Documentation for the Household Climate Action Tool

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1. Introduction

This document describes the data and methods used to calculate household emissions and changes in household emissions for the Household Climate Action Tool. The tool uses results from Allan *et al.* (2015) and Romanos *et al.* (2014), along with information from Statistics New Zealand's Household Economic Survey (HES) to help households make more climate-friendly consumption choices.[1] The data behind the tool is based on average emissions profiles and average spending patterns and is not designed to provide an accurate account of household emissions or the impacts of various actions for specific households. The tool is designed to be simple and easy to use so that people can get an idea of the actions they can take to reduce their emissions, and to get an idea of how big the impacts of these actions may be.

2. Data

2.1. Calculating emissions factors

To calculate household emissions, we first have to assign emissions factors to the products we consume. We do this using environmental input-output (IO) analysis. This is based on the "Total Requirements Table" from Statistics New Zealand's 2007 IO tables. This table measures, for each industry, the amount of output required from all other industries to produce a dollar of output in the original industry. We combine this with information with data on fuel use by industry and fuel emissions factors to calculate the emissions resulting from producing an extra dollar of output in each industry in the IO tables. All of the data used in the calculation of emissions intensities are for the year 2007 as this is the most recent version of the IO tables. Some emissions factors may have fallen since 2007 as producers have become more efficient. This will be particularly true for electricity as a larger fraction of our electricity comes from renewable sources now than it did in 2007. We then map these industry categories to consumption categories so that the table measures the emissions associated with an extra dollar

[1] **Disclaimer:** Access to the data used in this study was provided by Statistics New Zealand under conditions designed to give effect to the security and confidentiality provisions of the Statistics Act 1975. The results presented in this study are the work of the authors, not Statistics New Zealand.

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of expenditure for each consumption category. See Romanos *et al* (2014) and Allan *et al* (2015) for more details on the data and methods used to calculate emissions factors.

2.2. Calculating household emissions

To calculate household emissions, we combine detailed household-level expenditure data from the HES with our emissions factors. We multiply a household's expenditure in a given category (e.g. meat) with the associated emissions factor, i.e. $Emissions\ from\ meat = Emissions\ per\ dollar\ of\ meat\ consumed \times Expenditure\ on\ meat$. Total household emissions is given by adding the emissions from each expenditure category.

2.3. Key assumptions made in calculating carbon intensities

In calculating household emissions, we assume that imported products have the same emissions intensity as domestically produced goods e.g. imported clothing has the same emissions intensity as domestically produced clothing. It is not clear whether this assumption leads us to under- or over-estimate household emissions as it depends on the greenhouse gas efficiency of production (t-CO_2eq\unit of output) in that industry in New Zealand and the exporting country.[2] For example, New Zealand dairy farms are particularly greenhouse gas efficient at producing milk (producing 1 litre of milk results in fewer emissions than in other countries). If a household consumed milk from a less efficient country, we would underestimate emissions from dairy consumption for that household because we have assumed that all dairy producers are as efficient as New Zealand producers.

IO analysis assumes that the output in each industry is homogenous and therefore has the same emissions content per dollar of output. This assumption is more of an issue in the more heterogeneous consumption categories e.g. meat. Consider two households, one which spends $100 on meat, one which spends $200, but the quantity of meat (kgs) is the same for each household.[3] Our model assigns twice the emissions to the household that spends $200 than it does to the household that spends $100, despite the fact that the quantity of meat consumed (which is what matters for emissions) is the same in both households. Our model assumes that an extra dollar spent represents an increase in the quantity of goods consumed and does not allow for changes in the quality of goods consumed.

Finally, the HES expenditure data records only personal expenditures by a household. It does not include the government's contribution to some of the goods we consume (e.g.

[2] t-CO_2eq = tonnes of carbon dioxide equivalent.
[3] The household that spends $200 could simply be purchasing more expensive cuts of meat.

subsidised prescriptions, public schools). Other emissions that households have some control over or benefit from are also excluded. For example, the HES does not record information on the personal use of a company car. These emissions are then assigned to the people consuming the goods produced by the company the person works for and not to the person who benefits from using a company car. As certain things are left out of the HES, we do not provide a complete picture of a household's emissions. We cover only the emissions that arise from personal consumption spending.

3. Methods

3.1. Calculating household emissions

Annual household emissions in the tool are output from a series of regression equations that were estimated using a sample of over 5000 New Zealand households using information on household emissions, household expenditure, household size and composition, and other demographic characteristics. The user provides an estimate of their annual expenditure, and the number of adults and children in the household, and the equation gives a number for the average amount of annual emissions resulting from the consumption of households like theirs (i.e. similar in expenditure and composition). We break this total down into four broad categories: emissions from food, emissions from household utilities, emissions from transport, and other. These categories were chosen as the household actions in the tool affect emissions from these categories. This breakdown is based on the following regression equations:

Table 1: Regression equations used to calculate emissions

	$\ln(Total)$	$\ln(Food)$	$\ln(Utilities)$	$\ln(Transport)$	$\ln(Other)$
$\ln(Exp)$	0.711	0.623	0.457	1.070	1.289
$\#\ adults$	0.206	0.359	0.063	0.384	0.049
$\#\ adults^2$	-0.018	-0.032	-0.007	-0.035	-0.009
$\#\ kids$	0.090	0.228	0.109	-0.009	-0.075
$\#\ kids^2$	-0.012	-0.031	-0.023	0.011	0.011
$Constant$	-5.268	-5.741	-4.012	-11.171	-13.097

