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EPA

Greening EPA

A Look at Agencywide Environmental Progress

Issue Four

The Greening Continues

This issue of *Greening EPA* provides you with an update on some big events from last year and a preview of what is to come in 2000. Take a few moments and read about the success of the Laboratories for the 21st Century conference; the energy savings performance contract in the works for the Ada, Oklahoma, laboratory; the green power purchase in Golden, Colorado; the planned installation of a photovoltaic system at Research Triangle Park, North Carolina; and more.

—Phil Wirdzek, FMSD

The mission of the U.S. Environmental Protection Agency is to protect human health and to safeguard the natural environment—air, water, and land—upon which life depends.

New Laboratories Initiative Announced

On September 8, 1999, during the opening ceremony of the Laboratories for the 21st Century (Labs21) conference, Assistant Administrator Romulo Diaz, Jr., launched Labs21 as a new initiative to improve the environmental performance of the nation's laboratories. "Labs21 is no longer just a conference," he later explained. "It is now a full-fledged EPA and Department of Energy (DOE) initiative. The opportunities to drastically improve the environmental performance of our laboratories are too important to discuss just once a year at a conference. The Labs21 initiative will allow us to promote, discuss, and implement efficiency improvements on a continuing basis."

Following the announcement, Mr. Diaz chaired an informal meeting with representatives from more than 30 public and private sector laboratory owners to determine their interest and to solicit their input on the Labs21 approach. He also explained that the Labs21 initiative is being considered for participation in EPA's Project XL initiative, which could provide private sector companies, universities, and hospitals with regulatory relief for improving their environmental performance through participation in Labs21. Naturally, the private sector companies were very interested.

As currently envisioned, Labs21 will focus on the following activities:

- Create a national database of current environmental practices, including energy and water consumption data

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Labs21 Conference Is a Huge Success

Approximately 200 participants attended the Laboratories for the 21st Century (Labs21) conference held September 8 to 10, 1999, in Cambridge, Massachusetts. More than 40 speakers discussed topics ranging from new laboratory designs, financing building retrofits, improving fume hood and other HVAC systems, and incorporating renewable energy options. Attendees learned a wide variety of ways to improve the environmental performance of existing and future facilities.

Throughout the conference, speakers and participants emphasized that the technologies being discussed for improving energy and water efficiency and the strategies for implementing them have been proven and tested. Dale Sartor, a speaker from Lawrence Berkeley Labs, for example, described variable air volume (VAV) fume hoods as a "brand new, innovative, 17-year-old technology." As he explained it, VAV and other energy-efficient technologies have been proven effective, but facilities have been slow to embrace them.

Frank Kutlak, a speaker from the National Institutes of Health (NIH), explained why others are slow to embrace these technologies as he described how he incorporated many of them into the Louis Stokes Laboratories building currently under construction. He strongly suggested the need for an environmental advocate for every building project. Mr. Kutlak's advocacy has resulted in some impressive features at the new 290,000-gross-square-foot NIH laboratory including extensive daylighting, direct digital controls, an energy recovery wheel, VAV fume hoods, extensive electrical metering to measure energy consumption throughout the building, and appropriate use of variable frequency motors, pumps, and fans. The energy efficiency features are expected to earn NIH a $2 million rebate from the local energy provider.

Following a similar theme, Kath Williams, a conference speaker from Montana State University, presented a humorous and enlightening overview of the politics involved with "doing something different." As a result of her efforts, the university has adopted a "plus-ultra" (Latin for "more beyond") design approach. The new approach is being used in a pilot building on the campus that will house some of the university's chemistry and teaching labs. As planned, the building will include advanced fume hood designs, air scrubbing technologies, and other features with the goal of creating a zero-pollution emissions building.

"The challenge," according to Ms. Williams, "is not retrofitting laboratory buildings to improve performance but retrofitting people's thinking so they recognize the opportunities."

