

**NEW ZEALAND BUSINESS COUNCIL FOR SUSTAINABLE DEVELOPMENT**

**PROPOSAL FOR:**

**INCENTIVISING GREEN VEHICLES**

**16 NOVEMBER 2005**

The Business Council dedicates this report to the memory of the late Fraser Moors, the environmental manager for Sanford Fisheries, who tragically died after competing in the cross-harbour swim. We would like to pass on our condolences to his family, friends and work colleagues. We would also like to specifically acknowledge the time and commitment that Fraser Moors provided to this project.

## **ACKNOWLEDGEMENTS**

The Business Council would like to acknowledge the following organisations for their contribution to the project:

### **Project Team:**

**CITYCARE LIMITED**

**GHD PTY LIMITED**

**HONDA NEW ZEALAND LIMITED**

**IAG NZ LIMITED**

**INTERFACE NZ LIMITED**

**SANFORD LIMITED**

**TOYOTA NEW ZEALAND LIMITED**

**TRANSFIELD SERVICES LIMITED**

**URGENT COURIERS LIMITED**

**URS NEW ZEALAND LIMITED**

**VODAFONE NZ LIMITED**

**WAIKATO MANAGEMENT SCHOOL**

**WATERCARE SERVICES LIMITED**

### **Other Contributors:**

**AUCKLAND REGIONAL COUNCIL**

**LEASEPLAN LIMITED**

**SUSTAINABLE BUSINESS NETWORK**

## **EXECUTIVE SUMMARY**

With an average vehicle age of 11.7 years and around 2.6 million passenger vehicles in use, New Zealand has one of the oldest fleets and highest car ownership rates in the developed world. As a result, New Zealand is facing increased growth in vehicle related emissions. This has implications for air quality, health and costs related to meeting our climate change CO<sub>2</sub> reduction targets.

Vehicle related emissions are a result of old technology and inefficient energy use. The most sustainable vehicle options are those that offer a more complete combustion process, thereby reducing the proportion of greenhouse gases emitted, whilst being as fuel efficient as possible to reduce the total quantity of emissions produced. Considering these two requirements, the Business Council has made recommendations for policy changes and economic incentives that would increase the uptake of low emission, fuel efficient vehicles. These recommendations are summarised below.

## **PROPOSED POLICY CHANGES**

### **New Vehicle Emission Standards**

Change the New Zealand Emissions Standard for petrol vehicles so that they must meet Euro IV, ADR 79/02 or Japan 02/04 emissions standards by 2008 for new models and by 2010 for existing models. Change the New Zealand Emissions Standard for diesel vehicles so that they must meet Euro V, ADR 80/02 or Japan JE05 international emissions standards by 2010 for new models and by 2011 for existing models.

It should be noted that this timing is in line with the Australian timing for introducing Euro IV for new petrol vehicles and Euro V for new diesel vehicles.

### **ECONOMIC INCENTIVES:**

The Business Council recommends that the following economic incentives be put into place for passenger vehicles:

#### **New Vehicles:**

Provide cash grant incentives for fuel efficient vehicles and a penalty to less fuel efficient vehicles:

\$3,000 grant for vehicles achieving a fuel economy rating of 6.5 L/100km for petrol and 6.0 L/100km for diesel.

\$1,000 grant for vehicles achieving a fuel economy rating of 6.6 – 8.5 L/100km for petrol and 6.1 – 7.9 L/100km for diesel.

\$2,000 penalty for vehicles with a fuel economy of worse than 12 L/100km for petrol and worse than 11.1 L/100km for diesel vehicles.

## **Used Imports:**

Provide cash grant incentives for fuel efficient vehicles and apply a penalty to less fuel efficient vehicles:

\$1,000 grant for vehicles achieving a fuel economy rating of 6.5 L/100km for petrol and 6.0 L/100km for diesel, provided those vehicles are no more than 7 years old.

\$500 grant for vehicles achieving a fuel economy rating of 6.6 – 8.5 L/100km for petrol and 6.0 – 7.9 L/100km for diesel, provided those vehicles are no more than 7 years old.

\$1,000 penalty for vehicles with a fuel economy of worse than 12 L/100km for petrol and worse than 11.1 L/100km for diesel vehicles and/or more than 7 years old at the time of first registration in New Zealand.

96 percent of New Zealand's used imports originate from Japan and the Business Council understands that the emission standard that came into force in Japan in 2000 was equivalent to Euro IV. Therefore, from 2008 onwards all used imports that are sourced from Japan and aged 7 years old or less should meet emission standards that are equivalent to Euro IV, which correlates to the proposed policy change for New Zealand new vehicles.

An additional benefit of reducing the age of used imports to 7 years or less is that the safety features of those vehicles are also likely to be increased.

## **Transition for introducing Economic Incentives**

The Business Council recommends that Government backdate the economic incentives for two years, for those vehicles that meet the specified criteria. If this does not happen then the early adopters of the preferred vehicles will be penalised and the recent purchasers of the less favoured vehicles would be rewarded.

## **OTHER ACTIONS:**

Other actions recommended by the Business Council to increase the uptake of low emission, fuel efficient vehicles are:

- Reduce the sulphur content of diesel to 10 ppm (or less) by January 2009 and the sulphur content of petrol to 50 ppm (or less) by January 2008, with a future commitment to 10 ppm sulphur within petrol by January 2009.

This policy change is required to obtain the best benefits from low emission vehicles, as e.g. Euro IV vehicles are designed to run on petrol with 50 ppm sulphur content.

- Establish a New Zealand vehicle website database, which provides both fuel economy and emission ratings for new and used vehicles.

Ratings information would be provided by manufacturers or importers, and such information would be certified by the parent company or the deregistration certificate from the country of origin.

- Publicly undertake to encourage the replacement of central and local Government fleet vehicles with fuel efficient and low emission vehicles (where fit for purpose options are available).
- New Zealand Prime Minister to write to top 200 companies and government organisations requesting their support for efforts to improve air quality and reduce CO<sub>2</sub>, by adding at least 1 vehicle to their fleet that would achieve a fuel economy of 6.5 L/100km for petrol vehicles or 6.0 L/100km for diesel vehicles<sup>1</sup> and adding such vehicles to their recommended vehicle list.
- Consider allowing the most fuel efficient, low emission vehicles to use bus lanes. Assuming that the New Zealand emissions standard is tightened to Euro IV (or equivalent/better) for petrol and diesel vehicles, this exemption could be offered for vehicles with a fuel economy of 6.5 L/100km or better.

This could be authorised by approved stickers displayed on eligible vehicles.

- Cabinet Ministers to take a lead by selecting fuel efficient/low emission vehicles when they next select their next self-drive car.

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<sup>1</sup> This proposed action assumes that the NZ Emissions Rule will be amended to require that petrol vehicles meet Euro IV, ADR 79/02 or Japan 02/04 emissions standards by 2008 for new models and 2010 for existing models and that diesel vehicles will be required to meet Euro V, ADR 80/02 or Japan JE05 international emissions standards by 2010 for new models and 2011 for existing models.

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## **INTRODUCTION**

### **Project Initiation**

In 2004 the Business Council for Sustainable Development (the Business Council) was approached by one of its members, Robb Donze of InterfaceNZ Limited, with a request to investigate ways to remove economic barriers for the 'greening' of business vehicle fleets. This need was identified when InterfaceNZ found that the costs to replace their existing fleet with low emission vehicles (in this case, hybrid vehicles) would be significantly higher than for standard models.

InterfaceNZ sells floor covering made from recycled materials and Rob Donze has a strong personal commitment to sustainability. Traditionally, InterfaceNZ, like many New Zealand SMEs, has purchased vehicles from the ex-lease / second-hand market, but discovered that it was rare for low emission vehicles to be available from this source. When Robb Donze investigated the cost of purchasing new low emission vehicles he discovered that such a move would increase his annual Fringe Benefit Tax (FBT) considerably. He asked the Business Council to investigate options with the Government to reduce barriers and in particular to ask them to consider reducing the FBT when companies opted for low emission vehicles.

The Business Council enthusiastically agreed to support a membership based project to examine options to increase the take up of low emission vehicles by fleet buyers, as not only would it green the business fleet but would also introduce more of such vehicles into the second-hand market for uptake by either SMEs or by the general public. The Business Council expanded the focus of the project to look beyond FBT reductions and at a range of economic incentive mechanisms that have been introduced overseas to meet similar objectives.

One of our members, URS New Zealand, kindly seconded an engineer on their staff, Joanne Koppel, to provide the secretariat for the project.

## **KEY OBJECTIVES & PROJECT DRIVERS**

The most sustainable vehicle options are those that offer a more complete combustion process, thereby reducing the proportion of greenhouse gases emitted, whilst being as fuel efficient as possible to reduce the total quantity of emissions produced. Considering these two requirements, the Business Council focused upon incentives and policy changes that would increase the uptake of low emission, fuel efficient vehicles.

An increase in the use of fuel efficient, low emission vehicles would:

- help assist New Zealand meet its Kyoto obligations, by reducing CO<sub>2</sub> emissions;
- improve air quality, by reducing harmful gases and particulates emitted from vehicles; and
- reduce transport costs, by reducing requirements for non-renewable fuels (an increasingly important benefit as petrol prices rise).

These objectives are discussed in further detail below.

### **New Zealand's Kyoto Obligations**

As a signatory to the Kyoto Protocol, New Zealand committed to a zero increase in carbon emissions over 1990 levels (by the end of the first commitment period in 2012), in the expectation of being able to live within that constraint. However, since then, a number of mainly favourable trends within New Zealand have served to make that target unlikely to be achieved. The recent release of the Government's own projections has confirmed this.

The trends affecting New Zealand's ability to meet its carbon reduction targets include:

- Economic growth of 3.7 a year since 1993 has boosted consumption to levels above those expected when the protocol was signed.
- Favourable climate and good dairy wool prices combined with a relatively low dollar have expanded the dairy industry faster than had been expected.
- The relatively attractive returns from grass based agricultural products have slowed the growth of emission offsetting carbon sinks in the form of forests.
- Changes to the way scrub land is accounted for and the qualification of forests planted on land that was scrub in 1990, have lead to a reduction of 19.8 Mt CO<sub>2</sub>e of allowable sink offset.
- Higher economic growth has disproportionately increased the use of carbon based transport fuels, with a resulting increase in emissions.

It is now acknowledged that New Zealand is at risk of exceeding its Kyoto target by over 36 million tonnes of carbon dioxide during the treaty's first commitment period. With the cost of purchasing carbon credits on the international market expected to be over \$25 per tonne, this inability to meet Kyoto targets could result in a significant cost to New Zealand.

While New Zealand has low emission levels by developed world standards, our obligations make us exposed because of the particular sources of New Zealand's greenhouse gas emissions. With almost half of our emissions coming from the agriculture, it is difficult to see a quick fix in that area given the challenge of reconfiguring the biological process that produces methane in ruminant animals. The extended life of methane in the atmosphere will also be a challenge. Compared with many developed

countries only 10% of our emissions come from industry so the potential for meeting targets through improved manufacturing performance seems somewhat restricted. Similarly for the energy sector where capital cycles are extremely long. Many of our fossil fuel generation plans are likely to be still operating in 50-100 years.

It is recognised that the high performance level of the New Zealand economy has resulted in a much greater increase in emission levels than was previously predicted. Much of the increased growth has been from the transport sector<sup>2</sup> and this needs to be addressed as quickly to minimise the future cost to New Zealand for the purchase of carbon credits.

### **Opportunities to Reduce Emissions from the Transport Sector**

The transport sector offers the greatest short-term opportunities to reduce emissions for the following reasons:

- as companies continue to upgrade their fleets (every 2-5 years) ex-business vehicles would filter down to smaller businesses and the public, reducing the emission profile of the New Zealand fleet;
- the capital cycle is such that many vehicles will be scrapped within 10-20 years, resulting in older, higher emission vehicles needing to be replaced with newer, lower emission models, again reducing the emission profile of the New Zealand fleet;
- the conversion to low emission, fuel efficient vehicles would not require major lifestyle changes, and would reduce running costs as petrol prices increase;
- an increased uptake of low emission, fuel efficient vehicles would place pressure on vehicle suppliers to introduce other models into New Zealand that would fit within that category. There are a number of such vehicles that are available overseas but are not yet sold in New Zealand, including other varieties of hybrid vehicles and those that operate on higher-standard diesel, biodiesel and other renewable fuels;
- we can source fuel efficient / low emission vehicles from anywhere in the world because our annual purchases will only be a tiny proportion of the world's production of such vehicles (particularly relevant to used import purchases).

### **Adverse Health Effects of Vehicle Emissions**

The report commissioned by the Ministry of Transport on health effects due to motor vehicle pollution in New Zealand (NIWA, 2002) concluded that annual vehicle related particulate emissions directly result in the premature death of 399 New Zealanders along with a reduction in length of life for a further 200 elderly New Zealanders. However, particulates are only one type of vehicle emissions with proven adverse health effects. Other harmful by-products are carbon monoxide, nitrogen dioxide, sulphur dioxide, hydrocarbons and ozone.

The health effects of these by-products are disturbing from not only a social perspective, but also result in a significant burden on the public health system. Earlier this year, in a speech to the motor trade industry, Hon Judith Tizard stated that the cost to the Crown Account to cover the harmful health effects of vehicle emissions is about \$442 million<sup>3</sup> a year, with \$149 million due to passenger vehicles. By increasing the proportion of fuel

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<sup>2</sup> The increase in transport related emissions is estimated at 7.4 %, which is the largest single contributing source of the 22.5 % emissions increase above 1990 levels.

<sup>3</sup> Surface Transport Costs and Charges. Booz Allen Hamilton with Institute for Transport Studies, University of Leeds and associated consultants for the Ministry of Transport. March 2005.

efficient, low emission vehicles, monies that would otherwise be used to combat adverse health effects of motor vehicle pollution could be used to either incentivise the uptake of such vehicles or to fund more health services. Resources, such as medical staff time and equipment, would be freed up for use elsewhere within the healthcare system.

### **Adverse Environmental Effects of Vehicle Emissions**

New Zealanders pride themselves on our clean, green image which holds significant value for the country's economy, particularly within respect to the tourism and the agricultural sector. Air quality is an important aspect of our clean green image. However, the apparent increase in smog levels over recent years, particularly within the larger cities, presents a significant threat to both our air quality and international reputation. Smog production by vehicles is of increasing concern as the New Zealand fleet continues to age, with older vehicles being retained for use.