Total emissions (in t-CO_2eq) are then given by the equation:

$$Total = \exp(-5.268 + 0.711 \cdot \ln(Exp) + 0.206 \cdot adults - 0.018 \cdot adults^2 + 0.09 \cdot kids - 0.012 \cdot kids^2) \qquad (1)$$

Emissions from each category are calculated using an equation similar to the one for total emissions, but with the appropriate coefficients. For given numbers of a household's total expenditure, number of adults, and number of kids, the sum of food, utilities, transport, and other will not exactly equal total emissions from the above equation. This is because they are based on slightly different models. We compute the food, utilities, transport, and other emissions to provide a breakdown of total emissions. As an example, the breakdown for food emissions is $\frac{Food}{Food+Utilities+Transport+Other} \times Total\ Emissions$.

3.2. Calculating the result of climate actions

The products in the action categories are associated with different carbon intensities (t-CO_2eq/\$ of spending). These carbon intensities are shown in Table 2, displayed as kg-CO_2eq/\$ spent. Also shown are the carbon intensities of the 'other' categories where spending is reallocated after taking an action.

The purpose of the actions is to provide households with ideas of how they could reduce their emissions by shifting spending towards less emissions-intensive products, without a reduction in total expenditure. Therefore, we reallocate spending saved from taking an action to another category. Table 3 details how we reallocate spending for each action. This reallocation of spending means that emissions in the 'other' categories will rise slightly.

Within each action category (e.g. transport actions), we show a more detailed breakdown of emissions from transport e.g. emissions from personal petrol use, emissions from air travel, emissions from public transport etc. These are the emissions that a household can affect by taking actions listed. There is also be an 'other' category, which accounts for the transport emissions from things not covered under the list of actions. Table 4 provides examples of the kinds of goods or services that are included in the various spending categories. The breakdown of transport emissions is based on the average proportion of transport emissions from transport fuels (for example) for an x-person household with y total expenditure. The number for transport fuels (for example) is the average transport emissions for otherwise similar households. The breakdowns within each category are based on Table 5 (at the end of this document), which shows the average emissions shares by expenditure decile by household size.

In our model, changes in emissions come from changes in spending. We assume that this change in spending represents a change in the quantity of goods purchased. Each emissions action results in a reduction in expenditure in that category, and therefore a reduction in emissions. We can calculate the implied spending in each category by dividing the calculated emissions in each category by the emissions factor for that category. For example, if emissions from meat consumption for a household was 2 t-CO_2eq, then meat expenditure would be $\frac{2}{0.00215} = \$930$.

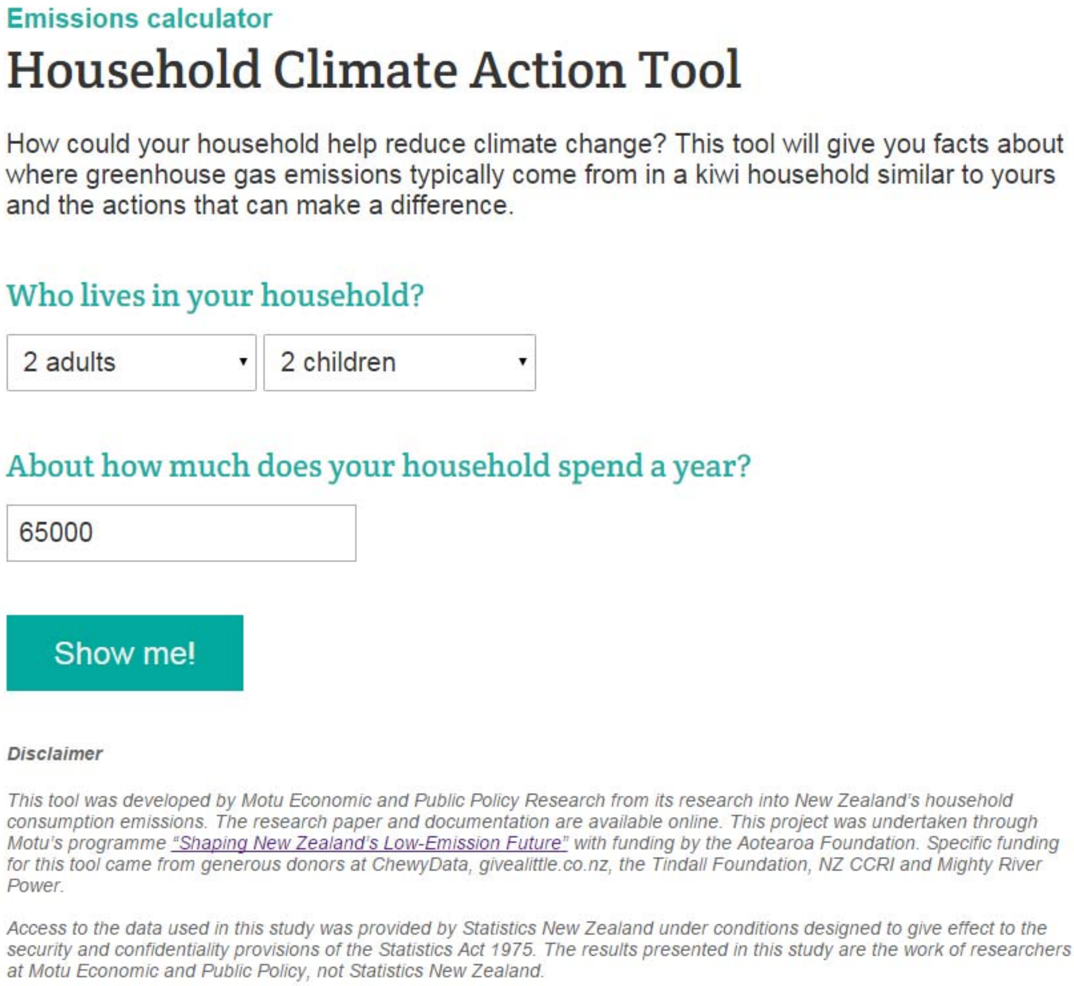
The net reduction in emissions (including spending reallocation) is calculated as:

