Power Management for Computers and Monitors

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ENERGY STAR®

- ENERGY STAR is a joint program of the U.S. Environmental Protection Agency and the U.S. Department of Energy
- Defines and qualifies energy efficient electronic products
  - 60 product categories, including office equipment
- Encourages energy efficiency practices
  - New and existing commercial and residential buildings

ENERGY STAR and Your Federal Facility

- Federal purchasers must buy ENERGY STAR qualified products
  - Energy Policy Act of 2005
  - Federal Acquisition Regulation (FAR) Subpart 23.203
  - Executive Order 13514 and 13423
- Federal agencies and facilities must enable ENERGY STAR features on computers and monitors
  - Executive Order 13514 and 13423

What is Power Management?

- Utilization of ENERGY STAR features on ENERGY STAR qualified electronics, in order to save electricity
- Standard in Windows and Macintosh operating systems
- Places monitors and computers into a low-power **sleep** mode after a period of inactivity
- Keyboard or mouse activity **wakes** computers and monitors
- Must be **enabled** on computer and monitors to ensure power savings

What is Enabled?

Monitors

- Monitor is set to enter “sleep” mode or “turn off” "after a specified period of inactivity
- Specified period of inactivity must be set to a specific time frame, not “Never”
- Recommended for 5 to 20 minutes of inactivity

What is Enabled?

Desktop Computers

- Desktop computer is set to enter “system standby” or “system hibernates” after a specified period of inactivity
- Specified period of inactivity must be set to a specific time frame, not “Never”
- Recommended at 30 to 60 minutes of inactivity
- “Turn off hard disks” can be ignored

What is Enabled?

