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Inquiry Spotlight: Green IT, Q1 2009

by **Doug Washburn and Onica King**

with Natalie Lambert

EXECUTIVE SUMMARY

Green IT awareness and action are on the rise. In 2008, Forrester received 130 inquiries from IT end user professionals on green IT, the majority of which focused on benchmark data — such as quantifiable benefits and meaningful metrics — and identifying power management best practices both in and outside of the data center. In anticipation of rising energy costs, heightened awareness for corporate environmental responsibility, and increased greenhouse gas and electric waste disposal regulation, Forrester expects an even stronger interest from IT professionals who are working to refine their scope of green IT activity and its business case into 2009.

WITH GREEN IT ON THE RISE, IT PROS SEEK BENCHMARKS AND BEST PRACTICES

IT executives continue to make the case for green IT, as proven by the 25% of organizations actively implementing green IT practices and the additional 61% in the process of creating or currently considering green IT strategies (see Figure 1). While green IT is a relatively nascent space, after reviewing the green IT-related inquiries in 2008, Forrester has identified several areas of interest for IT professionals:

- **IT ops professionals and CIOs are taking the green IT lead.** It comes as little surprise to see the leading number of green IT inquiries originating from IT professionals and CIOs. CIOs create, champion, and report the progress of green IT strategy to key stakeholders, while IT infrastructure and operations professionals execute these green ambitions from the distributed PC environment to the data center. But in the future, Forrester anticipates growing involvement from additional roles in IT — in particular, the enterprise architects, application portfolio managers, and business process professionals — to move beyond the low-hanging fruit and enable the green enterprise.¹
- **IT leadership is seeking green IT benchmarking and power management data . . .** The most common interest in green IT from IT professionals was on benchmark data — such as quantifiable benefits and meaningful metrics — totaling 51% of all green IT inquiries submitted (see Figure 2). A healthy 29% were interested in power management throughout all areas of IT. The remaining green IT inquiries related to categories such as regulatory compliance, sourcing, and greenhouse gas emissions (GHG). As IT leadership gives the green light for green IT, it's not surprising that they are most interested in benchmarking and power management data to identify, prioritize, and add credibility to their green strategies.
- **. . . as building the business case for green IT becomes essential.** Don't be fooled: Green IT is as much about the greenback as it is about reducing the environmental impact of operating IT and the business. In fact, 67% of IT professionals say that financial motivation — not environmental



Headquarters

Forrester Research, Inc., 400 Technology Square, Cambridge, MA 02139 USA
Tel: +1 617.613.6000 • Fax: +1 617.613.5000 • www.forrester.com

motivation — is their driving force behind the pursuit of greener IT.² As IT organizations expand their application of green IT outside of IT itself and use technology as an enabler to green the broader enterprise, additional value points such as risk mitigation, cost reduction, and revenue generation become apparent and need to be considered.³

Figure 1 Interest In Green IT Continues To Grow, Even In A Down Economy

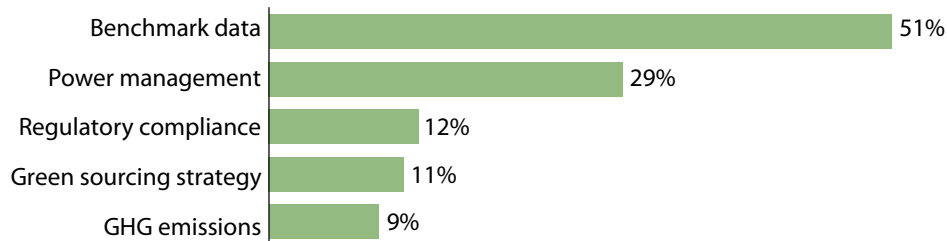


Source: October 2007 Global Green IT Online Survey
 *Source: April 2008 Global Green IT Online Survey
 †Source: October 2008 Global Green IT Online Survey

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Source: Forrester Research, Inc.

Figure 2 IT Professionals Seek Green IT Benchmark Data



Base: 130 green IT inquiries from business IT end users
 (multiple responses accepted)

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Source: Forrester Research, Inc.

Your Peers Are Asking: “What Green IT Metrics Should We Be Using?”

