United States Environmental Protection Agency

EnergizingEPA

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

October 2006

The Laboratories for the 21st Century (Labs21) 2006 Annual Conference is fast approaching! Don't miss your chance to be a part of this month's exciting event, which will bring more than 600 laboratory designers, engineers, and facility managers from around the world to San Antonio, Texas, October 17-19, 2006.

Online registration for the conference is now available through the Labs21 Web site at <www.labs21century.gov/conf/upcoming/2006/registration.htm>. The cost of registration is $550 ($595 onsite) and includes: admission to the opening and closing plenary sessions, each featuring prominent keynote speakers; admission to technical, poster, and breakfast sessions; the Technology and Services Fair; admission to the Grand Opening Reception; and continental breakfast, lunch, and refreshments each day of the event. Attendees can register for pre- and post-conference events and optional evening tours for an additional fee. To view the 2006 Conference Agenda and optional events, visit <www.labs21century.gov/conf/upcoming/index.htm>.

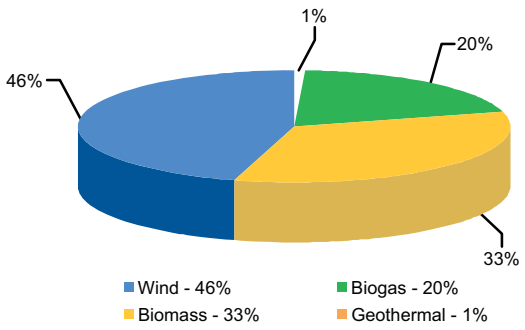
New Blanket Purchase Contract Brings EPA to 100 Percent Green Power

On September 1, 2006, EPA became the first federal agency to purchase green power equivalent to 100 percent of its annual electricity use. EPA is now under contract to purchase nearly 300 million kilowatt hours (kWh) of green power per year, which is equivalent to the electricity used annually by nearly 28,000 homes.

"EPA is proud to lead the way in purchasing 100 percent green power and hopes that its actions inspire other federal agencies to do the same," said EPA Assistant Administrator Luis A. Luna. If all federal agencies purchased green power to offset their total annual electricity use, it would be enough electricity to power more than 5.2 million homes for a year.

EPA reached this milestone through a consistently strong green power purchasing program. In 1999, EPA's Region 9 laboratory in Richmond, California, was the first federal facility to purchase green power equal to its total annual electricity consumption. As the first major federal agency to reach 100 percent green power—through the purchase of both delivered green power and renewable energy certificates (RECs)—EPA is offsetting the emissions associated with the electricity generated for all of its 190 facilities nationwide. EPA's green power purchases offset more than 600 million pounds of carbon dioxide (CO_2) annually, or the amount of CO_2 emitted by nearly 54,000 cars over the course of a year.

EPA Green Power Purchases by Power Source



EPA reached 100 percent green power by signing a contract with 3 Phases Energy Services in June 2006 for 110 million kWh of RECs, which support wind power in California, South Dakota, Oklahoma, and Wyoming.

Procured through the Defense Energy Support Center, this most recent green power contract represents EPA's first "blanket" green power procurement contract. Rather than signing multiple contracts that provide RECs to many different facilities, this single blanket contract covers the electricity used annually by all EPA facilities not previously purchasing green power. Overall, EPA's green power purchases support renewable power generation from four different energy sources in 19 states across the country.

For more information on EPA's green power purchases, or to learn more about RECs, visit <www.epa.gov/greeningepa/greenpower> or contact Justin Spenillo at (202) 564-0639 or spenillo.justin@epa.gov.

EPA Takes Energy Efficiency to New Heights in RTP

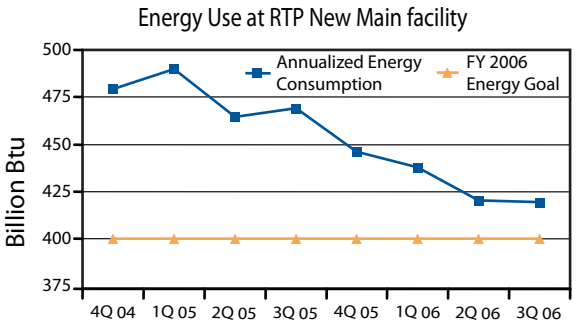
By working together to optimize building performance at its facilities in Research Triangle Park (RTP), North Carolina, EPA Headquarters and laboratory staff have found several ways to significantly reduce energy use at one of the Agency's largest laboratories, helping to meet new federal requirements for energy reduction in the Energy Policy Act of 2005.

