

How Large is Your Carbon Footprint?

Shanique Martin

MAST Academy

How Large is Your Carbon Footprint?

We have all been alarmed from information given to us by the media, showing that the state of our world is currently deteriorating. There have been many proposals made by scientists on as to why this change is happening and Global Warming seems to be the most proven and established one. Information gathered over the past 70 years shows that the temperature of the earth has been increasing exponentially. It has been shown that if this pattern of gradually warming were to continue, we may experience world wide climate changes. The cause of this is the use of fossil fuels. Fossil fuels are biological materials processed through thousands maybe millions of years by heat and pressure in the earth's crust and are used as a source of energy. When burned to produce energy they release greenhouse gasses such as carbon dioxide and methane.

Since the world energy demand is constantly increasing to satisfy the energy based modern technologies, the amount of carbon dioxide being released is increasing and thus is causing major environmental problems. We also have consumed over 75% of the available fossil fuels in the world in less than 100 years. These sources are non renewable and that they won't continue to sustain our energy demand. Eventually we humans will have no choice but to switch to alternatives that are more environmentally friendly, produce zero emissions and are more readily available to us. A few of these alternatives are solar, geo-thermal, hydro-electric and wind.

Whether or not our energy infrastructure transitions into one based on alternative resources within our lifetime will be determined by the people. One of the easiest and the fast applied ways of starting this transition is energy conservation and efficiency. By applying them we will be able to reduce our energy consumption by almost 50%. This is a small step that every one can take everyday that will have a giant impact on the environment.

“As members of this planet, we all contribute to climate change. Daily activities such as turning on the lights, driving and flying, all release greenhouse gases into the air. In fact, the

average American is responsible for emitting 44,974 lbs of CO₂ per year”. (3Degrees). This translates to about 3,747lb of CO₂ released per month per person in the United States. Our carbon footprint is what we contribute everyday to the ever so increasing release of carbon dioxide into the atmosphere; however, this can be reduced by recycling materials and using energy efficient appliances and vehicles.

In order for us to apply energy conservation and efficiency it is important for us to know what our current baseline energy usage and carbon dioxide output is. Carbon dioxide footprint calculators provided by multiple energy awareness companies are available to help us calculate this. Even though they ask for different things, general energy consumption information is gathered in order to determine a household’s or individual’s carbon dioxide output.

Many carbon footprint calculators are available at on the websites such as The Environmental Protection Agency (E.P.A.), The Nature Conservancy, BP Energy Lab and Safe Climate. The two calculators being compared for this opinion paper are provided by the E.P.A. and Safe Climate. Both calculators allow users to fill out a survey that provides the calculator with information that is used to calculate the carbon dioxide footprint of the user. These may include the number of people in the household, the various appliances, the number of cars and the average amount of energy used by the home per month. These are valuable information for the calculators because carbon dioxide footprints are determined based on the amount of energy we use daily and where that energy is generated from (i.e. fossil fuels).

In order to check how precise the two calculators are, the websites were given to 3 students to use and calculate their carbon dioxide footprints. They each completed the survey and found out their individual average carbon dioxide output per month.

Table 1: Calculated Monthly Carbon Dioxide Output for each Student.

Student	E.P.A.	Safe Climate
A	3,056lbs CO ₂	4159lbs CO ₂
B	1717lbs CO ₂	2453 lbs CO ₂
C	2145 lbs CO ₂	2011 lbs CO ₂

Based on the information provided by each student to the two calculators, the carbon dioxide output estimates differ greatly. For student A, the results from the E.P.A survey calculated an average carbon dioxide output of 12,225lbs/month for the household of 4 (about 3,056lbs/month/person) and the results from the Safe Climate survey calculated an average carbon dioxide output of 16,638lbs/month (about 4159lbs/month/person). For student B, the results from the E.P.A survey calculated an average carbon dioxide output of 5,152lbs/month for the household of 3 (about 1717lbs/month/person) and the results from the Safe Climate survey show a calculated average 7,359lbs CO₂/month for the household (about 2453lbs/month/person). For student C, the results from the E.P.A survey calculated an average carbon dioxide output of 2,145lbs/month/person (student chose to calculate her individual output) and the results from the Safe Climate survey show a calculated average of 2,011lbs/month/person.

