Five Avenues to Green

By Wylie Wong

College IT managers balance a concern for the environment with practical cost-saving measures.

Lake Land College in Mattoon, Ill., aims to be carbon neutral by 2012. To achieve this goal, administrators are investing in high-tech solutions to solve an age-old problem: how to use less electricity.

This January, Lee Spaniol, Lake Land's director of information systems and services, will begin replacing 1,800 PCs with more energy-efficient thin-client computers, a move that will decrease IT energy usage by half and save the college about $80,000 a year in electricity costs. In previous years, Spaniol has implemented numerous green initiatives, including using software to turn off PCs at night.

"Roughly one-third of campus energy consumption is from technology," he says. "So if I can turn off technology, it can make a huge impact in our electrical usage."

Spaniol has also helped facilities management install new HVAC technology, including server software that automatically turns off heating and cooling in classrooms at night, as well as a new lighting control system with motion detection sensors that turn off lights when classrooms are empty. Lake Land administrators are investing heavily in renewable-energy technologies, such as solar panels and a wind turbine to generate electricity to power campus buildings. It's also constructing geothermal systems that use underground wells to heat and cool buildings.

Lake Land College is taking an active role in the sustainability movement and the battle against global warming. While IT is heavily involved, Lake Land's green focus is a broad, college-wide effort in which everyone on campus — administrators, faculty, staff and students — work together to create change. Administrators have created a recycling program. Faculty members incorporate sustainability lessons into their curricula. And students work on independent study or class projects to offer the administration new ideas to become more environmentally friendly. The overall benefits of going green are threefold: The college protects the environment, it saves money from reduced energy consumption and it educates students about living a responsible green life.

LAKE LAND'S GREEN COMMITMENT

Lake Land College's investment in renewable energy will allow the campus to become carbon neutral by 2012, meaning it will have a net-zero carbon footprint, says Raymond Rieck, Lake Land's vice president of business services.

By 2012, use of alternative energy solutions — solar, wind turbine and geosystem technology — will save the college an estimated 850,000 kilowatt-hours of electricity use per year, which will result in a carbon reduction of 556 metric tons a year and nearly 70,000 therms of natural gas annually, he says.

"We have a holistic approach to green, and that's to get the community of students, staff and faculty on the same vision and goal," Spaniol says.

Here are five ways college IT administrators can go green with their technology:

1. Consider thin clients. At Lake Land, thin clients will use only 1.5 watts of power, compared with 85 to 150 watts for desktop computers, says Spaniol, who is standardizing on thin-client devices from Chip PC Technologies running on VMware's Virtual Desktop Infrastructure software. When server power is factored in, the college will use 5,600 watts to run the thin-client system, compared with 320,000 watts for the existing PCs.

Thin clients lessen the environmental impact in other ways. Thin-client devices are smaller than desktop and notebook computers, so they require fewer raw materials to build, Spaniol says. They also last seven to eight years, about double the lifespan of desktop PCs. Thin clients also have no moving parts, such as hard drives or fans, so they create no heat, which reduces air-conditioning costs in labs and classrooms, he says.

For colleges standardizing on regular PCs, administrators should use

Only 45% of IT energy usage is consumed in the data center. The remaining 55% is consumed outside the data center — for instance, at student computer labs.

SOURCE: Forrester Research

CHRIS BUCHER

Lake Land College's LEE SPANIOL says the school is investing in alternative energy such as solar to power campus buildings.

power management software tools to remotely turn off campus PCs at night, Spaniol adds. Lake Land uses the power management feature in Windows Server Group Policy, along with Microsoft Active Directory, to shut off computers at night.

2. Purchase Energy Star technology and encourage students to do the same. Tulane University in New Orleans creates an Energy Star Showcase Dorm Room every year to encourage students to equip their dorm rooms with energy-efficient products.

Since 2001, the college has outfitted a dorm room full of technology, appliances and lights that meet Energy Star requirements. Energy Star is a government program that labels the most energy-efficient models of products.

In 2001, Tulane gave the two-bedroom dorm room to three sophomores who were members of the school's environmental club, and that year the students gave tours of the room, educating fellow students, faculty, the media and other interested parties about the benefits of using Energy Star products, says Liz Davey, Tulane's environmental coordinator.

By using the savings calculator on Energy Star's website, the three students estimated that their dorm room saved $130 in energy costs during a school year. And if all 1,708 Tulane dorm rooms used Energy Star products, they estimated the school would save more than $200,000 a year in electricity, Davey says.

"It's a very powerful education tool across campus," she says.

Tulane still builds a showcase dorm room every year and equips it with donated Energy Star products, including a computer, desk lamps, stereo and clock radio. The school awards the room to one incoming freshman each year. But because the initial showcase dorm room took so much of the students' time, the school no longer asks students to give tours. Nevertheless, it's still an opportunity to teach the students about environmentalism, Davey says.

