

Green guide

Best Practice Guide to driving a greener path



 **FleetPartners**
service driven

Contents

Why go green with your fleet?	3
How can this guide help?	3
Fast facts	3
Best Practice Measurement and Setting Targets	4
What do I measure?	4
How to measure your fleets direct emissions	6
Emission factors and methods	6
Transport fuels (where fuel use data is available)	7
FleetPartners Reporting	9
How to set carbon reduction targets	9
Will there be cost savings?	9
Developing a New Vehicle Policy	10
Manufacturer Vehicle Range	10
Vehicle Selection Criteria	10
Vehicle Policy Tiers based on Whole of Life Costs	10
Pool vehicles	10
City verses Country driving	10
Improvements to my existing fleet	15
Vehicle condition and maintenance	15
Fuel Management Strategies	15
Driver engagement and education	15
Glossary and Useful Links	17
Glossary	17
Useful Links	18
Carbon Calculators – for businesses	18
Carbon Calculators - for individuals	18



"This is a really useful document for your clients and really readable too. I admire what you have produced."

Mark Roberts
GreenFleet Programme Manager
Sustainable Business Network

FleetPartners, proud to be a member of Sustainable Business Network, GreenFleet

Why go green with your fleet?

The environment is a hot topic and at the forefront of many corporate minds at the moment and will continue to be, as the New Zealand Government introduces measures to meet our Kyoto Protocol commitment. Transport in New Zealand contributed 77.2 million tonnes of CO₂ in 2005, demonstrating the major role it needs to play in reducing New Zealand's carbon emissions. Organisations in reviewing the carbon footprint generated by their fleet will be contributing to our Kyoto commitment and achieve financial rewards.

The financial rewards of 'going green' are demonstrated throughout this guide, but there are other benefits too - fulfilling Corporate Social Responsibility (CSR), Environmental Management System (EMS) or National Greenhouse and Energy Reporting System (NGERS) obligations, increasing your competitive edge and attracting and retaining staff are all part of the value that can be derived from 'going green'.



How can this guide help?

This guide has been compiled to help you understand all the factors involved when considering a greener fleet, answer some frequently asked questions, and ensure you have access to practical advice and real solutions for reducing your carbon footprint and saving money.

The aim of this guide is to assist you with:

1. Understanding the New Zealand Governments environmental initiatives and how they may impact on your business today or in the future.
2. Building on your existing knowledge of fleet related environmental steps and procedures you can implement.
3. Measuring your fleet's carbon emissions, fuel usage and kilometres travelled.
4. Identify your options so you can make informed choices when developing new vehicle policies or enhancing existing ones.
5. Take action now with the introduction of some simple measures and steps.
6. Where you can go to understand more about carbon emissions and the implications for your organisation.

Fast facts

- New Zealand Government ratified the Kyoto Protocol on 19 December 2002, committing to limit its levels of greenhouse gas emissions to 1990 levels, on average, during the period 2008-2012
- In 1990, New Zealand's total greenhouse gas emissions were equivalent to almost 62 million tonnes of carbon dioxide.
- The principle growth in New Zealand's emissions comes from increased carbon dioxide (CO₂), primarily from the energy sector which has grown by almost 42 percent relative to its emissions in 1990. Most of this increase has come from transport (65% increase in emissions) - equating to 19% of New Zealand's total greenhouse gas emissions.
- An automatic petrol vehicle travelling 75,000km over the term of the lease with CO₂ emissions of 240g/km produces 18 tonnes of CO₂, whilst a return flight from Sydney to London produces 10.11 tonnes of CO₂.
- Ministry for the Environment is the agency responsible for co-ordination of climate change across government. The Ministry is the Designated National Authority under the UN. It is also responsible for reporting under the UNFCCC and the Kyoto Protocol.
- Rather than measuring every companies CO₂ emissions, the government prefers to place the point of obligation so as to limit the number of participants, facilitate scheme administration, and provide appropriate incentives to change behaviour and reduce emissions.
- In the **energy** sector (**including liquid fossil fuels** and stationary energy), this will generally mean that participants with unit obligations will be located at the point of fuel supply, production or import. What this means is that the cost of credits or carbon units, based on the amount of fuel purchased will be passed down to the end user through the pump.

Liquid fossil fuels (mainly transport)	Preferred: oil companies Alternative: as above, with an option for the users of jet fuel for domestic purposes (ie, airlines) to voluntarily opt in to become participants with unit obligations.
--	--

Best Practice Measurement and Setting Targets

It is important to note the difference between Carbon Management and Carbon Neutrality. The latter is a more absolute target, generally embarked upon by those wishing to claim carbon neutrality for their product or service for marketing or public relation reasons. The Ministry of Environment has developed New Zealand-specific guidance on measuring greenhouse gas emissions, including emissions factors, available at www.mfe.govt.nz/publications/climate/guidance-greenhouse-gas-reporting-apr08/index.html.

What do I measure?

Simply the steps towards measurements are:

1. Select a base year

It is important you choose a base year that has complete and robust data.