The results show that the calculators have discrepancies. For instance, both students A and B, had calculated CO₂ that differed greatly from one calculator to the other. In both cases, the calculated amount of CO₂ per person was lower for the E.P.A. calculator than it was for the Safe Climate calculator. For students A and B, the results from the E.P.A. calculator were 3056lbs/month/person and 1717lbs/month/person respectively and the results from the Safe Climate calculator were 4159lbs/month/person and 2453lbs/month/person respectively. This could possibly be related to the fact that the E.P.A. survey provides more choices to reduce

carbon dioxide output such as, the recycling of various items. Student C had calculated outputs very similar from the E.P.A. calculator and the Safe Climate calculator.

The calculator offered by the EPA has more sources of energy included in its calculations than does the calculator offered by Safe Climate such as the ability to specify the energy source used to heat the users home and the inclusion of a monthly gas bill, if the user has one. It also provides the user with their carbon dioxide output for each appliance/item and it provides access to information the user may or may not know off the top of their head, such as the mpg of their vehicle. The E.P.A. calculator also includes areas in which the user can check the materials that they recycle at home and the calculator determines the net carbon dioxide output. One problem with the E.P.A. calculator is that it determines the carbon dioxide output for electricity usage from the amount of money spent monthly on electricity. This is not an accurate way of measuring this because the cost of energy fluctuates and so a person may have reduced their energy consumption but it may not be evident in their electricity bill.

The calculator offered by Safe Climate requires the user to provide less information than the E.P.A. calculator and thus takes less time. The Safe Climate calculator asks for 11 things in order to calculate the carbon dioxide output and the E.P.A. calculator asks for 11 things. The problem with this is that the Safe Climate calculator will most likely calculate an estimate further away from the actual carbon dioxide output than the E.P.A. Even though this may happen, the Safe Climate calculator has what I consider to be a better way of calculating the carbon dioxide output of a household when it comes from transportation; it allows the user to include more than one vehicle, which is more common in United States households of 2 or more people.

After using the two calculators to figure out their carbon dioxide footprint, the students expressed their favor of the E.P.A. calculator over the Safe Climate calculator. I too prefer the

E.P.A. calculator over the one provided by Safe Climate. It is more detailed and allows the user to see in what areas, whether it is transportation or utilities, they are releasing the most carbon dioxide and thus need to reduce energy consumption. Also, it goes a step beyond calculating a baseline carbon dioxide output for the user by providing the user with ways in which they can reduce their carbon dioxide output and if they make those changes how much carbon dioxide they could prevent from entering the atmosphere.

The calculator provided by Safe Climate is more aesthetically pleasing than the E.P.A. calculator and thus may capture the attention of a user better than the E.P.A. calculator. The Safe Climate calculator would probably be more effective if it included suggestions on how the user could reduce their carbon footprint. The purpose of a carbon dioxide footprint calculator is to allow a person to see how much carbon dioxide he/she is releasing into the atmosphere. After knowing this, one may ask, “what can I do to reduce my carbon dioxide output?” By having energy saving ideas at the end of the calculation, the Safe Climate calculator could become more effective and possibly encourage more people to make the small changes necessary to reduce their carbon dioxide footprint.

As noted above, energy efficiency and conservation are the first steps needed to be taken in order to reduce energy consumption and thus carbon dioxide output. “...energy conservation and energy efficiency. Most of the panelists agreed these are significant things we can do right now to reduce energy use and carbon emissions”. (Earth Sky Blogs) This does not require us to change our lifestyles. These are behavioral changes that each and every one of us can take in order to reduce our negative impact on the environment. It is as simple as flipping the light switch off as you leave a room or switching an incandescent bulb for a compact fluorescent one.

Works Cited

"Calculator." Safe Climate. World Resources Institute. 3 Dec. 2008 <<http://www.safeclimate.net/calculator/>>.

"Carbon Calculator." 3 Degrees. 2008. 6 Dec. 2008 <http://3degreesinc.com/carbon_calculator/>.

Kulpinski, Dan. "Energy conservation, efficiency should lead way on climate change." Weblog post. Earth Sky Blogs. 23 Sept. 2008. 9 Dec. 2008 <<http://blogs.earthsky.org/dankulpinski/2008/09/23/energy-conservation-efficiency-should-lead-way-on-climate-change/>>.

"Personal Emissions Calculator." United States Environmental Protection Agency. 2008. 3 Dec. 2008 <http://www.epa.gov/climatechange/emissions/ind_calculator.html>.