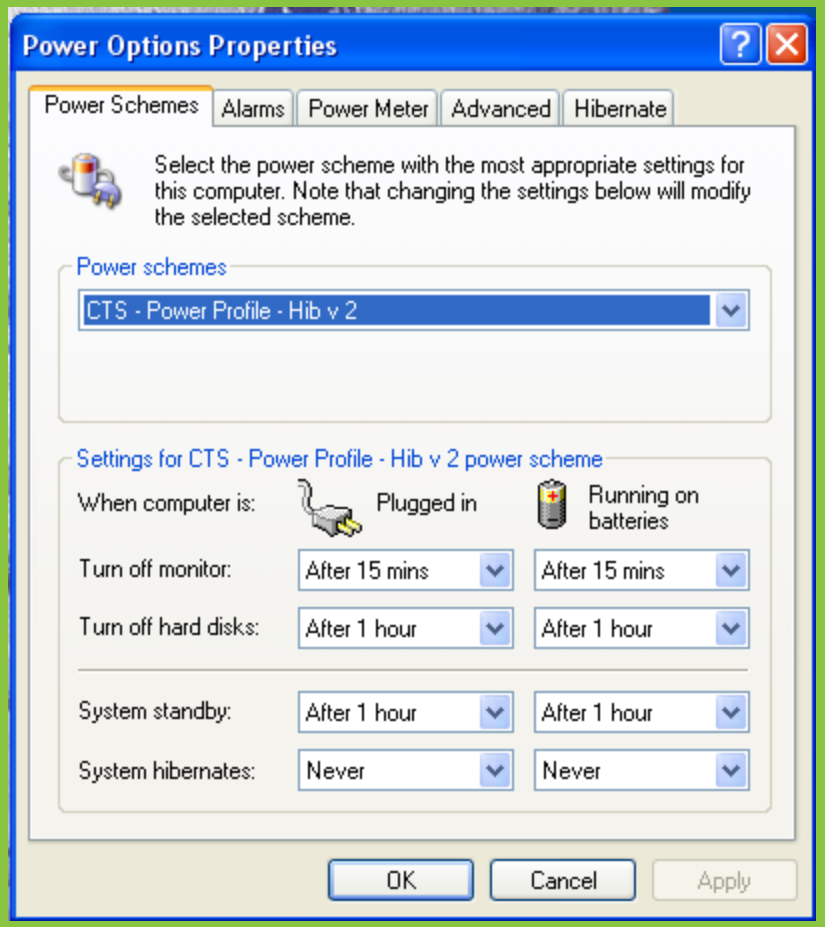
Laptop Computers

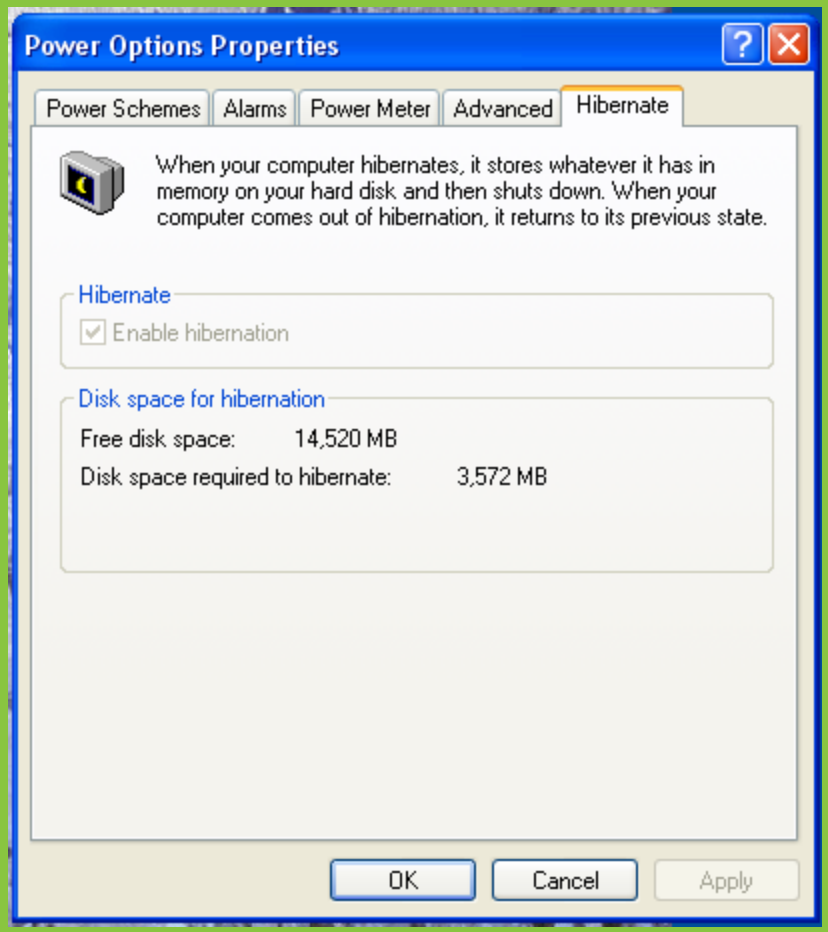
- Laptop monitor is set to enter “sleep” mode or turn off after a specified period of inactivity, and the laptop computer is set to enter “system standby” or “system hibernates” after a specified period of inactivity
- Must be enabled in both the “plugged in” and “running on battery” modes
- Specified periods of inactivity must be set to a specific time frame, and not “Never,” but these times frames do not have to be the same for all components and modes
- Recommended for 5 to 20 minutes of inactivity for the monitor and 30 to 60 minutes of inactivity for the computer
- “Turn off hard disks” setting does not save much AC power, and can be ignored in the “plugged in” power scheme

System Standby and Hibernate

- System Standby (S3)
  - Drops power to 1-3 Watts
  - Saves $25-$75 per computer annually
  - ***Wakes up in seconds***
- Hibernate (S4)
  - Drops power to 1-3 Watts
  - Saves $25-$75 per computer annually
  - ***Wakes up in 20+ seconds***
  - ***Saves work if power is lost***

Checking Cate's Computer





Why Power Management?

