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WHITE PAPER

Green IT: Saving Money while Saving Energy

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Executive Summary

This white paper moves beyond the hype of green IT and provides substantial support for implementing practical, yet cost-effective power management policies and tools to "green" your IT environment and boost your bottom line. We begin by outlining key drivers for adopting green IT practices: increasing government energy regulation, enhancing corporate image, and achieving considerable cost savings.

A key incentive for adopting green IT policies stems from shifts in government energy policies and regulations. Though strict enforcement and mandatory compliance measures are yet to be implemented, organizations should recognize the impact that many of these energy regulations and incentives could have on their business, and be more proactive about establishing more energy-efficient policies. On top of that, increasing pressure from investors, shareholders and even internal personnel to "be green" is playing a role, spurring the adoption of green policies to improve public relations, and demonstrate environmental responsibility.

Though government legislation and corporate image are important, by far the most influential aspect in the shift to "go green" is the potential cost savings from cutting back on unnecessary energy consumption.

Moving Beyond the Hype: Examining Key Drivers Fueling the Green IT Movement

There's been a fundamental shift in public sentiment toward greener, more sustainable business practices over the last decade, and as a result, many organizations are listing green IT initiatives as a top priority. What's driving this shift? The obvious reason is the collective desire to reduce our society's carbon footprint, but there are of course additional motivating factors for businesses. Government incentives are putting money back in the pocket of those businesses favoring greener IT practices. Companies are preparing for legislation, such as the impending carbon tax and "cap and trade" regulations now under review in Congress that may penalize them not following "green" best practices.

By far, the most significant driver in the green IT initiative is that these types of policies can help IT organizations address the constant pressure to reduce costs and maximize ROI, especially in light of the recent recession. And the substantial savings from effective power management policies is the clinching reason most businesses are putting green IT at the top of the list.

Though the initial interest and momentum behind green IT policies tends to come from CIOs, the onus is on IT managers to plan and execute initiatives that simultaneously reduce the organization's environmental impact and save money. As a prime example, a recent study by Enterprise Management Associates® (EMA™) shows that roughly 57 percent of companies have already implemented green IT initiatives.[1]

Industry Statistics Supporting the Value of Green IT

EMA:

- In a recent study by of Enterprise Management Associates (EMA), workstations account for roughly 90 percent of total businesses' power use, while servers make up the remaining 10 percent; and power for these workstations is often not managed from a central location making it difficult to assess overall power consumption.[1]
- As cited by Dennis Drogseth of EMA, the U.S. Department of Energy says that the U.S. National average electricity costs for commercial sector is 9.51cents/kWh, translating into a total average annual cost of $149.10 for each desktop[1]
- Multiply that by the total number of desktops, say 1,000 for example, and that means an organization's average annual power consumption costs could be $149,100[1]

Gartner:

- Gartner® recently released "The Top Strategic Technologies for 2010" and identified green IT initiatives as number four on the list of strategic technologies; identifying how IT can and should invest in green IT policies and use analytic tools to dramatically reduce energy consumption[2]

IDC:

- A recent IDC® survey (Sept. 2009) shows the most dramatic change among the factors driving green IT and sustainability policies was the increased focus on the growth of corporate IT infrastructure[3]
  - In 2008, the IDC survey showed that 31 percent of respondents identified corporate IT infrastructure as an important policy factor (ranking it at number four of top priorities)
  - In the 2009 survey, the role of corporate infrastructure rose to the second most important factor, according to 46 percent of respondents
- As quoted in a recent IDC press release:
  - "IDC believes that IT executives are feeling the pinch of their budgets being squeezed," said Vernon Turner, senior vice president of IDC's Enterprise Infrastructure, Consumer and Telecom Research. "Because they understand that much of their expanding infrastructure remains underutilized – adding to their company's capital and energy costs – green IT policies can help establish a more comprehensive approach to utilizing their assets."[3]
- In the short term, survey respondents indicated that getting measurement and management systems into place are their main priority.[3]