$$\Delta Emissions_{action} = \Delta Spend_{action} \times c_{action} - \sum_{j} \Delta Spend_{other,j} \times c_{other,j} \tag{2}$$

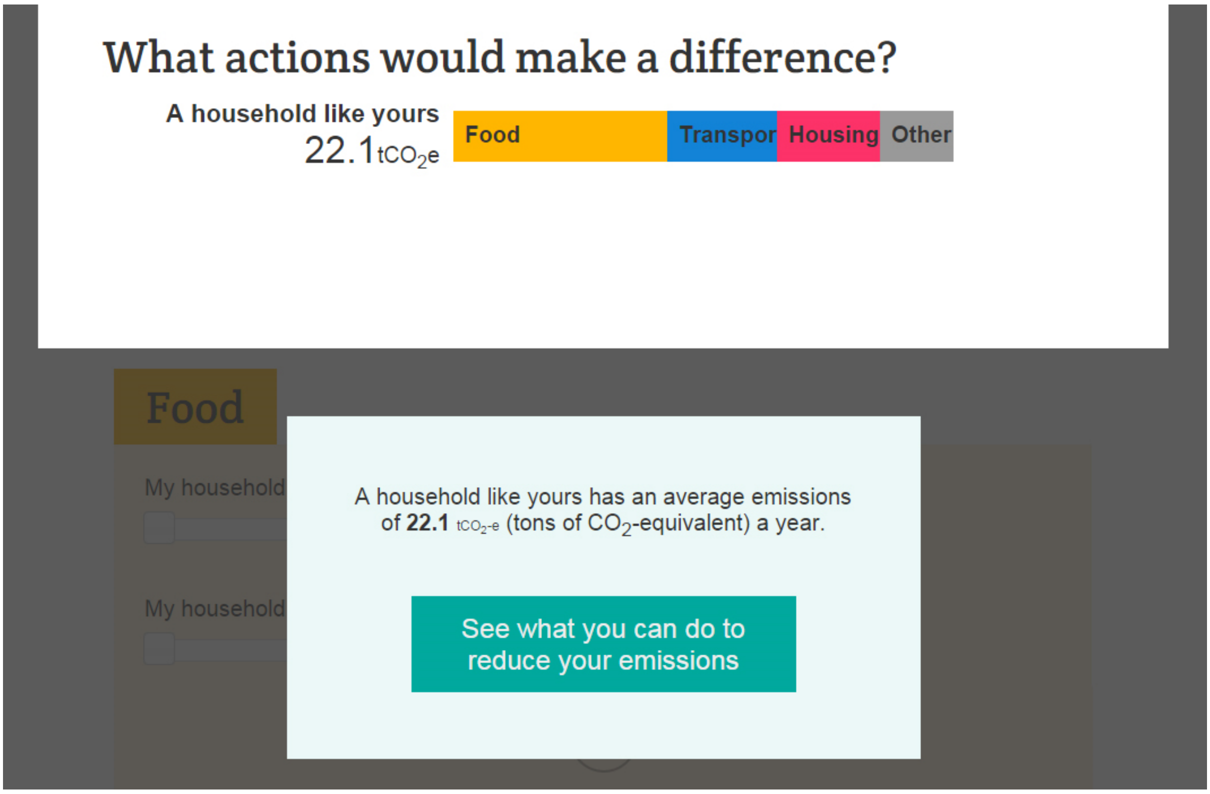
Where $\Delta Emissions_{action}$ is the change in emissions that result from undertaking the action, $\Delta Spend_{action}$ is the change in spending in the category affected by the action (see Table 2), and c_{action} is the amount of emissions per dollar spent in the category affected by the action (see Table 2). $\Delta Spend_{other}$ is the increase in spending in the appropriate 'other' category, and c_{other} is the emissions intensity of 'other' expenditure. Depending on the action, there may be more than one $\Delta Spend_{other,j} \times c_{other,j}$ term (see Table 3)

As an example of how the tool works, consider a two adult, 2 child household with \$65,000 in total expenditure. Users input this information into the first screen:[4]

[4] The screenshots of the tool were taken while the tool was under development. It may look different to the final version of the tool. The mechanics of the tool and the calculations made will match those in the final version.