EPA's main facility at its RTP campus, with more than one million square feet of laboratory and office space, accounts for nearly one-third of the Agency's overall annual energy use. Over the past three years, a team of EPA employees from RTP and Headquarters has been developing and implementing extensive recommissioning projects to improve the performance and efficiency of critical building control systems. In fiscal year (FY) 2005, their efforts helped reduce annual energy use by 7 percent compared to FY 2004; an additional reduction of up to 8 percent is expected in FY 2006 with the completion of several key projects.

In FY 2003, EPA began exploring opportunities to optimize building performance at RTP. A joint RTP-Headquarters team initiated the Laboratory Controls Optimization Project (LCOP) and Vivarium Controls Optimization Project (VCOP) to reduce energy use by minimizing air flow during both occupied and unoccupied periods, while ensuring performance and employee safety. For both projects, the team measured baseline air flow, then performed additional tests to determine the optimal range for ventilation controls when laboratories are occupied or unoccupied. Based on the results, the team adjusted and fine-tuned air flow set points, and assessed the impacts of these changes on the heating, ventilation, and air conditioning system. In doing so, the team was able to develop, verify, and implement plans to save energy and ensure safe ventilation in each of the laboratory units, animal suites, and building corridors and atriums.

LCOP and VCOP also created an opportunity for additional energy savings by reducing demands on the facility's air handling units (AHUs). The team implemented a Static Pressure Optimization and Reduction Test (SPORT) to optimize the number of AHUs needed to supply a minimum "static pressure" for each of the laboratories. With reduced operation of AHUs, EPA expects to reduce the facility's overall energy use by an additional 2 percent in FY 2006 compared to the FY 2004 baseline.

Due in large part to the dedicated efforts of the RTP-Headquarters team, recommissioning projects have vastly enhanced building performance and are expected to reduce annual energy consumption by up to 17 percent compared to the FY 2004 baseline.



Energy Consumption Annualized Each Quarter

The projects will have several other long-term impacts, such as extending the life of the HVAC system and establishing standard procedures for efficient system operation and preventative maintenance, as well as providing EPA substantial utility cost savings, resulting in a payback period of approximately two years.

"The success of LCOP, VCOP, and SPORT reflect the significant time, effort, and resources EPA has invested into improving energy efficiency and providing safe work environments," said Dan Amon of EPA's Sustainable Facilities Practices Branch. "Based on this success, these projects will now serve as models for future efforts to increase energy efficiency and ensure employee comfort and safety at other EPA facilities."

For more information, contact Dan Amon at <amon.dan@epa.gov>.

New Energy Metering System Tracks Savings

EPA recently installed a new online energy and water metering system for RTP's main facility and National Computer Center. With real-time metered data at their fingertips, RTP's facilities staff will be able to more effectively monitor and manage energy and water consumption at these two facilities. Experience with this system will also provide EPA with information to install similar metering capabilities at its other laboratories across the country, as the Agency works to meet federal advanced metering requirements established by the Energy Policy Act of 2005.

NVFEL Achieves International EMS Certification

EPA's National Vehicle and Fuel Emissions Laboratory (NVFEL) in Ann Arbor, Michigan, has become the second EPA laboratory to have its environmental management system (EMS) certified to the ISO 14001 standard.

ISO 14001 specifies an internationally recognized "best practice" framework for developing an EMS. Under the framework, each organization identifies those aspects of its business that impact the environment, develops objectives and a management program for improving performance, and subjects the system to regular monitoring and review, with an eye towards achieving continual improvement. While many federal facilities (including 34 EPA facilities) have implemented EMSs in accordance with Executive Order 13148, relatively few have taken the additional step (and incurred the cost) of subjecting the system to a review from an accredited ISO 14001 registration auditor.

The key advocate for ISO 14001 registration was Christopher Grundler, Deputy Director, EPA Office of Transportation and Air Quality. "We value innovation in all aspects of our work, from establishing national emission standards to developing clean automotive technologies and state-of-the-art measurement protocols," Grundler said. "This value applies to how we manage our operations as well, and achieving ISO certification was a natural fit for us."