### **National Environmental Standards - Air Quality**

National environmental standards to improve air quality came into effect on 1 September 2005, including requirements for regional councils to reduce pollution from fine particulates to a predetermined level by 2013. These standards include the setting of maximum levels for carbon monoxide, nitrogen dioxide, ozone and sulphur dioxide in outdoor air, much of which can be produced from vehicle emissions.

This proposal outlines changes in legislation that would require a higher standard of emission technology within vehicles imported into NZ (both new and used vehicles). These changes would assist regional councils in meeting their 2013 targets, particularly in areas such as Auckland where vehicle emissions are a major contributor to current exceedences.

### **Petrol Price Increases**

The current rise in petrol prices is increasing the need for ways to reduce vehicle running costs, be it personal vehicles or those for business use. Should this trend continue it is likely that companies with a significant transport component will need to transfer their increased operating costs on to the consumer. The Business Council recognises that there are a number of factors which may not support a reduction in fuel pricing, and therefore the selection of more fuel efficient vehicles is a key requirement to managing the effects.

The Business Council is also of the opinion that even if petrol prices should increase significantly, other forms of economic incentives are still required in order to make the cost of low emission, fuel efficient vehicles comparable with other 'standard' vehicles typically selected as business vehicles. Costing models used by the Business Council indicate that petrol prices would need to reach around \$4.00 per litre before the cost of a hybrid vehicle becomes comparable to a similar sized standard, non-hybrid vehicle (assumption based on a 4 year net present value calculation and 30,000 kilometres per year per vehicle, refer to Appendix D of this report). Looking at this in an alternative way, vehicles would need to be travelling around 80,000 kilometres per year for the price differential to close, which is a highly unlikely scenario.

## **BACKGROUND INFORMATION**

### **Characteristics of the New Zealand Vehicle Fleet**

New Zealand has one of the highest car ownership rates in the world and has around 2.6 million<sup>4</sup> passenger vehicles in use, of which 231,877 are registered to businesses<sup>5</sup>. The most prominent factors differentiating the New Zealand vehicle fleet from other developed countries are the lack of a local car manufacturing industry, the high level of second-hand vehicle imports and the increasing age of the fleet. Since 1999, the average age of cars has risen by 3.5 percent, with almost half of the fleet between 10 and 30 years old<sup>3</sup> and the average age of a passenger vehicle being around 11.7 years.

Land Transport New Zealand (LTNZ) records show that 228,797 passenger vehicles were first registered in New Zealand in 2004. This included 74,755 new vehicles and 154,042 used imported vehicles, with Japan being the major source of the used imports. Furthermore, 93,772 of those vehicles were registered by businesses, with a breakdown of 42,882 New Zealand new vehicles and 50,890 used imports.<sup>6</sup>

To provide an indication of the typical age of business-owned passenger vehicles, a comparison was made between the total fleet numbers and those vehicles first registered in 2004. Therefore, on the basis that 93,772 vehicles were first registered by businesses in 2004 and 231,877 of the total New Zealand passenger vehicles fleet is registered to businesses, approximately 40 percent of passenger vehicles within the business fleet are less than a year old.

Further background information on the New Zealand vehicle fleet is included within the appendix to this document.

### **Barriers to the Uptake of Fuel Efficient, Low Emission Vehicles**

Potential barriers to the uptake of fuel efficient and low emission business vehicles have been discussed with a number of parties, including businesses that have either investigated or undertaken greening of their vehicles. The Business Council has also surveyed sales and lease managers from Honda, Toyota, the Clean Green Car Company and LeasePlan, to assess what the key barriers are to the uptake of low emission vehicles and to ways in which these barriers may be overcome.

The survey results indicated that barriers to converting to low emission vehicles include economic factors and people's perceptions and/or lack of knowledge. The most common reasons given for not buying or leasing low emission vehicles were:

- a lack of environmental consideration within the decision making process;
- higher capital costs for low emission vehicles (be it perceived or actual); and
- the perception that low emission vehicles offer a limited selection and are less powerful than standard vehicles.

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<sup>4</sup> 2, 615, 418 active passenger vehicles recorded on the motor vehicle register, as at 11/06/2005 (Source: LTNZ, June '05).

<sup>5</sup> 231, 877 passenger vehicles registered by businesses, as at 11/06/2005 (Source: LTNZ, June '05).

<sup>6</sup> Vehicle fleet statistics provided by Land Transport New Zealand (LTNZ).

## **Overseas Examples of Economic Incentives for Low Emission / Fuel Efficient Vehicles**

Overseas examples of incentives for low emission and fuel efficient vehicles were researched in the early stages of this project. Economic incentives used overseas for this purpose include the following examples:

- cash grants – the United Kingdom offers £700 towards the purchase price for new LPG and hybrid vehicles and £1,500 for electric vehicles;
- tax concessions – within the United States, Colorado, Utah and Oklahoma all offer income tax credits for new and converted hybrid vehicles, and a number of states offer partial tax exemptions for businesses tax and state sales tax should such a vehicle be purchased. In the United Kingdom, hybrid vehicles are exempt from the recently introduced London congestion tax.
- In some states of Australia and the United States, registration costs are reduced for vehicles that are more fuel efficient and / or have a smaller engine size.
- In San Jose, California, those vehicles designated as 'clean-fuel' vehicles can park for free in areas of the city centre where other vehicles would be required to pay.

## INCENTIVISING THE UPTAKE OF FUEL EFFICIENT, LOW EMISSION VEHICLES

The survey results for barriers to purchasing low emission and fuel efficient vehicles, and the New Zealand fleet characteristics, indicate that a four-pronged approach is required:

1. Implement policy changes to reduce the number of less efficient, high emission vehicles that will be added to the New Zealand vehicle fleet.
2. Provide economic incentives to remove cost barriers to purchasing fuel efficient, low emission vehicles.
3. Educate the business community (and the wider public) on the benefits and range of fuel efficient, low emission vehicles available, and provide tools to assist with selecting these vehicles.
4. Government to provide leadership by undertaking to convert both Government and SOE<sup>7</sup> business fleets to fuel efficient, low emission vehicles.

The remainder of this section outlines the incentives, policy changes and other actions that the Business Council have proposed to achieve each of these four aims. Details are also provided on the proposed eligibility criteria and recommendations on how these incentives should be introduced. Suggestions are made for both New Zealand new vehicles and used imports.

### 1. POLICY CHANGES

#### 1(a). Policy Change for New Zealand New Vehicles:

The Business Council strongly feels that the New Zealand Emissions Standard needs to align itself much more closely with those currently in place for the European, United States and Japanese vehicle markets. Although the New Zealand standard provides for the introduction for Euro IV (or equivalent) standards for diesel vehicles, there is not yet any reference to Euro IV (or equivalent) requirements for petrol vehicles.

The Business Council recognises that New Zealand emissions policy is influenced by Australian policy (and by the sulphur content of New Zealand fuels). However, the Business Council also understands that the Australian Government is due to revise their own vehicle emissions policy within the near future, with the intention of phasing in the ADR 79/02 standard (based on Euro IV) in 2008 for new models and in 2010 for those vehicle models already in production. The Business Council recommends that the New Zealand emissions standard introduce these same requirements, as outlined below.

#### ***Tighten New Zealand Emissions Standard:***

Change the New Zealand Emissions Standard for petrol vehicles so that they must meet Euro IV/ ADR 79/02/ Japan 02/04 international emissions standards by 2008 for new models and 2010 for existing models. Change the New Zealand Emissions Standard for diesel vehicles so that they must meet Euro V/ ADR 80/02/ Japan JE05 international emissions standards by 2010 for new models and 2011 for existing models.

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<sup>7</sup> State Owned Enterprise

## 2. ECONOMIC INCENTIVES

### *Incentive Value and Derivation:*

After considering a range of economic incentives, including FBT reductions and other forms of tax concessions, the Business Council recommends that a cash grant be introduced to provide incentives for the selection of both new and used imported low emission, fuel efficient vehicles. It is the view of the Business Council that a cash grant will be simpler to implement and track than tax based incentives and could be provided to any purchaser of eligible vehicles, rather than being restricted to tax paying organisations.

The economic incentives discussed below apply to vehicle classes MA (cars) and MC (four wheel drives), but exclude category MB vehicles, which the Business Council understands to be the classification for 'people movers' and vans. The Business Council made these exclusions, not because low emission, fuel efficient people movers and vans are not important, but because they are not currently well served in terms of technology available within New Zealand. It is hoped that once such technology does become available, the proposed incentives for passenger vehicles and four wheel drives could be adapted to suit the MA vehicle category.

A two-tier approach has been proposed for the economic incentives, on the basis that a higher incentive should be offered for the most fuel efficient, lowest emission vehicle options (such as hybrid models) but with more stringent criteria applied, and a lower incentive offered to second tier vehicles that are more widely available, typically cheaper than the tier 1 vehicles but would still be an improvement compared with vehicle models commonly purchased for business fleets and as private cars.

The tier 1 fuel economy criteria, which is shown for the economic incentives below, is aimed at the optimum vehicle option in terms of environmental impacts (based on current vehicle technology available in New Zealand). The tier 2 fuel economy criteria is wide enough to allow a reasonable selection of vehicles from the current market, across all major vehicle suppliers, whilst still encouraging the majority of business fleets to move to a more fuel efficient option.

The value of the economic incentives proposed below for tier 1 new vehicles, were based on a net present value (NPV) assessment that compare the cost of the two hybrid models currently available in New Zealand (Honda Civic Hybrid and Toyota Prius) with vehicles that are most commonly included within a major business fleet.<sup>8</sup> The 'typical' business fleet vehicles used were the Toyota Corolla, Mazda 6 and the Ford Mondeo. Comparing similar sized vehicles, over a four year period, the NPV of a Honda Civic Hybrid is approximately \$5,000 more expensive than the Toyota Corolla and the Toyota Prius is approximately \$6-7,000 more expensive than the Mazda 6 and Ford Mondeo. The Business Council considers that \$5-7,000 incentives may be too costly for the Crown to implement. However, we have proposed economic incentives that would significantly reduce that price differential.

The \$1,500 value of the tier 2 incentive for new vehicles was considered to be a reasonable amount that would be high enough to have some impact on vehicle selection, whilst still being affordable for the Crown to provide. The value of the economic incentives

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<sup>8</sup> Leaseplan provided the Business Council with information on the most common vehicle models used by New Zealand businesses, as well as the vehicle capital and operating costs that Leaseplan apply for each of those models and the hybrid alternatives. This information was taken from the extensive Leaseplan database.

proposed for used, imported vehicles were factored from those recommended for new vehicle incentives, but scaled to reflect the lower capital cost.

The eligibility criteria differ for petrol and diesel fuelled vehicles on the basis that 2.7kg of CO<sub>2</sub> are produced per litre of petrol consumed, whereas 2.5kg of CO<sub>2</sub> is produced per litre of diesel consumed. The Business Council selected fuel economy levels for petrol vehicles and calculated an equivalent fuel economy criteria for diesel vehicles that would produce the same quantity of CO<sub>2</sub>. Therefore, the fuel economy requirement for diesel (F<sub>(diesel)</sub>) was calculated on that basis that:

$$F_{(\text{diesel})} = (2.5/2.7) \times F_{(\text{petrol})}.$$

The fuel economy criteria outlined below is in L/100km and applies for petrol and diesel vehicles only. However, an equivalent scale could be introduced in terms of CO<sub>2</sub> produced per km, with factors included for petrol, diesel, LPG, CNG, biodiesel etc.

The eligibility criteria for the economic incentives should have the ability to tighten with time, as the selection of fuel efficient and low emission vehicles increases. Alternatively, the incentives could only be offered for a limited time, e.g. for vehicles purchased between 2007 and 2010. Sunset clauses should be provided with the incentives, for example, incentives to be available until 40% of the new fleet registrations meet the proposed criteria for fuel economy ratings and emissions (legislative basis for emission standards).

## **2 (a). Economic Incentives for New Vehicles:**

The Business Council recommends a cash grant incentive scheme, which would apply to any organisation or individual purchasing an eligible vehicle. The incentives would be cash grants of either \$3,000 or \$1,500 that would be paid by the government to the vehicle purchaser at the time of first registration of the eligible vehicle.

It is recommended that the \$2,000 penalty fee be charged for the purchase of less efficient vehicles, to be paid at the time of the initial registration. The penalty fee could be used to subsidise other low emission, fuel efficient models. Re-exported cars would be refunded the penalty fee once the vehicle leaves NZ **or** be exempted if the vehicle is to be in New Zealand for less than a year.

The Business Council is of the opinion that this 'carrot and stick' approach would be the most effective means to incentivising the uptake of more fuel efficient vehicles.

The cash grant incentive scheme for new vehicles is discussed in further detail below.

### Cash Grant Incentive – NZ New:

- Provide cash grant (at the time of purchase) for fuel efficient vehicles, so that purchase and operating costs (or leasing costs) become more comparable with standard business fleet vehicles.
- Apply a penalty fee to the purchase price of vehicles that are less efficient in terms of fuel usage (penalty fee to be passed onto the consumer).

The Business Council recommends the following two-tiered cash grant incentive:

Tier 1: *For petrol fuelled vehicles:*

Provide a \$3,000 cash grant for vehicles achieving a fuel economy rating of 6.5 L/100km (or better).

*For diesel fuelled vehicles:*

Provide a \$3,000 cash grant for vehicles achieving a fuel economy rating of 6.0 L/100km (or better).

Tier 2: *For petrol fuelled vehicles:*

Provide a \$1,500 cash grant for vehicles achieving a fuel economy rating of 6.6 – 8.5 L/100km (or better).

*For diesel fuelled vehicles:*

Provide a \$1,500 cash grant for vehicles achieving a fuel economy rating of 6.0 – 7.9 L/100km (or better).

**AND**

*For petrol fuelled vehicles:*

Apply a \$2,000 penalty fee to the purchase cost of vehicles with a fuel economy higher than 12 L/100km

*For diesel fuelled vehicles:*

Apply a \$2,000 penalty fee to the purchase cost of vehicles with a fuel economy higher than 11.1 L/100km

## **2 (b). Economic Incentives for Used, Imported Vehicles:**

Similar to the incentive scheme for New Zealand new vehicles, the Business Council recommends that a cash grant incentive scheme be introduced to improve the performance of used imports.