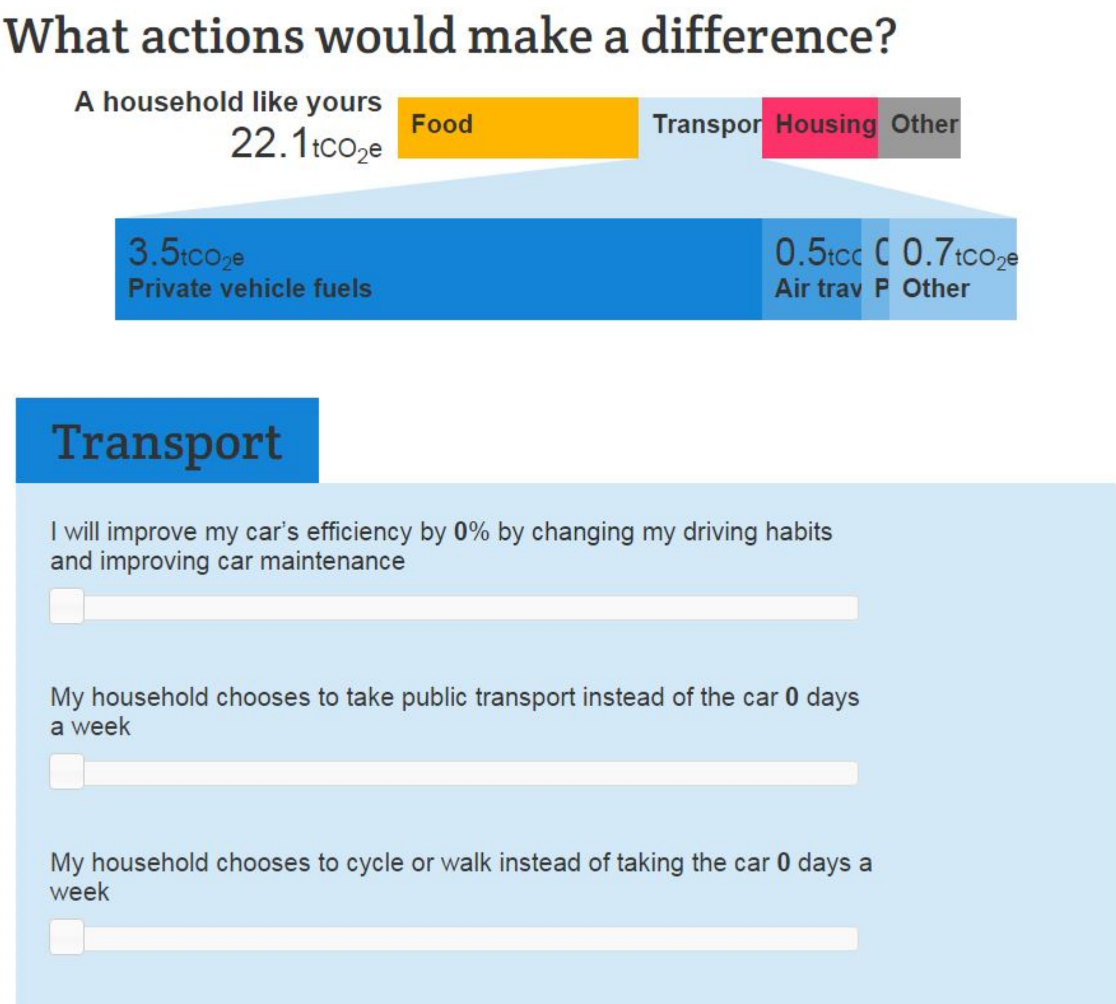


After clicking the "Show me!" button, the following screen is displayed, which shows the average emissions for household's like this:

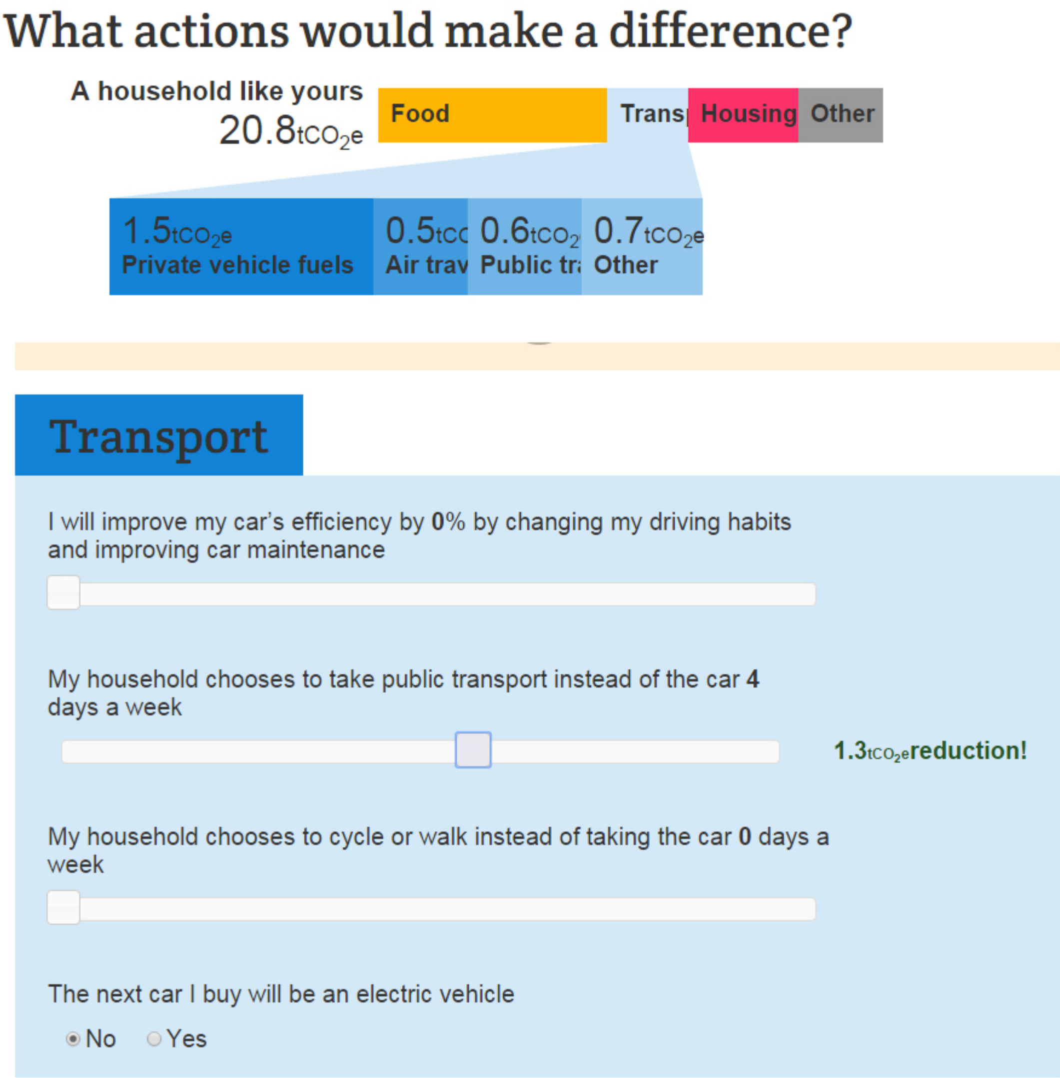


Annual emissions for households like this are estimated to be 22.1 t-CO_2eq. The emissions are made up of 9.4 t-CO_2eq from food consumption, 4.9 t-CO_2eq from transport spending, 4.5 t-CO_2eq from housing related spending, and 3.3 t-CO_2eq from other.

Now suppose this household is interested in reducing their emissions by changing their transport behaviour. They scroll down to the transport actions, which brings up an expanded bar showing the composition of transport emissions. This shows that households like this typically have 3.5 t-CO_2eq of emissions from fuelling their car, 0.5 t-CO_2eq from air travel, 0.1 t-CO_2eq from public transport, and 0.7 t-CO_2eq from other transport related expenditure.