Government Policies: Carbon Taxes, Cap and Trade, and You

The U.S. government has been calling for tough legislation and harsher regulations on energy consumption and green house gas emissions over the past few decades. The Obama administration and current Congress have pushed these issues to the forefront and continue to debate new climate bills in the House and Senate. Though the U.S. hasn't established national climate change levies or carbon taxes, there is still considerable momentum toward establishing state-wide carbon taxes and "cap and trade" legislations to encourage more energy-efficient IT practices. IT departments must prepare to face stricter regulations and put effective policies in place that curb unnecessary energy and help avoid regulatory issues in the near future.

One of the most prominent governmental bodies making headway on the green IT front is the U.S. Environmental Protection Agency (EPA). On its Energy Star Web site, the EPA projects that if every computer sold in the U.S. met the Energy Star requirements, the savings could grow to more than $2 billion annually and greenhouse gas emissions could be reduced by the equivalent of those from nearly 3 million vehicles.[4] In 2008, the EPA announced the "Energy Star Low Carbon IT Campaign" and identified power management as one of the most effective ways to curb energy consumption and save thousands each year.[5] The EPA states that by enabling power management settings, such as setting a computer to a low-power sleep mode after a period of inactivity, has the potential to save up to $50 per computer annually.[6]

The Obama administration, Congress and, specifically, the EPA are calling for smarter, more efficient energy use in businesses and turning to green IT practices, namely power management, to reduce power consumption and help organizations dramatically cut costs. Though national energy policies and enforcement regulations have yet to be solidified, there's considerable pressure to hold companies accountable for their wasteful energy practices and green house gas emissions, illustrating that organizations should be proactive about getting a more sustainable energy policy in place to avoid compliance and regulatory fines in the coming decade.

Powerful Savings with Power Management

Green IT initiatives include a number of different policies or practices, such as establishing a program to reduce e-waste by properly recycling old desktops, or cutting back on energy consumption by turning off idle computers. Though analysts may disagree on which methods are the most effective, one aspect they continue to emphasize is the investment in cost-effective power management software.

According to the recent Gartner report, "When to Consider Commercial PC Power Management Tools," companies using PC power management tools can reduce their carbon footprint and save up to $20 per desktop per year or more where energy is at a premium.[2] Along a similar vein, the EMA estimates that workstations account for roughly 90 percent of the total business power use. And, as outlined by EMA's Dennis Drogseth (referencing the U.S. Department of Energy), the U.S. National average electricity costs for the commercial sector is 9.51 cents/kWh, which translates into a total average annual cost of $149.10 for each desktop.[2]

There are a number of ways to reduce these annual costs, but automated power management is one of the key solutions designed to improve energy efficiency and cut costs. Effective PC power management gives IT managers the ability to control energy consumption by identifying where they are using the most energy, and how to reduce power usage with minimal interruptions to day-to-day user activities. With its ability to reduce both wasted energy and wasted budget, implementing an effective power management policy and tool is the perfect place for IT departments to get the green IT ball rolling.

Making the Argument for Power Management

It's evident that green IT has a myriad of benefits, and power management is an effective approach to cut annual IT costs and reduce unnecessary energy consumption. The real challenge for IT managers, however, is illustrating the potential cost savings to justify the investment in a power management solution to executives. The first step to "going green" is building solid projections that demonstrate both cost and energy savings, backed up by hard data and industry expertise (refer back to the "call out box" above for industry expert's statistics). A successful result will require a flexible and practical tool that lets IT easily customize and deploy power management policies without eating up all of the planned budget savings. Lastly, organizations must have a way to measure and report on their results to continue to prove value.

One of the best ways to justify the investment is to make cost and energy-savings projections using a number of free tools available on the Web and through vendors, such as the Numara® Power Management ROI Calculator. Another approach is to use comparisons between inefficient power management policies and effective ones to demonstrate how these initiatives could work in your organization (see Figure 1 and 2).