The old adage that “you can’t manage what you can’t measure” is relevant to any IT project, green or not. To that point, IT managers should develop metrics to ensure that financial and environmental value is actually being achieved. IT managers appear to be struggling in this area, however, given that more than half of the green IT inquiries in 2008 were related to benchmark data — seeking information on the quantifiable benefits of green IT and development of meaningful green IT metrics. Common questions from clients mirror what one CIO in the retail sector submitted:

“We’ve been researching green IT metrics and would like to understand if there are any emerging measurements.” (CIO, retail industry)

- **What you need to know:** To date, best practices and green IT standards are still in the early stages of development, with very little if any metrics established around waste disposal or comprehensive GHG emissions. However, momentum is building in the data center. The Green Grid’s Power Usage Effective metric (PUE) — a ratio of the total power into a data center to the power that actually gets to the IT load (e.g., servers, storage, network) — is gaining traction from IT suppliers, consortia, and user organizations. In the future, The Green Grid plans on extending the PUE metric to data center productivity; while more difficult to measure, this metric will determine the net amount of useful work performed by the data center.⁴ From a facilities perspective, a number of organizations — such as the U.S. Green Building Council, Labs21, Lawrence Berkeley National Laboratory, and the Silicon Valley Leadership Group — are joining forces to develop a LEED (Leadership in Energy and Environmental Design) certification to standardize the requirements, definition, and classes for greener and more energy-efficient data centers.
- **What you should do about it:** Before re-architecting your data center or purchasing new energy-saving IT equipment and management solutions, Forrester recommends that you measure your green IT baseline — an annual estimate of the energy consumption, residual CO₂ emissions, and energy costs of operating IT within and outside of the data center.⁵ Not only will this data offer a practical green IT starting point by exposing your most eco-taxing assets, but without it you cannot accurately quantify and report the benefits of your greening efforts to senior management.⁶ Empowered with this information, Forrester recommends using the goal-question-metric method — often employed by project managers, application developers, and enterprise architects — to develop meaningful metrics for green IT projects such as PC power management, video conferencing, or e-waste disposal (see Figure 3).⁷

Figure 3 Applying The Goal-Question-Metric Method To PC Power Management

Type	Question	Metric
Example goal: Reduce PC energy consumption with PC power management.		
Activity metrics	What is the current state of power management within our PC environment?	<ol style="list-style-type: none"> 1. Percentage of PCs with power management enabled 2. Breakdown of when PC power management is being enabled (e.g., during workday, nights, weekends, holidays) 3. Breakdown of how PCs are being power managed (e.g., "turn off monitors," "system standby," and "system hibernate")
	How much energy is consumed by idle computing across our PC environment?	<ol style="list-style-type: none"> 1. Total kilowatt hours of energy consumed by our PC environment 2. Total kilowatt hours of energy consumed by idle computing (e.g., PCs consuming energy but performing no useful work, such as at night or over the weekend) 3. Percentage of kilowatt hours generated by idle computing
Progress metrics	How have improved PC power management practices reduced our energy consumption?	<ol style="list-style-type: none"> 1. Percentage of PCs with power management enabled 2. Reduction in kilowatt hours of energy consumed by our PC environment 3. Percentage of kilowatt hours generated by idle computing
Diagnostic metrics	Where is PC power management not feasible?	<ol style="list-style-type: none"> 1. Percentage of PCs where PC power management is not feasible 2. Breakdown of reasons why PC power management is not feasible
	Where is PC power management feasible but not enabled?	<ol style="list-style-type: none"> 1. Percentage of PCs where PC power management is feasible but not enabled 2. Breakdown of reasons why PC power management was not enabled where feasible
Value metrics	What are the financial and environmental benefits from improving our PC power management practices?	<ol style="list-style-type: none"> 1. Reduction in energy costs by improving PC power management practices 2. Reduction in lbs. of CO₂ emissions by improving PC power management practices 3. ROI from investing in PC power management software

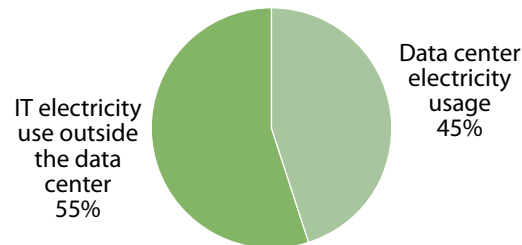
Your Peers Are Asking: “How Do We Reduce Power Consumption On The Desktop?”