The college asks incoming freshmen to submit a letter explaining why young people should care about energy efficiency, and the winner with the best essay is picked by the administration. The student gets to keep all the electronics and appliances, except for the refrigerator, which the student can use for a year. This fall, the Energy Star dorm room will include an HP TouchSmart tx2 tablet computer and an HP Deskjet printer.

"It's overwhelming to be a new student," Davey says. "You are facing a new home, new friends and the first semester of classes. We just want to communicate some basic principles on how to help the campus go green."

RICK OLIVIER

LIZ DAVEY of Tulane says the university encourages students to purchase Energy Star products.

3. Consolidate the data center. IT administrators can consolidate servers and storage to save data center space and reduce power and cooling costs.

At Marist College in Poughkeepsie, N.Y., the IT staff consolidated its servers by deploying virtualization software. For example, the college retired 10 servers and moved its entire web infrastructure to a new mainframe. "With a virtual server, there's no additional hardware or cabling. We've been able to contain our server sprawl," says Kathleen LaBarbera, manager of data center operations.

Elsewhere, Monroe Community College in Rochester, N.Y., has 75 virtual servers running on 10 blade servers. Without the virtual servers, the college would need 65 more blades and about six more cabinets.

Monroe also consolidated its storage by using data deduplication technology, which deletes multiple copies of the same file, keeping one copy that staff can access, says Jeffrey Bartkovich, vice president of educational technology services.

Besides consolidating hardware, colleges can save energy in other ways. Marist has implemented a hot-aisle/cold-aisle server configuration to improve airflow and prevent hot and cold air from mixing. The college has also raised the data center's temperature from 65 degrees to 75 degrees to save on cooling, LaBarbera says.

IT administrators traditionally keep their data centers cold because evidence suggests the hardware runs better when they are cool. But the American Society of Heating, Refrigerating, and Air-Conditioning Engineers, working with IT manufacturers, recently acknowledged that data center equipment can withstand higher temperatures. In 2004, ASHRAE recommended that temperatures be set between 68 and 77 degrees. In 2008, the organization widened the range to 64.4 to 80.6 degrees. According to Hewlett-Packard, for every increase of one or two degrees, IT shops can save 2 to 4 percent of cooling energy.

4. Reduce printing and implement document management. The Marist IT department uses recycled paper and requires two-sided printing, which saves about 800,000 pages, or 1,600 reams of paper, per year.

Lake Land, which also requires double-sided printing, eliminated stand-alone desktop printers and standardized on shared multifunction printers using soy-based inks, which are more environmentally friendly than petroleum-based inks. Switching from desktop printers to multifunction printers reduces the number of devices that end up in landfills, Spaniol says.

The college also saves money: Multifunction printers with soy-based ink cost 3 cents per page, while desktop printers with petroleum-based ink cost 11 cents per page, he says.

Marist has also moved many paper-intensive processes online, including employee timesheets. Each campus department also has password-protected file storage space on the network, where employees can place and share documents. "This way, people can put the documents on the server and people can see them without having to e-mail or print out hard copies for everyone," LaBarbera says.

5. Embrace video conferencing. Setting up distance-learning classrooms with video-conferencing equipment lets students in satellite campuses attend class remotely without having to travel to the main campus. Placing video-conference equipment in conference rooms also allows faculty and staff to attend meetings without having to travel, which saves on carbon emissions.

Lake Land has two distance learning classrooms, one at the main Mattoon campus and another at a satellite campus 24 miles away in Effingham, Ill. The classrooms, equipped with Polycom video-conferencing equipment, allow professors to lecture and teach students in two locations simultaneously, Spaniol says.

The college also has a conference room equipped with Polycom gear. The video-conference room saves Spaniol from having to drive two hours to the state capital in Springfield for meetings. "It saves me five trips a year," he says. ET

GIVE OLD PCS NEW LIFE

Before taking old computers to the recycler, Monroe Community College, in Rochester, N.Y., extends the life of its PCs by refurbishing and reusing them for other needs.

Students need high-performing computers, so the school places its newest, most powerful computers in its electronic learning centers, which are general-purpose labs with 10 to 100 computers, says Jeffrey Bartkovich, vice president of educational technology services. After two years, the PCs are redeployed to computer classrooms for general instruction, and after four years, the computers are redistributed to faculty that may have lower computing requirements.

When PCs reach six years of age, some are further repurposed again, this time as e-mail or simple web-surfing devices for students throughout campus, he says.

Marist College, in Poughkeepsie, N.Y., also reuses old technology. The college donates old computers to nonprofits and allows staffers to purchase their old machines for home use, says Kathleen LaBarbera, manager of data center operations.