2. Define the scope of your emissions

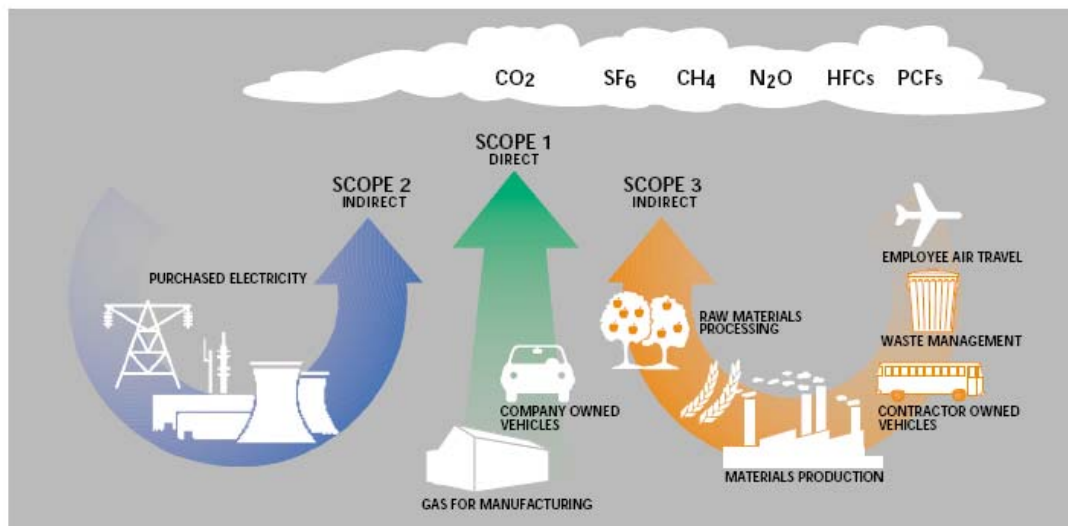
There are two categories of emissions generated in the course of conducting business:

- Direct emissions – that that are generated from on-site production or direct combustion of fossil fuels through owned/managed facilities, vehicles and equipment.
- Indirect emissions – which are divided into two categories called Scope 2 (electricity consumption) and Scope 3 (other indirect sources). Scope 2 emissions are generated through the consumption of electricity (kWh) to light and power offices and operations. Scope 3 includes business travel, employee commuting, and outsourced activities.

3. Define your organisational boundary

The Greenhouse Gas Protocol provides two methods for defining organisational boundaries and therefore what should be included in your inventory. Organisational boundaries can be set using either an **equity** or **control** approach. Using the equity method you account for the percentage of GHG emissions as a percentage of your ownership. Using the control approach you account for all GHG emissions if you have “operational” or “financial” control of the company, subsidiary, or facility. Having identified your business’s carbon footprint, or emissions inventory, you can now implement changes which will reduce your emissions over time.

Example



Nb: Both direct and indirect emissions contribute to an organisations emissions profile, but the split is important. It is only the DIRECT emissions which a company has direct control over and therefore the ability to reduce.



Greening your fleet

How green is your fleet? If as an organisation you don't know your fleets' carbon footprint how would you go about calculating it and what can you do to instigate improvements?

The following sections provide information and tips for measuring the environmental impact of your fleet and the steps you can take to make incremental towards a carbon reduction strategy.

When considering the measurement of your fleets' carbon footprint, you need to identify what you are going to measure.

Scope 1 and direct emissions are terms used to describe the carbon emissions produced within the boundary of your organisation, and as a result of its activities. Vehicles owned and operated by your organisation are classified under Scope 1 emissions.

When reviewing the vehicles to be captured within your organisations carbon footprint, consider the following:

- How do you define a company owned and operated vehicle? What combination of the following will make up your definition:
 - Tool of Trade (TOT) vehicles,
 - Vehicle driven by an employee with a TOT entitlement who has opted for a cash allowance
 - Pool vehicles
 - Employee vehicles used for business purposes
- How do you manage the kilometres travelled for each company vehicle? Is it split by business and personal usage?
- Are you currently able to capture the litres of fuel purchased for each company vehicle in your fleet?

How to measure your fleets direct emissions

Your fleets' direct emissions are the amount of CO₂ it produces per year, in tonnes.

The NZ Ministry for the Environment recommends businesses use the *Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (The GHG Protocol)* or *ISO 14064-1:2006 Greenhouse gases – Part 1 Specification with guidance at the organisational level for quantification and reporting of greenhouse gas emissions*.

Both documents are widely recognised and used. They provide comprehensive guidance on monitoring and reporting GHG emissions, and the Ministry believes there is no need to duplicate the content. Those wishing to monitor and report their corporate emissions on a voluntary basis should use these documents for New Zealand operations.

Emission factors and methods

The GHG Protocol categorises emission sources into Scope 1, Scope 2 and Scope 3 activities – an outline of these can be found on the Ministry for the Environment website.

Scope 1 emissions from transport occur from vehicles which are owned or controlled by the reporting organisation and can be done in two ways.

1. Transport fuels where fuel use data is available
2. Transport where no fuel data is available (based on distance travelled)

Under the reporting requirements of ISO 14064-1 and The GHG Protocol, GHG emissions should be reported in tonnes CO₂-e. (Division by 1000 converts kg to tonnes)

Important Note: *Emission factors for combustion of transport fuels are reported in Table 2- Page 7. The emission factors are sources from the Energy Greenhouse Gas Emissions 1990-2007 publication.*

Transport fuels (where fuel use data is available)

The simple calculation and example below provides the tools to calculate your organisations carbon footprint, based on total fuel usage.

