United States Environmental Protection Agency

EnergizingEPA

Office of Administration and Resources Management's Newsletter on Energy Conservation and Sustainable Facilities

August 2002

EPA Administrator Christie Whitman, along with federal, state and local leaders and over 2,000 employees and contractors, marked the official opening of the new RTP campus during a Dedication Ceremony on May 29, 2002.

"When planning for this facility began in the early 1990s, our goal was clear—build state-of-the-art laboratories and offices that embody the Agency's environmental mission and save the taxpayers money," said Administrator Whitman. "Through our partnerships with four federal agencies, three building companies, two architectural firms, and countless others, we have built one of the largest "green" buildings in the world—a model for others like it around the globe."

Leading by Example: New RTP Campus Is a Model of Sustainability

The new campus in Research Triangle Park (RTP), North Carolina–EPA's largest construction project to date–has become a model of environmental stewardship. Dedicated to environmental and public health research, this 1.2 million square foot facility accommodates more than 2,000 people and 600 laboratory modules.

"We concentrated on the way people think about green buildings," said Chris Long, project manager of RTP's new campus. "Quite often, you'll automatically jump into the types of technologies you can use. We've tried to take what everyone does automatically and factor in the environmental impact of a decision."

From the start, members of the project team worked to strike a balance between cost, function, and the environment. For example, the team re-routed a proposed road because it called for the destruction of a 100-year-old oak tree. From site design and landscaping to construction and waste management, EPA's new campus challenged conventional design and construction procedures.

The atrium provides daylighting and improved thermal insulation.

Congressional Representatives Bob Etheridge and David Price with EPA Administrator Christie Whitman.

Site Design: In order to minimize site disruption and preserve the existing ecosystem, the building was tailored to fit within the contours of the land. Adding an additional level to the facility and opting for a parking structure instead of a lot reduced the amount of land used. In addition, keeping natural woodlands and native plants reduced water, pesticide, and fertilizer needs, while simultaneously decreasing maintenance costs.

Water Quality: A pre-existing manmade lake and wetland area offer a natural means of controlling runoff and filtering contaminants. A new

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"OARM's mission is to help EPA meet its goals to protect human health and the environment in and around our own facilities. We do this by focusing on market opportunities rather than mandates, forging partnerships that promote the value of green products, buildings, and services."

—**Morris Winn,** *Assistant Administrator, Office of Administration and Resources Management*

Chelmsford Lab Opens Its Doors and Closes the Circle

Last September, EPA's New England Regional Laboratory (NERL) moved to its new home in Chelmsford, Massachusetts. Since then, the new 66,000 square foot laboratory has been honored several times for its achievements in environmental performance, design, and construction.

This spring, the Office of the Federal Environmental Executive recognized NERL with a 2002 White House Closing the Circle Award. The annual awards recognize an individual federal employee or team of employees at government facilities for efforts that result in significant pollution prevention and other positive environmental impacts. Both EPA and the U.S. General Service Administration (GSA) were recognized for their work on NERL and received the award at a special ceremony in June.

NERL was recognized in the "Model Facility" category, which requires "outstanding contributions to waste prevention, recycling, affirmative procurement, and sustainable design through leadership, investment in resources, operational practices, and change in culture." The NERL design and construction teams achieved this by incorporating innovative designs and technologies focused on sustainability.

From the project's start, NERL made waste prevention and reduction a priority. During construction, materials such as metals, plastics, gypsum drywall, glass, carpet, and construction and demolition debris were separated into clearly labeled bins for recycling. In addition, all soil and gravel within the limit of work was stockpiled and graded for later reuse as fill or loam. These recycling efforts resulted in more than 50 percent of the solid waste generated from construction being diverted from the landfill.

"NERL's extensive onsite construction recycling efforts also received a national GSA Demolition Derby Award," said Bob Beane, NERL project manager.

Solar shades above the windows at NERL.

NERL procured various recycled products throughout the project, including many recommended by EPA's comprehensive procurement guidelines. For example, the use of high fly ash content concrete kept an estimated 126 tons of fly ash from entering the waste stream.

