



# POWER & POTENTIAL

**MICHELLE ERICKSON**, Initiative Director, Environmental Sustainability for Global IT, Citigroup, clarifies having a big-picture view when implementing environmentally conscious operations

**W**hen I first began working on this topic, people would introduce me to others by saying, “Have you met Michelle? She’s saving the world one computer at a time.” The introduction was funny, of course, but I also embraced it, because it points to the power and potential of a single action, no matter how simple or small. When that action is repeated, replicated elsewhere, catalyzes or even simply inspires another, the value of the original act is far greater than its single instance. But in order to recognize the compounding value of that single instance, one must also be able to see the system in its entirety.

When implementing environmentally conscious operations, a big-picture view can help bolster your business case as well as create a more accurate Total Cost of Ownership and Return on Investment. (Alternatively, it can also help you reconsider a strategy that may seem compelling at first, but that will ultimately prove counter-productive to your goals.)

One good example of this is a hardware refresh. Even in the best of times, a desktop refresh can be low on a list of business priorities. During a downturn, it might not even make it to the consideration list. But if we were to take bank branches as an example, the end result can be compelling from an efficiency, cost, as well as environmental perspective. For example, if desktops are replaced with CPUs and LCD monitors with the highest-rated Energy Star label, overnight you’ve reduced energy consumption — and costs — along with the associated carbon. You may also have happier employees and a significantly improved customer experience. The benefits of the refresh can extend beyond the branch, however. Better computers mean developers can write more efficient code, which can reduce the application server requirements, which when multiplied, can contribute to a decrease in servers in the data center. And if you recycled the discontinued hardware in an environmentally sound manner, you might have even generated a little

income. To be sure, this is a simplified view; scale matters, and an example like this won’t always hold. You can see though how a single act can be the beginning of a virtuous circle.

Data center energy consumption can be another good example. Jack Glass, who heads up Citi’s data center planning and critical systems team, reminds us that if you save 1 kW in your infrastructure, you’ve saved a kW. But if you save 1 kW in your technology, more often than not, you’ve saved 2 kW due to decreased heating/cooling demand on the infrastructure itself. So while it is important that the center facilities be as efficient as possible — for example, use free cooling where possible or install a green roof (which Citi has done, in the world’s first LEED Platinum certified data center) — attention to the technology humming 24/7 is critical. Citi has aggressive server optimization programs in place wherever possible, across all major platforms. Scott Key, head of server virtualization, consolidation and optimization for Citi, and his

team have deployed over 4,000 virtual instances in the North America environment alone. That means an environment that would have required 312 kWh now runs on only 114 kWh. For every physical server turned virtual Citi sees a 40 percent reduction in power. That's great news for the environment, but also great for the business: Since January 2007 Citi has saved over \$2 million in power alone. When you add in cooling, the number jumps to a 73 percent save in power and cooling for each physical machine turned virtual, and that doesn't begin to take into account savings from reduced hardware and operating expenses. You can do the math...

Thus when you look at the whole system, you can identify opportunities that have value beyond immediate areas of known impact. It's not 1 kW, it's 2. It's not 40 percent — a great number — but really 73 percent. Citi's Sustainable IT program is based on this kind of holistic approach. Rather than looking exclusively at energy consumption — which was the trend in September 2007 when we launched the program — Citi's Sustainable IT framework purposefully considered ways IT could reduce its own environmental impact, and then ways it could reduce Citi's environmental impact. It further differentiates between areas of influence that are IT specific and IT enabled. The difference is subtle, but important. Particularly, since technology organizations will become critical partners to any business's corporate social responsibility efforts as we move into a low-carbon economy.

Based on these organizing principles Citi's Sustainable IT program focuses on five areas: Power Management, Paper Substitution, Travel Substitution, Sustainable Supply Chain, and a strong emphasis on Employee Education and Engagement. The framework provides a shared understanding of technology's role in better environmental management and a concise view into how different programs are interrelated. Citi has multiple initiatives in flight in each of these areas, and I can talk a blue streak about any of them. But I'd like to focus on the last for a minute, employee engagement.