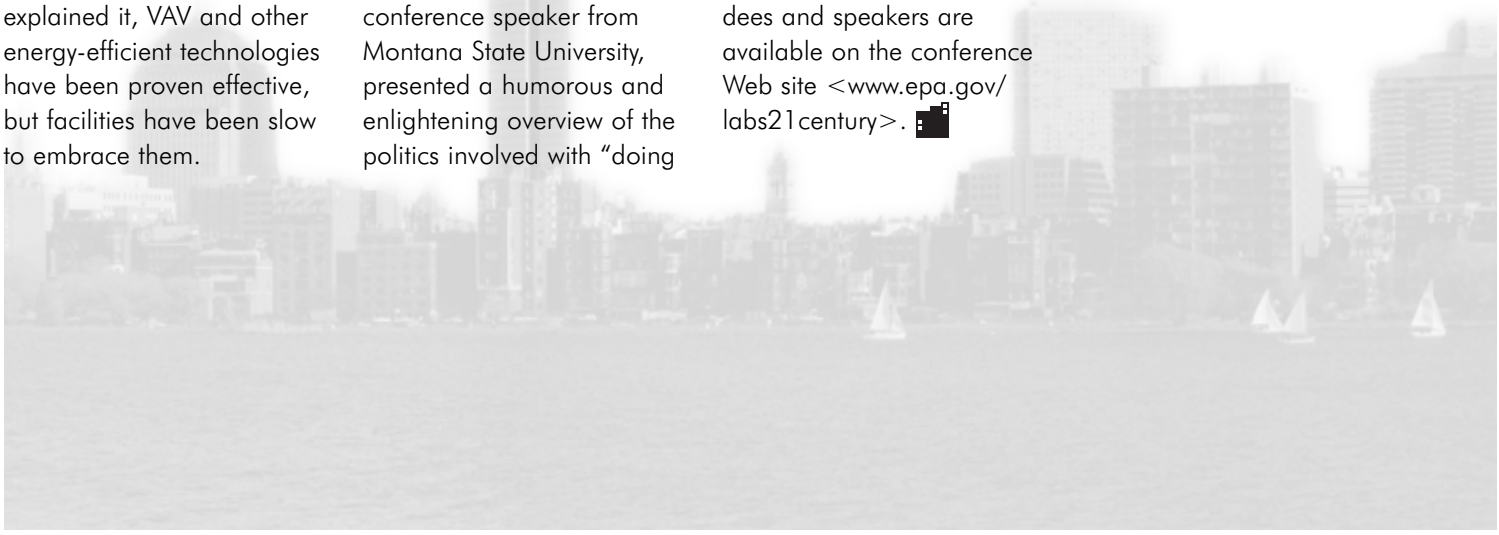
Retrofitting people's thinking is the goal of the new Labs21 initiative announced at the conference (see related story on page 1). Additional conference details, including copies of abstracts and presentations and lists of attendees and speakers are available on the conference Web site <www.epa.gov/labs21century>.

Mark Your Calendars:

The next Labs21 conference will be held September 6, 7, and 8, 2000, in San Francisco, California. Additional details will be posted soon on the Labs21 Web site <www.epa.gov/labs21century>

Call For Papers

Present your paper on energy efficiency in laboratories at the Laboratories for the 21st Century conference, September 6 to 8, 2000, in San Francisco, California. **Fax a 200-word abstract by June 2, 2000, to 781 674-2906.** Presenters will be notified by July 30, 2000.



New Laboratories Initiative *continued from page 1*

for a variety of laboratory types. The data can be used to compare laboratory performance.

- Negotiate voluntary goals for laboratory environmental performance, including energy- and water-efficiency goals, with each potential Labs21 participant.
- Provide training or other opportunities to exchange technical information.
- Establish partnerships with interested Labs21 participants.
- Promote the Labs21 initiative.

The typical laboratory currently uses five times as much energy and water per square foot as the typical office building due to intensive ventilation requirements and other health and safety concerns. Examining energy and water requirements from the holistic building perspective promoted by Labs21, however, can identify significant opportunities to improve efficiencies without sacrificing health and safety. As a result, the Labs21 initiative, as described above, will begin with an emphasis on improving energy and water efficiency. As these challenges are addressed, additional program elements will promote even more aggressive pollution prevention goals and strategies.

