

The Federal Computer Power Management Requirement: How to Get Started In Your Agency

Save up to \$75+ per PC Annually

Cate Berard, U.S. Environmental Protection Agency



Outline



1. Computer Power Management
2. ENERGY STAR: Your Solution for Minimizing Computer Electricity Use
3. Myth or Reality?
4. How to Move Forward in Your Organization
5. Q & A



Computer Power Management

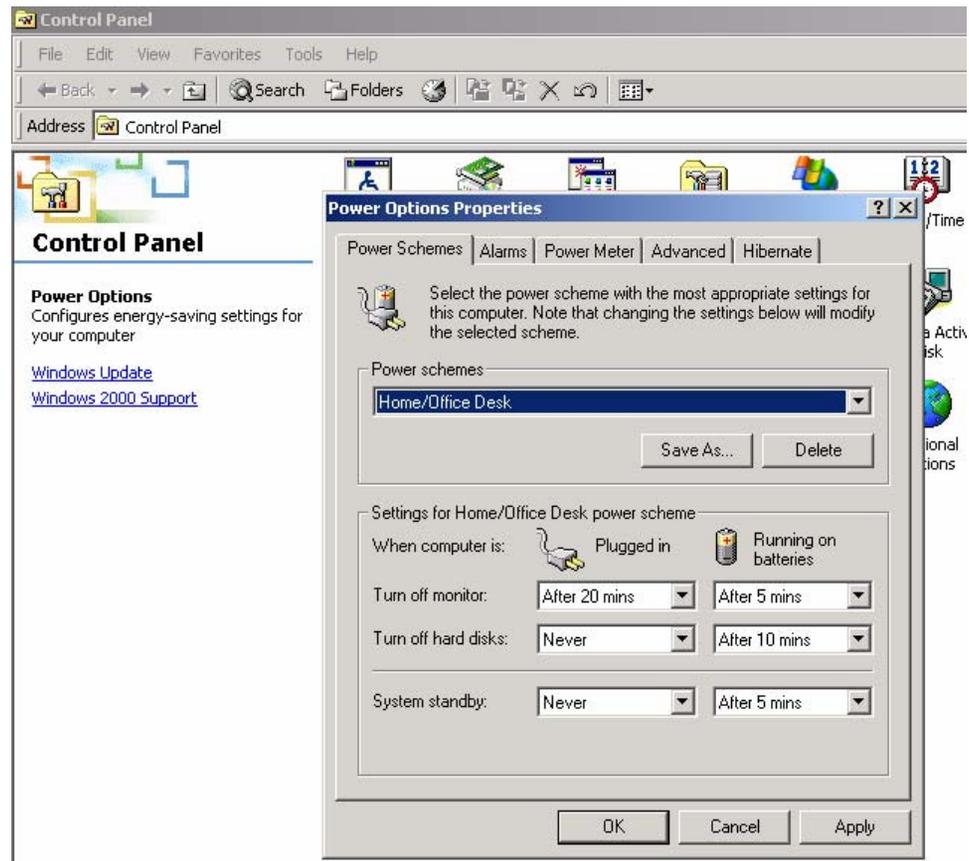
What is “CPM,” and why should I care?



What is Power Management?



- Monitor power management (MPM) places **monitors** into low power sleep mode after period of inactivity
- System standby and hibernate place the **computer** (CPU, hard drive, etc.) into sleep mode
- Built into Windows 95,98, ME, 2000, XP and now Vista
- Settings simply need to be activated



