

# Energizing EPA



## Recycling a Computer

A typical computer monitor contains six pounds of lead, as well as varying amounts of cadmium, chromium, mercury, and beryllium.

When a computer is recycled, typically the hardware is de-manufactured, although some usable parts may be removed for re-use. The de-manufactured material is sorted by commodity type (such as steel, aluminum, copper, and plastic) and then either re-used to make new products or disposed of in an environmentally sound manner. This approach helps protect the environment by reducing the amount of material that goes to landfills and incinerators, and it may also minimize the need for raw materials in new products.



## E-Cycling Turns Easy at EPA

Have you ever wondered what happens to computers and other electronics when they are outdated or not needed? Do they end up in a landfill with other types of solid waste? Are parts of them used to make newer, more up-to-date products? Or are they donated to charities, where they may still be useful?

Computers and other office electronics are a vital part of everyday activities at EPA, but most of us are unaware of the sheer number of these products that must be purchased—and eventually disposed of—by the Agency. Furthermore, many of us do not realize that the life cycle of electronics—from manufacture to disposal—can have considerable impact on the environment.

A new program administered by EPA under a government-wide acquisition contract (GWAC) will help EPA and other federal employees properly dispose of computers and other electronic equipment. The Recycling Electronics and Asset Disposition (READ) services program provides all federal agencies with a government-wide procurement tool to properly manage electronic inventories and recycle or properly dispose of excess or obsolete electronics in an environmentally sound manner.

The program is only in the early stages, but with two million federal employees using computers, EPA estimates that there is an average discard/obsolescence rate of 10,000 computers per week. The READ services goal is to recycle half of those computers. Initially, the program expects to recycle approximately 3,000 to 4,000 computers per week and increase that number as agencies become familiar with the GWAC.



Items covered under the contract include desktop personal computers, computer monitors, laptops, fax machines, printers, copiers, shredders, scanners, cell phones, televisions, and other miscellaneous electronics.

“The government-wide READ contract is the first coordinated effort in the federal sector to truly address the growing problem of obsolete, excess electronics that are stored in federal warehouses throughout the country,” said Oliver Voss, the procurement official involved in the READ program. EPA issued GWACs to eight small businesses in December 2004. The companies will evaluate each piece of equipment and its components, and will reuse, recycle, or dispose of them according to the following hierarchy:

- Refurbish and resell them, using the proceeds to offset costs.
- Donate them to charitable causes.
- Recycle as much as possible.
- Properly dispose of the remainder.

Since awarding the contracts, the READ Services Contract Team has been working to develop a marketing strategy for the GWACs. Publicity projects currently underway include development of an official pamphlet and Web



# New Roof is a Shining Example of Clean Energy

The National Health and Environmental Effects Research Laboratory, Western Ecology Division's (WED) main research facility in Corvallis, Oregon, has recently installed a state-of-the-art solar roof. The roof will not only supply the facility with clean energy, but also serve as a demonstration project for other facilities interested in the rapidly evolving field of solar power technology.

Oregon's potential for solar gain is excellent, rivaling parts of Florida during the summer months. EPA wanted to capture this potential while preserving the



Workers install the PV roof at EPA's Oregon facility.

existing flat roof structure. Thus the laboratory worked with the manufacturers to find a ballasted system, which enabled them to make no penetrations or structural changes to the roof.

Installation of 60 150-watt photovoltaic (PV) panels took about two months and was completed in December 2004. A 9.5 kilowatt grid-tied PV Inverter converts the DC power produced by the panels to AC power usable by the lab. The system is designed with an energy meter to measure the amount of energy produced by the PV array. Depending on the time of year, the PV roof is expected to provide approximately five percent of the entire facility's electricity use, according to Jay Gile, the facility and safety manager at the Corvallis laboratory.

"This project demonstrates EPA's commitment to the environment and shows the Agency's willingness to pioneer projects that utilize new technologies to con-



serve energy and natural resources," Gile said.

To help finance the project, WED partnered with the Energy Trust of Oregon, a nonprofit organization dedicated to promoting energy efficiency and clean renewable energy in Oregon, which contributed more than 20 percent of the project costs.

For more information or questions on the Corvallis solar roof project, contact Jay Gile at <gile.jay@epa.gov> or (541) 754-4721 or Justin Spenillo at <spenillo.justin@epa.gov> or (202) 564-0639.