Figure 1: Inefficient Power Management Policy

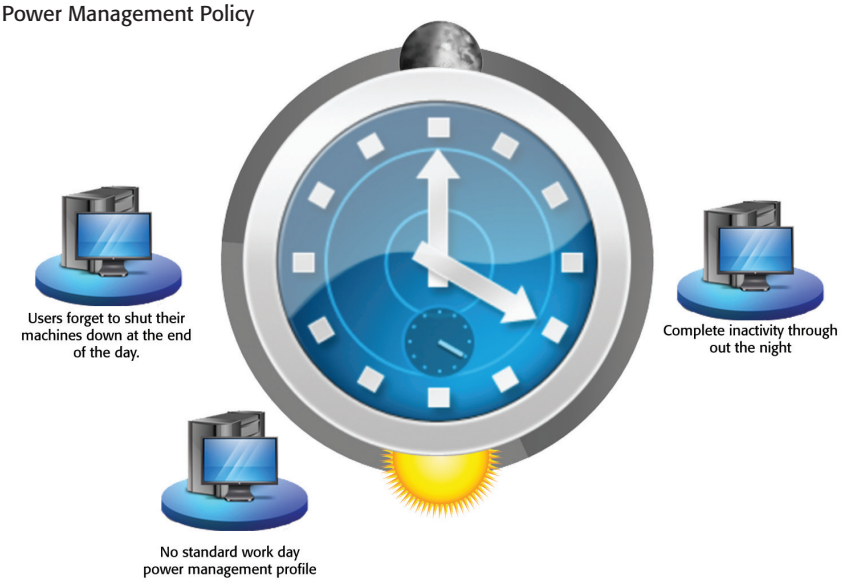
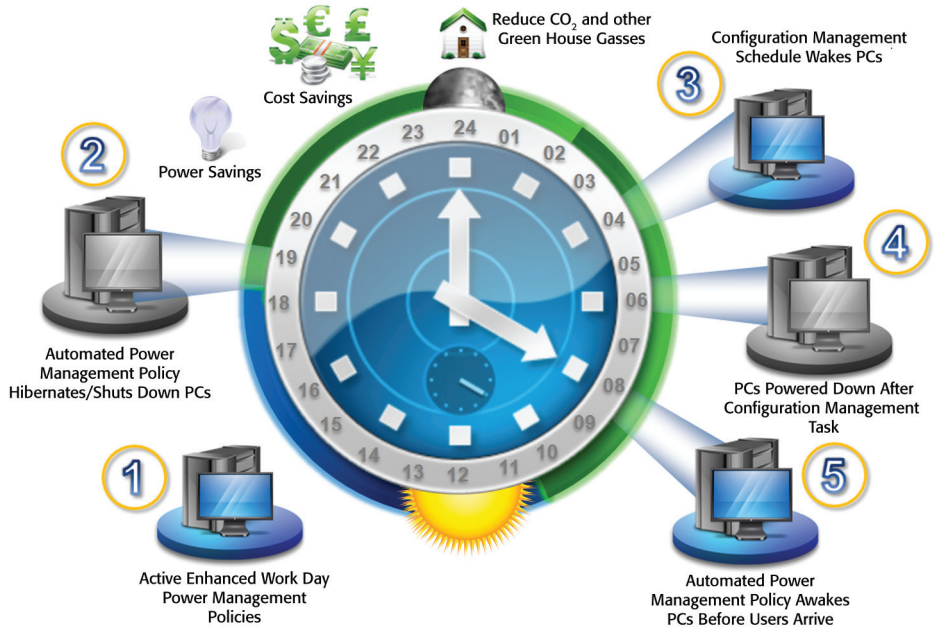


Figure 2: Efficient Power Management Policy



The EPA's Energy Star site provides a technical overview of the benefits of power management – such as 'hibernating' or using 'sleep mode' for desktops – and provides examples of companies that have saved thousands by implementing effective power management solutions. The EPA also developed the EPA Energy Savings Calculator, a free tool that can be downloaded into Excel® and used to make power savings projections. Input the number of Energy Star qualified desktops/laptops and monitors, power usage assumptions (e.g. average cost per kWh, amount of time desktops are hibernating, etc) and other relevant usage information into the calculator. Once you've plugged in all the information you can easily determine the total costs and amount of savings through implementing power management policies (see Figure 3).