Monitor Power Management: a No-brainer



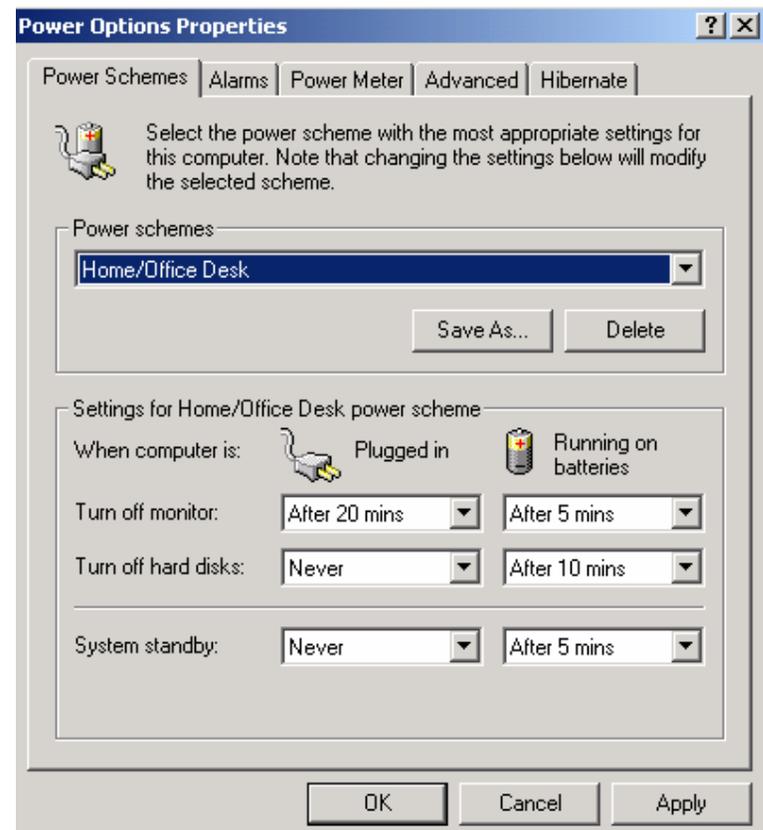
- Stable
- Easy to activate
- Saves **\$10-35+** per monitor annually



System Standby and Hibernate (CPM) can Double Savings



- System Standby (S3)
 - Drops power to 1-3 W
 - Wakes up in seconds
 - Saves \$10-50 per PC annually
- Hibernate (S4)
 - Drops power to 1-3 W
 - Wakes up in 20+ seconds
 - Saves work in the event of power loss
 - Saves \$10-50 per PC annually
- Turn off hard disks
 - saves very little