According to EPA estimates, if only 25 percent of the nation's estimated 150,000 private laboratories achieve energy-efficiency improvements of 60 percent (an efficiency gain less than the 68 percent gain expected at EPA's Ann Arbor facility), then the United States could reduce its annual energy consumption by 84 trillion British thermal units. This would save $1.25 billion in utility costs, reduce carbon dioxide emissions by 19 million tons, and remove the equivalent of 1.25 million automobiles from U.S. highways.

Additional information on the initiative is available on the Labs21 Web site at <www.epa.gov/labs21century> or by contacting Phil Wirdzek at 202 564-2094 or<wirdzek.phil@epa.gov>.

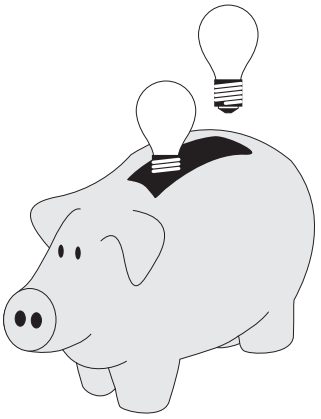
Ada Lab To Benefit From ESPC

On the heels of its success in Ann Arbor, Michigan, EPA is on the verge of entering into another Energy Savings Performance Contract (ESPC) for its laboratory in Ada, Oklahoma. EPA expects the ESPC upgrades to reduce the Ada lab's energy consumption by at least 60 percent and make Ada an environmental showcase facility.

Johnson Controls, the ESPC contractor, recently submitted its technical proposal to completely renovate the laboratory's HVAC system. The planned renovations will include replacing the laboratory's HVAC system with an environmentally preferable ground source heat pump system for heating and cooling the facility, installing variable air volume fume hoods to regulate the facility's air supply and exhaust emissions, installing new and upgraded fan motors, and completing the energy management and building control system to permit modular control at each fume hood.

Work is slated to begin in early spring of 2000 and construction is expected to take 1 year. Currently, the investment grade audit phase of the contract negotiation is under way, which will provide the engineering guarantee required by banking institutions before financing. As with the Ann Arbor ESPC, the service contractor will receive 100 percent of the lab's energy bill savings for the 23-year contract period. EPA will receive a performance guarantee on all new equipment and system upgrades, full maintenance, and replacement for the life of the contract.

In addition to the ESPC renovations, EPA is pursuing a 40-kilowatt photovoltaic system for the Ada facility to power the ground source heat pump. This project will be funded separately by EPA and through grants available to federal facilities. It is not part of the proposed ESPC.



EPA would like to thank the following EPA employees for their dedicated effort and help in making this project possible: Rolly Santos, Bill Wise (again!), Fred Childers, Garmon Smith, and Roger Cosby. For more information on the Ada ESPC, contact Phil Wirdzek at 202 564-2094 or <wirdzek.phil@epa.gov>.