Table 2: Fuel combustion emission factors (Transport fuels) – 2007

Fuel	Unit	Emission factor Total CO ₂ -e* (kg CO ₂ -e/unit)	Emission factor CO ₂ (kg CO ₂ /unit)	Emission factor CH ₄ (kg CO ₂ -e/unit)	Emission factor N ₂ O (kg CO ₂ -e/unit)
Regular Petrol	litre	2.32	2.29	0.0136	0.0155
Premium Petrol	litre	2.36	2.33	0.0137	0.0156
Petrol – Default**	litre	2.33	2.30	0.0136	0.0155
Diesel	litre	2.68	2.63	0.00305	0.0440
LPG	litre	1.61	1.59	0.0159	0.00469

* Use the total CO₂-e emission factor for calculating total CO₂-e emissions, rather than summing the totals for CO₂, CH₄ and N₂O.

** The default petrol emission factor should be used if it is not possible to distinguish between regular and premium petrol use.

Assumptions:

The kg CO₂-e per activity unit emission factors supplied in Table 2 is derived using calorific values sourced from the New Zealand Energy Data file 2008. All emission factors incorporate relevant oxidation factors which are sourced from Energy Greenhouse Gas Emissions 1990-2007.

The default petrol factor is a weighted average of regular and premium petrol based on 2007 sales volume data from the New Zealand Energy Data File 2008. It should be used when petrol use data does not distinguish between regular and premium petrol

As with the fuels for stationary combustion these emission factors are not full fuel cycle emission factors and do not incorporate (the Scope 3) emissions associated with the extraction, production and transport of fuel.

Example:

An organisation has 15 petrol vehicles. They used 40,000 litres of regular petrol in 2007.

	Quantity of fuel (litres)	x	Fuel emission factor (kg CO₂/unit)	=	Total Carbon Emissions in tonnes (petrol)
Petrol Calculation	40.000	x	2.29	=	91,600 kg CO ₂ 91.6 tonne CO ₂
			Fuel emission factor total CO₂-e* (kg CO₂-e/unit)		
Petrol Calculation	40.000	x	2.32	=	92,800 kg CO ₂ -e 92.8 tonnes CO ₂ -e

Transport where no fuel data is available (based on distance travelled)

If your records only provide information on kilometres travelled and you do not have information on fuel use, the emission factors in the following table can be used. Note, however, that factors such as individual vehicle fuel efficiency and driving efficiency mean that kilometre-based estimates of CO₂-e emissions are less accurate than calculating emissions based on fuel-use data. The emission factors in the below table should therefore only be used if information on fuel use is not available.

Table 3: Transport emission factors (based on distance travelled) – 2007

Vehicle size class*	Unit	Real world' petrol fuel use estimate (L/100km)	Emission factor Total CO ₂ -e** (kg CO ₂ -e/unit)	Emission factor CO ₂ (kg CO ₂ /unit)	Emission factor CH ₄ (kg CO ₂ -e/unit)	Emission factor N ₂ O (kg CO ₂ -e/unit)
Car - Small (<1600 cc)	Km	7.53	0.175	0.173	0.00102	0.00117
Car - Medium (1600 - <2500 cc)	Km	10.4	0.241	0.238	0.00141	0.00160
Car - Large (>= 2500 cc)	Km	14.2	0.331	0.327	0.00194	0.00221
Car - Default***	Km	10.4	0.241	0.238	0.00141	0.00160

* Example (representative) vehicle models for each of the size classes are: Small = Toyota Echo, Medium = Honda Accord, Large = Holden Commodore.

** Use the total CO₂-e emission factor for calculating total CO₂-e emissions, rather than summing the totals for CO₂, CH₄ and N₂O.

*** The default emission factor should be used if vehicle size class can not be determined.

Assumptions:

The above emission factors in Table 3 assume that all vehicles are petrol. The emission factors are derived by multiplying the default petrol emission factor from Table 2 by 'real world' fuel consumption rates for the petrol light vehicle fleet, based on information from The New Zealand Light Vehicle Fleet: Light Fleet Statistics 2007 (Ministry of Transport 2008). 'Real World' fuel consumption rates take into account 'real world' effects such as driver behaviour. Due to lack of data it is currently possible derive 'real world' fuel consumption rates for vehicles which use other fuels (e.g. diesel, LPG). The above CO₂-e emission factors should therefore be applied to all vehicles (for which only kilometre travelled information is available), regardless of the type of fuel used.

The above emission factors are average and therefore do not reflect the variability in fuel consumption rates between individual vehicles.

The default emission factor (for vehicles of unknown size) is the same as that for medium vehicles (1600 - <2500 cc).

Example:

An organisation has three vehicles which it owns. They are all large vehicles and travelled a total of 37,800km in 2007.