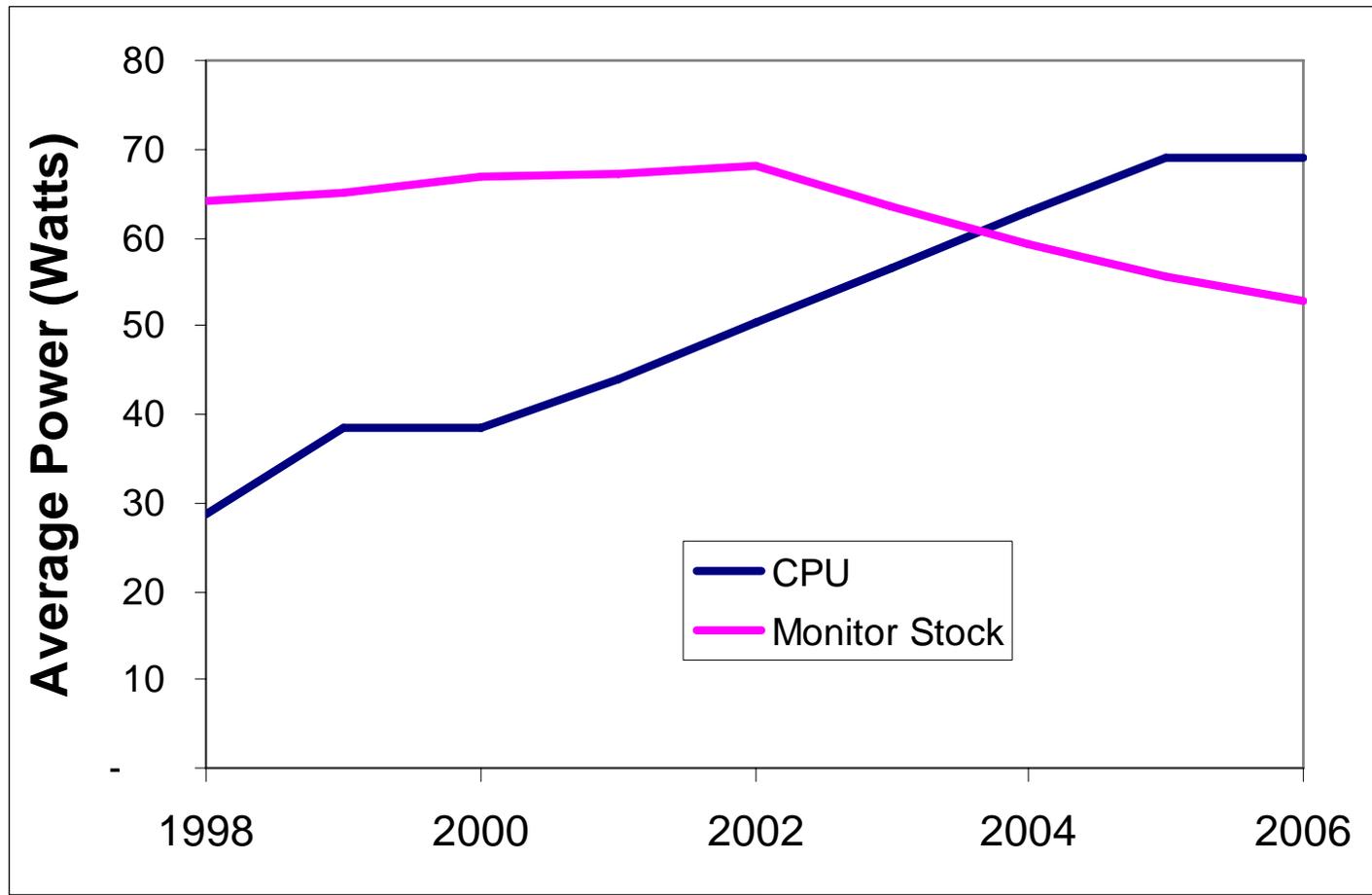
Why CPM?