EPA's Golden Laboratory Turns Green

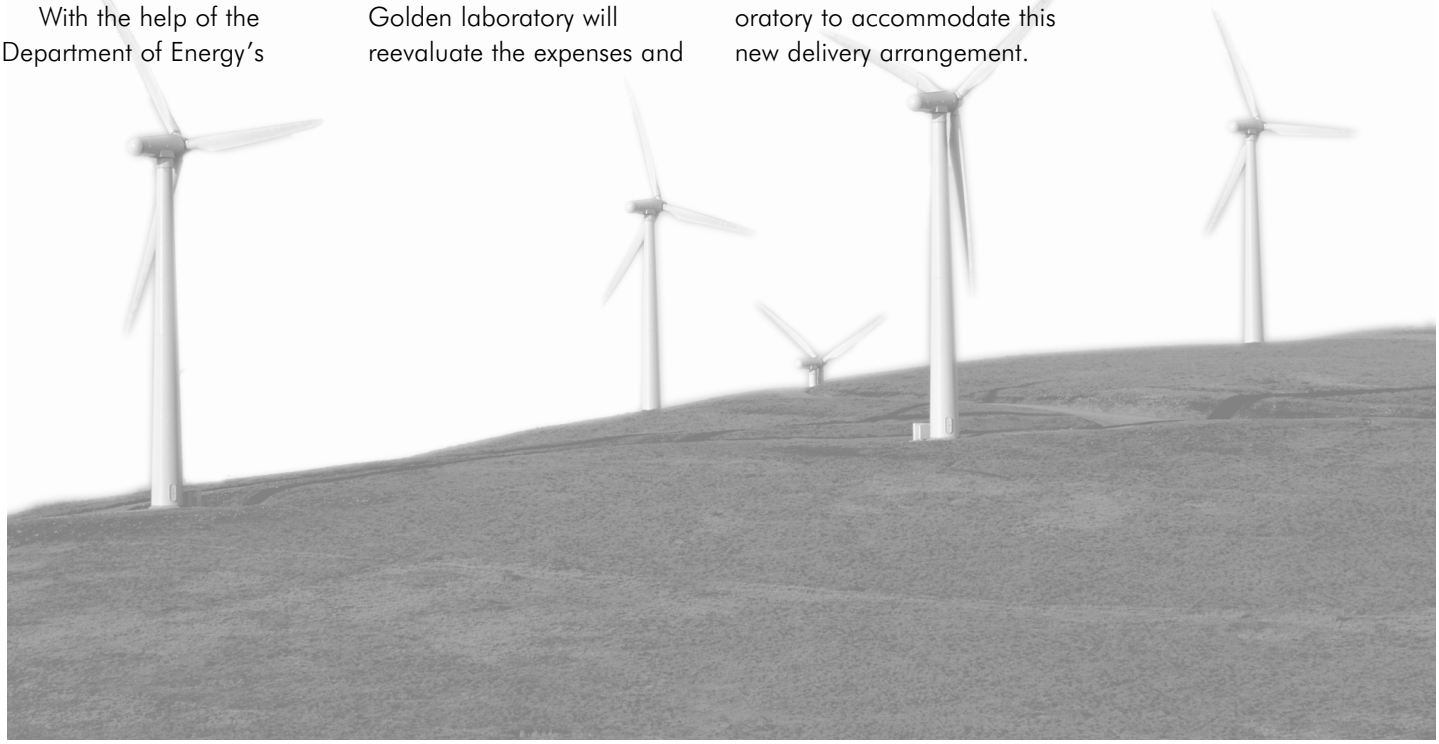
In a continual effort to practice what it preaches, EPA's Golden, Colorado, laboratory is using a green power alternative to traditional forms of energy. Since November 1, 1999, the Public Service Company of Colorado has supplied the 34,100-square-foot laboratory with electricity generated by wind turbines through a project called Windsource℠. The project offsets as much as 20 percent of the laboratory's more traditional energy sources such as coal, oil, natural gas, or nuclear. By choosing Windsource℠, EPA is supporting an energy source that produces no air, water, or waste emissions, and helping strengthen markets for renewable energy.

With the help of the Department of Energy's National Renewable Energy Laboratory, the Golden laboratory collaborated with Public Service Company to make the green power purchase possible. The contract between Public Service Company and EPA was signed September 1, 1999, and allows the laboratory to purchase green power in "blocks" on a monthly basis for 3 years. The laboratory will purchase 320 blocks of wind power per year, which is equivalent to 384,000 kilowatt hours (kWh) and represents 17 percent of the laboratory's total electricity based on 1999 electricity consumption. (The average home uses approximately 7,200 kWh a year.) At the end of the 3-year period, the Golden laboratory will reevaluate the expenses and energy efficiency of wind power.