	Distance travelled	x	Emission factor CO₂ for large vehicle (kg CO₂/unit)	=	Total Carbon Emissions in tonnes (petrol)
Transport emission	37,800	x	0.327	=	12,360kg CO ₂ 12.4 tonne CO ₂
			Emission factor total CO₂-e** (kg CO₂-e/unit)		
Transport emission	37,800	x	0.331	=	12,511 kg CO ₂ -e 12.5 tonnes CO ₂ -e

FleetPartners Reporting

FleetPartners Fuel Consumption report provides organisations with a monthly carbon emission summary per vehicle and by the total fleet. This report is generated based on actual fuel purchased, with data supplied direct from fuel card transactions and calculated against the make and model based on manufacturer data being available. Where manufacturer data is not available, a report can be created utilising the fuel usage formula (refer pg.5, Table 2). Analysis of this report will assist your organisation identify actual driver fuel consumption against manufacturer recommended consumption.

The abovementioned calculations provide a clear indication of how reducing your fuel usage, will positively impact on your carbon footprint. Organisations also need to consider if drivers are using the most efficient vehicles based on the kilometres they travel and if they are making unnecessary journeys?

How to set carbon reduction targets

The setting of carbon reduction targets may be part of your organisations CSR, EMS, Fleet Managers fleet efficiency strategy or compliance with regulatory obligations.

Having determined the current environmental impact of your fleet, the setting of targets will enable you to identify where you want to move to.

A structured and formal approach will enable you to:

- establish agreed overall carbon reduction objectives,
- set measurable targets e.g. 5% annual reduction in vehicle carbon emissions,
- ensure the timescales for targets are achievable and
- review your Vehicle Policy to identify how you can achieve incremental improvements.

Do not rush through changes to your policy. To achieve company wide endorsement it is important to understand the implications of policy change with respect to:

- attraction and retention of staff,
- vehicle selection and managing the balance between use for business purposes and personal use the targets you have set and the vehicles available within the Australian automotive market, and
- how the vehicles selected impact on the car allowance value.

GHG accounting and reporting should be based on the principles of:

- Relevance
- Completeness
- Consistency
- Transparency
- Accuracy

Will there be cost savings?

Cost savings will be realised through a review of your fleet composition and fuel expenditure. Utilising FleetPartners Vehicle Cost Comparator the Annual Whole of Life costs of your organisations existing fleet can be compared with alternative vehicles.

The Vehicle Cost Comparator enables you to consider the fuel costs per vehicle model per term and their carbon emissions.

Best Practice Vehicle Policy

The vehicles you select equates to the environment impact of your fleet. The development to a best practice Vehicle Policy requires careful consideration of the carbon footprint generated by your fleet. Having selected the vehicle mix within your Vehicle Policy there are limited ways in which you can reduce amount of carbon dioxide and other air pollutant emitted. The below information provides you with recommendations on how to develop a best practice Vehicle Policy and how to make incremental improvements to your existing fleet.

Developing a New Vehicle Policy

Manufacturer Vehicle Range

Are you currently restricting the vehicle choice based on manufacturer? Identifying the range of 'green' vehicles offered by a manufacturer will assist in the breadth of vehicles offered to your drivers. Consideration needs to be given to adding manufacturers that provide alternative fuel types and hybrid vehicles.

Conduct test drives with designated drivers to gauge feedback on hybrid technology or 'greener' vehicle options. This feedback will assist in the formulation of vehicle selection and implant advocates within the business as part of the Vehicle Policy change management strategy.

Vehicle Selection Criteria

How do you determine the vehicle selection criteria within your Vehicle Policy? Traditionally vehicle selection criteria includes automatic transmission, ANCAP safety rating, number of doors and colour, however in addition you can limit the vehicle selection based on fuel consumption and carbon emissions.

The addition of fuel consumption and carbon emission criteria is a very direct and effective way to reduce your organisations carbon footprint. However there may be resistance from drivers, therefore requiring a managed approach to implementation.

Vehicle Policy Tiers based on Whole of Life Costs

Introducing a "Whole of Life" policy approach will enable your organisation to make vehicle selections not based solely on monthly rental. Identifying the "Whole of Life" costs also takes into account fuel, maintenance, Fringe Benefits Tax (FBT) and additional running costs i.e. insurance, additional tyres.

In addition to the financial implications of your vehicle selection, the "Whole of Life" approach can be applied to the tonnes of CO₂ emissions, Green Vehicle Guide overall rating and CO₂ grams/km (on an individual vehicle basis). This will enable your organisations to review the environmental costs of the vehicle.

The combination of these two elements presents a powerful picture of where fuel consumption reductions can be achieved based on the vehicle type selected. Transitioning your fleets from 6 cylinders to 4 cylinder vehicles can lead to a reduction in fuel consumption of up to 20% per vehicle.

Pool vehicles

Pool vehicles can be selected based on exceptional environmental performance, by including alternative fuel types (LPG or ethanol), hybrid or very efficient diesel or petrol models providing an opportunity to implement fleet changes.

City verses Country driving

Reviewing your fleet mix based on the distance travelled or city/country driving will enable you to distribute vehicles based on their level of environmental impact. A vehicle with high carbon emissions travelling short distances and predominantly city driving will have a greater environmental impact compared to when it is utilised for long distance/country driving.

Identifying the fuel efficiency of the vehicles within your organisations fleet based on manufacturers recommend fuel consumption, driving habits and behaviours will enable you to significantly reduce your carbon footprint and manage driver resistance to vehicle selection changes.



Understanding alternative powered vehicles

Switching to a smaller 4 cylinder vehicle will dramatically reduce emissions. Vehicles that run on alternative fuel types or a combination of traditional and new fuels will reduce your carbon footprint.