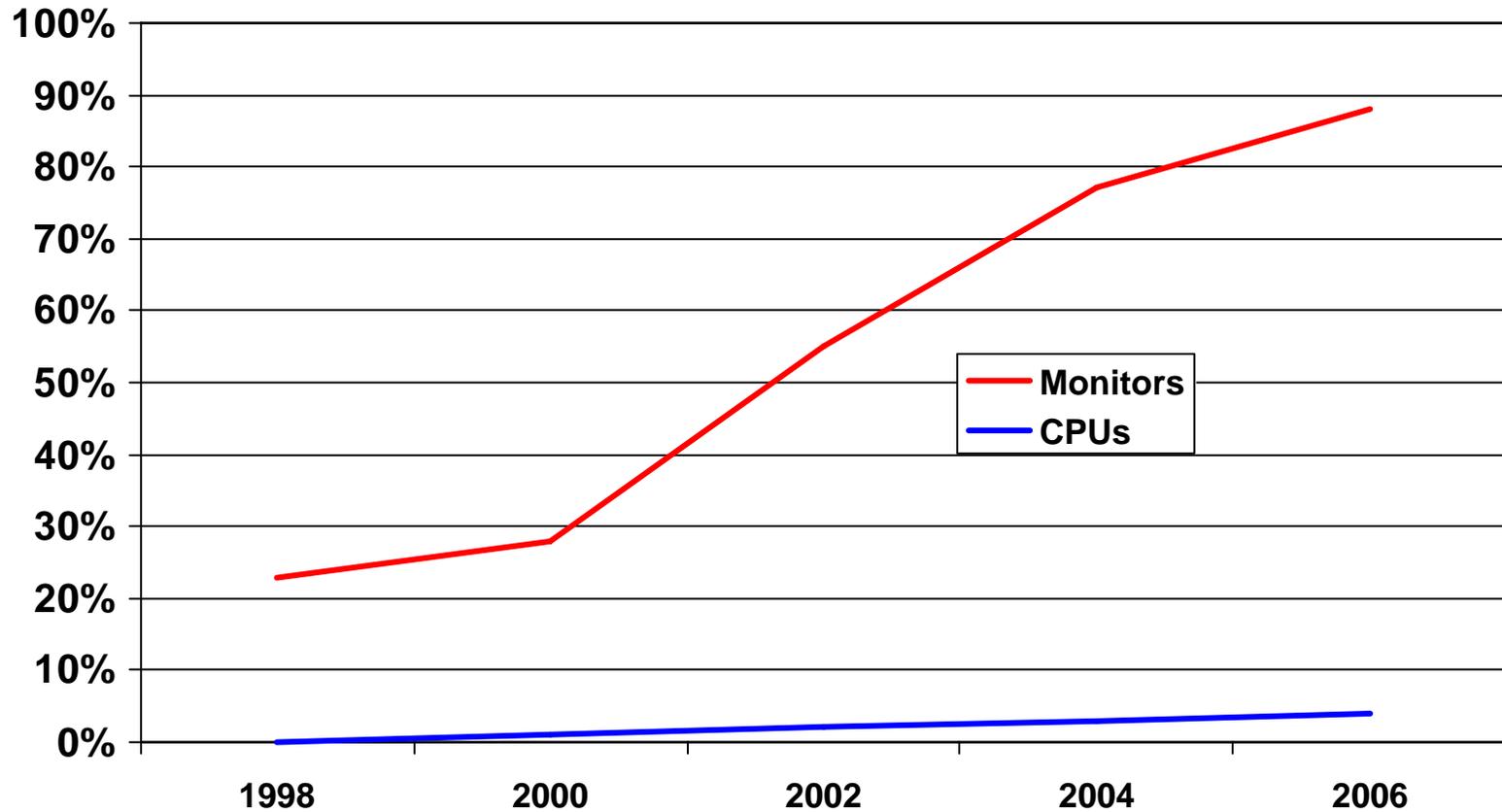
- Executive Order 13423
 - Requires federal agencies to activate ENERGY STAR “sleep” features on computers and monitors
- Use less electricity
 - Half of energy used to power PCs is wasted
- Reducing cooling loads
 - Typical office building with internal heat load and moderately efficient system saves an additional 15%
 - In southern climates savings can be 30% or more
- Reduce peak load demand charges
 - Some utilities charge up to \$200 per kW per year, many charge \$150/year
 - Roughly every 180 PCs or monitors power managed saves 1 kW of peak demand