# Computing Sustainability Results in LEED™ Silver

In January 2005, EPA's National Computer Center (NCC) in Research Triangle Park, North Carolina, received Silver certification from the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED™) program. At the project's outset, EPA opted for a single design-build contract that facilitated communication, inspired creativity, and strengthened a commitment to sustainability among the project planners, architects, and builders. The design-build team provided several additional sustainable features for the facility at no additional cost, and the Agency was able to successfully integrate design, construction, and technology to make NCC a functional and sustainable computing facility.

NCC includes the following sustainable features, among others:

- More than 2,000 polystyrene insulation-



The roof of EPA's computer center in RTP, NC, is covered with solar panels.

backed photovoltaic (PV) tiles cover NCC's roof, converting the sun's energy into electricity. The tiles not only provide additional energy potential for the laboratory, but also insulate the roof, making the building more energy-efficient.

- Heat-absorbing tiles cover the lobby's floor, soaking up sunlight from the large, southern-facing windows—oriented to maximize winter daylight received—and

re-emitting the energy as "free heat."

- Motion and daylight sensors control the high-efficiency fluorescent lighting, ensuring that the lights are only on when needed.
- Water-efficient fixtures are incorporated throughout the facility, including flow-resistant nozzles and automated shut-off, as well as hot and cold water delivery systems with automatic temperature controls. To further conserve water resources, the campus' landscaping incorporates native and adaptive species requiring minimal watering.
- To protect employees from potentially harmful pollutants and improve indoor air quality, printer and copier rooms are equipped with separate exhaust fans to safely discharge toner dust.

For more information on NCC's sustainable features, visit <www.epa.gov/greeningepa/facilities/rtp\_ncc.htm>.



# Agencies Star in Atlanta Energy Savings Effort

EPA's Region 4 office in the Sam Nunn Atlanta Federal Center (SNAFC) in Atlanta, Georgia, is saving significant amounts of energy and will officially receive the ENERGY STAR® building label April 19, 2005, thanks to a two-year coordinated recommissioning effort by a multi-agency ENERGY STAR team.

In February 2005, SNAFC submitted its application to receive the ENERGY STAR label, which is awarded to buildings whose energy performance rates in the top 25 percent of facilities in a particular sector. Submission of the application is the culmination of a building recommissioning partnership effort that began in 2003 among EPA, the U.S. Department of Energy (DOE), the U.S. General Services Administration, and SNAFC operations and maintenance contractor Brooks Range.

"This collaborative effort has truly energized a team that brings new ideas to the table at every meeting," said Danny Orlando, an ENERGY STAR senior engineer at EPA's Region 4 office. "Each participant has contributed resources to this effort, which has brought us one step closer to achieving the ENERGY STAR label."

SNAFC is one of the largest federal buildings in the country, and EPA's Region 4 office is the largest tenant in the building. The project's primary goal was to have SNAFC meet ENERGY STAR requirements after 12 months of demon-



The Sam Nunn Atlanta Federal Center.

## Seattle Regional Office Receives ENERGY STAR®

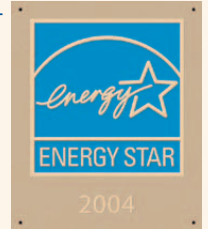
The Park Place building in Seattle, Washington, which houses EPA's Region 10 office, received the ENERGY STAR label in November 2004. EPA is the building's largest tenant, occupying 10 of the facility's 21 floors.

A series of improvements by both EPA and the building's owner, Benaroya Companies, paved the way for Park Place's designation. As part of a major renovation of its office space in 1999, EPA installed occupancy sensors in enclosed offices and some energy-efficient lighting fixtures. The Agency also emphasized the use of natural light by limiting the number of offices on the perimeter, creating open work areas, and installing glass relights beside office doors. More recently, Benaroya had a built-in incentive to work with EPA to achieve energy performance improvements. The Agency's lease is due for renewal in July 2006, and EPA includes a requirement in new office leases that buildings achieve ENERGY STAR ratings of 75 or higher.

Benaroya replaced additional lighting throughout Park Place with high-efficiency units, installed occupancy sensors, and replaced the building's outdated window-unit air conditioning system with a more efficient central heating, ventilation, and air conditioning system. The company also modified the penthouse ventilation system to recover heat leaving the building and use it to preheat fresh air, reducing the energy needed to heat the 310,828 square foot building. Even after achieving its efficiency goals, Benaroya continues to make improvements—the company is currently working to install a rooftop water storage tank, which will use gravity to help maintain the building's water pressure, thereby reducing the energy used by basement water pumps.

