Guidelines for Personal Computer Energy Savings

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Energy at MIT

MIT has over 20,000 networked personal computers supporting education, research, and administrative activities. In support of the MIT Energy Initiative for campus energy use, IS&T has developed near-term guidelines for energy saving actions you can take with personal computers. As a community, we can save 8 million kilowatt hours (kWh) annually from these actions on campus, without impacting function or service.

The annual electricity consumption for all uses in MIT buildings is 226 million kWh. Sixty-seven percent of this energy is produced in the cogeneration plant, and the rest is purchased from NStar. Community-wide adoption of power saving measures for personal computers would mean a reduction of nearly 4% of MIT's electric energy use and 11% of MIT's annual power purchases from NStar. This amount is equivalent to that needed to power 961 homes in Cambridge for a year.

Power Management and Energy Savings

Today's PCs come with advanced power management. These energy saving features – standard in Windows and Macintosh operating systems – place inactive monitors and computers (CPU, hard drive, etc.) into a low-power usage "sleep" mode. A simple touch of the mouse or keyboard "wakes" the computer and monitor in seconds. It is possible to choose different power savings configurations for your computer that best meet your needs.

Note: Check with your local IT support providers before changing any configurations on your machine to avoid disrupting important services such as TSM backup. If you are unable to change your energy settings, they have likely been restricted by your local IT support.

Energy Saving Recommendations

Monitor Power Management - A Must!

- Turn off a monitor display or put it in a lower-power or sleep mode during periods of inactivity.
- Avoid using screensavers - they waste energy and do not save the screen.

IS&T Recommendations for Power Management

Vendor terminology for power management features in the two commonly used operating systems at MIT:

Windows

Monitor:

- Turn Off Display
  If you will not be using the monitor for 10 or more minutes.
  Time to wake up is less than 5 seconds.
- Turn Off Hard Disk

After 5 minutes of inactivity

Computer

- Standby Mode
  After 1 hour of inactivity

Mac OS

Monitor:

- Put the display to sleep when the computer is inactive
  Set to 10 minutes
  Time to wake up is less than 5 seconds
- Put the hard disks to sleep when possible
  Turn on this check box

Computer

- Put the computer to sleep when it is inactive
  Set to one hour
  Time to wake up is less than 30 seconds

Detailed Instructions

For assistance in configuring these energy savings modes on your machine, see the IT Energy@MIT Initiative.

Computer Power Management

In the near-term we advise that you DO NOT enable the Computer Power Management Features, IF you rely on the following activities which require the computer to be on:

- Backup service via Code42/CrashPlan
- Remote access to files and desktop
- Remote system administration or scheduled maintenance (e.g., nightly jobs)

Power Savings Benefits

Adopting energy savings practices will reduce energy use during periods of inactivity. Annual savings for individual computers and monitors based on an assumption of 14 idle hours per day guide us to collective action across campus. A single Desktop with a 17" LCD monitor contributes 500kWh in annual savings. As a reference, an average home in Cambridge uses 700kWh per month.

- **Desktop (P4)**
  Power Saving: 65 watts
  Annual Energy Saving: 332 kWh
- **Laptop**
  Power Saving: 15 watts
  Annual Energy Saving: 76 kWh
- **17-inch CRT Monitor**
  Power Saving: 60 watts
  Annual Energy Saving: 306 kWh
- **17-inch LCD Monitor**
  Power Saving: 33 watts
  Annual Energy Saving: 168 kWh

Added Benefits:

- Reduced heat dissipation leading to reduced cooling energy
- Extra battery time for laptops
- Lower noise from reduced use of power supply and cooling fans

IS&T is exploring tools and solutions that will allow us to harness future energy savings from all computers on campus, without impacting function and service.

Myth or Fact

Over the years, several myths have created barriers to energy saving actions. Some of the common ones are explored below:

Myth: Screen savers save your screen.
Fact: Screen savers were originally developed to prevent the permanent etching of a pattern on older monochrome monitors. The same protection occurs when you place the monitor in a low power "sleep" mode. Avoiding the use of screensavers on LCD and CRT displays can reduce power usage while away from your computer by 30-75 watts.

Myth: Computers have a shorter life when you turn them on and off frequently.
Fact: Hard disks in PCs older than 10 years did not automatically park their heads when shut off, leading to disk damage from frequent on/off power cycling. Newer PCs are designed to handle over 40,000 on/off cycles, a number unlikely to be reached during an MIT computer's typical four-to-six-year life span.

Myth: Turning your computer off uses more energy than leaving it on.
Fact: The surge of power when a computer is turned off lasts a few seconds and is insignificant compared to the sustained energy used in keeping it on during periods of inactivity.