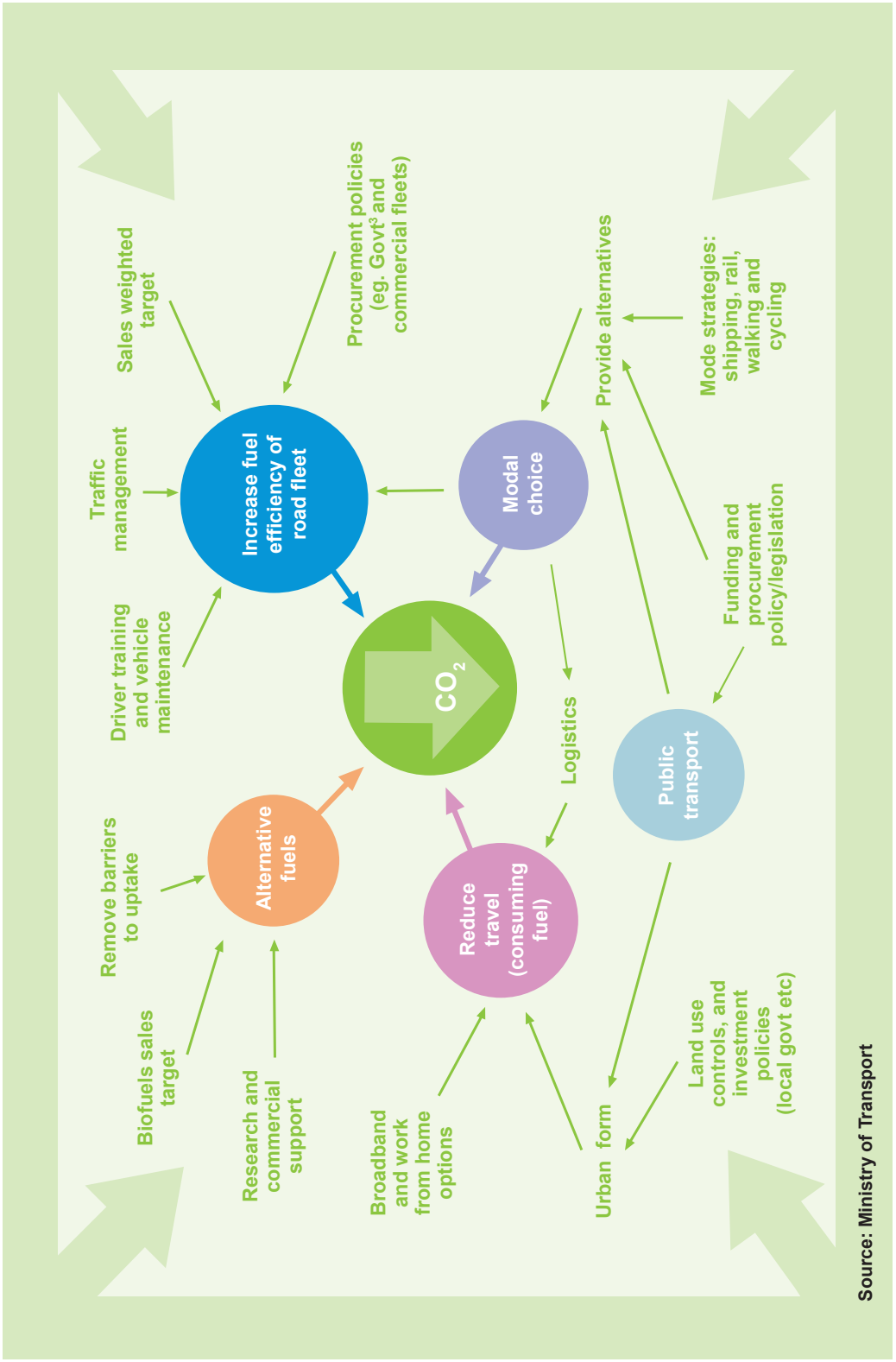
WHY THE REGISTERED IMPORTER SCHEME HAS BEEN DISMISSED

This option would be costly to administer, in terms of the bond payments, and auditing and ensuring of compliance. A complex system would need to be established to ensure that all potential loopholes were not exploited i.e. preventing a de-registered company which has breached its permitted level from re-registering under a new name.

This scheme would also present a number of significant policy design challenges. It would be complex to introduce, and would likely require entirely new primary legislation to govern and enable the registration of importers. Because the scheme is based on bond payments, forfeitures and the threat of de-registration, there would be difficulties in dealing with the thousands of small importers who only bring in up to four cars per year. The 'up front bond' would have to be very large in some cases to cover the likelihood of not meeting the standard in any one year. This would present financial challenges to many companies.

For these reasons, this option has not been pursued further.

APPENDIX 8: MEASURES TO REDUCE LAND TRANSPORT GREENHOUSE GAS EMISSIONS (FIGURE 7.3 OF THE NEW ZEALAND ENERGY STRATEGY)



Source: Ministry of Transport

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