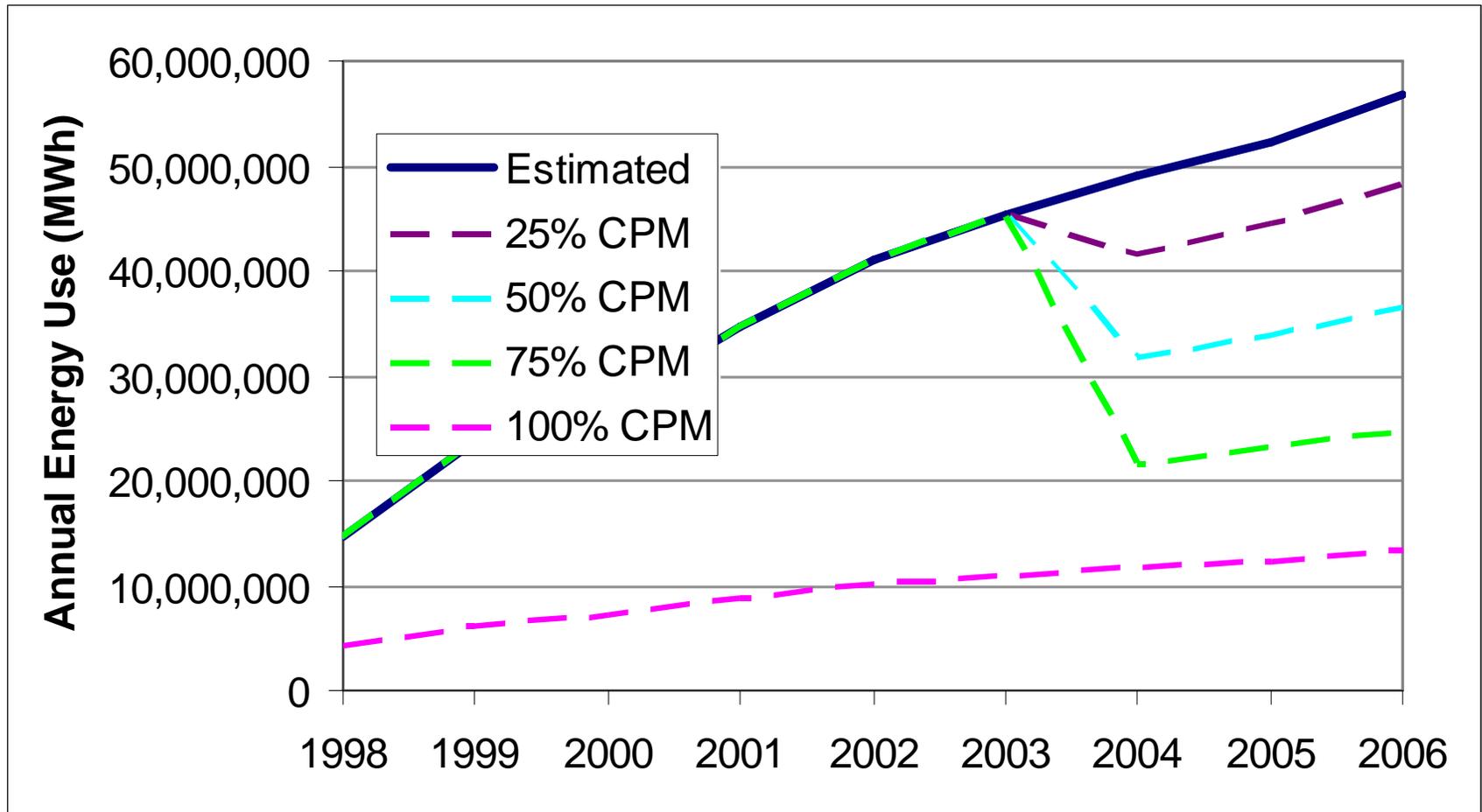
Computer Wattage Now Exceeds Monitor Power



Power Mgmt Utilization is High for Monitors but Low for CPUs



CPM Could have a Major Impact on Nat'l Computer Energy Use



What Would 50% Computer Power Management Accomplish?



- Reduce **6 million tons** of CO₂
- Remove **1 million** cars from the road

- Electricity to light **8 million** homes



CPM Recommended Settings



- To maximize power savings, EPA recommends:
 - Setting monitors to enter sleep mode after **5 to 20*** minutes of inactivity
 - Setting computers to enter *system standby* or *hibernate* after **30 to 60*** minutes of inactivity
 - * The lower the settings, the more energy you save
- On laptops, be sure to activate these settings in the AC power profile — not just the DC (battery power) profile.
- Don't bother with “Turn off hard disks” on desktop PCs



CPM: Where it works best



- Pentium IV (or newer) processors
- Windows 2000, XP, or Vista
- Regular administrative software updates are “pulled” by clients from the network, or Wake on LAN features are available to wake up client machines to receive administrative updates



Numerous Approaches to CPM are Working



Site (PCs)	CPM features centrally deployed using:	Sleeping PCs accessed for network updates via:
Army IMCEN (VA) (10,000)	Rolled out settings with new desktop software image	User Initiated Wakeup
GE (75,000)	Computer Associates Unicenter Asset Management (to distribute the necessary registry key changes)	User Initiated Wakeup
North Thurston Public Schools (4,000)	Energy Star EZ GPO	User Initiated Wakeup
Bemis Company, Inc. (5,000)	Desktop Standard's Policy Maker	Scheduled Wakeup from S3
BC Hydro (2,000)	Verdiem's EZ Surveyor	Scheduled Wakeup (from S5)
Vision Service Plan (2,000)	1 E's Nightwatchman	WOL from S5
Spring Branch ISD (7,000)	Manually Set all PCs to Sleep	User Initiated Wakeup