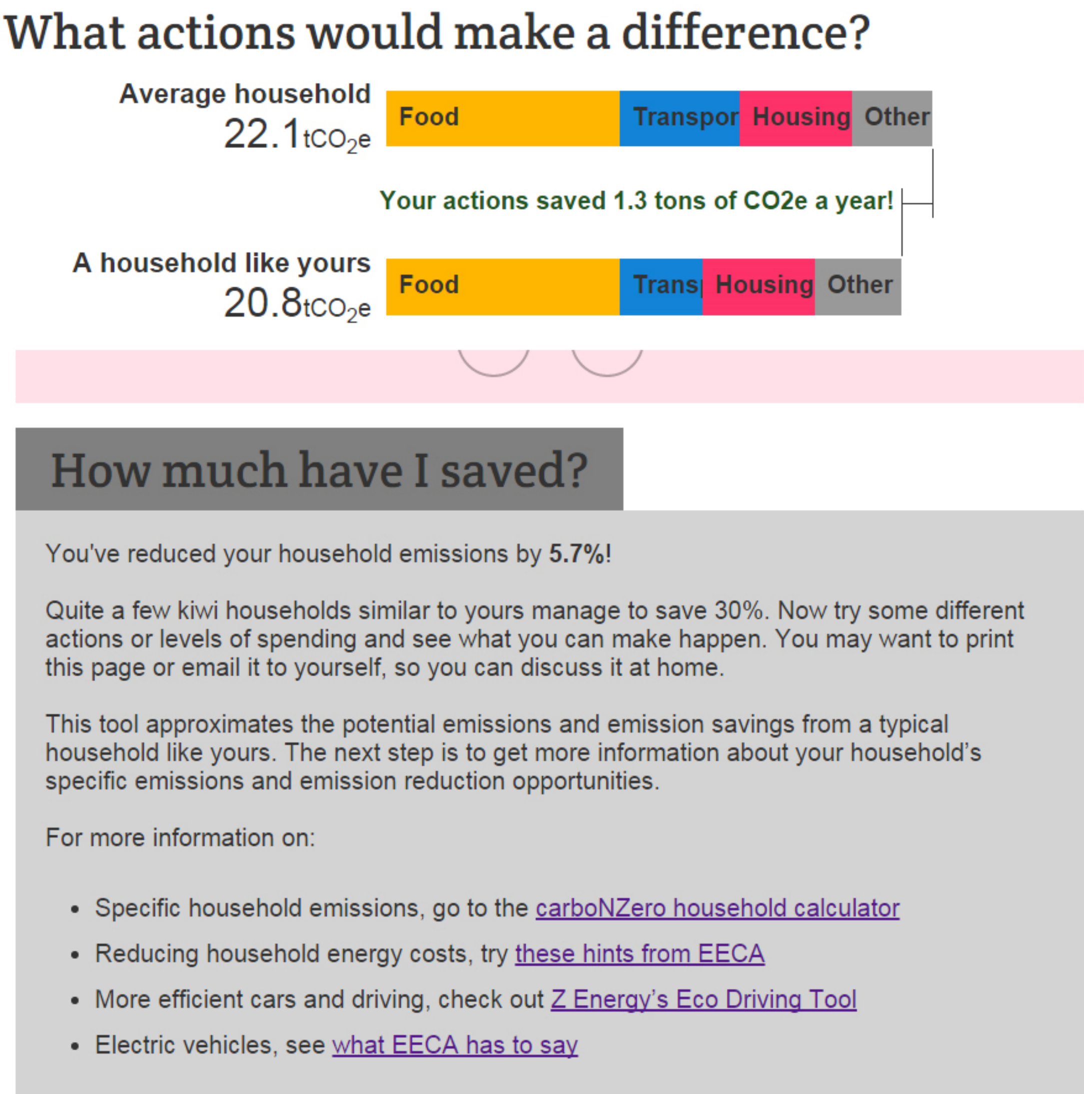


This household would like to know how big an impact taking public transport four days a week instead of driving has on the emissions of households like theirs. The action being undertaken is "My household chooses to take public transport instead of car." Selecting 4 days a week for this action shows changes the picture above to the following:



Taking public transport instead of driving four days a week results in emissions from private vehicle fuels falling from 3.5 to 1.5 t-CO_2eq, a reduction of 2 t-CO_2eq, and a net reduction (after spending reallocation) of 1.3 t-CO_2eq (in green next to the bar). What we are actually modelling is a proportionate reduction in household private vehicle use – in reality the average household will already be using some public transport. Using the terms of equation 2, $\Delta Spend_{action} = \$2390 - \frac{4}{7} \times \$2390 = \$1360$, and $\Delta Spend_{action} \times c_{action} = \$1360 \times 0.00147 = 2$ t-CO_2eq. The reallocation rule for the public transport action is 50% of the reduction in spending goes to pay for the increased use of public transport, with the rest being allocated to 'other' expenditure. The reallocation calculation is $0.5 \times \Delta Spend_{pt} \times c_{pt} + 0.5 \times \Delta Spend_{other} \times c_{other} = 0.5 \times \$1360 \times 0.00073 + 0.5 \times \$1360 \times 0.00034 = 0.7$. so the reallocation of results in 0.7 t-CO_2eq, giving the net reduction of 1.3 t-CO_2eq.

Once the household has finished selecting their actions, there will be a final reveal that will show the net effect of all the actions they have selected. Assuming that this household only chooses the public transport action, they would see the following reveal screen:



Total emissions have fallen from 22.1 to 20.8 t-CO_2eq and the transport bar has shrunk considerably. The grey box tells the user that they have reduced emissions by 5.7%. There are households in the sample from which we derive our equation for total emissions with emissions approximately 30% lower than the average generated by equation 1[5]. This gives households an idea of what is achievable. Depending on the type of household, it may or may not be possible to get a 30% reduction given the actions listed. The lower emitting households will be doing other things differently to average households as well.

[5] See Figure 5 on page 23 in Allan *et al.* (2015) for details on the variation in household emissions for a given level of expenditure and household size.

We also provide links to various information sources that users can visit to get more information about how to improve the fuel efficiency of their car or reduce their electricity bill. We also link to information about electric cars in New Zealand. There is also a link the carboNZero household calculator, which provides a more accurate footprint of a specific household's direct energy related emissions (transport fuels and household energy). This requires more information to use.

3.3. Relationships between actions

The driving related transport actions are interdependent, meaning that taking one action affects the impact of subsequent actions. For example, cycling instead of driving 3 days a week reduces the benefit of buying a more efficient car because you are not driving it as often. Taking some actions will also render other possible actions irrelevant. When this occurs, the irrelevant actions will disappear from the list of possible actions.

Buying an electric car renders all other driving related actions irrelevant. For most households, the action that has the largest impact on their transport emissions is buying an electric car. The way we have set the interdependencies allows users to compare the impact of changing their driving behaviour versus adopting a new driving technology.

The driving behaviour related actions are ordered as follows:[6]

- Taking public transport instead of driving x days a week
- Cycling/walking instead of driving x days a week
- I will improve the efficiency of my current car by x% by improving car maintenance and changing my driving behaviour.
- The next car I buy will not be an electric but will be x% more efficient than my current car

The sum of the public transport and cycling/walking actions cannot be greater than 7. If the public transport action is set at 4 days, and you select 4 days for the cycling/walking action, the public transport action will be adjusted to 3 so that the total across the two actions is 7. If the sum of these two actions is 7, the improving efficiency of your current car and purchasing a more efficient car actions become irrelevant and so disappear from the list. If you never use a car, improving the efficiency of it or purchasing a more efficient one will have no effect on your emissions.

[6] The order listed below may differ from the order displayed in the screenshot. The screenshot was taken of a beta version of the tool which may differ from the final version.

If the sum of the public transport and cycling/walking action is less than 7, then improving the efficiency of your current car and purchasing a more efficient car actions will have an impact on emissions. The impact of each of these actions depends on the level of the actions above it. For example, the impact of improving the efficiency of your current car by 10% will be smaller if the average member of your household also chooses to cycle/walk 3 days a week, relative to when you just choose to improve the efficiency of your car by 10%. Likewise, the impact of purchasing a more efficient car will depend on the public transport, cycling/walking, and improving efficiency of your current car actions.

4. Assumptions in the Household Climate Action Tool

In the actions where the units are days where you don't do X, we are implicitly assuming that households drive every day or eat red meat every day, for example. We recognise that not all household will do these things every day. The wording was chosen to make the tool as concrete and relatable as possible. You can think of it as each day everyone in your household doesn't eat meat/doesn't drive lowers your meat/fuel emissions by $\frac{1}{7}$.