The value of the cash grants proposed for used imports is less than for new vehicles, to reflect the lower capital cost. The Business Council has assumed that the capital cost of a used import would be in the order of one third of the cost of a new vehicle, and have amended the incentive values accordingly. The incentives would be cash grants of either \$1,000 or \$500 that would be paid by the government to the vehicle purchaser at the time of the first New Zealand registration of the eligible vehicle.

It is recommended that a \$1,000 penalty fee be charged at the time of the first registration in New Zealand for less efficient used imports. As with the new vehicles, the Business Council is of the opinion that this 'carrot and stick' approach would be the most effective means to incentivising the uptake of more fuel efficient / lower emission used, imported vehicles. The penalty fee could be used to subsidise other low emission, fuel efficient models. Re-exported cars would be refunded the penalty fee once the vehicle leaves NZ or be exempted if the vehicle is to be in New Zealand for less than a year.

Details of the cash grant incentive schemes for used imports are given below.

Cash Grant Incentive – Used Import:

- Provide cash grant (at the time of purchase) to encourage the selection of used imports that are fuel efficient.
- Apply a penalty fee to the purchase price of vehicles that are inefficient in terms of fuel usage.

The Business Council recommends the following two-tiered cash grant incentive:

Tier 1: *For petrol fuelled vehicles:*

Provide a \$1,000 cash grant for vehicles achieving a fuel economy rating of 6.5 L/100km (or better).

*For diesel fuelled vehicles:*

Provide a \$1,000 cash grant for vehicles achieving a fuel economy rating of 6.0 L/100km (or better).

Tier 2: *For petrol fuelled vehicles:*

Provide a \$500 cash grant for vehicles achieving a fuel economy rating of 6.6 – 8.5 L/100km (or better).

*For diesel fuelled vehicles:*

Provide a \$500 cash grant for vehicles achieving a fuel economy rating of 6.0 – 7.9 L/100km (or better).

**AND**

Apply a penalty fee for inefficient vehicles:

*For petrol fuelled vehicles:*

Apply a \$1,000 penalty fee to the purchase cost of vehicles with a fuel economy higher than 12 L/100km

*For diesel fuelled vehicles:*

Apply a \$1,000 penalty fee to the purchase cost of vehicles with a fuel economy higher than 11.1 L/100km

The Business Council recommends introducing the 'no more than 7 years old' criteria. The timing could align with the recommendations for introducing Euro IV emission standards for New Zealand new vehicles, but would also prevent undue restriction of the used import industry. To explain further, by 2008 the introduction would allow for the importation of 3 years worth of vehicles that were manufactured to the Euro IV equivalent standard, assuming that the vehicles are exported to New Zealand once they are more than 5 years old.

An additional benefit of reducing the age of used imports to 7 years or less is that the safety features of those vehicles are also likely to be enhanced.

## **2 (c). Other Economic Incentives:**

Road Pricing Incentives - future options that could be applied to both New Zealand new and used, imported vehicles:

If other proposed traffic restrictions such as toll roads and congestion taxes are introduced, low emission vehicles (of specified rating and fuel efficiency) could be exempt from those charges or face a lower rate. There are some restrictions on these incentives, for example, toll roads would either need to be publicly owned or some arrangement would need to be made for Government to reimburse private toll road owners.

## **3. OTHER INCENTIVES**

Other incentives that have been assessed by the Business Council are based on educating the public, providing tools to assist with the selection of fuel efficient and low emission vehicles and Government providing leadership to the wider business and general community. These actions may apply to both new and used, imported vehicles.

### 3 (a). Reduce Sulphur Content of Petrol:

It is important to note that although vehicles may be produced to a standard that meets the proposed emission criteria (Euro IV or equivalent / better), the vehicles' ability to perform to the design standard is dependent upon the quality of fuel used. Therefore, although the Business Council expects that the suggestions contained within this document would incentivise businesses to select low emission and fuel efficient vehicles, the sulphur content of petrol must be reduced to 50 ppm (or less) in order to see any significant reductions in vehicle related emissions.

The Business Council requests that by January 2008 Government reduces the sulphur content within diesel to 10 ppm (or less) and the sulphur content within petrol to no more than 50 ppm. This should be accompanied by a commitment to introduce 10 ppm sulphur within petrol by no later than January 2009. It should be noted that the recommendations of the sulphur content of petrol correlates to the intended Australian timeframes.

### 3 (b) Establish NZ Vehicle Database (fuel economy and emission rating):

A New Zealand online database is required so that businesses and individuals can create a list of 'green' vehicles to select from and access objective information on fuel economy, emission standards and safety of vehicle types. Government departments should also be required to select their vehicles using that database where fit for purpose options are available.

### 3 (c). Green Government Fleet:

Publicly undertake to replace central and local Government fleet vehicles with fuel efficient and low emission vehicles (where fit for purpose options are available). Government fleet purchasers should also have to validate why any vehicles that are not fuel efficient (i.e. 12 L/100km or higher) have been selected. This would form the basis of a green vehicle procurement strategy, requiring a careful consideration of vehicle options, whilst allowing greater flexibility should fit-for-purpose fuel efficient, low emission vehicles not be readily available in New Zealand.

The Business Council consider there to be significant benefits from the Government 'greening' their own fleet. Firstly, the volume of vehicles involved would result in a

significant reduction in carbon (and other) emissions. The large volume of vehicles involved would also raise the profile of fuel efficient and low emission vehicles and within one to three years the volume of such vehicles available within the ex-lease / second-hand market would increase. These benefits would be shared by both the business community (particularly SMEs) and the general public. Large volume government purchases would also encourage car companies to offer a greater range of fuel efficient and low emission vehicles.

### 3 (d). Request That Top 200 Companies Revise Vehicle Fleet and Selection List

The Business Council recommends that the New Zealand Prime Minister write to the top 200 New Zealand companies and government organisations and request their support for efforts to improve air quality and reduce CO<sub>2</sub>. Specifically, the Prime Minister could request that those organisations add at least 1 vehicle to their fleet that would achieve a fuel economy of 6.5 L/100km for petrol vehicles or 6.0 L/100km for diesel vehicles<sup>9</sup> and add such vehicles to their recommended vehicle list for staff use.

### 3 (e). Use of Bus/Carpool Lanes:

Consider allowing the most fuel efficient, low emission vehicles to use bus/carpool lanes, regardless of occupancy. This could be a significant economic incentive for businesses during peak traffic periods, particularly for those in the Auckland region and involved in the transport of goods or people.

Stringent criteria for fuel efficiency and emissions would need to be met to qualify for this incentive. Assuming that the New Zealand emissions standard is tightened to require Euro IV or equivalent emission standards to be met, the Business Council proposes that the tier 1 requirement for fuel economy be applied to this incentive, that is, achieve a fuel economy of 6.5 L/100km or better.

This could be authorised by approved stickers displayed on eligible vehicles.

### 3. (f) Self Drive Ministerial Vehicles

Cabinet Ministers to take a lead by selecting fuel efficient/low emission vehicles when they next select their next self-drive car.

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<sup>9</sup> This proposed action assumes that the NZ Emissions Rule will be amended to require that petrol vehicles meet Euro IV, ADR 79/02 or Japan 02/04 emissions standards by 2008 for new models and 2010 for existing models and that diesel vehicles will be required to meet Euro V, ADR 80/02 or Japan JE05 international emissions standards by 2010 for new models and 2011 for existing models.

## **TIMING & TRANSITION REQUIREMENTS FOR INCENTIVES**

### **Timing**

The proposed economic incentives and policy changes should be in place before the first Kyoto commitment period of 2008 to 2012, so that reductions in vehicle related carbon emissions can be seen before the end of the commitment period.

Policy based disincentives, such as a surcharge on the importation of less efficient, high emission vehicles, should be put in place as soon as possible, in order to bring about a behavioural change in the type of second-hand vehicles that are being imported into New Zealand.

The 'greening' of Government's own fleet should also begin as soon as possible. The Business Council support the work that the Ministry for the Environment is already doing in this respect, through the Govt<sup>3</sup> project.

### **Transition:**

#### ***Issues of concern:***

There are some commercial concerns that would need to be managed when implementing an economic incentive scheme. Two clear issues that would need to be considered for vehicle incentives are:

1. Reduced vehicle sales between the period of announcement of the incentives and the implementation date. As an example, if an announcement is made in March 2006 that a cash grant is to be introduced for eligible vehicles from 1 June 2006 onwards, then there could be a significant downturn in vehicle sales for that six month period, as vehicle buyers choose to wait until they can receive the incentive.
2. Increased costs to vehicle owners, due to the decreased resale value for those vehicles that meet the eligibility criteria but were purchased before the incentive scheme is introduced. An example is a vehicle that is purchased for \$25,000 and assumed to have a resale value of \$10,000 after three years. Following the introduction of the incentives the vehicle resale value may drop to \$7,000, therefore increasing the total cost of owning that vehicle by a significant amount.

#### ***Recommended Approach to Ease Transition:***

The Business Council recommends that Government backdate the economic incentives for two years, for those vehicles that meet the specified criteria. Furthermore, the Business Council proposes that any vehicles be shown to be purchased up to two years before the implementation date and shown to meet the eligibility criteria should be entitled to two thirds of the full cash grant (applies to both New Zealand new and used imports).

## **DETAILED ANALYSES / ACCOMPANYING INFORMATION**

The following additional information is included within the appendix:

- A. A detailed explanation of the project scope, outlining both inclusions and exclusions from the discussion;
- B. An analysis of the company fleet market in New Zealand – in diagrammatic form (number of business fleet vehicles, age characteristics of the New Zealand passenger fleet);
- C. Some research on the factors which are believed to be barriers to the take up of low emission vehicles (based upon vehicle industry and business surveys);
- D. An examination of the likely economic impact of the recommended incentives on a company in a tax paying position (sample net present value assessments);
- E. An examination of the likely impact on the Crown's finances as a result of the recommended incentives, based on an assumed uptake of low emission vehicles
- F. An examination of indicative cost savings from the purchase of low emission, fuel efficient vehicles, compared with the most popular new and used, imported vehicles currently purchased in New Zealand (savings based on reduced CO2 emissions and fuel usage).
- G. Case studies on businesses who are in the process of 'greening' their fleet vehicles (Vodafone, IAG, Urgent Couriers).

**APPENDIX A:**  
**PROJECT SCOPE**

## **Project Inclusions**

Vehicle classes included within this project are restricted to those defined as a Class MA, or MC vehicles<sup>10</sup>. It should be noted that Vehicle class MC refers to off-road passenger vehicles and, although the selection of off-road low emission vehicles currently available within New Zealand is limited, there are some models available that meet with the United States Emission Rating LEVII. As international standards tighten in the upcoming years, it is assumed that the range of off-road low emission vehicles will continue to increase. Therefore, it is considered appropriate to include the MC vehicle class within this project.

Although the economic incentives discussed in the proposal relate to incentives for new vehicles, policy based incentives to reduce emissions from second-hand imported vehicles have also been considered. These policy based incentives target second-hand vehicles that have yet to be imported, rather than those already in New Zealand. If greater restrictions are not placed on used imports now, and we continue to import less efficient vehicles (such as most SUVs), then New Zealand can expect major problems over the next 10 to 30 years, with much higher emissions from the aging fleet than what we are seeing today.

## **Project Exclusions**

Vehicle classes excluded from this project are pedal cycles, mopeds, motorcycles, 'people movers' and vans, omnibuses, medium and heavy goods vehicles. The Business Council has made these exclusions, not because low emission, fuel efficient options for these vehicles types are not important, but because they are not currently well served in terms of technology available within New Zealand. It is hoped that once such technology does become available, the proposed incentives for passenger vehicles and four wheel drives could be adapted to suit other vehicle types, including buses and vans.

Also excluded from this project are ways in which companies can reduce their emissions by altering their trip patterns (for example, carpooling, cycling, using walking school buses or reducing the number of trips) or by altering driving styles.

This proposal has not considered incentives for the use of alternative fuels, such as biofuels. This exclusion is not due to a lack of support for the idea, but rather because there are a number of issues to consider within this topic, which could not be covered in sufficient detail within this proposal. A number of projects and discussions are also already underway specifically for this area, particularly on the top of biofuels and the inclusion of ethanol within petrol.

Although the Business Council recognizes the importance of removing older, inefficient and high emission vehicles from New Zealand's roads, this is an area that businesses can not have direct impact on and therefore has not been focused on within this study. However, the Business Council would encourage the Government to continue to investigate ways to achieve this, including tail pipe emission testing and scrapping programmes. A trend graph showing the decreasing cost of new vehicles has been included within the appendix, as information that may be of interest to Government.

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<sup>10</sup> Refer to Land Transport New Zealand vehicle class definitions.

**APPENDIX B:**

**CHARACTERISTICS OF THE NEW ZEALAND VEHICLE FLEET**

### ***The General New Zealand Fleet***

There are currently around 2.6 million passenger vehicles registered in New Zealand<sup>11</sup>. This rates New Zealand as having one of the highest rates of car ownership in the world, with around 578 vehicles per 1000 people. As a comparison, vehicle ownership stands at 481 vehicles per 1000 people in the USA, 413 vehicles per 1000 people in Japan and 493 vehicles per 1000 people in Australia.<sup>12</sup>

The New Zealand vehicle fleet also has some unique qualities including the lack of a local car manufacturing industry and the high level of second-hand vehicle imports. Since 1996, there has been a significant increase in the number of second-hand cars and four-wheel drives (4WDs) imported into New Zealand, with Japan being the primary source. Of the total new vehicle registrations in New Zealand in 2004, (228,797 vehicles), 74,755 were new vehicles and 154,042 were second hand imports, with 73 percent of those imported vehicles being sourced from Japan.

Another important factor for the New Zealand fleet is its age distribution, with the average age of a New Zealand passenger vehicle being 11.6 years. As a comparison, the United Kingdom fleet has an average age of 6.3 years and the average age of passenger vehicles in Australia is 10.1 years. New Zealand also appears to not be following the international trend of upgrading an increasing proportion of the fleet with new vehicles, with the highest proportion of New Zealand passenger vehicles being in the 1989 to 1997 age bracket. Since 1999, the average age of cars has risen by 3.5 percent, with approximately 48 percent of vehicles now between 10 and 30 years old<sup>8</sup>.