NERL also incorporated energy- and water-efficient products and techniques. For example, daylighting and occupancy sensors are used throughout the building, and windows are tinted, insulated, and shaded with photovoltaic (solar energy producing) awnings, which supply approximately 2,000 watts of energy daily. To reduce water needs, low-flow sinks and electronic sensors have been installed in restrooms, a rooftop rain recovery system was put in place, and native plants and mulch were used in landscaping.

These and other innovative techniques, such as obtaining construction materials locally to reduce transportation costs and air pollution, make NERL a true model of sustainability. In addition to the honors mentioned above, NERL also won the GSA National Environmental Award and an Energy Showcase Award from the U.S. Department of Energy. For more information, please visit <www.epa.gov/oaintrnt/facilities/chelmsford.htm>.

New RTP Campus *continued from page 1*

water quality pond and 10 biofiltration sites were added to provide additional stormwater retention, sediment collection, and filtration.

Lighting Systems: Integrating high-efficiency lamps and ballasts, task lighting, occupancy sensors, and daylighting all helped yield savings in energy spending.

Building Mechanical Systems: The new facility was designed to use about 40 percent less energy than a typical, code-compliant laboratory and office facility. In addition to harvesting natural light and insulating against excess heat gain, the facility uses 25,000 control points in a building automation system to operate high efficiency, variable speed heating and cooling systems.

Construction: Every construction worker was required to view a video about the environmental initiatives being used for the new campus. Construction plans called for reusing the land-clearing debris, implementing a voluntary concrete recycling program, and introducing plant rescues that safely relocated more than 3,500 plants to new plots of land both on and off site.

Waste Management: Collecting and handling recyclables and construction waste were only part of the new campus' systematic approach to reduce, reuse, recycle, and responsibly dispose of waste materials.

Alternative Technologies: The use of photovoltaics, or solar energy cells, helped create one of the largest solar road lighting projects in the United States.

"We really tapped into EPA's in-house resources to address specific questions throughout the project," says Long. For more information visit <www.epa.gov/rtp/new-bldg>.

EPA Drives Toward "Fleet Excellence"

To reduce harmful vehicle emissions and fuel consumption and increase fuel efficiency, EPA has incorporated numerous technologies into its nationwide fleet of more than 1,100 automotive vehicles. In fiscal year 2001, EPA's fleet included 303 alternative fuel vehicles (AFVs) that use ethanol/gasoline mixtures, compressed natural gas, or electricity.

Two important mandates—the Energy Policy Act of 1992 and Executive Order (E.O.) 13149—help drive EPA's fleet management efforts. The Energy Policy Act requires that 75 percent of new vehicles acquired by federal agencies must be AFVs. E.O. 13149 requires that, by 2005, agencies reduce fuel usage by 20 percent, increase the fuel efficiency of light duty fleet vehicles by 3 miles per gallon, and use alternative fuels in AFVs at least 51 percent of the time. In 2000 and 2001, EPA exceeded the Energy Policy Act's 75 percent requirement by 10 percent or more. The Agency is on track to exceed this requirement again in 2002, said Melvin Joppy, team leader of the Transportation Management Staff.

Many of EPA's AFVs are flexible-fuel vehicles (FFVs) that run on ethanol, an alcohol typically made from corn or corn byproducts. Vehicles that use ethanol (such as E-85, a blend of 85 percent ethanol and 15 percent gasoline) have lower carbon monoxide and carbon dioxide emissions than traditional vehicles. FFVs run on any combination of ethanol and gasoline by sensing the percentage of alcohol in the fuel tank and adjusting the engine's parameters accordingly. EPA's FFVs use E-85, but FFVs can also use unleaded gasoline or any other mixture of ethanol and unleaded gasoline.

"The Regions' response to FFVs has been positive because of the flexibility offered by these vehicles," said Paul Grigsby, a facilities support services specialist.

Other vehicles in EPA's fleet run on natural gas, a clean-burning fuel that generates significantly less carbon monoxide, carbon dioxide, particulate matter, and nitrous oxide compared to similar fossil fuel vehicles. EPA's fleet uses compressed natural gas and consists of two types of vehicles: dedicated vehicles and dual-fuel vehicles. Dedicated vehicles use only natural gas, while dual-fuel vehicles have two tanks—one for natural gas and the other for unleaded gasoline. "Our goal is to have 85 percent of our dual-fuel vehicles using solely alternative fuels," Grigsby said.