We chose the particular actions listed in Tables 2 and 5, because of the availability of data and in the interest of keeping the tool simple. From Table 2, you can see that the action "red meat-free days" applies to pork and poultry as well as red meat. Given our data, we are unable to separate red meat consumption from pork and poultry consumption. As a result, the emissions factor attached to this action is slightly too low, so we underestimate the impact of this action.[7] For more information on the emissions intensity of different meat products, see the emissions factors included in the Climate Change (Agriculture Sector) Amendment Regulations 2012.[8] Replacing all red meat consumption with consumption of pork or chicken is another way to reduce household emissions, but it is an action we can't model.

Petrol and diesel are combined into one category (private vehicle fuel) for the purposes of the tool. A driving related action results in a reduction in spending on transport fuels, but we assume that the fuel being reduced is petrol, so we multiply this change in spending by the petrol emissions factor to calculate the reduction in driving related emissions. Petrol accounts for the vast majority of transport fuels consumed by households.

[7] There is a similar problem with dairy free days. Eggs are included in the spending category, along with milk and cheese. We are unable to separate milk and cheese consumption from egg consumption, so the emissions factor attached to this action will be slightly too low.

[8] http://www.legislation.govt.nz/regulation/public/2012/0315/latest/whole.html#DLM4809842

The emissions from air travel for the average household are quite low as the majority of households in our sample do not fly for personal reasons that often. Therefore, the impact of reducing air travel is quite small. To make the air travel action more relatable, we have displayed the air travel expenditure of the average household of your type, and the action is based on reducing this expenditure by between 0-100%. This means users can see the impact of a $500 or $1000 etc. reduction in air travel expenditure. If the users travels a lot more than this, they can easily multiply the reduction by how much the action would reduce their own spending. For example, suppose an average household spends $1,000 on air travel, and the users chooses to reduce their air travel spending by 50%. This is a $500 reduction, and it will result in a net reduction in emissions (after spending reallocation) of 0.1 t-CO_2eq. If you're household actually spends $10,000 a year on air travel, then a 50% reduction in spending is worth $5,000, 10 times the reduction for the average household (in dollar terms). The net reduction in emissions from this action will be 1 t-CO_2eq, 10 times that of the reduction for the average household.[9]

For the fuel efficiency based actions, we offer no advice on what specific actions households can take or how much of an effect specific actions will have on emissions. For advice on this, we direct users to the Energy Efficiency and Conservation (EECA) website, which has a wealth of information and calculators that can be used to improve the fuel efficiency of their current vehicle, or choose a more fuel efficient vehicle next time they buy a car. See https://www.energywise.govt.nz/on-the-road/ for more information on how you can improve fuel efficiency.

For the energy conservation actions, we again offer no advice on what actions households could take to reduce their energy use, or how much of an effect specific actions will have on emissions. As for fuel efficiency, the EECA website has information on how households can reduce their energy consumption and therefore their energy bills. See https://www.energywise.govt.nz/at-home/ for more information on how you can reduce your energy consumption.

The number for the annual recharging cost of an electric car ($310) is based on a charging cost for an electric car of $3.10 per 100kms and an annual distance driven of 10,000kms. The figure of $3.10 per 100kms comes from eCars, a New Zealand based importer and retailer of electric cars.[10] The figure for annual distance driven is the average of annual

[9] For example, if you go fly to Australia every year for a two week holiday, you could travel to Australia every 2 years and stay for a month. This would half your air travel emissions while keeping your total holiday time constant!

[10] http://www.electriccarsnz.co.nz/pages/extra_information/running_cost.htm

distance driven by men (12,000kms) and women (8,000kms) from the Ministry of Transport's New Zealand Household Travel Survey 2010-2013 (Ministry of Transport 2014).[11] If a user chooses this action, we assume that petrol consumption goes to zero.

For the "reduce driving and use public transport" action, we assume that 50% of the money saved by reducing petrol consumption is spent on public transport. This may not completely accurately reflect the costs of public transport in your town/city. Subsidies for public transport vary by location, as do the distances that people need to travel. For a more accurate account of the emissions impact of switching from driving to public transport, see the carboNZero household calculator at https://www.carbonzero.co.nz/EmissionsCalc/login.aspx.

[11] http://www.transport.govt.nz/assets/Uploads/Research/Documents/Drivers-2014-y911-Final-v3.pdf

Table 2: Carbon intensities of climate actions (kg-CO_2eq/$)

Action	HES spending category	Emissions intensity
My household will have __ red meat free days a week	Meat and poultry	2.15
My household will have __ dairy free days a week	Milk, cheese, and eggs	1.88
I will improve my car's fuel efficiency by 0-10% by changing my driving habits and improving car maintenance	Petrol	1.47
The next car I buy will be 0-50% more efficient than my current car (and I won't increase the distance I drive)	Petrol	1.47
My household will take public transport instead of the car __ days a week	Petrol	1.47
My household will cycle or walk instead of taking the car __ days a week	Petrol	1.47
The average household of my type spends $X on air travel, my household will cut this by 0-100%	Air travel	0.51
Our next car purchase will be an electric vehicle	Petrol	1.47
My household will reduce our electricity bill by 0-10% using energy conservation techniques	Electricity	0.81
Reallocation of reduction in meat/dairy spending	'Other food' – average emissions intensity of other food categories	0.34
Reallocation of reduction in petrol/air travel spending	'Other' – average emissions intensity of other categories (including other food)	0.34
Reallocation of reduction in petrol spending for public transport action	Average of road and rail passenger transport	0.73
Reallocation of reduction in electricity spending	'Other' – average emissions intensity of other categories (including other food)	0.34
Reallocation of petrol spending to electricity for electric car action	Electricity	0.81

