If you're not aware that you're part of the problem, you can't be part of the solution.

—Professor Bill Torbert
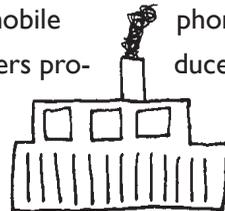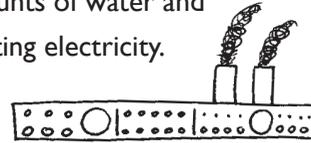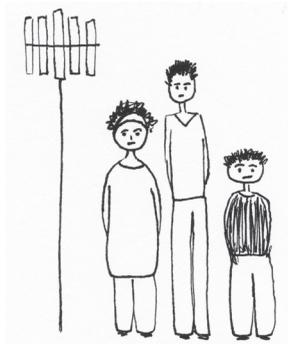Boston College School of Management

The Internet is the largest thing that humanity has built.

Every Google, Amazon and GPS search and video download (*every* online activity) requires an international network of cell sites and data storage centers that consume *huge* amounts of water and greenhouse gas-emitting electricity. Manufacturing every e-device consumes electricity, toxic chemicals, water and materials mined under abusive conditions. The world now has more mobile phones than toilets. Manufacturers produce more transistors than farmers grow grains of wheat or rice. Because of increased video streaming and "smart," Internet-connected devices, e-technologies' power demands increase 20% per year. The Internet could generate 3.5% of greenhouse gas emissions (more than aviation and shipping industries) by 2020 and 14% by 2040. Wireless technologies consume ten times as much energy as wired. They also risk interception and privacy loss and generate more electromagnetic radiation (EMR) than wired tech.

How do we reduce the Internet's footprint?

Spread the word

Downloading a video uses more data and takes more energy than downloading a photo; transmitting a picture takes more energy than a voice message, which takes more than text. Skyping uses more energy than plain talk. **With the Internet of Things** (machine-to-machine communication), the Internet grows exponentially larger, and e-waste increases. Don't buy into it.

Katie Singer, author of *An Electronic Silent Spring* (Steiner, 2014) and *Limits to Electronic Growth* (forthcoming) and consultant with the EMR Policy Institute, prepared this flyer. katiesinger@electronicsilentspring.com

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If you can translate this flyer into Arabic, Chinese, French, Hebrew, Hindi, Russian or Spanish, please contact: katiesinger@electronicsilentspring.com. German and Japanese translations of this flyer are available at www.electronicsilentspring.com/flyer

Internet Footprint Quiz

Name the Internet's main energy hogs.

1. *Access networks:* World-wide infrastructure that includes cellular antennas, radio transmitters and routers.
2. *Data centers:* Run by businesses, universities, governments, hospitals. Packed with cooling systems and computers that store websites, records, GPS, etc., data centers' CO2 emissions grow by 13% per year.
3. *Embodied energy:* Used to mine raw materials, manufacture and ship each item to its end-user.

Why does energy efficiency increase energy demand? As devices get less expensive, more people buy them, which increases consumption of raw materials and energy.

Which consumes more electricity: streaming 52 hours of video or running two refrigerators for a year? 52 hours of video streaming.

How many tons of electronics do we discard? Globally, we discard 44.7 million metric tons (49.27 million U.S. tons) of e-waste per year. A four-person U.S. household discards about 176 pounds per year.

How to reduce the Internet's footprint

- Buy repairable, upgradable, modular electronics. Wait at least four years to upgrade.

- Delete old emails and Facebook posts.

- Since wireless tech uses 10 times as much energy as wired (i.e. fiber optics), download videos via wired devices. Better yet, *rent* videos.

- If you must have a mobile device, keep Wi-Fi and Bluetooth off unless you're using them. Keep "Airplane mode" on. Limit message-checking to every two hours.

- Delay children's use of electronics until they have mastered reading, writing and math on paper.

- Text, email or call rather than Skype. Better yet, talk in person.
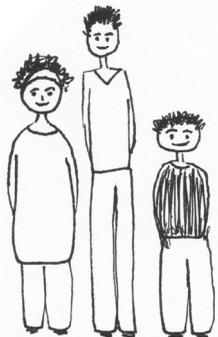
More ways to e-reduce

- *Web designers*: Minimize videos, pop-ups and slide shows. These consume *lots* of energy and thereby emit *lots* of CO2. Link or embed videos, do not re-post them.

- *Manufacturers*: Make modular, repairable, wired electronics that re-use functional components. Collaborate with multiple companies to require suppliers to disclose all chemicals and use safer alternatives. Buy raw materials and parts only from sources that verify worker protections.

- *Service providers:* Use renewable power. Do not build out 5G further until it is proven sustainable, secure and safe. Do not beam the Internet from space, since launching thousands of rockets degrades the ozone layer, impacts atmospheric heating and speeds climate change.

- *Municipalities:* Take ownership of water, gas and electric companies. Restore/maintain electro-mechanical utility meters. Provide fiber-optics-to-the-premises as a public utility. Ban Bitcoin mining. At recycling centers, let robots "mine" re-usable metals from discarded electronics to generate income.

Universal Internet Access

has become necessary for family connectedness and educational and economic opportunities. Like clean power and water, clean Internet service should be delivered as a publicly or mutually-owned utility that is:

SUSTAINABLE—Internet service is wired (i.e. fiber optics) to the premises, with no wireless interface in "the last mile." Devices are long-lasting, repairable, recyclable and modular.

SECURE—Service is wired to the premises, not interceptible, with user privacy protections.

SAFE—Manufacturers provide verifiable worker protections for raw material mining and assembly of transistors and devices. To minimize exposure to electromagnetic radiation (EMR), infrastructure is wired to the premises and devices use shielded cabling. Before they are marketed and deployed, services and devices are proven resilient for weather catastrophes. They are tested for long-term, non-thermal impacts and proven safe for pregnant women, children, insects, birds, trees and other living creatures.

INSURED—Underwriters (not self-insurance programs) provide liability against fire, safety and health damages.

NET NEUTRAL—Internet access is affordable and not censored.

The Precautionary Principle

Most electronic technologies have been deployed without environmental, energy or social impact assessments. Since resources are not limitless, and unregulated consumption leads to degradation and depletion, this is not sustainable for ecosystems or economies.

Before new technologies are deployed, could UN nation States adhere to the Precautionary Principle, mandate enforceable environmental impact assessments of Internet use, and generate solutions that will help the world move toward sustainability, safety and security?

When an activity raises threats of harm to human health or the environment, precautionary measures should be taken, even if some cause and effect relationships are not fully established scientifically. In this context, the proponent of an activity, rather than the public, should bear the burden of proof.
                                    —The Precautionary Principle