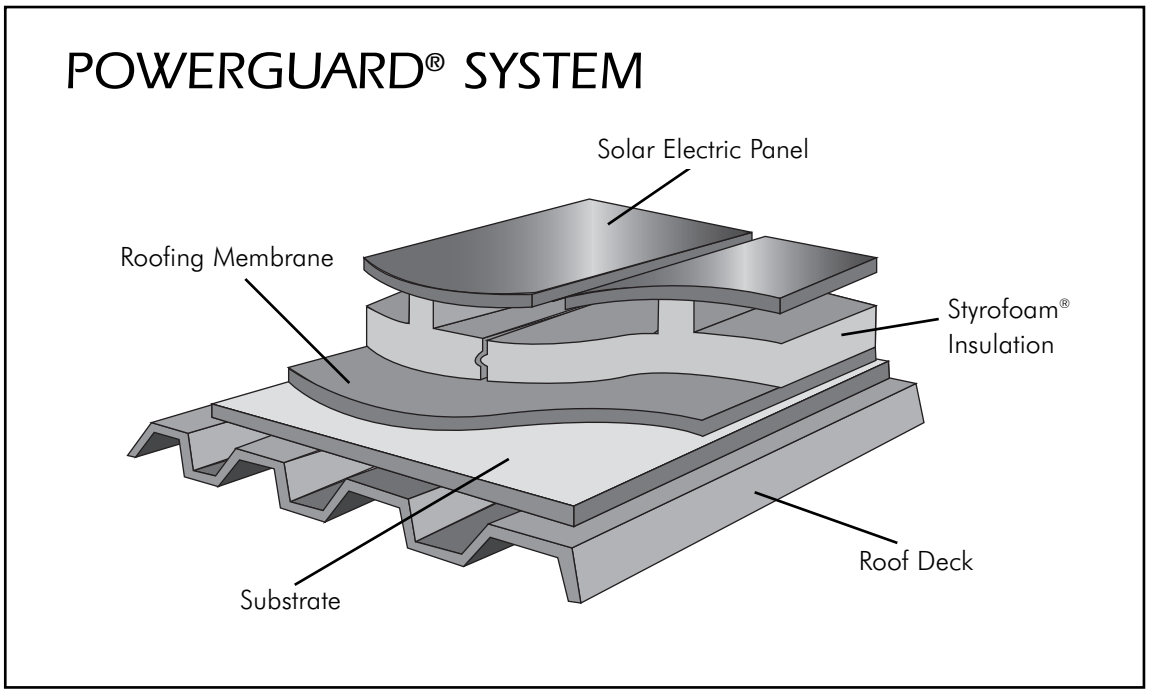
Because current green power sources are slightly more expensive than conventionally generated power, EPA financed its green power purchase by adopting a less expensive source of natural gas. Formerly, the laboratory paid Public Service Company for the natural gas it used as part of its regular utility bill. To save money, the laboratory now buys its natural gas directly from the wellhead in Oklahoma and pays Public Service Company only for the cost of transporting the gas to the Golden laboratory, saving approximately $10,000 per year by eliminating "middle man" charges. EPA installed a gas meter at the Golden laboratory to accommodate this new delivery arrangement.

Golden's green power comes from Public Service Company's Ponnequin Wind Facility, built on a buffalo farm on the Colorado and Wyoming border. The wind facility has 29 wind turbines that generate up to 700 kilowatts of energy each, supplying Colorado residents with approximately 20 megawatts of power. (One megawatt of wind power can serve the electricity needs of more than 300 customers.)

For more information on this project, contact Dianne Thiel at 303 312-6389 or <thiel.dianne@epa.gov> or Sue Datson at 303 312-7087 or <datson.sue@epa.gov>.



PV Installation Planned for EPA's National Computer Center



Continuing its trend of alternative energy use, EPA is preparing to launch a partially solar-powered computer center in its new North Carolina facility. When construction on the National Computer Center, and its host facility in Research Triangle Park (RTP), is completed, it will mark the opening of one of the largest photovoltaic (PV) installations on the east coast. The 100-kilowatt, integrated roof power system will convert the sun's light into energy, feeding it directly to the building and supplementing the main power utility.

By partnering with Virginia Alliance for Solar Electricity (VASE), Solarex, PowerLight, and the Department of Energy (DOE), EPA successfully arranged for $500,000 in financial assistance for this $800,000 project. Substantial financial assistance also was provided by DOE's Renewable Energy Project Demonstration Program. Among one of the largest single PV installations in a federal facility, the RTP computer center not only gives EPA the opportunity to demonstrate the effectiveness and marketability of an alternative technology, but it also serves as a powerful example of the Agency's commitment to sustainable energy principles. In addition, the PV system supports the Million Solar Roofs initiative, which challenges American businesses and communities to install solar systems on one million roof tops by 2010. More specifically, the RTP installation supports President Clinton's 1997 commitment that the federal government alone will install 20,000 solar rooftop systems by 2010.