### ***The New Zealand Business Fleet***

Information provided by Business Council members indicate that, currently, around 493,000 vehicles are owned by approximately 143,000 New Zealand businesses<sup>13</sup>.

As at June 2005, approximately 9 percent of the total New Zealand passenger vehicle fleet are recorded as being for business use. Of the 228,797 passenger vehicles first registered in 2004, 93,772 were registered by businesses (41%). Of these business 93,772 vehicles, 42,882 (57%) were new and 50,890 (33%) were used imports.

It is clear that increasing the uptake of low emission vehicles by these businesses would be a significant means to reduce social, environmental and economic impacts of vehicle related emissions.

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<sup>11</sup> Source: Land Transport New Zealand (LTNZ), July 2005.

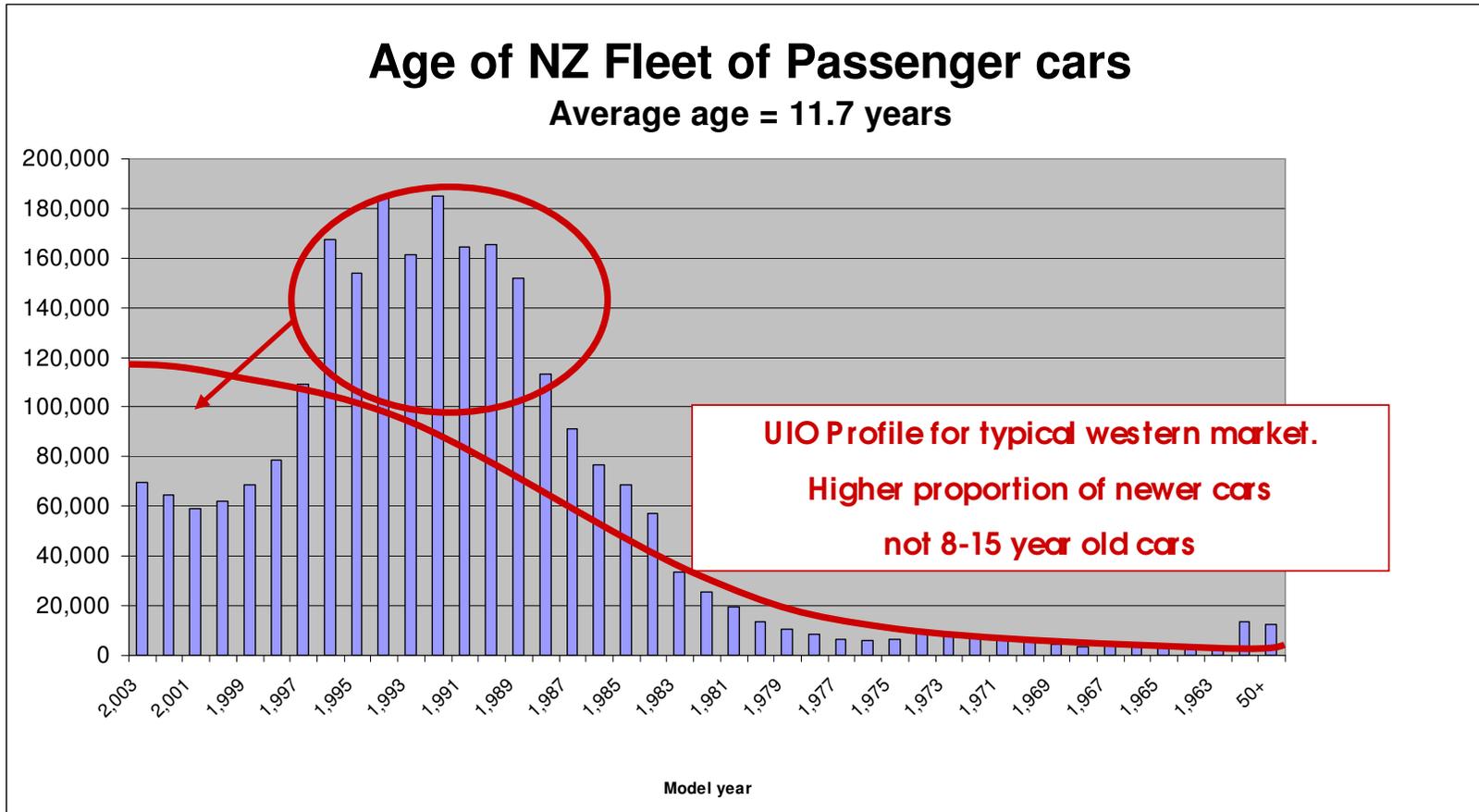
<sup>12</sup> Source: Earthtrends website for car ownership per 1000 people:

[http://www.earthtrends.wri.org/searchable\\_db/index.cfm?theme=4&variable\\_ID=290&action=select\\_countries](http://www.earthtrends.wri.org/searchable_db/index.cfm?theme=4&variable_ID=290&action=select_countries)

<sup>13</sup> The following limitations apply to the quoted NZ businesses numbers and their vehicle ownership:

- Business numbers may include duplicate companies and/or companies who no longer exist;
- (UBD) NZ Business Directory has 151,733 businesses listed;
- Vehicle numbers have not been verified within the last year.

# New Zealand "Units in Operation" **All Makes**



**ACTIVE VEHICLES RECORDED ON THE MOTOR VEHICLE REGISTER, AS AT 11/06/05  
BY VEHICLE TYPE AND CUSTOMER TYPE  
(Source: LTNZ, June '05)**

VEHICLE TYPE	CUSTOMER TYPE			Total
	Company	Individual	Other	
<b>AGRICULTURAL MACHINE</b>	466	1,006	14	<b>1,486</b>
<b>ATV<sup>1</sup></b>	1,055	1,790	201	<b>3,046</b>
<b>BUS</b>	10,061	6,690	922	<b>17,673</b>
<b>GOODS VAN/TRUCK/UTILITY</b>	160,690	307,940	8,406	<b>477,036</b>
<b>MOBILE MACHINE</b>	11,074	2,208	251	<b>13,533</b>
<b>MOPED</b>	680	15,115	7	<b>15,802</b>
<b>MOTOR CARAVAN</b>	3,056	16,557	12	<b>19,625</b>
<b>MOTORCYCLE</b>	3,050	73,409	329	<b>76,788</b>
<b>PASSENGER CAR/VAN<sup>2</sup></b>	231,877	2,367,049	16,492	<b>2,615,418</b>
<b>SPECIAL PURPOSE VEHICLE</b>	1,414	356	497	<b>2,267</b>
<b>TRACTOR</b>	8,632	24,829	630	<b>34,091</b>
<b>TRAILER NOT DESIGNED FOR H/WAY USE</b>	651	378	30	<b>1,059</b>
<b>TRAILER/CARAVAN</b>	81,906	438,557	4,336	<b>524,799</b>
<b>Total</b>	<b>514,612</b>	<b>3,255,884</b>	<b>32,127</b>	<b>3,802,623</b>

<sup>1</sup> All Terrain Vehicle

<sup>2</sup> Company owned passenger cars/vans comprise 9 percent of the total vehicles for that category. Please note that the 'other' category may include fleet vehicles for non-business tax paying organisations such as Government departments.

**NEW AND EX-OVERSEAS CARS REGISTERED IN 2004**  
(Source: LTNZ, July '05)

**NEW VEHICLES REGISTERED**

VEHICLE TYPE	Company	Individual	Other	TOTAL
AGRICULTURAL MACHINE	39	53	2	94
ATV	251	235	34	520
BUS	361	59	124	544
CAR	42,882	28,542	3,331	74,755
MOBILE MACHINE	776	74	18	868
MOPED	186	1,836	1	2,023
MOTOR CARAVAN	340	117		457
MOTORCYCLE	512	4,055	41	4,608
NON HIGHWAY TRAILER	64	43	1	108
SPECIAL PURPOSE VEHICLE	16	5		21
TRACTOR	780	1,794	56	2,630
TRAILER	5,937	17,442	177	23,556
TRUCK	15,364	6,682	969	23,015
<b>TOTAL</b>	<b>67,508</b>	<b>60,937</b>	<b>4,754</b>	<b>133,199</b>

**EX-OVERSEAS (USED IMPORTED) CARS REGISTERED**

VEHICLE TYPE	Company	Individual	Other	TOTAL
AGRICULTURAL MACHINE	16	34		50
ATV	31	47		78
BUS	494	269	22	785
CAR	50890	103085	67	154,042
MOBILE MACHINE	295	51	1	347
MOPED	57	377		434
MOTOR CARAVAN	300	552	1	853
MOTORCYCLE	161	1679		1,840
NON HIGHWAY TRAILER	3	8		11
SPECIAL PURPOSE VEHICLE	64	12	11	87
TRACTOR	45	163		208
TRAILER	119	534	9	662
TRUCK	7725	5639	161	13,525
<b>TOTAL</b>	<b>60,200</b>	<b>112,450</b>	<b>272</b>	<b>172,922</b>

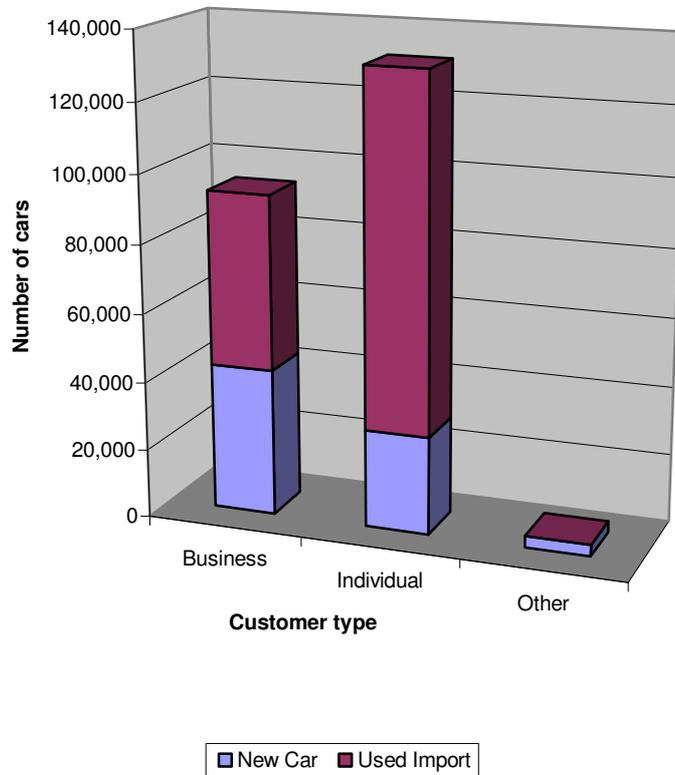
*Percentage of new passenger vehicles purchased by businesses in 2004:*

**57%**

*Percentage of ex-overseas passenger vehicles purchased by businesses in 2004:*

**33%**

Vehicles first registered in 2004, by customer type



Last year, New Zealand businesses registered nearly 94,000 passenger vehicles for the first time. It is assumed that a significant portion of these vehicles would have an engine size of greater than 2 litres, and as a result would be relatively high fuel users. The New Zealand emissions standard currently only requires new petrol vehicles to be manufactured and certified to the Euro II standard. By comparison, from January 2000 to December 2004 European car manufacturers and suppliers were required to certify their vehicles to the more stringent Euro III standard, and since the start of 2005 have been selling Euro IV vehicles.

The Business Council project "Incentivising greener vehicles" proposes that Government apply a combination of economic and policy based instruments to encourage businesses to select fuel efficient, low emission vehicles. An increase in the selection of such vehicles would see decreased CO<sub>2</sub> emissions and cleaner air in the near future. Secondary benefits would also be seen within the next two to four years, as the ex-fleet vehicles are sold into the second-hand market (for other businesses and individual owners).

## **APPENDIX C:**

### **BARRIERS TO THE UPTAKE OF FUEL EFFICIENT AND LOW EMISSION VEHICLES**

The following information is based on the results of surveys that were completed by sales staff from both vehicle suppliers (new and used imports) and vehicle leasing agencies.

The Business Council would like to thank sales staff from the following organizations for taking the time to complete the Business Council survey on vehicle selection and potential barriers to the selection of low emission vehicles:

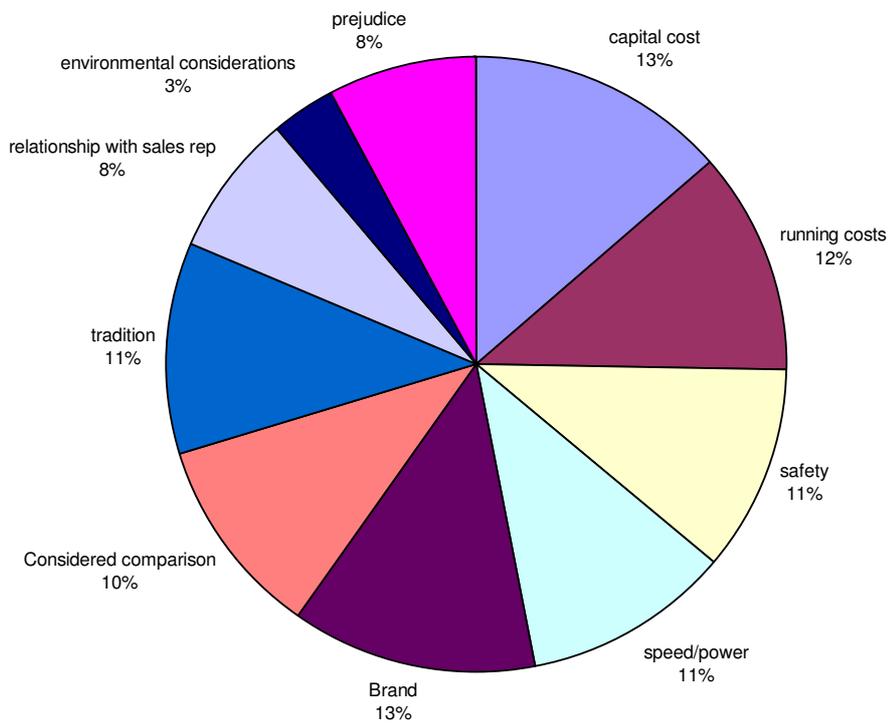
Honda New Zealand (Vehicle Sales)  
The Clean Green Car Company  
Toyota New Zealand  
Honda Lease New Zealand  
LeasePlan New Zealand