Figure 3: EPA Energy Saving Calculator

ENERGY STAR Computer Power Management Savings Calculator

Savings Estimate

	Energy Saved Annually (kWh)	Dollars Saved Annually	3-Year Totals $ Savings	Pollution Prevented: CO2 (in tons)	Equivalent to: Acres of trees planted	Equivalent to: Number of cars removed
Savings from ENERGY STAR qualified monitors vs. standard monitors:	2,512.1	$258.75	$718.04	5.8	1.19	0.96
Savings from ENERGY STAR qualified notebooks vs. standard notebooks:	11,744.8	$1,209.71	$3,357.05	27.0	5.58	4.49
Savings from ENERGY STAR qualified desktops vs. standard desktops:	184,788.5	$19,033.22	$52,818.92	425.5	87.73	70.69
Total savings from ENERGY STAR qualified monitors & computers:	**199,045.4**	**$20,501.68**	**$56,894.02**	**458.3**	**94.50**	**76.15**
Savings from monitors going into sleep mode:	2,453.0	$252.66	$701.15	5.6	1.16	0.94
Savings from notebook displays going into sleep mode:	751.7	$77.43	$214.87	1.7	0.36	0.29
Total savings from monitor sleep mode:	3,204.7	$330.08	$916.02	7.4	1.52	1.23
Savings from desktops going into system standby or hibernate mode:	50,074.4	$5,157.66	$14,312.98	115.3	23.77	19.16
Savings from notebooks going into system standby or hibernate mode:	720.8	$74.24	$206.02	1.7	0.34	0.28
Total savings from system standby and hibernate mode:	50,795.2	$5,231.90	$14,519.00	117.0	24.11	19.43
Total savings from monitor and computer sleep settings:	**53,999.9**	**$5,561.99**	**$15,435.02**	**124.3**	**25.64**	**20.66**
Total Savings:	**253,045.2**	**$26,063.7**	**$72,329.0**	**582.6**	**120.13**	**96.81**

To maximize power savings, EPA recommends setting computers to enter system standby or hibernate after 30 to 60 minutes of inactivity. To save even more, the EPA suggests setting monitors to enter sleep mode after 5 to 20 minutes of inactivity.[7] The principle is simple: the lower the setting, the more energy you save.

The EPA also makes a compelling business case for activating system standby and/or hibernate settings. The benefits they list include:

- **Cutting the electricity used by PCs roughly in half,** saving $25–75 per PC annually. Estimate your savings using the online savings calculator.
- **Reducing office cooling loads,** saving an additional $5–10 per PC annually, and as much as $10–25 or more in warm climates
- **Decreasing peak load demand charges** levied by utilities
- **Enhancing data security** by reducing the chance that valuable information is displayed on unattended PCs
- **Improving user productivity** by eliminating the daily wait for computers to boot up
- **Public recognition** for preventing pollution. Join a growing number of IT departments that are implementing sustainable, environmentally friendly Low Carbon IT.[8]

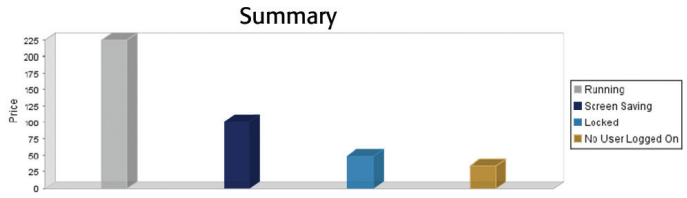
Of course, there are some costs associated with purchasing power management tools and activating new settings, but they are easily offset by the major benefits. That said, there will be some small costs associated with agents billing time to test older software applications or peripheral devices for 'sleep compatibility' and ensure computers in sleep mode can still run regular software updates.[8]