NVFEL first self-declared its EMS to be in place in August 2005, well in advance of the December, 31, 2005 deadline required under Executive Order 13148. The laboratory then began the process of preparing for an ISO 14001 certification in January 2006. The facility sought out this voluntary, third-party certification as a means of demonstrating its commitment to continual improvement and to lead by example. The effort was strongly supported and encouraged by all levels of NVFEL's staff, from office management to laboratory technicians. According to Ruth Schenk, the facility's EMS coordinator, "The people here at [NVFEL] want to participate. They are generously offering suggestions and developing new programs that strengthen and support the EMS."

NVFEL primarily functions as a fuel and emissions testing laboratory for mobile sources. For that reason, the EMS focused on five significant environmental aspects: 1) air emissions from testing and facility operations; 2) accidental releases and spills; 3) chemical use throughout the lab; 4) consumption of natural resources; and 5) waste reduction. Some of the facility's accomplishments in the past year include:

- Selling or recycling 425 computer units through the Recycling Electronics and Asset Disposition (READ) program. (See March 2006 *Energizing EPA*.)
- Switching to reusable absorbents for laboratory cleaning and spills, preventing more than 2,200 pounds from entering the waste stream annually.
- Moving to filtered solvent for its automotive parts cleaners, reducing the amount of solvent needed for each cleaner by more than 40 gallons each year.

For more information on NVFEL, contact Steven Dorer, facility manager, at (734) 214-4200 or <dorer.steven@epa.gov>.

NVFEL Revisits ESPC

NVFEL established EPA's first energy savings performance contract (ESPC), an innovative way to upgrade its mechanical systems by financing them with utility savings. Since the start of the contract in April 2001, NVFEL has been able to cut its energy profile in half and reduce its water use by 73 percent (from baseline values).

However, since 2005, workload changes and additions to the facility have degraded energy performance. Based on recent energy audits initiated in response to this issue, NVFEL developed a new list of areas for improvement that includes installing a cogeneration system and high-efficiency chiller, reducing the fixture density of hallway lighting, and reducing the air exchange rates in the laboratories. The contracted energy services company is considering incorporating requirements for these improvements into the original contract. "The laboratories here were built in the late 1960s," said Steven Dorer, NVFEL facility manager. "The ESPC has allowed us to upgrade the facility while achieving financial and environmental benefits."

Safeguarding EPA Assets With Electronics Stewardship

As technology advances, more electronics are used and discarded, posing complex energy efficiency and environmentally responsible disposal challenges. This article kicks off a series of articles in Energizing EPA that will discuss EPA's role in the lifecycle of electronics, including the roles of property officers, the Tools for Schools program, and other important programs dedicated to the challenges of electronics purchase, reuse, and recycling.

To ensure the reuse, recycling, and proper disposal of electronics, as well as safeguarding Agency assets, EPA uses a thorough personal property management process. The Property Management Program (PMP), which tracks accountable and sensitive property such as computers, printers, and office equipment throughout its lifecycle at the Agency, plays a key role in implementing the Federal Electronics Challenge (FEC), which promotes environmental stewardship in federal electronics purchase, use, and disposal.

EPA recently signed a Memorandum of Understanding (MOU) with several other federal agencies titled *Promoting Sustainable Environmental Stewardship of Federal Electronic Assets*. The PMP plays an important role in implementing this MOU and the Federal Electronics Challenge. To implement the MOU and the FEC, the Agency is looking to all employees to help minimize the environmental impact of electronics at every lifecycle stage—including purchase, use, and end-of-life management.

"Ensuring accountability to safeguard EPA's assets will promote an effective and efficient personal property management program," said Brenda Bell, the Agency's Property Management Officer. "It also results in cost savings throughout the property's life cycle, from acquisition to disposal."

Personal property, also known as "moveable assets," is a broad category that covers nearly every item EPA purchases or leases except real property (and low cost items such as office supplies). Personal property also includes "sensitive items" that are tracked regardless of price, such as computers, laptops, BlackBerries, and cell phones purchased by EPA for business use by employees. A listing of all the sensitive items can be found on the property Web site at <intranet.epa.gov/oas/fmsd/property>.

The PMP focuses on ensuring the proper use, tracking, and disposal of this property. The program relies on the participation of the Property Management Team, including custodial officers in every "accountable area" as well as EPA employees. For those items purchased on a purchase card and delivered directly to cardholders, it's important to keep custodial and property officer informed of the purchase, including sensitive items.

