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Could the Net be killing the planet one web search at a time?

BY ALEX ROSLIN, FOR POSTMEDIA NEWS JUNE 3, 2011 COMMENTS (113)

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Every Facebook update and LOL cat you post contributes to global warming, due to the server industry's dependence on coal-fired electricity.

Photograph by: Chris Jackson, Getty Images

It's Saturday night, and you want to catch the latest summer blockbuster. You do a quick Google search to find the venue and right time, and off you go to enjoy some mindless fun.

Meanwhile, your Internet search has just helped kill the planet. Depending on how long you took and what sites you visited, your search caused the emission of one to 10 grams of carbon into the atmosphere, contributing to global warming.

Sure, it's not a lot on its own — but add up all of the more than one billion daily Google searches, throw in 60 million Facebook status updates each day, 50 million daily tweets and 250 billion emails per day, and you're making a serious dent in some Greenland glaciers.

The Internet has long promised a more efficient and greener world. We save on paper and mailing by sending an email. We can telecommute

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instead of driving to work. We can have a meeting by teleconference instead of flying to another city.

Ironically, despite the web's green promise, this explosion of data has turned the Internet into one of the planet's fastest-growing sources of carbon emissions. The Internet now consumes two to three per cent of the world's electricity.

If the Internet was a country, it would be the planet's fifth-biggest consumer of power, ahead of India and Germany. The Internet's power needs now rival those of the aviation industry and are expected to nearly double by 2020.

"The Internet pollutes, but people don't understand why it pollutes. It's very, very power-hungry, and we have to reduce its carbon footprint," said Mohamed Cheriet, a green IT expert and professor in the engineering and automation department at Montreal's Ecole de Technologie Superieure (ETS).

The bulk of all this energy is gobbled up by a fast-growing network of huge "server farms" or data centres that form the backbone of the Internet. They are hush-hush facilities, some the size of five Wal-Marts, packed from floor to ceiling with tens of thousands of computers.

These are the computers that make the Internet run — routing traffic and storing much of those ever-expanding heaps of data.

Say you do a Google search. Your query kicks into action about 1,000 servers at various Google data centres. Those computers scan billions of web pages already in Google's archives and spit out an answer.

Total time elapsed: 0.2 seconds on average. Meanwhile, Google's data centres are also constantly combing the Internet to update their archives of web pages.

All those computers have a voracious appetite for energy, especially for cooling equipment to prevent overheating.

Apple's 46,000-square-metre iDataCenter is set to open in North Carolina this spring with a price tag of \$1 billion U.S.. It will use an estimated 100 megawatts of power — as much as about 100,000 Canadian homes.

Apple's mega-facility is part of a cluster of gigantic new data centres coming on line in North Carolina that are powered largely by cheap and highly polluting coal power. Google has a 44,000-square-metre data centre in the state that eventually will consume an estimated 60 to 100 MW. Facebook has a 28,000-square-metre facility under construction there that will eat up 40 MW.

Greenpeace calls the three facilities "North Carolina's dirty data triangle." Coal, it says, is the most polluting of all fossil fuels and the world's single largest source of greenhouse gas emissions.

"The technologies of the 21st century are still largely powered by the dirty coal power of the past," the environmental group said in a report card on the IT sector in April, titled How Dirty is Your Power?

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"People are pretty concerned about it," David Kessler, a Greenpeace spokesman in San Francisco.

In Lenoir, North Carolina, Google's \$600-million, super-sized data centre offers employees the kind of unusual perks that were the hallmark of the high-flying dot-com era.

But Google chose Lenoir for more than just some nice handouts. It also wanted cheap electricity for those power-hungry servers.

North Carolina offers industrial customers one of the lowest electricity rates in the U.S. — 5.8 cents per kilowatt hour, versus the U.S. average of 6.7 cents.

It just so happens that the state's electricity is also some of the dirtiest in the country. Nearly two-thirds of the state's electricity comes from coal.

The IT industry is now responding by starting to improve the energy efficiency of its data centres.

But that's not enough, said Bill St. Arnaud, an engineer and green IT consultant in Ottawa. The Internet is growing so fast, he said, it's overtaking such efficiency gains. Besides, efficiency improvements alone won't wean the IT industry from using inexpensive and polluting coal, he said.

The real solution, he said, is for governments to impose measures like carbon taxes and emissions caps that make dirty energy less attractive financially.

"The planet is warming up, and it's going to get very bad. We need a price on carbon. It's the only way to get people to move off coal because coal is currently so cheap," he said.

"We have to move from this fossil fuel fiesta to a smarter economy."

Some seeking to reduce the Internet's carbon footprint point to a homegrown solution: the GreenStar Network.


GreenStar, which is based at Montreal's ETS, is an alternative Internet that runs on small data centres powered solely by cleaner renewable energy, like wind, solar and hydroelectric power.

GreenStar is growing quickly because of the huge worldwide demand for green IT, St. Arnaud said. Since being launched last fall with a core of five green data centres in Canada, the network has expanded to include 15 other data centres in Europe and the U.S., mostly at universities and a few small industrial partners. Others are planned for China and Africa.

"Our biggest problem is meeting demand. We've demonstrated that we can build an Internet that's as reliable as the normal Internet, but without using dirty energy," St. Arnaud said.

The province says the market for green IT will be worth \$600 billion annually worldwide by 2013.

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