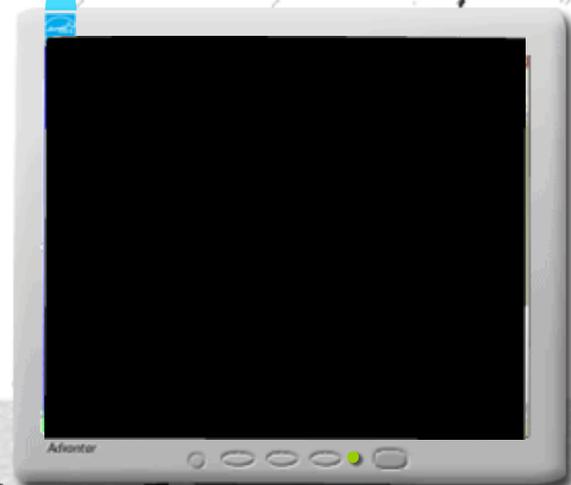
ENERGY STAR: Your Solution for Minimizing Computer Electricity Use



Minimizing Computer Energy Use



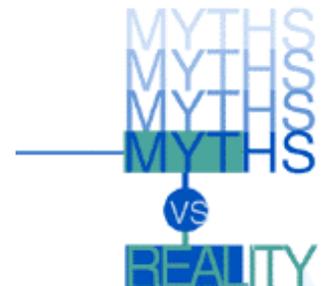
ZZZZZZZ...



Myth or Reality?



Sleep features can wear out hardware by forcing the computer to turn on and off several times a day



The Verdict: Myth!



Sleep features can wear out hardware by forcing the computer to turn on and off several times a day

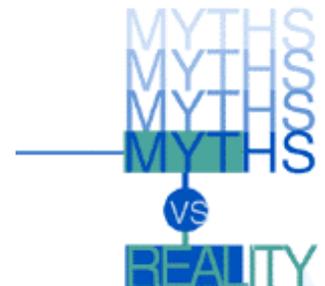
REALITY: Modern computers are designed to handle **40,000** on-off cycles before failure, and you're unlikely to approach that number, even if you keep your computer 5-7 years. Some studies indicate it would require on-off cycling every five minutes to harm a hard drive.



Myth or Reality?



Computers and monitors use more energy with power management settings activated, due to power surges when cycling on and off



The Verdict: Myth!



Computers and monitors use more energy with power management settings activated, due to power surges when cycling on and off

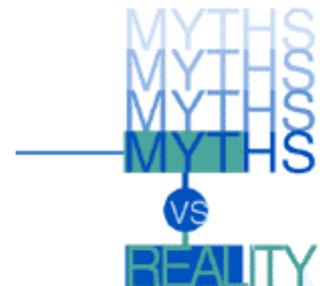
REALITY: the small surge of power created when PCs are turned on is far smaller than the energy used by running the device when it is not needed



Myth or Reality?



Computer power management
saves a substantial amount of
energy on notebook computers –
not just desktops



The Verdict: Reality!



Computer power management saves a substantial amount of energy on notebook computers – not just desktops

REALITY: While they use less energy than desktops, notebook computers still burn about **20-30 watts** of power. System standby and hibernate features reduce notebook power draw to **1-2 watts**

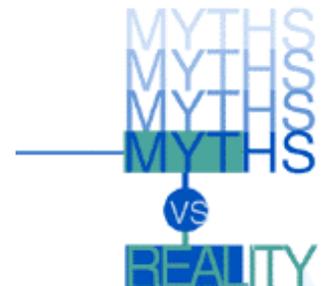
TIP: Be sure to activate system standby and hibernate features in the AC power profile – not just the DC power profile



Myth or Reality?