Usage Case: Lead by Example

All this information is helpful, but when it comes down to justifying purchasing asset management or power management tools the best approach is to use an example. This Proof of Concept (POC) usage case shows the amount of money wasted by not implementing efficient power management policies and extrapolates how these annual costs add up across the business. Numara® Software recently conducted a POC exercise that demonstrated how implementing efficient power management policies can help organizations reduce unnecessary energy costs by up to 90 percent (see Figure 4 and 5).

Figure 4: Example Based on Customer POC

- 114 Devices over 6 Weeks
- 0.09$/KWh



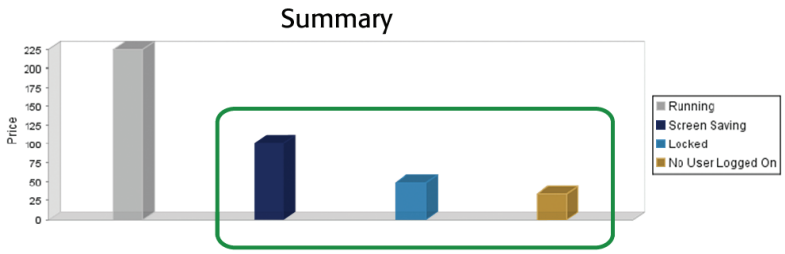
Equivalent for 1 Year (114 PCs): $3,466

Real Usage: $1,950

WASTED MONEY: $1516

1,000 PCs	5,000 PCs	10,000 PCs
$30,403	$152,017	$304,034
$17,105	$85,526	$171,052
$13,298	$66,491	$132,982

Figure 5: Summary of Green IT Policy for Customer POC



Green IT Policy:

Shut down or Hibernate computers when they are not in use

Key Factors to Consider When Shopping for a Power Management Solution

When testing power management solutions, organizations should look for solutions that are robust, flexible and easy to manage. These solutions should also be compatible with other systems management tools, and easily integrate into solutions that have greater capabilities and features, such as comprehensive asset management or desktop management platforms. This not only streamlines integration, but helps establish effective green initiatives in departments beyond IT, and enables IT managers to justify and offset some of the initial costs of purchasing a power management solution.

A power management solution that's tightly integrated with your asset and desktop management tools will help streamline processes and improve productivity across the business. The power management tool will enable companies to establish policies tailored to users' work practices and hours, and adjust policies by groups (e.g. site, department, desktop or laptop, server, etc).

Another key feature of a good power management solution is the ability to produce on-demand reports that demonstrate precisely how energy is being used and where improvements could be made:

- Reports should show details like the percentage of usage, hours of usage, energy consumed, or the price of energy consumed at local rates
- Reports must be automatic and easy to export, so IT managers don't waste time searching for or reformatting reports before submitting them to executives for review

The solution should make it easier to configure policies based on the organization's specific energy management policies and compliance requirements. Above all, power management policies should not impact usage, maintenance or administration. Integration should be seamless and behind the scenes, so it doesn't result in unnecessary downtime or interruptions of daily operations. The user-interface should be intuitive and user-friendly to minimize training and the costs associated with that training. Power management software should simplify the process of configuring and deploying detailed power management policies so they fit companies' real needs, while generating reports to help IT managers monitor progress and identify areas where considerable energy savings can be achieved.

Tips for Implementing a Successful Power Management Initiative

1. **Provide a Projection of Cost Savings:** Use projections to illustrate how a green IT initiative will help improve your organization's bottom line and use real-world examples of other companies that have used power management and other green IT policies to cut spending and demonstrate real ROI, for example, the Numara® Power Management ROI Calculator. Seeing policies put into action will help executives understand how sustainable investments made today will have positive results in the long run.