## NZBCSD Survey Results

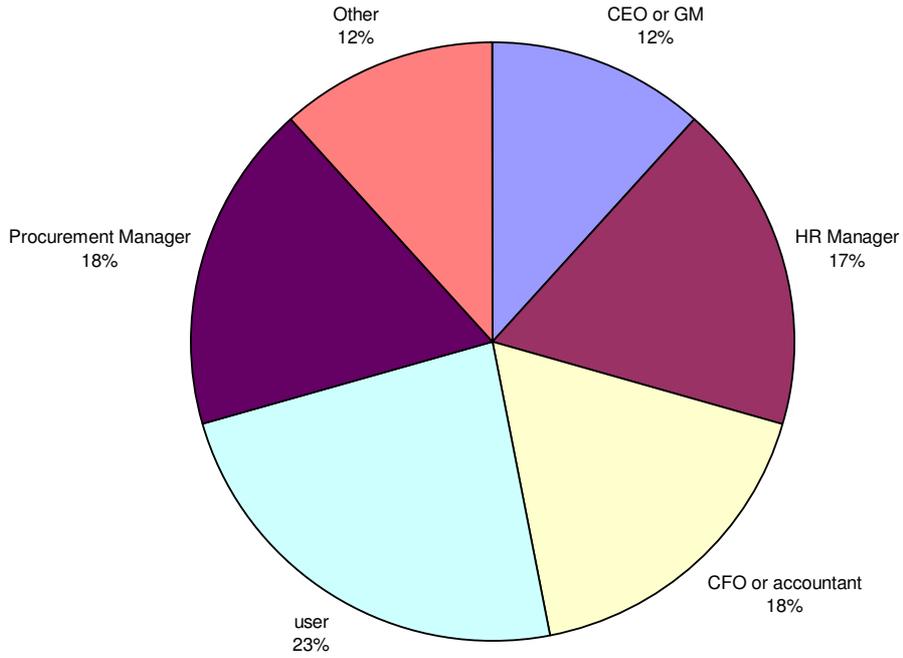
### BUSINESS **PURCHASING** TRENDS FOR FUEL EFFICIENT, LOW EMISSION VEHICLES

Sales staff surveyed at: Honda New Zealand  
The Clean Green Car Company  
Toyota New Zealand

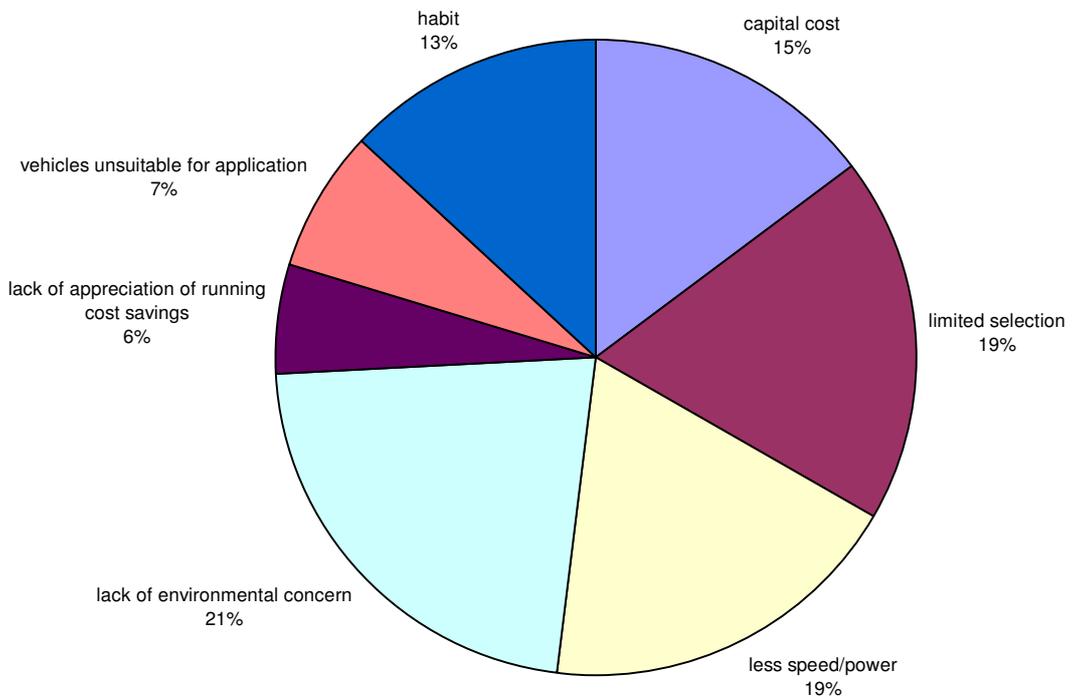
**Factors Influencing Fleet Selection (Sales)**



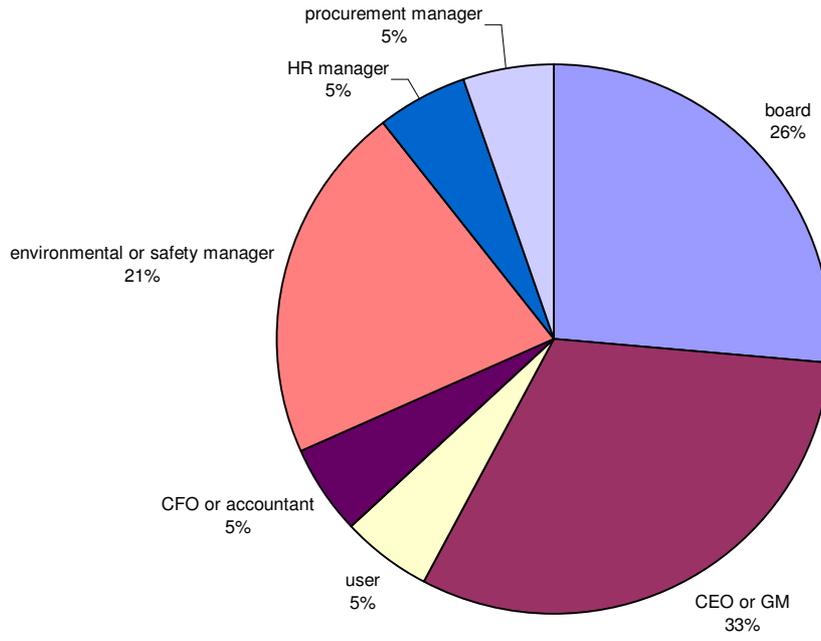
**Decision Maker for Fleet Selection (Sales)**



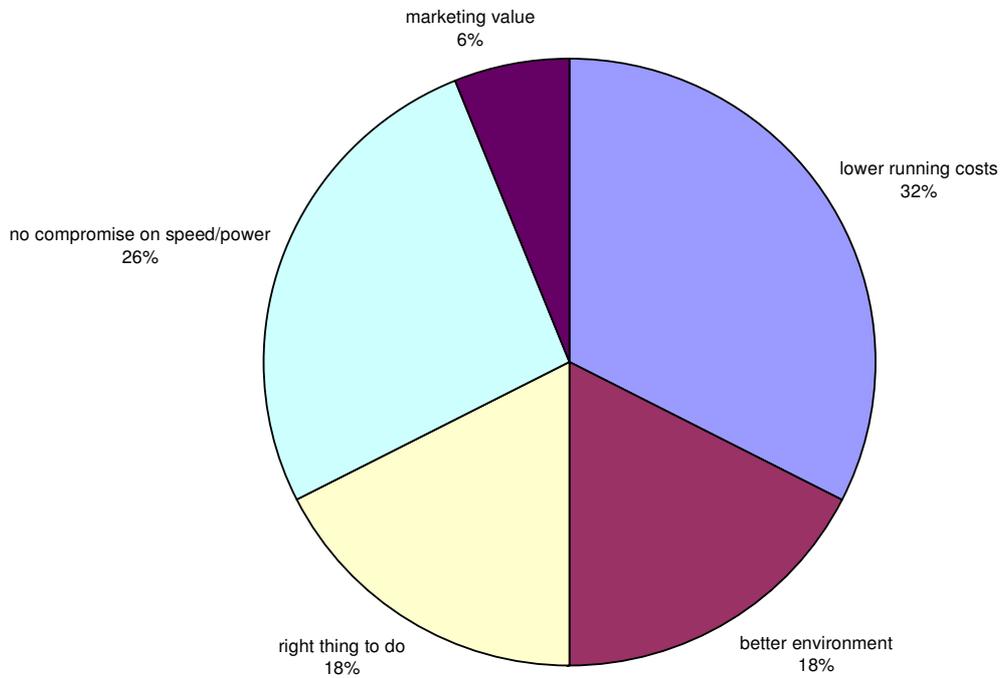
**Reasons For *Not* Selecting Low Emission Vehicles (Sales)**



### Champion for Low Emission Vehicle Selection (Sales)



### Arguments Successfully Used to Encourage Low Emission Vehicle Selection (Sales)

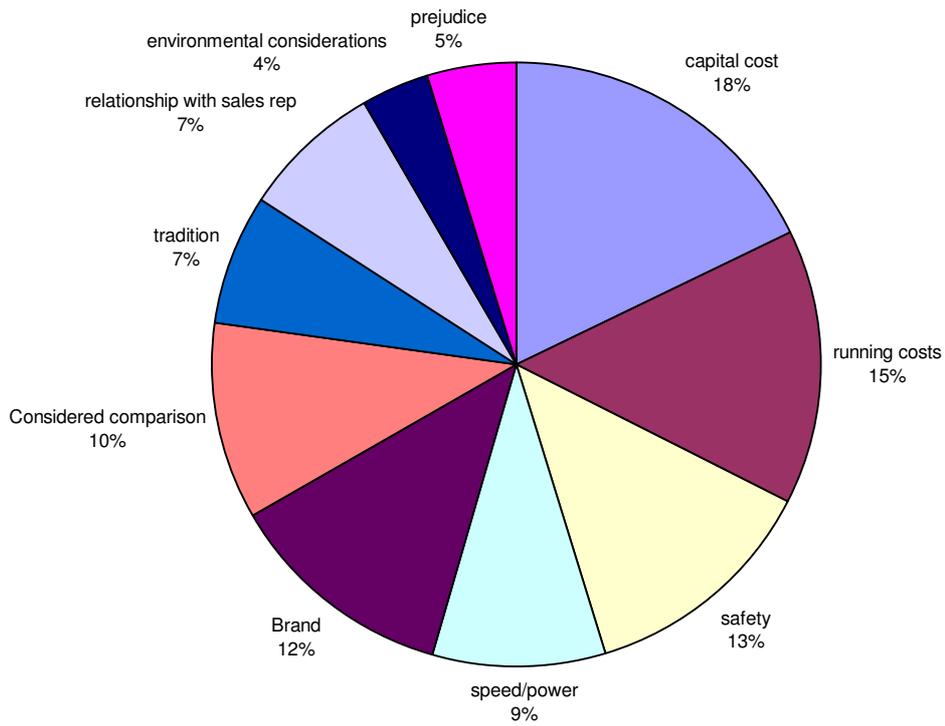


# NZBCSD Survey Results

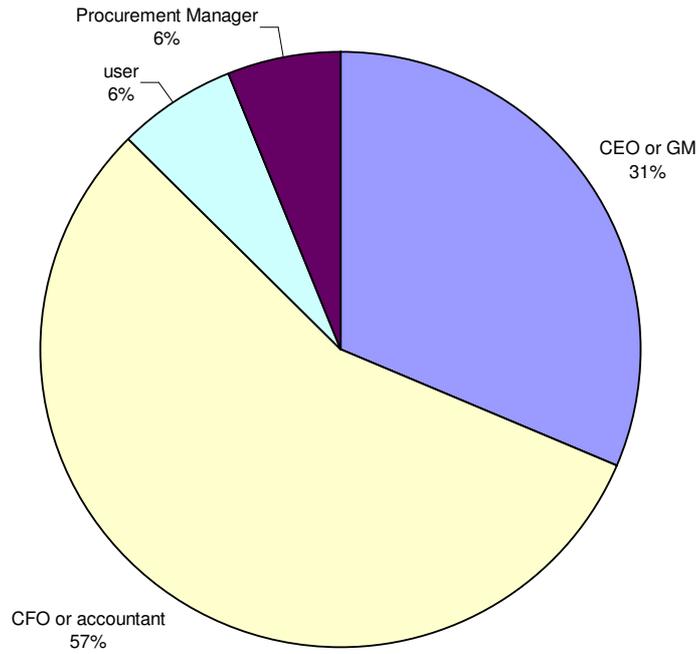
## BUSINESS LEASING TRENDS FOR FUEL EFFICIENT, LOW EMISSION VEHICLES

Sales staff surveyed : Honda Lease New Zealand  
LeasePlan New Zealand

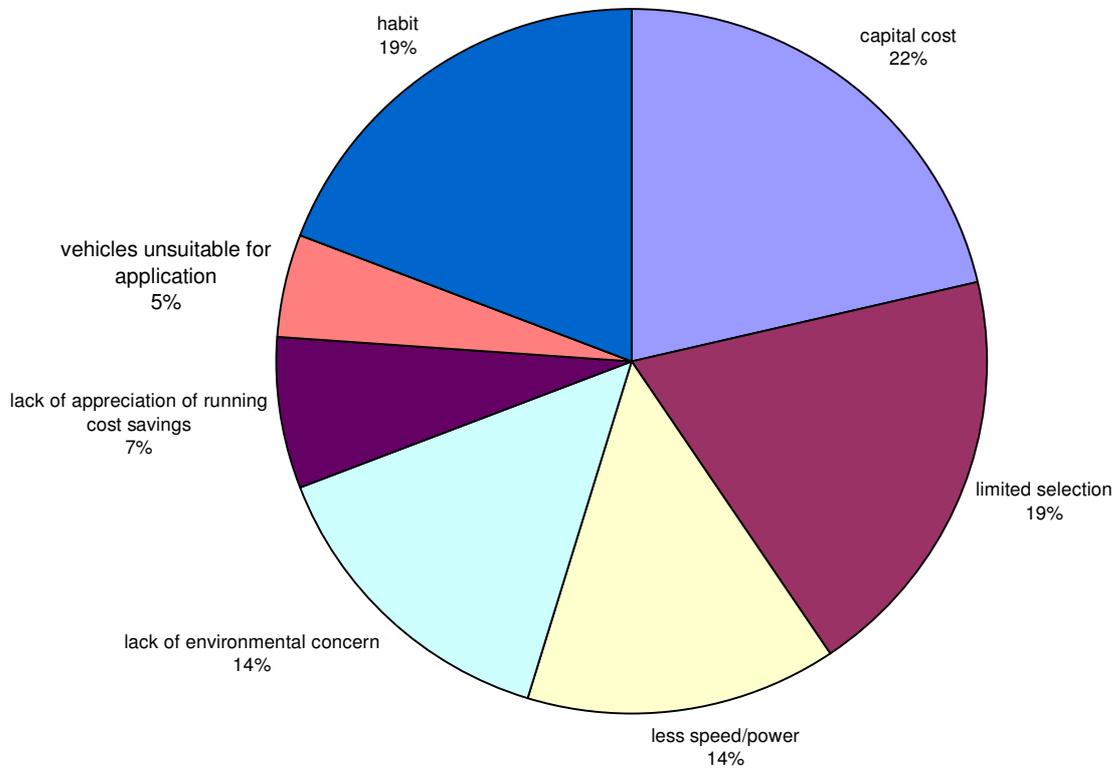
**Factors Influencing Fleet Selection - Leased Vehicles**