Twenty-nine percent of green IT inquiries related to power management and how to reduce the energy consumption of IT assets. While the data center has captured much of the energy efficiency spotlight, significant environmental and financial value is left on the table by overlooking the PC environment. And as IT leadership looks to wring out the operational costs and environmental externalities of IT, reducing the energy consumption of the distributed PC environment is an effective place to start — maybe even more so than the data center. Common questions include those like this one from an IT professional:

“What technology solutions are companies using to manage power consumption on PCs so that they can cut energy costs?” (Infrastructure and operations professional, pharmaceutical industry)

- **What you need to know:** Recent Forrester research reveals that, on average, 10% more energy is consumed outside of the data center (e.g., PCs, monitors, office peripherals) than within the data center (see Figure 4).⁸ And the financial case for employing PC power management best practices is there — ENERGY STAR estimates that firms can save anywhere from \$25 to \$75 per PC per year. Organizations such as Washington Mutual, General Electric, and Dell boast savings of \$3 million, \$2.5 million, and \$1.8 million per year, respectively, by simply turning off their PCs when not in use. Forrester recommends organizations take a “time-based” approach to PC power management — maximize gains by powering down PCs nights and weekends, applying industry best practices (e.g., activate “standby” after 30 minutes), and enabling power management on as many assets as possible.⁹
- **What you should do about it:** To make life easier and ensure that financial and environmental value is actually achieved, IT managers should consider the unique provisioning, administration, power settings, and reporting capabilities offered by PC power management software.¹⁰ Point solutions such as Verdiem, or traditional client management suite vendors such as BigFix, LANDesk, and ScriptLogic, now offer PC power management tools. To further maximize the gains, don’t discount the softer elements of rolling out PC power management, such as piloting, marketing, and promotion. With that in mind, IT managers should pilot the software before going live, develop a go-to-market campaign with the business, and then promote the realized benefits over time to reaffirm the value of PC power management.¹¹

Figure 4 IT Consumes More Energy Outside The Data Center



(These numbers represent the average of all respondents reporting on percentages of IT electricity usage.)

Base: 308 hardware technology decision-makers from North American and European enterprises that are very interested, interested, or slightly interested in increasing the electrical efficiency of the data center

Source: Enterprise And SMB Hardware Survey, North America And Europe, Q3 2008

Your Peers Are Asking: "How Do I Environmentally Manage IT Asset Disposal?"

As companies deploy new technology throughout the organization, they are faced with the real problem of what to do with old and often outdated IT assets that have reached the end of their useful life. A regulatory landscape that includes Waste Electrical and Electronic Equipment (WEEE); the Basel Convention; the Resource Conservation and Recovery Act (RCRA); and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA); in addition to local and regional government tariff-funded recycling and anti-landfill laws, means addressing technology waste isn't as simple as tossing PCs into a recycling bin instead of a trash can. Significant financial penalties, lost brand equity, and possible criminal prosecution now push IT asset disposal up the priority list. Consequently, it's no surprise that 14% of inquiries can be summed up by the following submission by an IT manager:

"We are investigating what our obligations are under the European Commission's directive on WEEE. We have been given conflicting messages from suppliers who deal with recycling of IT infrastructure waste. On one hand, we have been told that the WEEE directive seeks to make the producers of electronic and electrical equipment responsible for financing the collection, treatment, and recovery of e-waste equipment. On the other hand, we have been told that businesses and consumers are now responsible for disposing of obsolete technology in an environmentally friendly way. We need to understand what our responsibilities are under this legislation and what evidence we must receive and retain for equipment that has been disposed of under the directive." (IT operations manager, insurance and finance)

- **What you need to know:** IT disposal laws are not yet harmonized across geographic regions, let alone the globe. Even the European Union's (EU) WEEE directive is but a framework of minimum compliance requirements, with each EU member country implementing its own

take on legislation. The EU's WEEE directive is based on the concept of Extended Producer Responsibility (EPR) and as such ultimately makes producers — i.e., manufacturers, retailers, branders, and importers — financially responsible for IT disposal in most instances.¹² This is not the case in North America, where for the most part, organizations remain liable for their own IT equipment disposal.

- **What you should do about it:** Understanding and complying with a varied regulatory landscape requires significant resources and expertise that IT organizations are unlikely to be able to handle on their own. With that in mind, Forrester recommends working with IT asset reclamation and disposal service providers, which include hardware manufacturers such as Dell, HP, and IBM, or pure-plays like Intechra and Redemtech. While these providers may charge a premium, it's a worthy investment given the complexity of the regulatory landscape and public image risk from improper disposal practices. Moreover, these organizations can help you offset disposal fees by reselling your end-of-life IT assets into the secondary market. To get the best deal, partner with your colleagues in sourcing and vendor management to, first, negotiate discounted disposal services when purchasing new IT assets, and second, plan for disposal at the time of acquiring new IT assets.¹³