Table 3: Reallocation of spending for each household action

Action	Where spending is reallocated
FOOD	
My household will have __ red meat-free days a week	Added to 'other food' expenditure
My household will have __ dairy-free days a week	Added to 'other food' expenditure
TRANSPORT	
I will improve my car's fuel efficiency by 0-10% by changing my driving habits and improving car maintenance	Added to 'other' expenditure
The next car I buy will be 0-50% more efficient than my current car (and I won't increase the distance I drive)	Added to 'other' expenditure
My household will take public transport instead of the car __ days a week	Increase public transport spending by half of the petrol reduction. Balance reallocated to 'other'.
My household will cycle or walk instead of taking the car __ days a week	Added to 'other' expenditure.
The average household of my type spends $X on air travel, my household will cut this by 0-100%	Added to 'other' expenditure.
Our next car purchase will be an electric vehicle (transport fuels expenditure becomes zero)	Increase electricity by $310 Balance added to 'other'
Housing	
My household will reduce our electricity bill by 0-10% using energy conservation techniques	Added to 'other' expenditure.

Table 4: Examples of products in each spending category

Meat	Beef, lamb, chicken, pork etc.
Dairy	Milk, cheese etc.
Other food	Bread, fruit and vegetables, restaurant food and takeaways etc.
Private vehicle fuels	Petrol and diesel
Air travel	Domestic and international air travel
Public Transport	Public road or rail transport, taxis
Other transport	Purchase of car, vehicle servicing and repairs, warrant of fitness, parking fees, registration fees etc.
Electricity	Electricity
Other housing	Gas, coal, firewood, materials and services for household maintenance, rates etc.
Other – general	Recreation spending, household contents, clothing, interest payments, personal goods and services

Table 5: Fraction of food, transport, and utilities emissions for emissions action categories by expenditure decile and household size

		% of Food Emissions			% of Transport Emissions				% of Utilities emissions	
Expenditure Decile (000s)	Household Size	Meat	Dairy	Other food	Transport fuels	Air travel	Public transport	Other transport	Electricity	Other utilities
10 - 18	1	30%	21%	49%	51%	6%	13%	30%	55%	45%
	2+	32%	21%	47%	56%	5%	9%	31%	56%	44%
19 - 24	1	31%	20%	48%	60%	9%	10%	21%	47%	53%
	2	36%	21%	43%	64%	7%	5%	24%	53%	47%
	3+	31%	22%	47%	81%	1%	3%	16%	50%	50%
25 - 30	1	31%	20%	49%	54%	12%	9%	25%	43%	57%
	2	33%	20%	47%	73%	6%	2%	19%	52%	48%
	3	28%	22%	50%	76%	4%	7%	13%	52%	48%
	4	31%	20%	49%	79%	3%	5%	12%	50%	50%
31 - 36	1	29%	18%	53%	67%	9%	4%	20%	47%	53%
	2	33%	19%	48%	69%	9%	6%	16%	50%	50%
	3	29%	21%	50%	73%	4%	8%	16%	47%	53%
	4+	32%	20%	48%	78%	5%	5%	13%	46%	54%
37 - 42	1	33%	16%	51%	61%	7%	9%	23%	40%	60%
	2	32%	18%	50%	67%	11%	5%	17%	50%	50%
	3	31%	20%	49%	75%	6%	6%	13%	47%	53%
	4+	29%	22%	49%	79%	2%	3%	15%	47%	53%
43 - 50	1	24%	19%	57%	54%	16%	4%	26%	46%	54%
	2	32%	18%	50%	66%	12%	4%	19%	44%	56%
	3	29%	19%	52%	73%	5%	5%	17%	48%	52%
	4+	29%	22%	49%	75%	11%	3%	11%	45%	55%
51 - 59	1	31%	15%	54%	52%	15%	8%	25%	39%	61%
	2	31%	17%	52%	62%	15%	4%	19%	45%	55%
	3	34%	18%	48%	70%	7%	6%	17%	42%	58%
	4	32%	20%	48%	71%	10%	5%	14%	41%	59%
	5+	33%	23%	45%	76%	5%	8%	12%	42%	58%

60 - 70	1 - 2	30%	18%	52%	61%	18%	4%	17%	41%	59%
	3	33%	19%	48%	74%	10%	4%	11%	46%	54%
	4	31%	19%	50%	72%	11%	3%	14%	44%	56%
	5+	34%	18%	47%	74%	4%	4%	18%	42%	58%
71 - 89	1 - 2	31%	17%	52%	56%	19%	4%	21%	37%	63%
	3	30%	16%	54%	65%	10%	7%	18%	38%	62%
	4	31%	17%	52%	73%	10%	6%	11%	39%	61%
	5+	31%	17%	52%	71%	11%	6%	13%	43%	57%
90 - 197	1 - 2	31%	15%	54%	53%	19%	6%	22%	34%	66%
	3	31%	17%	52%	62%	15%	6%	17%	37%	63%
	4	31%	17%	52%	61%	14%	6%	18%	33%	67%
	5+	34%	16%	50%	63%	16%	8%	13%	36%	64%

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