2. **Don't Miss out on Extra Money:** Many states offer incentives to organizations implementing eco-friendly initiatives and policies. Thoroughly research the opportunities available in your area to see if you can add more bang for your buck. Visit the U.S. Department of Energy's Web site for energy-efficiency programs and initiatives in your state.

3. **Kill Two Birds with One Stone:** One way to secure funding is to roll the power management project into a related initiative, such as improving your IT asset management. Select an asset management tool that comes with a power management solution integrated into the existing platform, so you can help manage your assets and curb IT spending on unnecessary power use.

4. **Use Real-time Reporting:** The most compelling aspect of any power management tool is the ability to produce on-demand reports of energy consumption. This real-time reporting enables IT managers to see what areas, terminals, departments or groups are using the most energy, how to address these issues and, most importantly, the actual power savings in dollars. This is invaluable for presenting your green initiatives to high-level executives and proving ROI.

5. **Give it Time:** Power management initiatives do lead to positive, long-term impacts, both on the company's bottom line and their impact on the environment, but results don't happen overnight. IT managers need to make sure they set expectations and explain how establishing policies and monitoring energy consumption is the first stage of implementation, and will lead to major cost savings down the road.

6. **Share the Savings:** While green IT policies will help the IT department to reduce unnecessary energy costs, these approaches should be shared with the entire organization. Establishing company-wide policies and best practices will help all of the departments and employees within a company to cut down on power use, reduce costs and improve the company's image – not to mention their impact on the environment

Conclusion

Green IT is top priority for smart organizations looking to cut costs, align with changing government policies and regulations, and improve their corporate image. Though virtualization, server consolidation and hardware upgrades can improve energy efficiency, implementing an efficient power management policy is the fastest and most economical way to integrate these initiatives across your business. The Department of Energy and Environmental Protection Agency (EPA) both provide substantiated support for power management tools, as do leading IT experts from Gartner, EMA and IDC. Plus, the availability of a handful of free power management calculators, such as the EPA Energy Savings Calculator and the Numara Power Management ROI Calculator, give you sure-fire ways to make the "value" argument for green IT. Implementing green IT doesn't have to be complicated or expensive; and practical power management software can achieve remarkable cost savings, all while reducing a company's green house gas emissions, enhancing their corporate image, and making a positive impact on our environment

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Umesh has over 15 years of IT and service management experience including IT operations management, CRM and Help Desk/Service Desk product management. He currently leads the Product Marketing efforts at Numara Software. By closely researching market needs and requirements, in addition to working with IT industry analysts, his team delivers the market intelligence required to ensure product strategy is in alignment with market requirements. Umesh holds a Bachelor's Degree in Commerce with a Major in Management Information Systems and certifications in Product Management, Project Management and ITIL®

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[1] "Next Generation Asset Management and Its Initiatives: Bringing Asset and Service Management Together Successfully" by Dennis Drogseth, Enterprise Management Associates (EMA), presented at the Numara Software VIP Asset Management Roadshow 2009 (10/13/2009)
[2] "Gartner Identifies the Top 10 Strategic Technologies for 2010" by Gartner Research (10/20/2009)
[3] "IDC Survey Finds Energy Efficiency Still Dominates, But Other Factors Influencing Green IT and Sustainability Policies of U.S. Companies" by IDC (9/24/2009)
[4] "Computers for Consumers" by the U.S Environmental Protection Agency (EPA) as part of the Energy Star program
[5] "General Technical Overview on Power Management" by the U.S Environmental Protection Agency (EPA) as part of the Energy Star program
[6] "Sleep, Does a Body and the Environment Good Energy Star Launches Low Carbon IT Campaign" by The U.S. Environmental Protection Agency (EPA) (4/3/2008)
[7] "General Technical Overview on Power Management" by the U.S Environmental Protection Agency (EPA) as part of the Energy Star program
[8] "Activating power management features in enterprises" by the U.S Environmental Protection Agency (EPA) as part of the Energy Star program