How Can IT Help Solve Climate Change?

We face the biggest challenge of the 21st Century - tackling climate change. In the same way that the Internet revolutionized how people exchange information, the IT sector can help transform the energy sector that dramatically increases efficiency and interconnectivity while reducing emissions and energy costs. Big solutions are needed now.

SMART 2020: Enabling the Low Carbon Economy in the Information Age, a report by the Climate Group, illustrates the potential of the Information Technology (IT) sector to direct its notoriously rapid technological innovation toward solutions that cut emissions and improve efficiency across the economy, which would result in global emission savings of 15% by 2020.

SMART 2020 points out that the solutions potential of the IT sector stretches beyond climate-friendly lifestyles and onto system-wide solutions that increase the overall efficiency of society, while making a major dent in global greenhouse gas pollution.

3 Examples of IT based Climate Solutions

(1) The "Smart Grid"
IT energy technologies as applied to the electricity grid to create the "smart grid" have the ability to transform the electricity grid to a more dynamic and decentralized system to deliver and manage our energy needs, and one that is able to significantly increase the amount of renewable sources of electricity. The electric vehicle in your garage or parking lot may be able to serve as a storage device of renewable energy such as wind, which often blows more at night when demand is lower, and can then be borrowed back from the smart grid during the day when the demand is higher. When combined with building energy management tools (see below), the smart grid allows the customer to see how power is used or costs throughout the day and allow the customer to take action to reduce their energy footprint or power bill.

With the ability to quickly adjust the supply of energy from a broader range of sources, as well as adjust the demand through the growth in development of "smarter" buildings and appliances, the "smart grid" has the potential to allow the reduction or phase out of the dirty coal fired power plants. Though the "smart grid" is in very early stages of definition and investment, IT driven smart grid technology holds the potential for significant reductions in energy use and greenhouse gas emissions.

Examples: Cisco & IBM Collaborate on Smart Grid for Amsterdam,
IBM supports Fayetteville, NC Smart Grid success

(2) **Building Energy Management**

By providing building managers and home owners with much more detailed and realtime information on their energy use, through web based tools such as Google's Powermeter, Microsoft's Hohm, and even from the latest app on your iPad, IT has the potential to provide a completely new set of tools to enable us to better manage our energy use, both through behavior change and more fine-tune control of when we heat and cool our homes or offices.

Examples

- Cisco's Smart Connected Buildings system shown to reduce energy consumption 25% by managing building systems over IT network.
- Google's PowerMeter is a free electricity usage monitor, which can provide live data from either a smart meter or a monitor attached to your meter. By leveraging live data, PowerMeter provides consumers detailed insight on the actual electricity footprint of appliances and other products in the home.
- Microsoft's Hohm is similar to Google's power meter, but because Hohm does not require additional hardware, it has a significantly larger potential audience than PowerMeter currently. However, without the inclusion of live energy use data, its potential for empowering customers to change their behavior would appear to be less than PowerMeter.

(3) Transportation

IT solutions have the potential for significantly reducing transportation related emissions as well, largely through the elimination of the need for travel by providing electronic alternatives to various transportation demands. The broader application of more advance telecommuting tools have the potential to reduce the commuting related emissions as more employees are able to remain connected to perform their jobs effectively from outside the office on a regular basis.

Similarly, the broader use of life-size video conference technology such as Cisco's Telepresence or HP's Halo have the potential to reduce emissions as an alternative to travel for in person meetings, but much depends on whether these technologies are deployed in a way to truly replace travel demand, or merely as a supplement to what would have otherwise been a teleconference call. Delivery of key services such as health care, as shown in Ericsson's e-health case study in Croatia, show the potential for IT solutions to remove or reduce significant amounts of transportation demand in other sectors as well.

-Cisco's Telepresence & HP's Halo Video Conferencing

-Ericsson E-Health Case Study from Croatia, (p.8)