The PV technology for the computer center is produced by Solarex Corporation. The system features a PowerGuard PV roof tile assembly, manufactured by PowerLight, which incorporates PV cells backed with insulating polystyrene foam, turning solar energy into usable power while increasing the building's thermal insulation. EPA expects to complete the building and solar installation by December 2000. For more information on the PV system at the National Computer Center, contact Chris Long at 919 541-0249 or <long.chris@epa.gov> or Doris Ellis at 202 564-8038 or <ellis.doris@epa.gov>.

Doctors "Do No Harm" To Improve Human Health and the Environment

The Hippocratic oath, to which all physicians must swear allegiance, requires doctors to "Do no harm." With assistance from EPA, the National Association of Physicians for the Environment (NAPE) is applying that directive beyond the operating room and hospital walls to examine the broader environmental impacts of the medical profession's activities on human health.

EPA's Assistant Administrator for the Office of Administration and Resources Management, Romulo Diaz, Jr., addressed nearly 300 attendees at a recent NAPE conference on biomedical research at the National Institutes of Health in November. Mr. Diaz introduced Labs21, EPA's newest environmental efficiency initiative, which can help NAPE implement its "Pollution Prevention is Disease Prevention" philosophy. (Read "New Laboratories Initiative Announced" on the cover of this issue for more information on Labs21.) With a greater emphasis on biomedical research expected in the next century, NAPE and EPA see many opportunities for medical researchers to apply Labs21 principles. These principles will help:

- Lower laboratory utility and operating costs.
- Reduce health and safety risks.
- Improve facility management.
- Improve community relations.
- Lower insurance premiums.

In addition to promoting the Labs21 goals, NAPE is dedicated to eliminating nearly all hospital-generated mercury waste by 2005, reducing total hospital waste volume 33 percent by 2005 and 50 percent by 2010, and is targeting additional substances for pollution prevention and waste reduction projects. NAPE is pursuing these goals in conjunction with the American Hospital Association, EPA's Office of Pollution Prevention, and EPA's ENERGY STAR® programs.

For more information about NAPE and its partnership with EPA, visit the association's Web site at <www.napenet.org> or contact Phil Wirdzek at 202 546-2094 or <wirdzek.phil@epa.gov>.

EPA's Energy Management Activities Detailed in Report

EPA has submitted its annual report to the President on its activities to meet energy, water, and greenhouse gas reduction goals in the previous fiscal year. The report, *The U.S. Environmental Protection Agency's Energy Management and Conservation Programs Report for Fiscal Year 1999*, addresses EPA's energy and water efficiency and conservation activities for the buildings and vehicles it owns and operates.

Executive Order (EO) 13123, *Greening the Government Through Efficient Energy Management*, signed in the spring of 1999, mandates that all federal agencies provide energy and water consumption data for all of their laboratories and other industrial facilities, unless a facility meets exemption criteria developed by the Department of Energy. In previous years, most agencies did not report energy consumption data or set reduction goals for laboratories or industrial facilities. As an environmental leader, however, EPA has provided consumption data for all its laboratories since 1993, and has been striving to reduce energy and water consumption in these energy-intensive buildings. Although EO 13123 allows EPA to set lower standards, the Agency will continue to work toward achieving the original, more stringent energy reduction goals required of nonindustrial facilities.

The energy management report includes detailed information on the following:

- EPA's energy performance goals.
- Energy-efficiency implementation at EPA facilities.
- Facility-by-facility energy and water reporting.
- Energy and water conservation measures being incorporated in new construction.
- Partnerships with other agencies.
- Incentive awards to employees involved in energy-efficiency measures.
- An appendix of tables containing energy and water consumption data for each EPA laboratory for fiscal year 1999.
- An appendix containing EPA's alternative fuel vehicles acquisition report.