The alternative fuel vehicles currently available in New Zealand are:

Diesel vehicles

Although Diesel-powered cars generally have a better fuel economy than equivalent petrol engines and produce less greenhouse gas pollution the critical constituents of diesel exhaust include particulate matter (PM), oxides of nitrogen (NOx), sulphur dioxide (SO₂), carbon monoxide (CO), and a laundry list of toxic chemicals, many of which are known or suspected to cause cancer. Combined with cleaner, low sulphur diesel fuel however, new engines and emission control technologies can reduce pollution by 90% or more.

Advantages

- Fuel economy, less maintenance, runs cooler, more power at lower RPM's.
- You will normally get 20% - 30% more kilometres per litre compared to a similar powered petrol engine. The engine has to be built stronger, so it lasts longer. The engine does not require an electrical ignition system, so less to maintain, and more reliable starting when damp.
- Diesel engines are also cheaper to maintain as they have less parts than that of a petrol powered engine.
- The life span of a diesel engine is also much longer.
- If you're looking for torque, for pulling a boat or other equipment, then the diesel engine has the supreme advantage.
- With trucks, diesel is normally the leader over petrol engines in terms of performance and kilometres per litre. Diesel trucks will get more kilometres than petrol trucks, and the price for diesel is a bit cheaper than petrol these days. With petrol prices on the rise, diesel will continue to dominate for a long time to come. Improved torque: superior torque output is one reason larger vehicles are ideally suited for diesel engines

Disadvantages

- Made from a type of petroleum
- Does not burn clean enough even with current high tech and costly fuel systems.
- Engine noise can be louder
- Initial purchase may be higher than a standard petrol model
- Diesel exhaust is associated with cancer and non-cancer health effects. Smog and soot trigger asthma attacks and worsen the health of individuals with asthma.

Biofuels

Biofuels are combustible fuel produced from biomass. These fuels are usually in the form of alcohols, esters, ethers, and other chemicals produced from biomass. The two main biofuels are biodiesel and bioethanol.

Advantages of Biodiesel

- It is made from renewable resources.
- It performs just as well as the normal diesel fuel.
- It causes less pollution as compared to diesel-powered engines.
- It is relatively less inflammable compared to the normal diesel.
- It can be mixed with normal diesel fuel.
- It is biologically degradable and reduces the danger of contamination of soil and underground water during transport, storage and use.
- It contains no sulphur, the element responsible for acid rain.
- There are no extra costs for the conversion of engines in comparison to other biological fuels.
- It is suitable for catalytic convertor.
- Its refineries are comparatively simpler and environmental-friendly in design than typical petrochemical refineries.
- It produces 78% less carbon dioxide (CO₂) than normal diesel fuel.

Disadvantages of Biodiesel

- It is more expensive than normal diesel fuel.
- It tends to reduce fuel economy.
- It is less suitable for use in low temperatures.
- It gives out more nitrogen oxide emissions.
- Only a few petrol stations offer biodiesel-fuel.
- It can only be used in diesel-powered engines.
- It can cause inner fuel tubes of older vehicles to lose their long-lasting qualities.
- It is more likely than petroleum diesel to attract moisture, which can cause problems in cold weather (fuel freezing, deposit of water in the vehicle fuel delivery system, fuel cold flow, clouding, and an increased corrosion, for example) and increase the risk of microbial growth (which can also clog engine filters adding to maintenance costs).

Advantages of Bioethanol

- The use of ethanol-blended fuels can reduce the net emissions of greenhouse gases by as much as 37.1%, which is a significant amount.
- Ethanol-blended reduces greenhouse gases by up to 3.9%.
- The net effect of ethanol use results in an overall decrease in ozone formation, an important environmental issue. (The emissions produced by burning ethanol are less reactive with sunlight than those produced by burning fuel, which results in a lower potential for forming the damaging ozone).
- Ethanol is considered a renewable energy resource because it is primarily the result of conversion of the sun's energy into usable energy. Creation of ethanol starts with photosynthesis, which causes feedstocks, such as sugar cane, to grow. These particular feedstocks are processed into ethanol.
- It benefits energy security as it shifts the need for some foreign-produced oil to domestically-produced energy sources.
- It reduces greenhouse gases.
- It burns more cleanly (more complete combustion).
- It reduces the amount of high-octane additives.
- The fuel spills are more easily biodegraded or diluted to non toxic concentrations.

Disadvantages of Bioethanol

- Production of ethanol requires significant energy and large amounts of land.
- Fuels with more than 10% ethanol content may not be compatible with some fuel system components and may cause corrosion of ferrous components.
- It can negatively affect electric fuel pumps by increasing internal wear and undesirable spark generation.
- It is not compatible with capacitance fuel level gauging indicators and may result in erroneous fuel quantity indications in vehicles that employ that system.

Hybrid vehicles

Hybrid vehicles are fitted with conventional petrol engine and a supplementary electric battery (power-plant).