The advantage to a whole systems view is recognizing that there is more at play than what is typically viewed as technology's domain. What is happening with the end-user can be as important as any effort undertaken within the

infrastructure. In other words, it's not enough to tackle the symptom. You have to go to the source of the problem. And when working to lessen your environmental impact, ultimately, 80 percent of what needs to be done is about behavioral and cultural change.

Turning lights off, recycling, duplex printing, printing less; all are examples of positive behavioral change that are easily imbedded. Electronic storage is a less obvious example, but a big one. Storage boxes have to sit somewhere, and energy is required to keep those disks spinning. Most companies have a culture of accumulation, especially when it comes to e-mail. "Save everything, just in case." This is one of my personal challenges, and I know one shared by many. In particular, the general employee population rarely understands that copies of even simple e-mails like "Thanks" will be stored for years if not deleted properly. Even if you run the best de-duplication process there is, it won't be enough because you haven't addressed the primary source of the issue. This is why Employee Education and Engagement is so critical, and by that I mean ALL employees, not just those in the technology organization.

Earlier this year Citi launched a global, month-long "Lighten Your Load" campaign. Geared toward all Citi employees and with content available in 11 languages, we provided Citi employees easy-to-understand tips and step-by-step illustrations on ways to reduce one's electronic storage. The site was the fourth most active page on our O&T intranet. We held a public challenge, inviting employees to submit their success stories, and publicly acknowledged and praised those who achieved the greatest reductions. One employee was able to reduce her storage by 31MB, for example. As a single instance, that may not seem like much. But multiply that by 300,000 employees and the impact can be deep. When you create context for employees to better understand the implications of their actions — essentially sharing with them the whole systems view — behavior change is easier to incent. And once learned, that behavior is repeated at work, replicated at home, perhaps even shared at a dinner party, who knows? Similar to that one PC, it's the potential beginning of another virtuous circle whose power of reach is likely far greater than anything we could imagine.

Next on Citi's Sustainable IT agenda is a

strategic evolution that will maintain the whole systems view while clearly mapping out the connections between data center activity and the different lines of business. One might also think of this as a comprehensive view of the business from all vantage points with the data center as the central spoke. This means digging deeper into the system, to try and make visible the economic impact that a decision made three months ago by one part of the business has on an entirely different group today. Identifying the cost or save "down the line" will become crucial in the coming years as the impact of global warming on the international economies becomes more evident. Thus, on my agenda is the creation of an IT Energy Roadmap. To use system dynamics mapping to clearly articulate the interrelated nature of data center capacity to shareholder value and the business's bottom line, as well as products and services and the customer base. By mapping out the whole system, seeing "the big picture," the goal is to empower Citi with the knowledge necessary to respond in a timely manner to any potential regulations and expenses resulting from the new carbon economy.

It is a tremendously ambitious project. We are just beginning the process, and my guess is where we end up will likely be very different from what is envisioned now. It's an important step, though, because corporations are meant to be profit-bearing organizations. In Financial Services in particular, Excel is the tool of choice; budget is king. Nothing can happen without a solid business case with clear, demonstrable value. I don't have a generous budget to invest in this green program or that one. In fact, I don't have a budget at all — which is how it should be. When Citi implements a change that will "green" operations, the funds should come from the relevant budget. IT strategy and IT sustainability are not two separate entities, but instead two sides of the same coin. The same holds true for the business. Our goal is to illustrate that connection, leverage a whole-systems view to give clear visibility into individual parts, see how one action impacts another, perhaps months later. In doing so we will be preparing for changes that will surely come — with the new energy bill in the U.S., for example — and in doing so, further the business agenda for profitability as well as environmental sustainability... one step at a time. **BTQ**



**MICHELLE ERICKSON** is Initiative Director, Environmental Sustainability for Global IT at Citigroup. She is leading Citi's Sustainable IT Program to implement responsible environmental operations while continuing to support business growth, foster innovation, reduce cost, and mitigate risk. The enterprise program integrates existing initiatives with innovative new efforts, focusing on Power management, Sustainable Supply Chain, Paper and Travel substitution, and an emphasis on Employee Education and Engagement. Ms. Erickson is also a founding member of Climate Interactive, a coalition of business, non-profit and academic organizations working to enable sharing of accessible climate simulations as a path to helping stabilize the climate.