

Shopping on-line reduces a midnight clear's carbon dioxide

December 21 2007



Although reindeer are fairly carbon neutral, cybershopping still helps Santa fill his holiday orders. Credit: ORNL

Holiday shoppers who do most of their gift gathering on-line are saving more than wear and tear on their toes. They are also trimming emissions of carbon dioxide into the atmosphere by nearly half a million metric tons, according to calculations from the Department of Energy's Oak Ridge National Laboratory.

Carbon dioxide, a so-called greenhouse gas, is cited as a major contributor to the climate change scenario's increasingly warmer temperatures. Human activities release a significant amount of carbon dioxide into the earth's atmosphere, particularly the burning of fossil

fuels for transportation.

Holiday internet shopping is also on the increase, with web-shoppers already representing a significant slice of holiday shoppers overall. According to the National Retail Federation, just over 30 percent of this year's holiday retail shopping will be done on-line.

Those desktop shoppers represent a corresponding reduction of carbon dioxide released into the atmosphere, said ORNL environmental scientist Jesse Miller.

"Using several assumptions and data from several authoritative sources, we can reasonably estimate that nearly half a billion kilograms of carbon dioxide are kept out of the atmosphere by shopping on-line," Miller said.

Here is their math, much simplified and based on publicly available statistics and some chemistry: The average shopper drives 6.7 miles on a trip. The average vehicle gets 22.9 miles per gallon. If that person makes an average three trips, that's 0.87 gallons of gasoline, which, being mostly carbon, contains 2.413 kilograms of carbon per gallon. (Incidentally, 2.413 kilograms of carbon equates to a five-pound chunk of black stuff.)

The United States' shopping-age population (15 to 69) is around 212 million. The three shopping trips by those shoppers amount to 444,780,000 kilograms of carbon emitted into the atmosphere.

However, if one assumes that 30 percent of these people shopped at their desktops instead, that figure drops by 134,323,560 kilograms of carbon, which converts to 492,519,720 kilograms, or nearly half a million metric tons, of carbon dioxide kept out of the atmosphere.

Which delays by that much the day that Santa delivers his goods dressed

in a jolly red tank top.

"On-line shopping's reduction of carbon emissions would be equal to 63 percent of America's workers staying home for one day," Miller said, citing mileage stats and a 2001 National Household Travel Survey.

Granted, there are some offsets to the on-line carbon savings bonanza. For instance, in a carbon sense there is really no such thing as "free" shipping.

"Delivery trucks will run more," Miller notes. "However, these trucks make multiple deliveries per trip, so that impact is reduced. Also, while private parcel services add runs based on deliveries, the U.S. Postal Service makes the same number of runs regardless of package deliveries, so there is no net gain with them."

The energy-carbon cost in running a personal computer should also be factored.

"Broadband users now spend 48 percent of their spare time--about an hour and 40 minutes--on-line, with 12 percent of this for shopping," he said, citing marketing statistics.

PCs are powered by electricity, which may come from a fossil fuel-burning plant. However, Miller notes, that PC was probably running anyway, and depending on where it is located its power could come from nuclear or hydro plants.

If the computer and screen are turned off or in sleep mode when not used, that further cuts the eventual emission by reducing power demand. Those who prefer to make their holiday shopping trips to the mall can still reduce their carbon debt to society.

"Plan your shopping so that you can combine several trips into one, or go shopping with your friends in a single vehicle," Miller suggested. "Good planning, along with cyber shopping, reduces traffic congestion, which is another carbon contributor."

Websurfers and store shoppers alike can also reduce power demand, and thus carbon emissions, by replacing the incandescent bulbs in their homes with energy-saving compact fluorescent bulbs.

That's a handy gift Santa could deliver in his carbon-neutral sleigh.

Source: Oak Ridge National Laboratory

Citation: Shopping on-line reduces a midnight clear's carbon dioxide (2007, December 21)
retrieved 19 April 2024 from
<https://phys.org/news/2007-12-on-line-midnight-carbon-dioxide.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.