Advantages

- Fewer carbon dioxide emissions
- Potentially utilise a smaller petrol engine, offering better fuel economy
- Petrol engine shuts down to idle at lights, using the battery to keep air conditioning running

Disadvantages

- Higher initial purchase cost
- Unseen running costs
- Resale values not fully understood
- Still requires fossil fuels
- Uncertainty around life of battery, currently estimated at 10 years
- Freeway or country driving runs on petrol engine, with emissions and fuel economy of a normal vehicle

Vehicles currently available (@ November 2008)

- Toyota Prius, CO₂ 106 g/km, 4 cylinder
- Honda Civic, CO₂ 109 g/km, 4 cylinder
- Lexus GS450h, CO₂ 186 g/km, 6 cylinder
- Lexus RX400h (4WD), CO₂ 192 g/km, 6 cylinder
- Lexus LS600hL, CO₂ 219 g/km, 8 cylinder

Future releases (@ November 2008)

- Toyota Camry hybrid – December 2009
- Toyota Prius 1.8L, CO₂ g/km – July 2009

LPG

This is the longest standing alternate fuel type.

Advantages

- Amongst the lowest life-cycle greenhouse gas emissions in the automotive fuel category
- Widespread availability of LPG service stations
- Dual fuel capabilities, increases the distance travelled between service stations
- Better for the engine and can prolong engine life
- Has a higher octane rating than petrol (108 compared to 91)

Disadvantages

- Increases fuel consumption by approximately 30% however LPG is up to 50% cheaper than petrol.
- Minimal carbon dioxide emissions reduction
- Federal Government grants not applicable vehicles used for commercial or business use
- Still may utilise fossil fuels
- Not available on all vehicle models
- Initial conversion can cost up to \$3000. However, you could repay the cost of the conversion in 2 years
- Has a lower energy density than petrol

Vehicles currently available (October 2008)

- Ford FG Falcon, XT Wagon, XT Sedan
- Ford BF Falcon MkIII, XT
- Holden VE Commodore, Omega Sedan

Electric vehicles

Advantages

- Electric cars are 100% emission-free, having no polluting by-products; therefore they are cleaner than hybrid automobiles.
- They secure their power from batteries, the sun or hydrogen fuel cells.
- Battery-powered electric cars, besides being cleaner, are more fuel-efficient, get better mileage and have less moving parts to wear out.
- Cars powered by hydrogen fuel cells are emission-free, lightweight, compact, and three times as efficient as gas engines, have excellent ranges, easy refuelling and are totally safe.
- Lower emissions than a hybrid and higher efficiency.

Disadvantages

- Some of the disadvantages of all electric cars have been their limited range, long recharge times or exorbitant costs associated with continual powering of the battery that runs the electric motor.
- Although solar-powered electric cars, which are equipped with batteries that are charged by the sun, have longer ranges, they are still dependent on batteries, which have size and weight limitations.
- To meet public acceptance, a car must include specific conditions: drive a minimum of 300 miles (482 km) between re-fuelling, fill-up promptly and drive fast enough to match traffic.
- An electric car cannot go more than 100 miles (161 km) between re-charging, is difficult to re-charge in some instances and doesn't drive beyond 60 mpg as yet.



Improvements to my existing fleet

The following simple steps can be taken to achieve incremental improvement in the carbon footprint of your existing fleet.

Vehicle condition and maintenance

Term and kilometre management

Do you know the age, term and kilometres of all the vehicles within your fleet? Should your fleet comprise of vehicles with a term of greater than 3 years the carbon emissions may be significantly higher for their modern equivalent.

Are some of your drivers travelling more kilometres than others? Reviewing your fleet from a kilometre perspective will enable you to rotate vehicles amongst driver to manage total distance travelled.

Vehicle condition and maintenance

Vehicle maintenance can assist in keeping your fleets carbon emissions to their minimum. There are a couple practical measures you can take in this area to improve the environmental performance of your fleet.

Servicing your fleet

Regular servicing of the vehicles within your fleet will ensure that fuel economy is being maintained at its optimal level. Generally vehicles that are overdue for a service are more likely to be performing at above than average fuel efficiency levels.

Tyre performance

Drivers who regularly maintain and monitor the correct inflation in their tyres will observe a positive impact on fuel consumption and vehicle handling. The monitoring of tyre tread levels by drivers will also reduce occupational health and safety risk.

Fuel Management Strategies

Actively managing and monitoring individual vehicle and total fleet fuel expenditure can save the organisation money and reduce your carbon footprint.

The three main areas where improvements can be achieved are:

- Fuel cards

Inclusion of fuel cards within your fleet management agreement will enable comprehensive reporting based on each vehicles fuel consumption and total carbon emissions. When measuring your fleet's environmental impact and setting reduction targets an audit of company expensed fuel may indicate which staff members require fuel cards. This will enable accurate reporting and tracking of your carbon footprint, organisation wide.

- Recording kilometres travelled

Company issued fuel cards will identify the costs associated with running your fleet. Company procedures need to be implemented to ensure that odometer readings are supplied at each fuel purchase by all drivers. This will enable valuable analysis of fuel reports and accurate measurement of carbon emissions.

- Changing driver behaviour

Fuel consumption reporting will enable comparative analysis of driver's actual fuel consumption versus the vehicle manufacturers' recommendations. This detailed reporting will provide insight into drivers who purchase cheaper fuel and are fuelling private vehicles. Drivers who are conscientiously managing fuel costs could also be rewarded.

Driver engagement and education

Critical to the improvement and adoption of a more environmentally focussed fleet is the training and education of all drivers.