- Reduce electricity used for powering equipment
  - Half of energy used to power personal computers is wasted
  - Reduce peak load demand charges
- Reduce cooling loads by reducing the heat generated by equipment
  - Save an additional 15-30%
- Save money
- Gain environmental benefits
  - Reduce greenhouse gas emissions

How to Power Manage

- Determine your baseline for computers and monitors
- Identify challenges
- Find and implement a power management solution
- Check power management status regularly
- Calculate benefits

Determine Your Baseline

- Refer to your FEC Baseline Survey or Annual Reporting Form
  - Understand where these numbers come from
- Manually check a representative sample your computer pool
- Electronically check using software or networking tools
- Request technical assistance

Identify Challenges

- Talk to your IT staff
- Frequent challenges:
  - Activating power management settings on many computers at once
  - Ensuring power management settings do not interfere with administrative software updates
    - e.g., Security patches, antivirus definitions and scanning
  - Keeping power management features enabled

Find and Implement a Solution

- Numerous solutions exist, including free software, and software tools that you may already own
- ENERGY STAR provides free technical assistance to find a solution that works for your facility (generally via teleconference)
  - Email to powermanagement@cadmusgroup.com

Options for Implementation

- Manually set power management settings
  - Works well for small facilities or facilities with many non-networked machines
  - May require administrative lock down of settings, or regular checks to ensure settings are unchanged
- Acquire and install software to set and manage settings
  - Public domain/Operating System solutions (free)
  - Commercial solutions
    - Funding mechanisms may be available including Pollution Prevention (P2)/Recycling funds, Energy Saving Performance Contracts (ESPCs)

Public Domain/Operating System Solutions

- Activate power management settings
  - ENERGY STAR provides instructions at: http://www.energystar.gov/index.cfm?c=power_mgt.pr_power_mgt_sleep_activate
- Ensure that power managed computers receive updates
  - ENERGY STAR provides an instructions at: http://www.energystar.gov/index.cfm?c=power_mgt.pr_power_mgt_sleep_updates
- No cost, but will require IT staff support

Commercial Solutions

- FEC, EPA and ENERGY STAR do not promote or endorse any particular product or service
- ENERGY STAR provides an informational list at: http://www.energystar.gov/index.cfm?c=power_mgt.pr_power_mgt_comm_packages
- Generally have licensing fees, and may require IT staff support
- May be more feature-rich with integrated solutions

Return on Investment

- Labor costs: ~ $5 / seat
  - Identifying appropriate solutions
  - Testing and troubleshooting exceptions
  - Ensuring that power managed computers do not interfere with administrative software updates
- Software costs: ~ $0-15 / seat

Compare with

- Energy savings: ~ $75+ / seat

Check Power Management

- Depending on the solution your facility implements, you may need to check and reset power management features
  - Lock down through administrative rights
  - Reset via login scripts, network policies or software solutions
  - Educate your users
- Annually record results either manually or electronically (from software solutions)

Calculate Benefits

- Use the ENERGY STAR calculator
  - If you want to calculate benefits of going from 0% power management to some other percentage
  - If you only have products meeting the most recent ENERGY STAR specification
  - If you want to calculate benefits of turning off machines
  - If you want to change assumptions
- http://www.energystar.gov/ia/products/power_mgt/LowCarbonITSavingsCalc_v26_with_5_0v2.xls?34c3-6995

Calculate Benefits

- Use the Electronics Environmental Benefits Calculator
  - If you want to calculate benefits of going from default percentage power management to some greater percentage
  - If you have a mix of ENERGY STAR 3.0/4.0/4.1 products
- http://www.epa.gov/fec/publications.html#calculator

Questions?

- ENERGY STAR's Frequently Asked Questions provides myth-busting: http://www.energystar.gov/index.cfm?c=power_mgt.pr_power_mgt_faq

- ENERGY STAR also has a specific document on insomnia: http://www.energystar.gov/ia/products/power_mgt/downloads/PC_Insomnia_Causes_Solutions_7-21-09.pdf?6144-a2c3

Resources

- ENERGY STAR Power Management
- http://www.energystar.gov/powermanagement

- FEC Operations and Maintenance Resources
- http://www.epa.gov/fec/publications.html#operation

Contact Information

- Regional Champions
  - http://www.epa.gov/fec/technical.html
- E-mail
  - fec@epa.gov
- Cate Berard
  - berard.cate@epa.gov
  - 202-564-8847