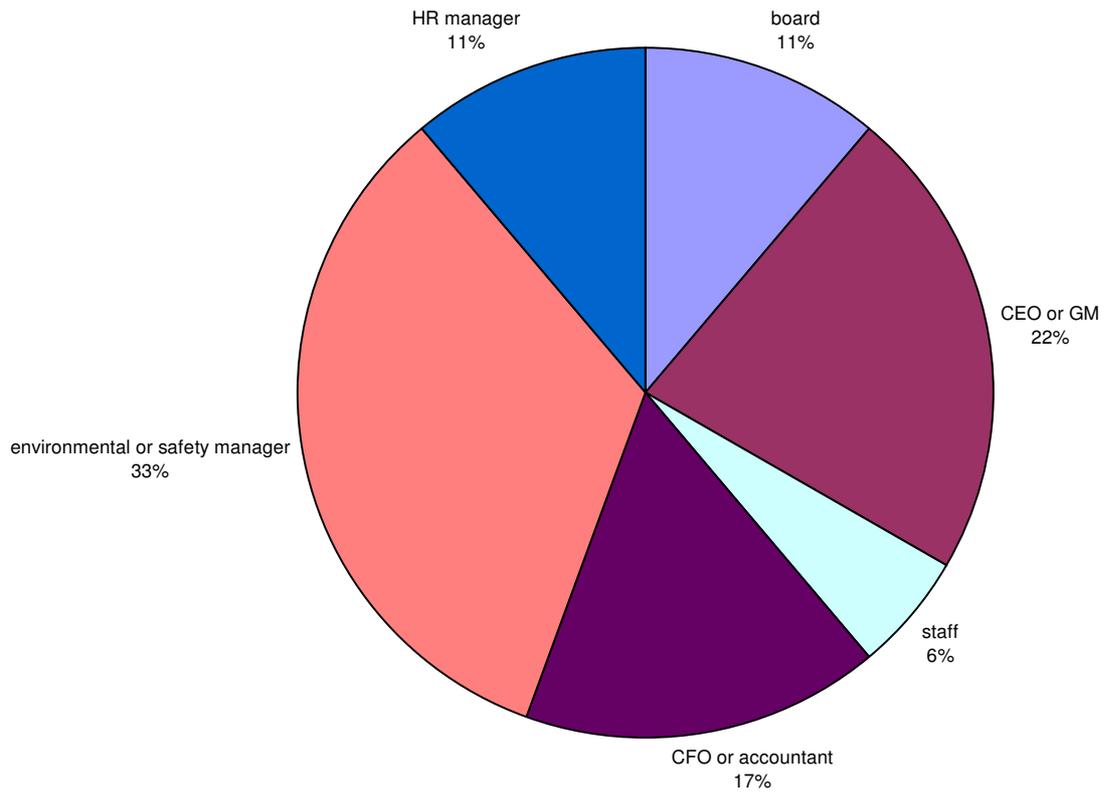
### Decision Maker for Fleet Selection - Leased Vehicles



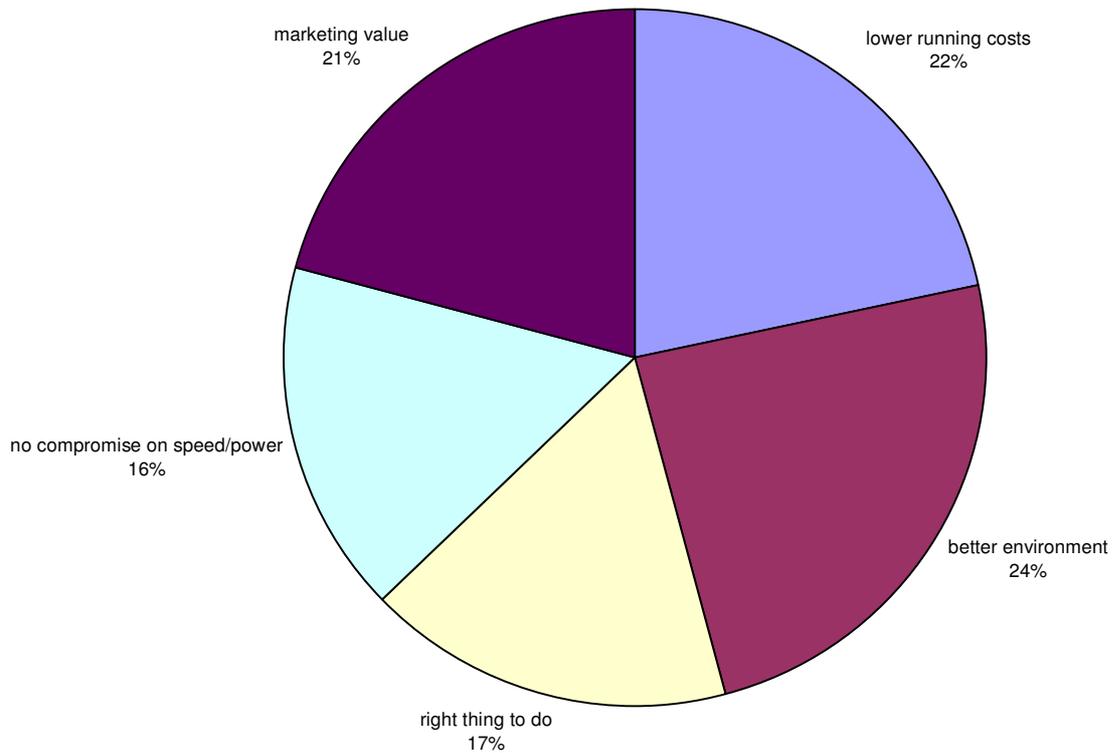
### Reasons For Not Selecting Low Emission Vehicles - Leased Vehicles



### Champion for Low Emission Vehicle Selection - Leased Vehicles



### Arguments Successfully Used to Encourage Low Emission Vehicle Selection - Leased Vehicles



## **APPENDIX D:**

### **NET PRESENT VALUE (NPV) COMPARISONS BETWEEN EFFICIENT, LOW EMISSION VEHICLES & STANDARD BUSINESS FLEET VEHICLES** (incorporating proposed economic incentives)

Please note that the NPV comparisons have been made between standard vehicles commonly purchased for a large business fleet (identified from vehicle sales/lease data) and the two hybrid vehicles currently available in New Zealand – the Toyota Prius and the Honda Civic Hybrid.

These hybrids are of a comparable (physical) size to ‘typical’ business vehicles and were indicated by Business Council Member companies to be their preference when considering alternatives for their own fleets.

## NZBCSD NPV Comparison Results

Information for the NPV assessment was taken from independent sources, with LeasePlan supplying all costings information and fuel efficiency ratings taken from the Australian Green Vehicle Guide database. Table 1 presents the information used for the NPV assessment, along with any assumptions that were made.

**Table 1: Base information for NPV comparisons**

All figures ex GST unless otherwise stated

FBT based on original purchase price

	Car A	Car B	Car C	Car D	Car E
	Honda Civic Hybrid	Toyota Corolla	Toyota Prius	Mazda 6 *	Ford Modeo
Purchase Price	\$29,333	\$22,368	\$38,666	\$28,292	\$26,995
GST Payable on Purchase Price	\$3,667	\$2,796	\$4,833	\$3,537	\$3,374
Estimated km per annum	30,000	30,000	30,000	30,000	30,000
Fuel Efficiency (l/100km)	5.2	8.5	4.4	9.5	9.3
Fuel Cost per litre - Year 1	\$1.50	\$1.50	\$1.50	\$1.50	\$1.50
Fuel Cost per litre - Year 2	\$1.55	\$1.55	\$1.55	\$1.55	\$1.55
Fuel Cost per litre - Year 3	\$1.59	\$1.59	\$1.59	\$1.59	\$1.59
Fuel Cost per litre - Year 4	\$1.64	\$1.64	\$1.64	\$1.64	\$1.64
Operating costs pa - reg, tyres, maint etc	\$1,572	\$1,020	\$1,332	\$744	\$1,524
Insurance (p/a)	450	450	450	450	450
Value of Benefit	20%	20%	20%	20%	20%
FBT Rate	64%	64%	64%	64%	64%
Tax rate	33%	33%	33%	33%	33%
Tax Depreciation	31.2%	31.2%	31.2%	31.2%	31.2%
Discount Rate	10.0%	10.0%	10.0%	10.0%	10.0%
Estimated resale	\$7,700	\$8,400	\$10,000	\$9,600	\$9,100

\* Mazda include 3 year maintenance in purchase price

Table 2 compares the cost of purchasing and running low emission and fuel efficient vehicles, which meet the most stringent incentive requirements, with other 'standard' vehicles that are commonly purchased by New Zealand businesses. The costs given for each vehicle are based on the net present value, over a four year period.

**Table 2: Results of NPV comparisons – New Vehicles only**

Incentive	4 Year NPV (\$1,000s)				
	<i>Honda Civic Hybrid</i>	<i>Toyota Corolla</i>	<i>Toyota Prius</i>	<i>Mazda 6</i>	<i>Ford Mondeo</i>
Base Case (no incentive)	38	32	47	39	39
\$3,000 grant for vehicles meeting high level eligibility criteria	36	32	44	39	39

Table 2 shows that the Civic Hybrid is comparably priced with the Mazda 6 and the Mondeo without any financial incentive. However, it should be realised that much of this economic viability results from the Civic Hybrid being a 1.3 L vehicle (described as closer to a 1.5 L vehicle with the electric motor supplementing), rather than a 2L+ sized vehicle, such as the Mazda 6 or the Mondeo. The Civic Hybrid still requires an economic incentive in the order of \$6,000 to make it comparably priced to the smaller motored Corolla or to other 1.3-1.5 L vehicles. Similarly, the cost of a Toyota Prius is approximately \$8,000 more than similar sized vehicles such as the Mazda 6 and Ford Mondeo. The proposed incentive scheme would reduce the price differential between the hybrid and comparable standard vehicles to within \$2-5,000, which is likely to be far more acceptable to businesses and private vehicle buyers / lease holders.

The following page presents an assessment of the effect of fuel pricing on the difference in NPV for hybrid and comparably sized non-hybrid vehicles. Please note that this table is the NPV that was used to produce the figures shown in Table 2, and again the Honda Civic Hybrid should be compared with the similarly sized Toyota Corolla and the Toyota Prius with the Mazda 6 and Ford Mondeo. Results will differ according to the vehicle make/model and costs used (capital and operating costs).

**Fuel Sensitivity Assessment - Comparison of Hybrid Vehicles with 'typical' company vehicles**

All figures ex GST unless otherwise stated

**Model 1**

NPV

FBT based on original purchase price

	<b>Car A</b>	<b>Car B</b>	<b>Car C</b>	<b>Car D</b>	<b>Car E</b>
	Honda Civic Hybrid	Toyota Corolla	Toyota Prius	Mazda 6 *	Ford Modeo
Purchase Price	\$29,333	\$22,368	\$38,666	\$28,292	\$26,995
GST Payable on Purchase Price	\$3,667	\$2,796	\$4,833	\$3,537	\$3,374
Estimated km per annum	30,000	30,000	30,000	30,000	30,000
Fuel Efficiency (l/100km)	5.2	8.5	4.4	9.5	9.3
Fuel Cost per litre - Year 1	\$4.00	\$4.00	\$4.00	\$4.00	\$4.00
Fuel Cost per litre - Year 2	\$4.12	\$4.12	\$4.12	\$4.12	\$4.12
Fuel Cost per litre - Year 3	\$4.24	\$4.24	\$4.24	\$4.24	\$4.24
Fuel Cost per litre - Year 4	\$4.37	\$4.37	\$4.37	\$4.37	\$4.37
Operating costs pa - reg, tyres, maint etc	\$1,572	\$1,020	\$1,332	\$744	\$1,524
Insurance (p/a)	450	450	450	450	450
Value of Benefit	20%	20%	20%	20%	20%
FBT Rate	64%	64%	64%	64%	64%
Tax rate	33%	33%	33%	33%	33%
Tax Depreciation	31.2%	31.2%	31.2%	31.2%	31.2%
Discount Rate	10.0%	10.0%	10.0%	10.0%	10.0%
Estimated resale	\$7,700	\$8,400	\$10,000	\$9,600	\$9,100