Most employees will be actively participating in environmental reduction measure within their day to day lives. The extension of these behaviours into the work place is often readily adopted by drivers if they are involved in the development and implementation of a new vehicle policy. Regular communication with drivers will benefit the organisation, staff morale and the environment.

Consulting with your drivers

Consulting with your drivers throughout the policy development and vehicle selection phase via focus groups, formal meetings, staff surveys and test driving potential vehicles will enable all stakeholders to identify the benefits, solutions, models and contents of the policy. Positive engagement with drivers will open up the discussion enabling a greater range of ideas and potential result in a vehicle policy that exceeds organisational expectations. Communication throughout the process will also ensure that the implementation phase is managed with minimal disruption and de-motivation of drivers.

Extended Driver Education

Traditional driver education focuses on safety, however fuel efficiency and reducing your fleet's environmental impact should also be incorporated. The following tips will assist drivers reduce fuel consumption¹:

Drive in high gear

An engine runs most efficiently between 1,500 and 2,500 rpm (this may be lower in diesel vehicles); therefore to maintain this rev level drivers should change up through the gears when practical and before 2,500 rpm. For an automatic transmission the gear shift will be quicker if the driver eases back slightly on the accelerator once momentum has been achieved.

Speed reduces economy

Travelling at high speeds results in higher fuel consumption. A vehicle travelling at 110km/h can use up to 25% more fuel than it would at 90km/h. For city driving the most fuel efficient speed is 60km/h.

Minimise vehicle drag

External vehicle accessories such as roof racks and spoilers or having the window open will increase air resistance in a travelling vehicle. These factors could increase fuel consumption by up to 20%.

Monitor air conditioner usage

Utilising an air conditioner will increase fuel consumption. However when travelling at speeds over 80km/h an air conditioner will be better for fuel consumption than having a window open due to the extra aerodynamic drag.

Travel light

Unnecessary cargo will impact on the fuel usage; an extra 50kg of weight may increase fuel costs by up to 2%.

Try not to leave your vehicle idling longer than 30 seconds

It uses more fuel than switching off and restarting your vehicle. The net increased wear and tear from this practise is negligible.

Plan your journeys

Drivers who have the flexibility with their travel plans should take time to identify make travel decisions that result in fewer trips. Ways to improve travel planning include:

- Combine journeys into one trip rather than several trips. This will save both time and the fuel consumption resulting from running a cold engine).
- Avoid travelling during peak-hour wherever possible. This will reduce the time the vehicle spends idling.
- Investigate alternative transport methods where possible.

Lead by example

Drivers often have an emotional attachment to their vehicle. The New Zealand tradition of a large 6 cylinder vehicle has formed the foundation of many fleets. Implementing more fuel efficient 4 cylinder vehicles can result in morale issues amongst drivers. In conjunction with entering into consultation with drivers during the development of a new vehicle policy, a strong visual message can be portrayed by Directors and Senior Managers driving more environmentally sound vehicles that align with the new policy direction.

New vehicles are generally more fuel efficient, safer, and have fewer emissions. Most importantly, when choosing a vehicle, be sure the power is appropriate for the purpose – this directly affects fuel efficiency.

Source: <http://www.greenvehicleguide.gov.au/GVGPUBLICUI/StaticContent/greenerMotoring.aspx>, cited 1 September 2008; www.greenfleet.org.nz cited 28 October 2008, www.rightcar.govt.nz cited 28 October 2008, www.allabouthybridcars.com

Glossary and Useful Links

Glossary

Bio fuels - renewable fuels derived from biological materials that can be regenerated.

Carbon Credit — issued as a certificate which equates to a single tonne of carbon dioxide being eliminated for the Earth's atmosphere by some means.

Carbon Offset – a financial instrument representing a reduction in greenhouse gas emissions by investing in emission reduction projects. One carbon offset represents the reduction of one metric ton of carbon dioxide, or its equivalent in other greenhouse gases. The most common types:

- Renewable energy e.g. such as wind farms, biomass energy, or hydroelectric dams
- Bio-sequestration e.g. Green Fleet
- Energy efficiency projects

Carbon Footprint - the amount of greenhouse gas produced resulting from the impact human activities have on the environment. Measured in units of carbon dioxide.

Carbon Neutral – CO₂ emissions to the atmosphere are fully offset, counterbalanced, compensated or neutralised through the purchase of an equivalent amount of carbon credits from cleaner production sources, the generation of renewable energy or energy efficient projects.

CO₂e - Carbon Dioxide equivalent - An abbreviation of 'carbon dioxide equivalent' and is the internationally recognised measure of greenhouse emissions. There are six gases controlled by the Kyoto protocol and each of these gases has a different capacity to heat the atmosphere. This is referred to as their global warming potential (GWP).

Direct Emissions - produced from sources within the boundary of an organisation and as a result of that organisation's activities. For example, a company with a vehicle fleet would report greenhouse gas emissions from the combustion of petrol in those motor vehicles as direct emissions.

Emission Factor – can be defined as the average emission rate of a given pollutant, for a given source, relative to the intensity of a specific activity. Emission factors are used to derive estimates of air pollutant or greenhouse gas emissions based on the amount of fuel combusted, the number of animals in animal husbandry, on industrial production levels, distances travelled or similar activity.