ENDNOTES

- ¹ To date, only a few roles in IT have clearly established their function in the greening of IT. But to successfully green the enterprise — and move beyond the low-hanging fruit of green IT — involvement from additional roles in IT will be required. See the January 23, 2009, "[The Rise Of The Green Enterprise: A Primer For IT Leadership's Involvement](#)" report.
- ² IT is constantly challenged to reduce cost and do more with less. So within the cost-conscious world of IT, should IT leadership even consider green IT? Yes. In addition to reducing the capital and operating expenses of IT immediately and into the future, green IT can also deliver financial value across the broader business. See the February 10, 2009, "[Q&A: The Economics Of Green IT](#)" report.
- ³ Early indicators of technology being used to enable the green enterprise include Nike's "Considered Index" desktop application, which empowers designers to make more eco-friendly decisions when designing shoes, and UPS's package flow software to eliminate left-hand turns from delivery routes, which saved \$8.4 million in fuel costs and 32,000 metric tons of CO₂ emissions in 2007. See the January 23, 2009, "[The Rise Of The Green Enterprise: A Primer For IT Leadership's Involvement](#)" report.
- ⁴ Current practice estimates data center PUEs range from a good ratio of 1.3 — i.e., 77% of the power supplied to the data center is used by computing equipment (e.g., servers, storage, networks) — to a poor ratio of 3.0 — where only 33% of total facility power actually reaches the data center's computing gear. Source: The Green Grid (http://www.thegreengrid.org/~media/WhitePapers/White_Paper_6_-_PUE_and_DCiE_Eff_Metrics_30_December_2008.ashx?lang=en).

- ⁵ Since Forrester's survey data reveals that "reducing energy-related operating expenses" is the overwhelming motivation for pursuing green IT, version one of the green IT baseline focuses on measuring IT's energy consumption. Forrester recognizes that green IT extends far beyond reducing IT's energy consumption, and future versions of the green IT baseline will include criteria such as paper waste, water usage, disposal, recycling practices, and beyond. See the October 21, 2008, "[Forrester's Green IT Baseline Calculator](#)" tool.
- ⁶ IT is perennially challenged to reduce cost and do more with less. So when approaching green IT, do yourself and your business a favor and don't be exposed as the emperor with no clothes. See the August 29, 2008, "[Is Green IT Your Emperor With No Clothes?](#)" report.
- ⁷ Selecting meaningful metrics is a challenge for most IT shops, and the goal-question-metric (GQM) method has long been the industry standard for guiding managers in choosing appropriate metrics. Given the increased pressures that IT groups face to quantify the value that they deliver, this technique must remain the cornerstone of any metrics program. See the August 1, 2005, "[Goal-Question-Metric Method Is Still The Most Pragmatic Way To Develop Metrics](#)" report.
- ⁸ See the December 18, 2008, "[More Energy Is Consumed Outside Of The Data Center, 2008](#)" workbook.
- ⁹ Forrester has identified three common approaches to PC power management that will minimize energy consumption during periods of inactive computing: "scheduled," "always-on," and "hybrid." Power management is not one-size-fits-all, so make your decision based on user sensitivity to PC downtime and predictability, not ultimate savings. See the December 5, 2008, "[How Much Money Are Your Idle PCs Wasting?](#)" report.
- ¹⁰ PC power management software offers enhanced capabilities such as provisioning, administration, "wake-up" functionality, advanced settings, and reporting functionality that can help IT ops professionals realize and quantify the financial and environmental benefits from power-conscious behavior. See the December 5, 2008, "[How Much Money Are Your Idle PCs Wasting?](#)" report.
- ¹¹ Forrester's PC power management calculator quantifies the energy, CO₂ emissions, and cost savings of PC power management. In particular, the calculator allows IT managers to compare current PC power management practices to a target state. See the October 22, 2008, "[Calculating The Value Of PC Power Management](#)" workbook.
- ¹² Regardless of location within the EU, producers are largely held responsible for the disposal of IT equipment — with the one consistent exception being that of equipment purchased before August 2005, or the appropriate watershed date for the country. If it is not replaced, then you are responsible for financing and arranging treatment in accordance with the WEEE directive and existing waste management legislation. Forrester's prior work on e-waste legislation offers an overview of some member country specific regulations. See the May 20, 2008, "[IT Assets And EU Waste Legislation](#)" report.
- ¹³ When purchasing new equipment, ask the suppliers under consideration for trade-in credits for replacement equipment. If there is no value remaining in the equipment, tell the supplier that the new business is contingent upon their agreement to take out the old equipment. They may not do this for free, but since it's linked to the new procurement, they will likely give you better pricing than if you just picked up the phone and asked them to haul it away.

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