As part of EPA's commitment to the environment, the PMP works to promote maximum usage from EPA's assets. The Agency is working on a plan to increase the "refresh cycle" of replacing electronic equipment to every four years, instead of every three years. Once EPA employees reach maximum usage of their personal property, it may only be disposed of through one of the following methods:

- Transferred to the General Services Administration (GSA) "exchange sales" as surplus property.
- Donated through the Computers for Learning Program (CFL).
- Reused, manufactured, recycled, or disposed of properly under the Recycling Electronics and Assets Disposition services contract (READ, see the March 2005 issue of *Energizing EPA*).

To facilitate reuse, recycling, and proper disposal of electronics, either at maximum usage or due to other circumstances such as an office move, EPA employees should be aware of their responsibilities in the property management process. Employees should give their custodial officers a list of computers and equipment along with the serial/ID numbers, location of the items, and the condition of the item. The electronic equipment will be inspected and assigned a disposal code, depending on its condition, to determine whether the computer goes to GSA, CFL, or READ. In the first stage of the move from three EPA buildings in the Crystal City area of Northern Virginia to a new office building, for example, 60 computers were donated to CFL and 350 to 400 computers were handled under the READ service contract.

For more information on the PMP, visit <intranet.epa.gov/oas/fmsd/property> or contact Brenda Bell in the Facilities Management and Services Division at (202) 564-4830. To learn more about the Federal Electronics Challenge, visit <www.federalelectronicschallenge.net>.

EPA's Electronic Stewardship Activities

- Purchasing
- Reuse
- Recycling
- Proper Disposal
- Awareness

Award Winners Update

Energy Upgrades at Chelmsford Lab Yield Big Savings

Energy use dropped by 11 percent from fiscal year (FY) 2004 to FY 2005 at EPA's New England Regional Laboratory (NERL) in Chelmsford, Massachusetts. And it's due in large part to the dedicated efforts of NERL Facility Manager Bob Beane and his staff to enhance the energy efficiency of the building's heating, ventilation, and air conditioning (HVAC) system.

Due to inefficient heating coils in perimeter offices, ice formed on the inside of windows at the NERL facility during winter 2004, making it difficult to maintain comfortable temperatures in those spaces. Areas adjacent to these offices had to compensate with higher temperature set points, which disrupted the HVAC balance and caused the system to use more energy. In April 2004, NERL began working with the building owner to design 23 fan-powered perimeter air terminals, which NERL installed in October 2004. The fans enhanced heat distribution in the perimeter offices, improving both temperature control and energy efficiency.

NERL Facility Manager Bob Beane.

During this upgrade, NERL also connected the primary office HVAC system to several rooms that were previously heated and cooled by less-efficient individual HVAC units. Beane and NERL facility management staff continued to monitor building performance throughout FY 2005, finding additional opportunities to improve energy efficiency. During a routine operations and maintenance audit in February 2005, NERL discovered that its gas boilers were wasting energy by operating more pumps and motors than required to meet the building's heating demand. NERL found that defective sensors were to blame and replaced them to increase system efficiency. In June 2005, Beane began working with new onsite management to monitor HVAC performance on a daily basis and make adjustments to system set points according to outdoor air temperatures—actions that will continue to improve efficiency and save energy.

Beane recently received EPA's Btu Buster Award in recognition of these efforts to improve energy efficiency at NERL, where energy use decreased from 25.2 billion British thermal units (BBtus) in FY 2004 to 22.3 BBtus in FY 2005. For a complete list of EPA Btu Buster Award winners, visit <www.epa.gov/greeningepa/champions/index.htm>.

Co-sponsor Helps Build Foundation, Future for Labs21 Program

Laboratories for the 21st Century, or Labs21, has become a sustainable resource for laboratory professionals worldwide. In 2005, to help the program, its conference, and other education programs reach their full potential, EPA and the U.S. Department of Energy (DOE) solicited involvement from a nonprofit organization that could increase the program's effectiveness, expand its reach, provide resources, increase public awareness, and help to ensure the program's continued success.

In February 2006, the two agencies named the International Institute for Sustainable Laboratories (I²SL) as the Labs21 cosponsor. I²SL is a non-profit foundation with a mission to develop worldwide partnerships that promote sustainable laboratory design, engineering, and operational practices, and to address the rapid pace of science, medicine, research, and development in an ever-changing and dynamic world. I²SL is coordinating key components of the 2006 conference in San Antonio, Texas, including registration, pre- and post-conference workshops and symposia, evening tours, sponsorship opportunities, and the Technology and Services Fair.

