## 3.2 Role of Electric Utilities

IT equipment has become the third largest source of power demand in the commercial sector, accounting for more **than 10% of an organization's energy use.**

In fact, IT and related communications technologies now account for more than 2% of all global $CO_2$ emissions.

To improving the energy efficiency and environmental friendliness of your IT Department can be a real challenge.

The easiest way to reduce energy costs is to implement an easy and cost-effective PC power management solution.

**The Challenge of Power Management**

A typical PC consumes between 400 kWh (kilowatt hours) and 600 kWh of electricity each year, depending on the brand, how it is equipped (e.g. LCD or CRT monitor), and how hard the CPU is working.

The average cost of a kilowatt hour of electricity in the United States averaged $.0898, and ranged from $.0533 to $.2536.

Assuming all computers in a 10,000 machine environment are left turned on all of the time these rates would result in an annual cost for electricity of somewhere between $1,867,632 and $13,329,216.

**If you consider that 50% of all PC's are left on** both overnight and on weekends (70% of the total hours each **week), it's reasonable to expect that actively** implementing effective power management policies across the organization can result in savings of up to 35% (i.e. 50% of 70%) on your PC-related electrical bill.

Given the heat generated by a PC, reducing the number of hours that each PC is turned on each day will reduce the cost of electricity for air conditioning in warmer months.

### 3.2.1 Role of Telecommuting, Teleconferencing and Teleporting

Teleworking technologies are variously implemented for green computing initiatives and many advantages include lower greenhouse gas emissions related to travel, greater worker

satisfaction and, as a result of lower overhead office costs, increased profit margins. Teleconferencing and telepresence technologies are often implemented in green computing initiatives.

The ways in which telecommuting is eco-friendly.

It reduces carbon emissions. **Whether it's by planes,** trains or automobiles, traveling in to work has a negative impact on the environment. Cutting the commute, thus prevents an excessive amount of carbon emissions to go into the air.

It reduces electricity. When people work in an office,

almost everything is powered by electricity. From lights to computers and printers—even the coffee machine—everything consumes large quantities of electricity.

Working at home allow reduce electricity consumption to what it really takes to make home office run.

It reduces paper printing.

It makes you take better care of your equipment. Think about how often you actually shut down your computer at work.

In addition to flexible schedule and saving time and money, telecommuting also greatly helps the environment.

## Why Telecommuting is a Green Way to Work

Studies have shown that remote workforces contribute to sustainable, environmentally-friendly workplaces by reducing

congestion, lowering fuel consumption, minimizing construction, lessening pollution emissions, reducing the strain on transportation systems, and improving air quality.

Example: Dell and Xerox have experienced this first-hand.

The average U.S. commuter produces an estimated 380 lbs. of CO2 each year during rush hour, but switching to full-time telecommuting **reduces each person's work**-related carbon footprint by 98 percent.

According to Global Workplace Analytics, if workers in the U.S. who held telework-compatible jobs (50 percent) and wanted to (79 percent) worked from home just two days a week, the U.S. as a whole would:

**Gas Use:** Save nearly 52 million gallons of gas—the greenhouse gas equivalent of taking approximately 88,000 vehicles off the road per year.

**Oil:** Save over 2.6 million barrels of oil, valued at over $264 million.

**Roads:** Reduce wear and tear on highways by over 1 billion miles a year.

The advantages are many-

Increased worker satisfaction,

Reduction of greenhouse gas emissions related to travel, and

Increased profit margins as a result of lower overhead costs for office space, heat, lighting, etc.

## Implementation

Blackle

Fit-PC: a tiny PC that draws only 5w

Zonbu Computer

The Asus Eee PC and other ultra portables

## Blackle

Blackle is a search-engine site powered by Google Search.

Blackle came into being based on the concept that when a computer screen is white, presenting an empty word page or the Google home page, your computer consumes 74W.When the screen is black it consumes only 59W.

Based on this theory if everyone switched from Google to Blackle, mother earth would save 750MW each year.

## Fit-PC:

A tiny PC that draws only 5w

Fit-PC is the size of a paperback and absolutely silent, yet fit enough to run Windows XP or Linux.

Fit-PC is designed to fit where a standard PC is too bulky, noisy and power hungry.

Fit-PC draws only 5 Watts, consuming in a day less power than a traditional PC consumes in 1 hour.

**Zonbu Computer**

The Zonbu is a new, very energy efficient PC.

The Zonbu consumes just one third of the power of a typical light bulb.

The device runs the Linux operating system using a 1.2 gigahertz processor and 512 meg of RAM. It also contains no moving parts, and does even contain a fan.

The Asus Eee PC and other ultra portables

The "ultra-portable" class of personal computers is characterized by a small size, fairly low power CPU, compact screen, low cost and innovations such as using flash memory for storage rather than hard drives with spinning plotters.

These factors combine to enable them to run more efficiently and use less power than a standard form factor laptop. The Asus Eee PC is one example of anultraportable.

**3.2.2 Limitations**

Green Computing could be quite costly.

Some computers that are green may be considerably underpowered.

Rapid technology change.