Computer users will complain about having to wait for their machines to “wake” from system standby or hibernate



The Verdict: Myth!



Computer users will complain about having to wait for their machines to “wake” from system standby or hibernate

REALITY: Employees typically embrace power management when they understand that they are saving money and preventing pollution. Plus “waking” computers takes far less time than booting.

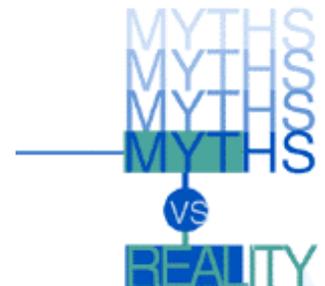
TIP: Inform employees about power management settings prior to activating them, and share information on the economic and environmental benefits



Myth or Reality?



Because Microsoft ships Vista software with computer power management settings enabled, there is no need to worry about sleep settings on Vista machines



The Verdict: Myth!



Because Microsoft ships Vista software with computer power management settings enabled, there is no need to worry about sleep settings on Vista machines

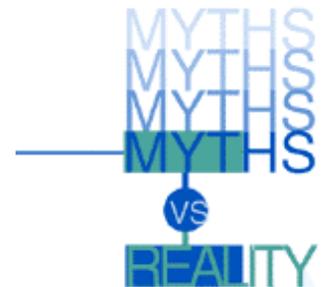
REALITY: While Microsoft does ship Vista with sleep settings enabled, operating systems are usually installed by PC makers, enterprise IT departments, computer resellers, or 3rd party service providers. Windows default power management settings are not typically retained.



Myth or Reality?



Employees who access their desktop computers remotely (e.g., through VPN) must have their machines powered 24/7 and should not use computer power management features



The Verdict: Reality!



Employees who access their desktop computers remotely (e.g., through VPN) must have their machines powered 24/7 and should not use computer power management features

REALITY: Technologies that allow users to “wake” sleeping or off computers from *outside* of the network are still in their infancy

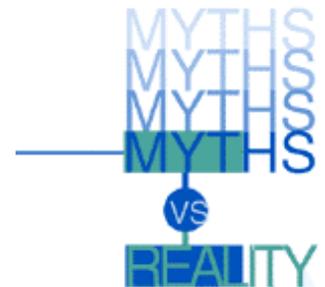
TIP: Apply monitor sleep settings to these computers!



Myth or Reality?



The “Turn off Hard Disks” power management feature saves lots of energy



The Verdict: Myth!



The “Turn off Hard Disks” power management feature saves lots of energy

REALITY: “Turn off Hard Disks” saves very little power. Only system standby and hibernate features offer serious savings.

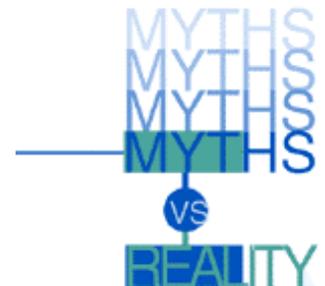
TIP: Make sure your IT manager isn’t confusing “Turn off Hard Disks” with true power management



Myth or Reality?



In Microsoft server software, there are no administrative software tools for centrally managing computer power management features



The Verdict: Myth AND Reality!



In Microsoft server software, there are no administrative software tools for centrally managing computer power management features

While current Microsoft server software lacks such tools, Windows Server 2008 will include them. In the meantime, there are numerous ways to centrally activate and manage these features -- many of them free.

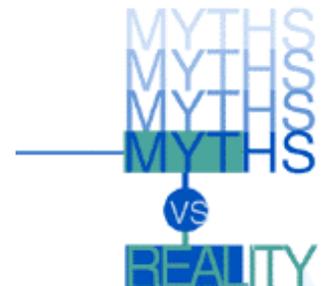
TIP: ENERGY STAR can help identify the best solution for your IT environment



Myth or Reality?