Thanks to these improvements, the Park Place building uses about 40 percent less energy than the average office building of similar size. Benaroya used the ENERGY STAR benchmarking tool to evaluate the building for energy consumption, climate, square footage, building use, and air quality, and found that the building placed in the top 25 percent of office buildings nationwide for energy efficiency.

For more information about the Region 10 office and energy efficiency measures at the Park Place building, contact Robert Fallis at <fallis.robert@epa.gov>.



strated savings (in this case, February 2005). A preliminary walk-through of the facility and a DOE Assessment of Load and Energy Reduction Techniques (ALERT) team audit provided the framework for the recommissioning work.

The partners have met monthly since January 2003 to develop their plans, including analyzing building electricity use, instituting ongoing metering and evaluation, piloting projects for occupancy sensors, implementing energy awareness programs, and conducting building

systems recommissioning. The team performed a whole-building evaluation to identify simple, low-cost modifications such as: strategically reducing lighting in excessively lit areas; installing occupancy sensors as standard operating procedure; repairing improperly installed or broken equipment; adjusting after-hours energy usage and system start-up by carefully analyzing the energy management system; developing policies to ban space heaters; and mandating air bal-

continued on page 6



# Buying Green, Being Lean Reduces Resource Use

As EPA strives to meet federal requirements to reduce its energy and water use, the keys to success are improving efficiency, focusing on its biggest energy users, and buying green power.

According to Executive Order (E.O.) 13123, every federal agency is required to reduce its energy use in industrial facilities (such as laboratories) 20 percent by fiscal year (FY) 2005 and 25 percent by FY 2010, compared to an FY 1990 baseline. Buying green power, whether delivered as electricity or renewable energy certificates (RECs), counts toward meeting that requirement, since the goal is to reduce the emissions associated with energy use. EPA now purchases green power or RECs for approximately 75 percent of the electricity it uses annually.

In FY 2004, EPA laboratories used 296,877 British thermal units (Btus) per gross square foot (with green power netted out), down 17 percent from their FY 1990 baseline of 357,864 Btus per gross square foot per year. Green power purchases were key to the FY 2004 reduction; without green power netted out, EPA's FY 2004 energy use was virtually even with FY 1990. In FY 2003, EPA laboratories' energy use (without green power netted out) was down 8.8 percent from FY 1990, and in FY 2002, it was 15.3 percent lower. Several large re-commissioning efforts currently underway at RTP facilities will begin to restore the balance between green power purchases and actual energy use reductions in meeting E.O. 13123 energy conservation goals.

"With the completion in October 2004 of a large renewable energy certificate purchase in Research Triangle Park (RTP), North Carolina, EPA is on track to exceed the FY 2005 E.O. 13123 requirements," said Richard Lemley, director of EPA's Office of Administrative Services. The Agency intends to meet the E.O. 13123 FY 2010 goals with a balanced approach of actual energy use

reductions and green power purchases." (For more information regarding green power purchasing at RTP, see *Energizing EPA*, December 2004.)

EPA employs five principal approaches for meeting the E.O. 13123 goals:

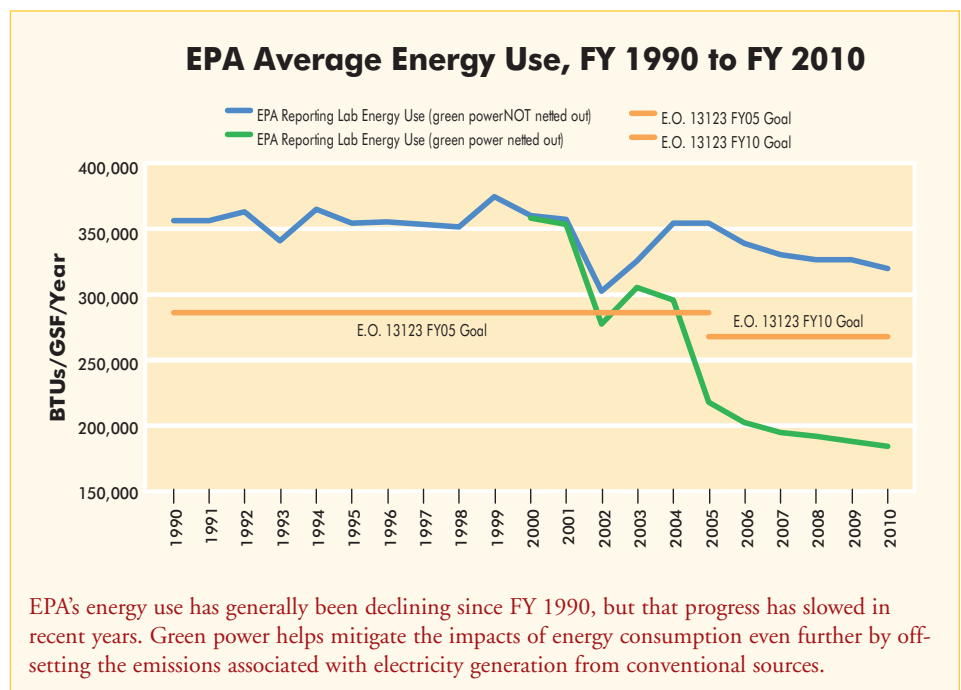
- Good design and oversight for new facilities, such as the Kansas City, Kansas, Science and Technology Center, which used 25 percent less energy in its first year than other comparable variable air volume laboratories.
- Commissioning, re-commissioning, and retro-commissioning facilities that are not reaching their peak energy performance, such as the new main facility in RTP, where a major commissioning effort underway is expected to reduce energy use at the facility by 10 to 15 percent.
- Mechanical system improvements in facilities such as the Atlantic Ecology Division Laboratory in Narragansett, Rhode Island, which completed upgrades in FY 2004 and is expected to reduce energy use by 15 percent.
- A focus on largest facilities first, such as RTP and the A.W. Breidenbach Environmental Research Center in Cincinnati, Ohio.

- Green power procurement, which is a quick and effective way to reduce the Agency's environmental footprint at its laboratories and offices.

## Water Use Dries Up

In addition to setting energy use goals, E.O. 13123 also requires EPA to have water management plans and best practices for conserving water use in place in 15 percent of its facilities by FY 2004. EPA has already far exceeded that requirement; by the end of FY 2004, detailed water management plans had been completed and signed for 11 of the Agencies' 29 reporting facilities, with more currently underway.

EPA has set an internal goal to reduce water use 10 percent by 2010, from an FY 2000 baseline. In FY 2004, EPA used about 167.5 million gallons of water in its 29 reporting laboratories, a 10.6 percent reduction from the 187 million gallons used in FY 2000. Thanks to ongoing mechanical upgrades, installation of low-flow plumbing fixtures, and other water conservation best practices, the Agency remains on track to surpass its FY 2010 water reduction goal.





# Energy Savers and Water Misers: *How Everyday Activities Can Help Reduce EPA's Energy and Water Use*

EPA offices require a significant amount of energy to maintain comfortable temperatures and lighting. While an employee may not have control over a building's thermostats, you can still do your part to conserve energy by following a few simple rules:



### Power Down

A typical work day lasts about nine hours, yet many employees leave their personal computers (PCs), monitors, and printers on 24 hours per day, seven days per week. Even when set to standby mode, ENERGY STAR®-rated PCs can use up to 15 watts of electricity per hour. If left on from 5:00 p.m. until 8:00

a.m., that's about 0.23 kilowatt hours (kWh) per work day, or nearly 100 kWh per PC per year. Thus, if everyone at EPA's Federal Triangle facilities in Washington, DC, left their computers on all night for a year, that would be enough electricity to power 50 homes for an entire year, for a total cost to taxpayers of \$39,000 per year.

### Dress for the Occasion

During the winter months, some employees use portable space heaters in their workspace. Space heaters are not only inefficient, using the same amount of electricity as 45 fluorescent light bulbs, but they can also be expensive to operate. A 1,500-watt space heater running nine hours per day, consumes nearly 300 kWh or approximately \$20 each month. Before plugging in that additional source of heat, consider wearing an extra layer of clothing.

### Give the Environment a Hand

Automatic door openers are designed for handicapped accessibility, yet they are often used when manual operation would suffice. In most Federal Triangle buildings, the electric opener causes the door to remain open nearly 5 seconds longer than it would under manual operation. That means warm air is needlessly released outside, requiring the

building's heating system to work extra hard to maintain a constant temperature. Next time you reach for that silver button, remember that costs in dollars and environmental impact could be avoided by opening the door manually.



### Fix the Drips

You can also help reduce EPA's water use by turning faucets completely off. One faucet, leaking one drip per second, wastes 7.5 gallons per day or 2,750 gallons per year. Report leaks and running toilets—one stuck toilet wastes more than 2,500 gallons per day!