\* Mazda include 3 year maintenance in purchase price

<b>Car A Civic Hybrid</b>						
	<b>Year 0</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>	<b>End</b>
Purchase Price	<b>\$29,333</b>					
Fuel Costs		6,240	6,240	6,240	6,240	
Operating Costs		1,572	1,572	1,572	1,572	
Insurance		450	450	450	450	
Fringe Benefit Tax		4,224	4,224	4,224	4,224	
GST on FBT		733	733	733	733	
Profit/Loss on Disposal						(1,128)
Recovery on resale						(7,700)
<b>Total Operating Costs</b>		<b>13,219</b>	<b>13,219</b>	<b>13,219</b>	<b>13,219</b>	<b>(8,828)</b>
Tax Depreciation		9,152	6,297	4,332	2,980	
Tax Shield		(7,382)	(6,440)	(5,792)	(5,346)	372
<b>Operating Cash Flow</b>		<b>5,837</b>	<b>6,779</b>	<b>7,427</b>	<b>7,873</b>	<b>(7,328)</b>
<b>Net Cash Flow</b>	<b>29,333</b>	<b>5,837</b>	<b>6,779</b>	<b>7,427</b>	<b>7,873</b>	<b>(7,328)</b>
Discounted cash flows	29,333	5,306	5,603	5,580	5,378	(5,005)
<b>NPV</b>	<b>\$ 46,195</b>					
<b>Car B Toyota Corolla</b>						
	<b>Year 0</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>	<b>End</b>
Purchase Price	<b>\$22,368</b>					
Fuel Costs		10,200	10,200	10,200	10,200	
Operating costs		1,020	1,020	1,020	1,020	
Insurance		450	450	450	450	
Fringe Benefit Tax		3,221	3,221	3,221	3,221	
GST on FBT		559	559	559	559	
Profit/Loss on Disposal						(3,388)
Recovery on resale						(8,400)
<b>Total Operating Costs</b>		<b>15,450</b>	<b>15,450</b>	<b>15,450</b>	<b>15,450</b>	<b>(11,788)</b>
Tax Depreciation		6,979	4,801	3,303	2,273	
Tax Shield		(7,402)	(6,683)	(6,189)	(5,849)	1,118
<b>Operating Cash Flow</b>		<b>8,049</b>	<b>8,767</b>	<b>9,262</b>	<b>9,602</b>	<b>(7,282)</b>
<b>Net Cash Flow</b>	<b>22,368</b>	<b>8,049</b>	<b>8,767</b>	<b>9,262</b>	<b>9,602</b>	<b>(7,282)</b>
Discounted cash flows	22,368	7,317	7,246	6,958	6,558	(4,974)
<b>NPV</b>	<b>\$ 45,473</b>					

<b>Car C Toyota Prius</b>						
	<b>Year 0</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>	<b>End</b>
Purchase Price	\$38,666					
Fuel Costs		5,280	5,280	5,280	5,280	
Operating Costs		1,332	1,332	1,332	1,332	
Insurance		450	450	450	450	
Fringe Benefit Tax		5,568	5,568	5,568	5,568	
GST on FBT		967	967	967	967	
Profit/Loss on Disposal						263
Recovery on sale						(8,400)
<b>Total Operating Costs</b>		<b>13,597</b>	<b>13,597</b>	<b>13,597</b>	<b>13,597</b>	<b>(8,137)</b>
Tax Depreciation		12,064	8,300	5,710	3,929	
Tax Shield		(8,468)	(7,226)	(6,371)	(5,783)	(87)
<b>Operating Cash Flow</b>		<b>5,129</b>	<b>6,371</b>	<b>7,225</b>	<b>7,813</b>	<b>(8,487)</b>
<b>Net Cash Flow</b>	<b>38,666</b>	<b>5,129</b>	<b>6,371</b>	<b>7,225</b>	<b>7,813</b>	<b>(8,487)</b>
Discounted cash flows	38,666	4,662	5,265	5,428	5,337	(5,797)
<b>NPV</b>	<b>\$ 53,562</b>					
<b>Car D Mazda 6</b>						
	<b>Year 0</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>	<b>End</b>
Purchase Price	\$28,292					
Fuel Costs		11,400	11,742	12,094	12,457	
Operating costs		744	744	744	744	
Insurance		450	450	450	450	
Fringe Benefit Tax		4,074	4,074	4,074	4,074	
GST on FBT		707	707	707	707	
Profit/Loss on Disposal						(3,261)
Recovery on sale						(9,600)
<b>Total Operating Costs</b>		<b>17,375</b>	<b>17,717</b>	<b>18,070</b>	<b>18,432</b>	<b>(12,861)</b>
Tax Depreciation		8,827	6,073	4,178	2,875	
Tax Shield		(8,647)	(7,851)	(7,342)	(7,031)	1,076
<b>Operating Cash Flow</b>		<b>8,729</b>	<b>9,867</b>	<b>10,728</b>	<b>11,401</b>	<b>(8,524)</b>
<b>Net Cash Flow</b>	<b>28,292</b>	<b>8,729</b>	<b>9,867</b>	<b>10,728</b>	<b>11,401</b>	<b>(8,524)</b>
Discounted Cash flows	28,292	7,935	8,154	8,060	7,787	(5,822)
<b>NPV</b>	<b>\$ 54,406</b>					
<b>Car E Ford Mondeo</b>						
	<b>Year 0</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>	<b>End</b>
Purchase Price	\$26,995					
Fuel Costs		11,160	11,495	11,840	12,195	
Operating costs		1,524	1,524	1,524	1,524	
Insurance		450	450	450	450	
Fringe Benefit Tax		3,887	3,887	3,887	3,887	
GST on FBT		675	675	675	675	
Profit/Loss on Disposal						(3,052)
Recovery on sale						(9,100)
<b>Total Operating Costs</b>		<b>17,696</b>	<b>18,031</b>	<b>18,376</b>	<b>18,731</b>	<b>(12,152)</b>
Tax Depreciation		8,422	5,795	3,987	2,743	
Tax Shield		(8,619)	(7,862)	(7,380)	(7,086)	1,007
<b>Operating Cash Flow</b>		<b>9,077</b>	<b>10,169</b>	<b>10,996</b>	<b>11,645</b>	<b>(8,093)</b>
<b>Net Cash Flow</b>	<b>26,995</b>	<b>9,077</b>	<b>10,169</b>	<b>10,996</b>	<b>11,645</b>	<b>(8,093)</b>
Discounted Cash flows	26,995	8,252	8,404	8,262	7,953	(5,528)
<b>NPV</b>	<b>\$ 54,338</b>					

**APPENDIX E:**

**AN EXAMINATION OF THE IMPACT ON CROWN FINANCES FROM RECOMMENDED INCENTIVES**

*Please note that these are indicative costs only, based on an assumed uptake of the proposed economic incentives. No other vehicle related costs, such as motor vehicle duty, have been considered in this assessment.*

Estimated Impact of Incentives on Government Finances (Estimated from New Zealand Motor Vehicle Registration Statistics 2004 (LTNZ))

2004 New Cars (includes NZ new cars and used imports registered for the first time):

TOTAL 2004 NEW REGISTRATIONS 228797	NZ NEW CAR REGISTRATIONS 74755	USED IMPORT REGISTRATIONS 154042
Category 1 vehicles No. 2004 registrations up to 1300cc 5999 3%	Category 2 vehicles No. 2004 registrations 1301 - 1,800cc 57143 25%	Category 3 vehicles No. 2004 registrations 1,801 - 2,500cc 106090 46%
		Category 4 vehicles No. 2004 registrations 2,500+ 59565 26%

new cars purchased by businesses, 2004	57%
new cars purchased privately, 2004	38%
used imports purchased by businesses, 2004	33%
used imports purchased privately, 2004	67%

check: 228797  
100%

Based on Table 3, 2004 figures (LTNZ 2004) which provides a

Estimated take-up of incentives for New Zealand new cars:

Take up of incentives from point of introduction, until Sunset Clause is activated (i.e. 40% of new registrations within eligibility criteria):

\$ 3,000 per vehicle	\$ 1,500 per vehicle	\$ 2,000 per vehicle
Impact on Government Finances (to be offset from other source)	Impact on Government Finances (to be offset from other source)	Impact on Government Finances (revenue)
\$ 22,426,500 Additional 7% assumed to come from Cat. 2 vehicles	33,639,750 Assumes 7% downsized to Cat. 1 vehicles & 12% enter Cat. 2 from 2004 Cat. 3 vehicles	19,461,713 13% Assumes half of 2004 Cat. 4 vehicles (i.e. 13%) downsize to Cat. 3

\*47% of vehicles assumed to be in Category 3, i.e. no incentive or penalty applied (between 8.6 and 11.9L/100km for petrol).

Backdated Incentives for NZ New Vehicles:

\$ 2,000 per vehicle	\$ 1,000 per vehicle
Impact on Government Finances (to be offset from other source)	Impact on Government Finances (to be offset from other source)
\$ 3,920,115 3% Assumes 100% of vehicles 1.3L or less will be eligible and claimed for	11,202,223 15% Assumes 70% of vehicles 1.301-1.8L or less will be eligible and claimed for

Total Estimated Cost to Government - NZ New Vehicles:

Estimated Total Cost to Government	
51,726,874	

Estimated take-up of incentives for used imports:

Take up of incentives from point of introduction, until Sunset Clause is activated (i.e. 40% of new registrations within eligibility criteria):

\$ 1,500 per vehicle	\$ 500 per vehicle	\$ 1,000 per vehicle
Impact on Government Finances (to be offset from other source)	Impact on Government Finances (to be offset from other source)	Impact on Government Finances (revenue)
\$ 23,106,300 10% Additional 7% assumed to come from Cat. 2 vehicles	23,106,300 30% Assumes 7% downsized to Cat. 1 vehicles & 12% enter Cat. 2 from 2004 Cat. 3 vehicles	0 0% Assumes half of 2004 Cat. 4 vehicles (i.e. 13%) downsize to Cat. 3

\*47% of vehicles assumed to be in Category 3, i.e. no incentive or penalty applied (between 8.6 and 11.9L/100km for petrol).

Total Estimated Cost to Government - NZ New Vehicles\*:

Estimated Total Cost to Government	
46,212,600	

\*It is assumed that it would be difficult for those who purchased

Total Cost to Government from NZ New & Used Import Vehicle Incentive Schemes:

Estimated Total Cost to Government	
97,939,474	

**APPENDIX F:**

**AN EXAMINATION OF INDICATIVE COST SAVINGS FROM THE PURCHASE OF LOW EMISSION, FUEL EFFICIENT VEHICLES, COMPARED WITH THE MOST POPULAR NEW AND USED, IMPORTED VEHICLES CURRENTLY PURCHASED IN NEW ZEALAND**

*Please note that these are indicative costs only, based on and estimate of reduced CO2 emissions and fuel usage. .*

**Estimated cost savings offered by low emission / fuel efficient vehicles, as compared with top selling NZ cars**

Cost savings are based on both reduced investment in Carbon credits and fuel use savings. Please note that CO2 emission reductions are based on decreased fuel use only

**NEW ZEALAND NEW VEHICLES:**

**Cost Savings From CO2 Emission Reductions**

Make & Model	Fuel Efficiency (l/100km)	Private Vehicle								Fleet Vehicle								
		Estimated km per annum	CO2 Emissions (g/km)	CO2 Emissions (T/yr)	Difference in CO2 emissions compared with average emissions from a low emission, fuel efficient vehicle (T/yr)	Estimated Life of Vehicle (yrs)	CO2 Emissions Saved over life of vehicle (T)	Monetary savings over life of vehicle at \$15/tonne Carbon tax	Monetary savings over life of vehicle at \$25/tonne Carbon tax	Estimated km per annum	CO2 Emissions (g/km)	CO2 Emissions (T/yr)	Difference in CO2 emissions from std & average low emission, fuel efficient vehicle (T/yr)	Estimated Life of Vehicle (yrs)	CO2 Emissions Saved over life of vehicle (T)	Monetary savings over life of vehicle at \$15/tonne Carbon tax	Monetary savings over life of vehicle at \$25/tonne Carbon tax	
<b>Top Selling New NZ Cars in October 2005</b>																		
Car A	Toyota Corolla	8.5	15000	195.5	2.9325	1.1265	20	22.53	\$338	\$563	30000	195.5	5.865	2.461	20	49.22	\$738	\$1,231
Car B	Holden Commodore	15.3	15000	351.9	5.2785	3.4725	20	69.45	\$1,042	\$1,736	30000	351.9	10.557	7.153	20	143.06	\$2,146	\$3,577
Car C	Ford Mondeo	9.3	15000	213.9	3.2085	1.4025	20	28.05	\$421	\$701	30000	213.9	6.417	3.013	20	60.26	\$904	\$1,507
<b>Examples of 'eligible' low emission &amp; fuel efficient vehicles</b>																		
Car D	Honda Civic Hybrid	5.2	15000	119.6	1.794						30000	119.6	3.588					
Car E	Toyota Prius	4.4	15000	101.2	1.518						30000	101.2	3.036					
Car F	Peugeot 307 (diesel)	5.2	15000	140.4	2.106						30000	119.6	3.588					

**Cost Savings From Reduced Fuel Usage**

Make & Model	Fuel Efficiency (l/100km)	Private Vehicle								Fleet Vehicle								
		Estimated km per annum	Fuel Use per annum (L/yr)	per annum, assuming petrol \$1.50/L &	costs compared with average emissions from a low emission, fuel efficient vehicle (T/yr)	Estimated Life of Vehicle (yrs)	Fuel cost savings over life of vehicle (T)	Estimated km per annum	Fuel Use per annum (L/yr)	Fuel Costs per annum, assuming \$1.50/litre	costs compared with average emissions from a low emission, fuel efficient vehicle (T/yr)	Estimated Life of Vehicle (yrs)	Fuel cost savings over life of vehicle (T)					
<b>Top Selling New NZ Cars in October 2005</b>																		
Car A	Toyota Corolla	8.5	15000	1275	1912.5	932.5	20	\$18,650			30000	2550	3825	2845	20	\$56,900		
Car B	Holden Commodore	15.3	15000	2295	3442.5	2462.5	20	\$49,250			30000	4590	6885	5905	20	\$118,100		
Car C	Ford Mondeo	9.3	15000	1395	2092.5	1112.5	20	\$22,250			30000	2790	4185	3205	20	\$64,100		
<b>Examples of 'eligible' low emission &amp; fuel efficient vehicles</b>																		
Car D	Honda Civic Hybrid	5.2	15000	780	1170						30000	1560	2340					
Car E	Toyota Prius	4.4	15000	660	990						30000	1320	1980					
Car F	Peugeot 307 (diesel)	5.2	15000	780	1170						30000	1560	2340					

**Total Savings From Reduced CO2 Emissions & Fuel Usage - Costs associated with cars A, B & C compared with the cost of a low emission, fuel efficient vehicle (averaged over vehicles D, E and F) [assumes \$25/tonne C]**

Car	Make & Model	Estimated km per annum	Total Savings if Std. Car replaced with low emission, fuel efficient vehicle	Estimated km per annum	Total Savings if Std. Car replaced with low emission, fuel efficient vehicle
Car A	Toyota Corolla	15000	\$19,213	30000	\$58,131
Car B	Holden Commodore	15000	\$50,986	30000	\$121,677
Car C	Ford Mondeo	15000	\$22,951	30000	\$65,607

