

## Using the carboNZero Household Calculator

This clever calculator, held on a website at [www.carboNZero.co.nz](http://www.carboNZero.co.nz), can work out how much greenhouse gas emissions (in carbon dioxide equivalent) has been released to the atmosphere by your activities over the period of a month or a year. If you're a registered user, you'll be able to go back to visit your record on the site and add information (for comparison) after the same time period has passed.

It is free for the public to use, and is kindly provided by Landcare Research Ltd, based at Lincoln in Canterbury.

### **To get the most accurate results, you will need to do some preparation.**

This involves collecting information, which can then be entered through your computer when you're connected to the website. These notes (from Sustainable Living Programme) will help you to prepare.

The calculator uses information on energy consumption at your home for heating and power, your private transport, use of public land transport and aircraft, and the effect of waste you throw away. Each of these has a carbon impact.

First, decide whether you will seek the results for one month or a year: Please choose from Month / Year

### **Home Energy**

You will need an electricity bill, for one month, or bills covering the start and end of the year. What you need from these is the total of units, which are kilowatt-hours, consumed during the chosen period. Make a note here: ..... units (kWh).

If you use piped gas supply, you need to know how many units or kilowatt-hours equivalent of gas you have consumed during the same period: ..... units (kWh).

If you use bottled gas for cooking or room heating, you need to know how many kilograms of gas were used during the chosen period. Receipts would be useful but if you have no receipts, have a look at the gas bottle label to see what weight it contains, and estimate the number of bottles used: ..... Kg

You might use a heating fuel oil or diesel? If so how many litres have you consumed: ..... Litres.

Even though it is very air polluting, you might burn coal? How many kilograms per period: ..... Kg.

*Note that wood that is burned is not included, nor is paper.* This is because they are not historic or fossil carbon, but represent a part of the natural cycling of carbon taken from the atmosphere by living trees, which is naturally returned as carbon dioxide by burning or decay (provided the land is used to grow trees again afterwards).

### **Private Transport**

This calculator is at its most useful when used for the whole household. That may include more than one vehicle? So, your first selection will be to say how many vehicles are being included: .....

For each vehicle, indicate the type of fuel (petrol, diesel or LPG) and the total number of litres consumed during that period. Yes, this means going back to look at the fuel purchase receipts or alternatively record how much you spent buying fuel. Because fuel prices vary, the number of litres consumed gets the most accurate result. Make your notes here:

**OR** if you do not know how many litres of fuel were bought for the month or year you're measuring, you can make an approximate calculation, by first checking the engine size. This will typically be somewhere between one and three litres. (A 2000cc car = 2-litre and this calculator uses litres not cubic centimetres). If you do not know your engine size, consult the car manual or you can search for a similar car at <http://www.fuelsaver.govt.nz/> to find an estimate of the engine size. You only need to know if your engine size is small (< 1.5 litres), medium (1.4-2 litres) or large (>2 litres). Secondly, you use the distance travelled during that period in kilometres, which you might get from a logbook record of the odometer readings. A handy way of finding these for a year is to look at the odometer readings recorded on the last two or three Warrant of Fitness inspection statements.

*Your vehicles may carry several people on most journeys, in which case the footprint you calculate is being shared. Keep this in mind when viewing the results.*

### **Urban Public Transport**

You or other members of your household may be regular users of public transport services (such as a 40+ seat bus) to commute to work or school. Public transport vehicles release much less carbon per passenger than a car. The calculator can look at public transport in several ways. It asks you for the distance in kilometres, multiplied by the number of people in your household on a journey, multiplied by the number of trips you make in your chosen period. Try to get an accurate indication of the distance in kilometres (if you're a keen computer user, Google Maps will help you to calculate this: <http://maps.google.com/maps>) and then multiply it by the number of trips and the number of people from your household:

Regular/commuter transport journey 1: ..... km X..... people X  
.....times in this period = .....passenger kilometres (pkm)

Is this city bus, or train or ferry?

Regular/commuter transport journey 2: ..... km X..... people X  
..... times in this period = ..... passenger kilometres (pkm).

Is this city bus, or train or ferry?

*What you will enter is the total for each of three types of travel: bus, train or ferry.*

**OR** if you cannot work out the distance travelled, a less accurate calculation can be made by entering the number of hours in total that are travelled on buses (in the month or year concerned).

**OR** for even less accuracy, just give the number of urban trips made by public transport in which case an 'average urban commuting distance' is used by default within the calculator. You might need to take this option if household member bus trips are occasional and go to different places each time.

### **Other Transport -- Longer Distance**

The same principle of passenger kilometres travelled is used in this part of the calculator. In preparation, collect information on the distances involved in long-distance coach trips, and air travel. There is some help on the website with these distances. Long distance coach travel: ..... km. International air travel: ..... km. Domestic air travel: ..... km.

Aeroplanes travel at high altitudes, particularly on international trips, dumping water vapour trails and nitrogen oxides into the upper atmosphere, in addition to carbon, which makes them particularly damaging. The calculation allows a multiplier of 1.9 for this, so your carbon footprint grows fast if it includes air travel.

### **Waste and Recycling**

With recycling of paper, glass, metals and compostables, much of the remaining waste produced by households these days is bulky but lightweight materials such as plastic packaging. This calculator uses weight rather than volume. It asks how many kilograms of rubbish you have produced, in this period, heading to landfill - in a plastic sack (up to 6kg capacity) or held in a wheelie bin (up to 25kg capacity, depending on bin size). *You will need to estimate.* A typical city household produces over 100kg of waste per person to landfill per year, less if excluding potentially recyclable and compostable items. We know of people who have reduced their annual waste to landfill down to a few kilograms (see [www.rubbishfreeyear.co.nz](http://www.rubbishfreeyear.co.nz)). Estimate of your rubbish sent to landfill each month or year ..... Kg.

Then, the calculator asks you what proportion of the household's waste paper is being recycled, so that it can make allowance for the paper component of your landfill waste. Proportion of waste paper recycled: All / Most / Some / None. Secondly, it asks how much of the food scraps from the kitchen and green garden waste is being recycled (e.g. composted) so that it can allow for this component of the landfill waste. Proportion of food scraps and green garden waste composted: All / Most / Some / None.

Paper, cardboard and organic food scraps are converted into methane gas within a sealed landfill. Methane molecules are much more damaging than carbon dioxide molecules in heating the atmosphere, when this gas is released from landfills.

### **When you are ready to use the calculator**

By collecting all this information in advance, you will be replacing guesswork with more accurate figures, which helps if you want to compare now with future visits. Remember, the calculation is only as accurate as the data you have collected!

To use the calculator, go to [www.carbonzero.co.nz/EmissionsCalc/login.aspx](http://www.carbonzero.co.nz/EmissionsCalc/login.aspx) and select a 'username' (& write it here to help you remember: SL.....) *We ask you to begin the user name you choose with the letters SL so that you are identified as a Sustainable Living course participant.* This will also allow Sustainable Living Education Trust [www.sustainableliving.org.nz](http://www.sustainableliving.org.nz) to learn from your and other users' collective experiences, but without intruding into personal information. If you'd like to read the latest Sustainable Living newsletter, visit the site today. Best Wishes.