Sleeping computers will not receive important software updates such as new antivirus definitions and Windows security patches



The Verdict: Myth!



Sleeping computers will not receive important software updates such as new antivirus definitions and Windows security patches

REALITY: There are numerous ways to ensure that software updates are applied, including waking up computers through the network prior to distributing updates.

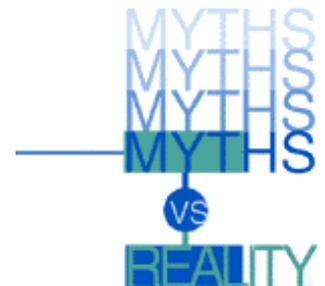
TIP: ENERGY STAR can help identify the best solution for your IT environment



Myth or Reality?



My network administrator says our PCs are “enabled for hibernate,” so we *must already* be taking advantage of computer power management features.



The Verdict: Myth!



My network administrator says our PCs are “enabled for hibernate,” so we must already be taking advantage of computer power management features.

REALITY: For the hibernate feature to be available, it is sometimes necessary to enable it in Windows. This does *not* mean that PCs are configured to automatically enter hibernate after **30 to 60 minutes** of inactivity.

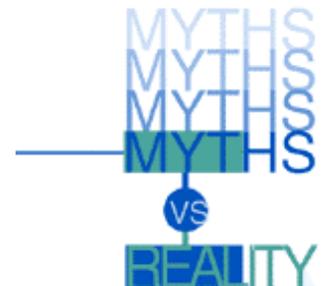
TIP: To avoid potential confusion, ask if PCs are “configured to automatically enter system standby or hibernate after **30 to 60 minutes** of inactivity.”



Myth or Reality?



It's possible for individuals disable computer sleep settings after the IT department deploys them.



The Verdict: Reality!



It's possible for individuals disable computer sleep settings after the IT department deploys them.

REALITY: In most IT environments, users can change sleep settings via the Windows Control Panel.

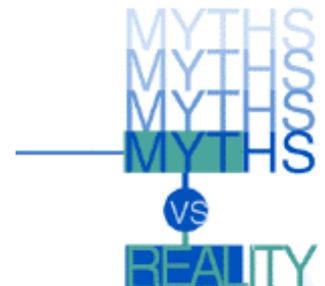
TIP: Educate users about the benefits of retaining sleep settings. Consider tools (e.g., EZ GPO) that periodically reset or lock down sleep settings.



Myth or Reality?



System standby and hibernate features can render a computer unstable, causing system crashes and/or preventing it from waking



The Verdict: Myth!



System standby and hibernate features can render a computer unstable, causing system crashes and/or preventing it from waking

REALITY: while problematic in early versions of Windows, these features work almost flawlessly in Windows 2000, XP, and Vista.



How to Move Forward in Your Organization



Suggested Steps



1. Review current behaviors
 - Are PCs left on at night?
 - Are sleep features enabled on monitors? Computers?
2. Estimate the savings
 - Visit www.energystar.gov/powermanagement
 - Share estimates with energy managers, senior management
 - Contact us for assistance if a business case is needed
3. Engage your IT colleagues
 - Ask for their participation in a 30 min call. We can:
 - Address concerns about the stability of CPM and its impact on hardware
 - Address concerns about keeping all PCs updated & secure
 - Help identify the best method for activating and managing sleep features
 - For additional info, send them to “CPM implementation resources” at www.energystar.gov/powermanagement



Summary



- Implementing MPM and CPM can save as much as **\$100 per PC annually**, and is required under Executive Order 13423
- Many organizations are already saving
- EPA's ENERGY STAR Program can help you estimate savings and identify implementation options



Questions & Answers



Contact Information



- Additional information at:
www.energystar.gov/powermanagement
- Contacts:
 - Mike Walker, Beacon Consultants Network Inc. (EPA Technical Support Contractor): 617-921-8445, mwalker@beaconconsultants.com
 - Steve Ryan, US EPA Energy Star Program Manager: 202-564-1254, Ryan.Steven@epamail.epa.gov