**USED, IMPORTED VEHICLES (considered for Private vehicles only):**

**Cost Savings From CO2 Emission Reductions**

Make & Model	Fuel Efficiency (l/100km)	Private Vehicle								
		Estimated km per annum	CO2 Emissions (g/km)	CO2 Emissions (T/yr)	Difference in CO2 emissions compared with average emissions from a low emission, fuel efficient vehicle (T/yr)	Estimated Life of Vehicle (yrs)	CO2 Emissions Saved over life of vehicle (T)	Monetary savings over life of vehicle at \$15/tonne Carbon tax	Monetary savings over life of vehicle at \$25/tonne Carbon tax	
<b>Top Selling Used Imports in October 2000-2004</b>										
Car A	Subaru Legacy	11.4	15000	262.2	3.933	2.127	20	42.54	\$638	\$1,064
Car B	Honda Odessey	9.4	15000	216.2	3.243	1.437	20	28.74	\$431	\$719
Car C	Nissan Pulsar	7.2	15000	165.6	2.484	0.678	20	13.56	\$203	\$339
<b>Examples of 'eligible' low emission &amp; fuel efficient vehicles</b>										
Car D	Honda Civic Hybrid	5.2	15000	119.6	1.794					
Car E	Toyota Prius	4.4	15000	101.2	1.518					
Car F	Peugeot 307 (diesel)	5.2	15000	140.4	2.106					
<b>Cost Savings From Reduced Fuel Usage</b>										
Make & Model	Fuel Efficiency (l/100km)	Estimated km per annum	Fuel Use per annum (L/yr)	Fuel Costs per annum, assuming petrol	Difference in annual fuel costs compared with average emissions from a low emission, fuel efficient vehicle (T/yr)	Estimated Life of Vehicle (yrs)	Fuel cost savings over life of vehicle (T)			
<b>Top Selling Used Imports in October 2000-2004</b>										
Car A	Subaru Legacy	11.4	15000	1710	2565	1585	20	\$31,700		
Car B	Honda Odessey	9.4	15000	1410	2115	1135	20	\$22,700		
Car C	Nissan Pulsar	7.2	15000	1080	1620	640	20	\$12,800		
<b>Examples of 'eligible' low emission &amp; fuel efficient vehicles</b>										
Car D	Honda Civic Hybrid	5.2	15000	780	1170					
Car E	Toyota Prius	4.4	15000	660	990					
Car F	Peugeot 307 (diesel)	5.2	15000	780	1170					

**Total Savings From Reduced CO2 Emissions & Fuel Usage - Costs associated with cars A, B & C compared with the cost of a low emission, fuel efficient vehicle (averaged over vehicles D, E and F) [assumes \$25/tonne C]**

Car	Make & Model	Private Vehicle	
		Estimated km per annum	Total Savings if Std. Car replaced with low emission, fuel efficient vehicle
Car A	Subaru Legacy	15000	\$32,764
Car B	Honda Odessey	15000	\$23,419
Car C	Nissan Pulsar	15000	\$13,139

Formula Used Above:

Petrol CO2 = 23 x Fuel Consumption  
Diesel CO2 = 27 x Fuel Consumption

Fuel Efficiency = Litres/100km

Note:

**TOP 5 MAKES AND MODEL OF USED IMPORTED CARS REGISTERED 2000 - 2004 BY CC RATING CATEGORY**

2004	MAKE	MODEL	TOTAL
	SUBARU	LEGACY	8,601
	HONDA	ODYSSEY	5,167

**APPENDIX G:**

**CASE STUDIES ON BUSINESSES WHO HAVE PURCHASED FUEL EFFICIENT AND LOW EMISSION VEHICLES**

- 1. Urgent Couriers**
- 2. IAG New Zealand Limited**
- 3. Vodafone New Zealand**

## **Greening of Business Vehicle Fleet, Case Study**

### **Urgent Couriers**

#### **Selection of Low Emission, Fuel Efficient Vehicles for Courier and Management Fleets**

Urgent Couriers is a company that is committed to sustainability and have incorporated a number of environmental and social initiatives into their business practices. As a courier service is based upon the transport of goods, Urgent Couriers are committing to investigating ways to reduce their environmental impact as related to transport.

In 2003 Urgent Couriers was approached by Honda New Zealand with a lease package arrangement for the Honda Jazz, a small 1300cc vehicle that meets the United States ultra low emission vehicle status. With a total of 80 owner drivers (70 cars/vans and 10 cycle couriers) contracted to Urgent Couriers, Honda was able to provide a 45 month full service lease at a rate that was competitive against the standard practice of purchasing 6 – 7 year old Japanese imported vehicles as courier vehicles. The business case for the Honda Jazz showed a 30 percent savings in fuel costs. However, at that time none of the 70 owner drivers were willing to take up the lease option.

Three key barriers were identified for the conversion to the Honda Jazz lease. The first was a general reluctance to change and the unproven status of the Honda Jazz as a courier vehicle. Another barrier was a lack of appreciation of the fuel cost savings of the Honda Jazz compared with the 1500 /1600cc second-hand imported vehicles typically used by the couriers. This lack of appreciation of the fuel savings was in spite of the business case showing a 30 percent savings and was tied into the vehicle model being unproven. The third and most significant barrier was the 45 month commitment required by the lease agreement. Typically, the courier industry has a relatively high turnover and owner drivers may stay in the industry for less than the term of the lease. Urgent Couriers also have a three month trial period for new drivers, which made new contractors unlikely to commit to a lease agreement within the trial period.

Together Urgent Couriers and Honda sought to overcome these barriers. In September 2003 Steve Bonnici, a director of Urgent Couriers, decided to set an example by replacing his own company vehicle with a Honda Jazz. Steve's previous vehicle was an older four cylinder Subaru Legacy and the fuel cost savings have been significant. The design of the Jazz interior and, specifically, the ability to fold the seats down flat, was shown to provide more than adequate capacity for goods. Honda amended the terms of the lease agreement to allow leases to be transferred between owner drivers and provide for couriers to rent the Honda Jazz during the three month trial period, at a rate only slightly higher than the lease cost. The rental arrangement is then able to be transferred over to a lease agreement.

As a result of being able to see a Honda Jazz in action and the increased flexibility of the lease terms, Honda Jazz vehicles now make up approximately 20 percent of the owner driver fleet. Urgent Couriers have also replaced their other company owned vehicles with the Honda Jazz, resulting in four in total that are used by the management staff.

## **Greening of Business Vehicle Fleet, Case Study**

### **IAG New Zealand Limited**

#### **Selection of Petrol / Electric Hybrid Vehicles**

IAG New Zealand Limited (IAG NZ), which trades under the State and NZI general insurance brands, is the largest general insurer in the New Zealand market. Over the last three years IAG NZ has adopted a sustainability strategy, which includes setting corporate targets to reduce resource usage. As a result, a goal was set to reduce vehicle emissions by 5 percent over the 2004/2005 financial year. This initiative is in line with similar measures undertaken by the Australian parent company.

IAG NZ has approximately 1,900 staff nationwide, who are supported by a vehicle fleet of around 260 cars. The fleet is leased over a period of 45 months and mainly comprises of 1.8 to 2.4-litre Hyundai vehicles. In 2004 IAG NZ put out a tender to the market for a vehicle lease provider to manage the company fleet. The company's sustainability strategy was a core component of the tender process and a proactive vehicle leasing company was required to enable IAG NZ to meet their 5 percent fuel reduction target. IAG NZ stipulated that the fleet include four each of the Toyota Prius and the Honda Civic Hybrid vehicles. Customfleet was the successful bidder and in addition to providing the hybrid vehicles has also been working on other initiatives to help reduce the environmental impact of the IAG NZ fleet.

The eight hybrid vehicles were selected in spite of the business case, which showed a significant cost increase between hybrid and standard company vehicles. Typically, IAG NZ require their sustainability initiatives to be economically viable as well as meeting company environmental (and social) targets. Although the hybrid vehicle purchase did not achieve this level of economic viability, the expenditure was approved in order to enable the company to meet its corporate targets on fuel usage. It was also seen as a worthwhile exception that would raise staff and the business community's awareness of low emission vehicles.

The hybrids were selected over other low emission and fuel efficient vehicles on the basis that they were appropriate for the company's needs, in terms of the size and comparison with the existing fleet. It was also thought that as a new and innovative technology, the hybrid vehicles would make a greater impact and capture people's imagination more than other low emission, fuel efficient but petrol fuelled models.

IAG NZ's vehicle fleet is primarily to transport people, rather than goods or equipment. Therefore hybrid vehicles were fit for purpose. The 1.5 L (assisted)<sup>14</sup> Toyota Prius' were given to staff who tend to travel greater distances, and therefore require a more powerful vehicle, and the 1.3L (assisted)<sup>1</sup> Honda Civic Hybrids were given to IAG NZ staff who predominantly travel shorter, local trips.

Feedback from staff has been very positive for both hybrid models. Later this year a further eight hybrid vehicles will join the IAG NZ vehicle fleet. These additional hybrid vehicles were approved in the original business case, and their selection has been strengthened by the positive feedback from staff. Anthea Ogilvie, Sustainability Consultant for IAG NZ, has advised that the increased cost is the only barrier that is preventing IAG NZ from replacing the rest of their fleet with hybrid vehicles.

*Should other businesses have questions on this topic, IAG NZ welcomes them to contact Anthea Ogilvie, either by email to [Anthea.Ogilvie@iag.co.nz](mailto:Anthea.Ogilvie@iag.co.nz) or by phoning +64 (09) 969 3880.*

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<sup>14</sup> The electric motor assists the petrol motor and therefore the vehicle power is greater than that of a standard vehicle with the same CC rating.

## **Greening of Business Vehicle Fleet, Case Study**

### **Vodafone New Zealand Limited**

#### **Company Policy to replace fleet vehicles with Honda Civic Hybrids**

As part of the Vodafone graduate programme, the graduate team are required to undertake a project that complements the company's values, one of which is 'Passion for the World Around Us'. This company passion encourages employees to identify and pursue projects that offer environmental or community benefits as well as being good for the business.

The 2004 graduate team chose sustainable transport as their project, specifically, the introduction of hybrid vehicles into the Vodafone fleet and native tree planting to offset carbon emissions. The project would deliver environmental benefits through reduced petrol consumption and hydrocarbon emissions. And the community would benefit through the reduction of health problems associated with these emissions as well as through the planting of trees at a local school.

The project was enthusiastically taken up by the Vodafone management team, based on its ability to meet company objectives, display environmental considerations and reduce the size of Vodafone's environmental footprint. The project also follows on from previous Vodafone initiatives that have reduced the overall size of the vehicle fleet from 120 vehicles three years ago, to the 51 vehicles today. The graduates led the project and were also sponsored by the Executive Team and the Supply Chain and Corporate Responsibility teams.

The first step was to review the current 51 fleet vehicles and identify those which could be replaced with a hybrid. Of the 51 vehicles, 28 were excluded on the basis that a hybrid vehicle would not be "fit-for-purpose". The majority of these were four wheel drive vehicles used for off-road access and for towing infrastructure. The fleet list was narrowed down to the 23 vehicles that are pool cars used for driving around town, and where a hybrid replacement would be suitable. Many of these 23 vehicles were of a higher engine rating than the 1.5L Toyota Prius or the 1.3L Honda Civic Hybrid, but the graduate team and management felt the hybrids were suitable alternatives for these cars.

The next step was to prepare a business case for replacing the 23 pool cars with hybrids, as the lease agreement expired for each one. The Honda Civic Hybrid was selected as the preferred option and the financial assessment showed a NPV savings of \$70,000 over three years. These cost savings (primarily lower fuel costs) were supported by other benefits, such as environmental savings, health benefits to the community and building reputation and trust with stakeholders. As the telecommunications industry is based around the uptake of new technology and consumer trends, the conversion of Vodafone vehicles to new technology hybrids offers Vodafone significant marketing value and potential brand enhancement.

Vodafone identified the main barriers to overcome in order to bring about the Company policy change to select hybrid vehicles. These included an additional up-front cost and the unsuitability of hybrid vehicles to meet some needs. The capital cost barrier was overcome by selecting the Honda Civic Hybrid, which is a similar price to a non-hybrid Civic and offers a cheaper lease price than many of the current fleet vehicles of similar engine size. The unsuitability of hybrids for some applications was recognized as a real barrier and approximately half of the Vodafone fleet hybrid vehicles were deemed to not "fit for purpose". However, this is something that may change with time, as a greater range of hybrid vehicles enter the New Zealand market. A further option for Vodafone is selection of other low emission vehicles with 4WD capability.

Barriers that were encountered due to misplaced perceptions or a lack of awareness were that hybrids are lacking in speed/power and a general lack of awareness for the environmental and fuel cost savings that could be realized with hybrids. The main barrier was a lack of education around the Honda Hybrid vehicle and in 2005 this will be addressed through more aggressive personalized marketing to fleet stakeholders, to encourage uptake. These perceptions will need to be overcome by both the education of staff and by experience, as the hybrid vehicles become incorporated into the fleet. Vodafone have indicated that they may also look into other non-hybrid but low emission, fuel efficient vehicles to add to the current policy.

The following is a comment from Nathan Harraway, a representative of the 2004 Graduate Team, on what he considers to be the reasons behind the successful implementation of the Vodafone Green Fleet policy:

*“Education on the environmental and health impacts of hydrocarbon emissions, backed up with a solid financial business case was the deciding factor in our organization”.*<sup>15</sup>

Ultimately, the business case for the uptake of hybrid vehicles was able to appeal to Vodafone on the basis that it offered the full range of benefits; financial, environmental / social and marketing benefits. When presented in this manner, the question became not “Why would we green our fleet?” but “Why wouldn’t we?”

Vodafone would like to acknowledge the assistance that was provided for this project by both the Sustainable Business Network (SBN) and Esanda. Through their GreenFleet programme, SBN was both an information source for Vodafone and assisted them with the tree-planting scheme, which is aimed at offsetting fleet vehicle emissions. Esanda are Vodafone’s fleet partner and were highly supportive throughout the project.

*Additional Information:*

*Vodafone would like to offer their assistance to other businesses who may be considering greening their own vehicle fleet. Please contact Annette Culpan on 09 355 0814 for further information.*

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<sup>15</sup> Personal comment by Nathan Harraway, representative of the 2004 Vodafone Graduate Team and instrumental in the Vodafone Green Fleet project (May, 2005).