As for the program itself, EPA, DOE, and I²SL hope to broaden and strengthen Labs21—without additional resource requirements from the federal government—by focusing on additional issues relevant to laboratory and high-tech facility sustainability and performance. In particular, I²SL plans to help EPA and DOE explore the role of renewable energy in building design and how operations and maintenance could potentially augment existing energy savings. Beginning with its strategic partners in Canada, Austria, and several others in the European Union, I²SL hopes to gain momentum for Labs21 within the international laboratory community, learning what other countries are doing to promote laboratory sustainability and sharing information with them.

For more information on I²SL and the conference co-sponsorship, visit the organization's Web site at <www.i2sl.org> or <www.labs21century.gov>.

EPA Headquarters and Regional Offices Boost Recycling Efforts

Across the country, EPA's regional offices are implementing innovative ideas to encourage and increase office recycling.

Region 1 is making every page count with its paper reduction campaign. In addition to encouraging duplex copying and printing, the Boston office has installed computer software that allows paper-free faxing. The computer program converts incoming faxes to electronic files that can be received and viewed as e-mail attachments. The software also allows employees to send faxes directly from their computers. The Region 1 office is using "eScan" copy machines, which allow employees to scan paper documents and distribute them electronically via e-mail instead of making hard copies. Facility Manager **Dave Austin** noted that he is encouraged by the success of the paper usage reduction programs.

At the **Region 4** offices, all refrigerators made prior to 1993 have been replaced with more efficient ENERGY STAR® appliances. ENERGY STAR qualified refrigerators require approximately half the amount of energy as older models by using high efficiency compressors, improved insulation, and more precise temperature and defrost mechanisms. To date, eight of the replaced refrigerators have been recycled, and eight more were given away for reuse—two to the building's Health Clinic. To recycle the refrigerators, **Gary Hosmer**, of the Office of Policy and Management, rented a truck and delivered the appliances to a local recycler, where approximately 98 percent of the materials were recovered, including metal, glass, plastic, and oil. In addition, hazardous materials such as mercury and PCBs were properly disposed.

Taking a different approach to keeping paper out of the waste stream, **Region 5** is promoting a completely closed-loop paper recycling system. With an aggressive goal of increasing recycling by 200 percent, the regional office is teaming up with the General Services Administration in the Metcalfe Federal Building in Chicago to collect office paper that is then recycled into tissue and towels used in Region 5 facilities. The paper recycling program has expanded from solely the EPA office to the entire building, thanks to its coordinator and creator **Rich Hoffman**. Hoffman, Region 5's recycling coordinator who recently won EPA's Pollution Prevention (P2) award for his efforts, stresses the importance of including other tenants when implementing recycling programs. In addition to his work with the closed-loop system, Hoffman has instituted a recycling orientation program for new employees.

EPA's **Region 6** office in Dallas, Texas, is home to the "Bulb Eater," a machine that crushes used fluorescent light bulbs and safely removes all of the mercury gas contained inside. Crescent Real Estate, the Region 6 building owner, collects all of the bulbs used in the building. The Bulb Eater crushes them while activated carbon filters capture and neutralize the potentially harmful mercury gas and vapors inside. This process reduces the bulbs to clean, crushed glass ready to be recycled. The crushed bulbs are then stored in 55-gallon drums and shipped to a recycling facility in Florida. Region 6's facility manager, **Lisa Bokun**, praised the recycling system, noting that she looks forward to working in cooperation with the environmental management system (EMS) team to seek out new opportunities to improve office recycling in Region 6.

Through these efforts and many others, EPA's regional offices are leading the way with their environmentally conscientious ideas and serve as noteworthy models for other offices across the country. For more information on EPA's recycling best practices, contact Gail Wray at (202) 564-7683.

Events Not to Miss!

Labs21 2006 Annual Conference
October 17-19, 2006
San Antonio, Texas
For more information, visit <www.labs21century.gov>.

National Recycling Coalition Annual Congress
October 22-26, 2006
Atlanta, Georgia
For more information, visit <www.recyclingconference.org>.

Advanced Facilities Engineering Conference
November 8-9, 2006
Denver, Colorado
For more information, visit <www.afec.biz>.

Brownfields 2006
November 13-15, 2006
Boston, Massachusetts
For more information, visit <www.brownfields2006.org

Greenbuild International Conference and Expo 2006
November 15-17, 2006
Denver, Colorado
For more information, visit <www.greenbuildexpo.org>.

Contact Us

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

Marjorie Buchanan
E-mail:
buchanan.marjorie@epa.gov
Phone: (202) 564-8206
Web site:
www.epa.gov/greeningepa