## E-Cycling Turns Easy at EPA

continued from page 1

page to advertise READ services to EPA and other federal agencies, conducting strategy meetings with other agencies on how the GWACs operate, and forming a contractor work group to get buy-in for

advertising and marketing READ services throughout the country.

For more information on the READ GWAC, visit <[www.epa.gov/oamhpd1/readinfo/index.htm](http://www.epa.gov/oamhpd1/readinfo/index.htm)> or contact Karen

Richardson at (202) 564-4378 or <[richardson.karen@epa.gov](mailto:richardson.karen@epa.gov)>, or Oliver Voss at (202) 564-4514 or <[voss.oliver@epa.gov](mailto:voss.oliver@epa.gov)>.



## Events Not to Miss

### Laboratories for the 21st Century 2005 Call for Presenters Deadline April 15, 2005



[www.labs21century.gov/conf/upcoming/index.htm#call](http://www.labs21century.gov/conf/upcoming/index.htm#call)

If you have in-depth knowledge and experience in sustainable laboratory design, engineering, and operation, we encourage you to submit an application to be a presenter at the Laboratories for the 21st Century (Labs21) 2005 Annual Conference. For the first time, presenters will have the chance to showcase their ideas in one of three ways:

- Give a technical presentation in a parallel session.
- Display designs in the poster session.
- Share a project for informal review by leading design experts at the first-ever Roll-Up Your Sleeves Roundtable.

The Labs21 2005 Annual Conference will be held October 18-20, 2005, in Portland, Oregon. For more information, visit the Web site at [www.labs21century.gov](http://www.labs21century.gov).

### Earth Day—35th Anniversary April 22, 2005



EPA Headquarters, along with other federal agencies, will celebrate Earth Day on Thursday, April 21st at an outdoor fair of exhibits and tours highlighting sustainable practices. For more information about what you can do for Earth Day or activities in your area, see [www.epa.gov/earthday](http://www.epa.gov/earthday).

### Energy 2005: The Solutions Network August 14-17, 2005 Long Beach, California



[www.energy2005.ee.doe.gov](http://www.energy2005.ee.doe.gov)

This is the eighth annual workshop for federal, state, local, and private sector energy managers, energy service companies, utilities, procurement officials, engineers, and other energy professionals. The event will provide opportunities to learn, network, and discuss the latest in new technologies, renewable energies, alternative financing, policy and planning, and much more.

## Agencies Star in Atlanta's Energy Savings Effort

continued from page 3

ancing when offices are constructed in open space.

In addition to direct energy savings, recommissioning efforts have reduced cooling loads, which has allowed the building's second chiller to remain on standby. The project has also successfully increased tenant awareness of energy efficiency issues and created a "building covenant" specifying energy efficiency and other green practices to be followed within the building during modifications.

To apply for the ENERGY STAR label, buildings are benchmarked and receive a rating from 1 to 100, based on data available for that facility's sector, i.e., office buildings. Buildings that achieve

ratings above 75 (meaning they perform in the top 25 percent of the sector) qualify to receive a label. SNAFC's baseline ENERGY STAR rating in 2002 was 59; as a result of the recommissioning effort, the rating is now 81. In 2001, the 1.8 million square foot facility consumed nearly 74,000 British thermal units (Btus) per gross square foot per year. By the end of 2004, SNAFC had achieved its goal of consuming 60,000 Btus per gross square foot per year. Between fiscal year (FY) 2003 and FY 2004 alone, energy use at SNAFC decreased 12 percent. Assuming the current energy cost was constant over FY 2003 to FY 2004, GSA realized more than \$192,000 in annual energy savings, which was passed on to building tenants including EPA.

As a result of the partnership's efforts, SNAFC now serves as a model for energy-efficient building commissioning nationwide. This effort has inspired GSA to initiate recommissioning efforts at additional government-owned buildings, and several are now applying for the

ENERGY STAR label. In October 2004, SNAFC and its partners received a DOE Federal Energy and Water Management Award for Energy Efficiency/Energy Program Management for their work on this project.

For more information on the Region 4 office and the recommissioning efforts at SNAFC, contact Danny Orlando at [orlando.danny@epa.gov](mailto:orlando.danny@epa.gov). For more information about the ENERGY STAR program, visit [www.energystar.gov](http://www.energystar.gov).



## Contact Us

For more information about *Energizing EPA* or the activities of EPA's Sustainable Facilities Practices Branch, please contact:

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