Environmental Management Scheme (EMS) - a tool for managing the impacts of an organisation's activities on the environment. It provides a structured approach to planning and implementing environment protection measures.

Fossil fuels - Carbon-rich fuel formed from the remains of ancient animals and plants. Coal, oil, and natural gas are all fossil fuels.

Hybrid Vehicle - vehicles that are fitted with conventional petrol engine and a supplementary electric battery (power-plant).

Indirect Emissions - are emissions generated in the wider economy as a consequence of an organisation's activities (particularly from its demand for goods and services), but which are physically produced by the activities of another organisation. For example, an indirect emission generated from the extraction and production of fossil fuels.

Kyoto Protocol – an international agreement to address global warming and delay climate change. Led by the United Nations, the Protocol sets targets for the greenhouse gas emissions of developed countries for the period 2008 to 2012. Different countries have different targets they have to achieve. New Zealand's target is to reduce its greenhouse gas emissions to the level they were in 1990 or take responsibility for excess emissions. Only countries that ratify the Protocol are bound by it.

Useful Links

CarbonZero Land Research – www.carbonzero.co.nz – An internationally recognised greenhouse gas emissions management and reduction scheme offering optional mitigation strategies through the provision of credible and verified offsets or carbon credits.

Department of Climate Change - <http://www.climatechange.govt.nz> – emission trading scheme

GreenFleet www.greenfleet.org.nz – a practical program developed by the Sustainable Business Network which enables New Zealand businesses to do something towards reducing the impacts of their vehicle fleet on our environment and people

Greenhouse Gas Protocol – <http://www.ghgprotocol.org> - Corporate Accounting and reporting standards.

International Organisation for Standardisation (ISO) – <http://www.iso.org> – Specification with guidance at the organisation level for quantification and reporting of greenhouse gas emissions.

Intergovernmental Panel on Climate Change (IPCC) – <http://www.ipcc.ch> – provides Good Practice Guidance National Greenhouse Gas Inventories

Kyoto Protocol - http://unfccc.int/kyoto_protocol/items/2830.php

New Zealand Ministry of Economic Development – <http://www.med.govt.nz> – New Zealand Energy data files and guidance for corporate greenhouse gas reporting.

New Zealand Ministry for the Environment – <http://www.mfe.govt.nz> – Designated National Authority under the UN, responsible for the co-ordination of climate change across the government. Guide for Voluntary, Corporate Greenhouse Gas Reporting – <http://www.mfe.govt.nz/publications/climate/guidance-greenhouse-gas-reporting-apr08/index.html>

New Zealand Ministry of Transport – <http://www.transport.govt.nz> – transport strategy and policies

Right car - <http://www.rightcar.govt.nz> – search and compare vehicle performance, fuel economy, driver safety, carbon dioxide emissions, air pollution.

TZ1's Beginners' guide to the voluntary carbon market: Q&A, www.nzx.com/asset/TZ1Beginnersguide_VCM.pdf

Carbon Calculators – for businesses

Catalyst R&D calculator- <http://www.catalystnz.co.nz> - under innovation tools and downloads section.

Landcare Research Institute's CarbonZero <http://www.carbonzero.co.nz>, calculators for household and travel.

Carbon Calculators - for individuals

Contact Energy's Contact Carbon Calculator will help you calculate your household's carbon footprint. <http://www.contactenergy.co.nz> under the energy efficiency section. Contact is now carbon neutral.

Meridian Energy – Are carbon neutral and offer information on reducing energy on their website. www.meridian.co.nz

Ministry for the Environment has an ecological footprint calculator which measures how much land is required to supply your living and lifestyle needs <http://www.mfe.govt.nz/withyou/do/footprint/>

The World Resources Institute's Safe Climate Calculator
<http://www.safeclimate.net/calculator>

FLEETPARTNERS – NEW ZEALAND

New Business Enquiries: 0800 360 960
Customer Enquiries: 0800 372 632

AUCKLAND

61 Mountain Rd
Mt Wellington
PO Box 98899
Manukau
Auckland 2241
T. 09 570 3900
F. 09 570 3999

WELLINGTON

20-22 Barker St
PO Box 11800
Wellington 6142
T. 04 801 8000
F. 04 801 8101

CHRISTCHURCH

74 St Asaph St
PO Box 3253
CMC
Christchurch 8140
T. 03 377 1333
F. 03 377 1336

www.fleetpartnersnz.co.nz

FLEETPARTNERS – AUSTRALIA

New Business Enquiries: 1300 666 001
Customer Enquiries: 13 17 39

HEAD OFFICE

Level 1, 600 Victoria Street
Richmond
VIC 3121
T. 03 8416 5300
F. 03 8416 5303

NEW SOUTH WALES

Level 4, 134 William Street
East Sydney
NSW 2011
T. 02 8314 5000
F. 02 8314 5099

QUEENSLAND

Level 8, 303 Coronation Drive
Milton
QLD 4064
T. 07 3015 9200
F. 07 3015 9299

SOUTH AUSTRALIA

Suite 26, 213 Greenhill Rd
Eastwood
SA 5063
T. 1300 666 001

WESTERN AUSTRALIA

Suite 27, 22 Railway Rd
Subiaco
WA 6008
T. 08 6454 6100
F. 08 9382 2071

www.fleetpartners.com.au