EPA also uses electricity as an alternative to fossil fuels. Electric vehicles use various types of batteries and other mechanisms to store the electricity used to power the vehicle. In addition, the Agency acquires gas-electric hybrid vehicles to help achieve reductions in fuel emissions and increase fuel efficiency among its fleet.

EPA officials continue to look to the future. "To keep pace with technology, we attend a variety of workshops and conferences on alternative fuel technology and advancements," Joppy said. In addition, EPA plans to unfurl a new voluntary "Fleet Excellence" partnership that will encourage private-sector organizations to increase their fleet's miles per gallon by 3 percent annually. Currently under development by the Office of Air and Radiation's Office of Transportation and Air Quality (OTAQ) and the Office of Administration and Resource Management's Facilities Management and Services Division (FMSD), the program aims to attract private-sector partners as "Fleet Excellence" leaders, with an overall goal of reducing harmful vehicle emissions. The program will promote the use of AFVs, fuel-efficient vehicles, and other technological advancements that improve fuel efficiency and reduce harmful air pollutants. The Administrator's office recently gave the concept a "thumbs up," directing OTAQ and FMSD to work with GSA to further improve EPA's own fleet, and to invite other federal and private fleets to join.

New Technology Fair Highlights 2002 Labs21 Conference

The Laboratories for the 21st Century (Labs21) 2002 Annual Conference will be held from October 7-9, 2002, in Durham, North Carolina. From thought-provoking sessions with leading national experts to showcases of the latest technologies, this unique conference will provide attendees with the tools and resources needed to design and manage the next generation of laboratories.

LABS FOR THE 21ST CENTURY

Focusing on the comprehensive or "whole buildings" approach advocated by Labs21, conference participants will devise new solutions to reduce costs and increase laboratory design and operational efficiency. Various conference sessions will explore the broad range of issues facing today's laboratory-intensive industries—from biotechnology to environmental sciences to microelectronics.

As a newly added feature, this year's conference will offer a small exhibit hall, displaying state-of-the-art technologies applicable to sustainable laboratory design. Vendors from across the country will display new products, such as automated lab control systems and advanced laboratory fume hood technologies.

Conference attendees will also have the opportunity to participate in a series of dynamic, hands-on sessions at EPA's new state-of-the-art Research Triangle Park (RTP) campus. Each session will feature a tour of the RTP facility, as well as a series of presentations on topics such as campus planning and integration, central utility plants, lab modules, and high-bay research facilities.

For more information on the conference, including details on registration and accommodations, visit <www.epa.gov/labs21century>.

Recommissioning Nets Results at Fort Meade

EPA is constantly striving to improve energy efficiency at its facilities by upgrading heating, ventilation, and air conditioning systems and incorporating new technologies. Sometimes, however, new energy-efficient mechanical systems do not always operate properly and fail to maximize energy savings benefits. Recommissioning allows building managers the opportunity to check and adjust a facility's control system, building programming, and hardware to ensure that energy savings goals are met while worker health and safety are protected.

The Environmental Science Center in Fort Meade, Maryland.

In 2001, EPA Region 3 and EPA Headquarters staff began recommissioning the EPA Region 3 Laboratory at Fort Meade, Maryland, which came online in 1999. Although the laboratory had installed variable air volume fume hoods, the facility's control system was not programmed properly to take advantage of the energy savings this equipment could provide. Specifically, the amount of air exhausted from the fume hood and conditioned air supplied to the labs did not decrease or increase appropriately when fume hood sashes were closed or opened. In addition, the nighttime setback function was not operating. The recommissioning process also revealed that by better matching fume hood and fume hood manifold exhaust, the lab could reduce fume hood manifold exhaust fan operations, thus saving energy.

Facility Manager, Rick Dreisch, is pleased with the recommissioning effort. "We saw results through a groupwide effort. Although it was a long process, by approaching it in a step-wise fashion, we avoided disrupting laboratory operations." According to EPA's Sustainable Facilities Practices Branch, which tracks EPA laboratory energy use, Fort Meade's energy use per gross square foot per year should decrease by 12 percent because of the recommissioning effort. For more information, contact Rick Dreisch at 410 305-2646.

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