For a copy of the report, contact Phil Wirdzek at 202 564-2094 or <wirdzek.phil@epa.gov>.

Current Energy and Water Consumption And Future Plans

The energy consumption table in the last issue of *Greening EPA* (page 4) contained a decimal error. The "Net Difference" for Btus per square foot for fiscal year (FY) 1995 to 1998 should have been -0.85 and not -8.5, as initially given. We apologize for any confusion this might have caused. Below is an updated table, which includes FY99 data.

To meet its goal of reducing energy consumption 30 percent by 2005 based on the 1985 baseline, EPA will rely on aggressive energy-efficiency projects financed through energy savings performance contracts (ESPCs). In 2000, EPA will see the actual energy-efficiency gains of its ESPC-financed project at Ann Arbor, Michigan, which guarantees a 66 percent reduction in energy. These same engineering concepts will be replicated in other EPA laboratories.

EPA also is purchasing renewable energy and installing renewable energy technologies at many of its laboratories. In mid-1999, for example, EPA purchased 100 percent renewable electricity for its Richmond, California, laboratory and at the end of the year began purchasing almost 20 percent wind power for its electricity needs at its Golden, Colorado, laboratory.

Percentage of Change in EPA Laboratory Energy and Water Consumption From FY95 and FY96 to FY00

	Energy			Water		
FACILITIES	**FY95 Btu/ft²**	**FY99 Btu/ft²**	**Difference FY95 to FY99 (%)**	**FY96 H_2O (gal)**	**FY99 H_2O (gal)**	**Difference FY96 to FY99 (%)**
REGION 1						
Narragansett, RI	396,457	411,578	3.31	3,059,533	4,276,556	39.78
REGION 2						
Edison, NJ	58,359	73,291	25.59	5,308,548	5,911,444	11.36
REGION 3						
Fort Meade, MD[1]	N/A	570,576	N/A	N/A	12,132,300	N/A
REGION 4						
Athens ORD, GA	255,387	248,541	-2.68	5,221,059	4,311,461	-17.42
Athens ESD, GA	N/A	503,595	N/A	N/A	5,358,964	N/A
Gulf Breeze, FL	255,435	236,411	-7.45	8,098,500	5,920,509	-26.89
Montgomery, AL[2]	350,739	350,739	0	1,315,440	1,315,440	0
RTP, NC	492,011	530,033	7.73	72,890,935	57,596,535	-20.98
REGION 5						
Ann Arbor, MI	569,409	540,573	-5.06	18,084,905	16,662,856	-7.86
Duluth, MN	316,286	241,824	-23.54	2,656,251	1,566,265	-41.03
Cincinnati, OH	370,019	348,164	-5.91	35,142,735	39,998,289	13.82
REGION 6						
Ada, OK	310,105	239,260	-22.85	2,108,011	5,672,232	169.08
Houston, TX[3]	540,606	547,353	1.25	5,270,253	5,797,000	9.99
REGION 8						
Golden, CO[4]	N/A	484,226	N/A	N/A	1,497,281	N/A
REGION 9						
Las Vegas, NV	287,793	308,443	7.18	8,938,000	6,914,240	-22.64
Richmond, CA[5]	633,874	415,803	-34.40	117,436	258,094	119.77
REGION 10						
Manchester, WA	261,018	296,234	13.49	2,358,451	2,429,370	3.01
Newport, OR	194,688	189,420	-2.71	963,000	827,000	-14.12
Corvallis, OR	273,549	253,656	-7.27	4,946,120	6,147,491	24.29
Net Difference	359,489	375,263	4.39	176,479,176	184,593,327	4.60*

*NOTE: EPA's FY99 water consumption actually decreased 6.16 percent compared to FY96 when the new facilites (Fort Meade, MD; Athens ESD, GA; and Golden, CO) are excluded.

[1]Estimated.
[2]Estimated.
[3]For Houston, FY97 water data was used instead of FY96 because FY96 water data was not available.
[4]Estimated.
[5]Richmond's purchases of renewable power are not included in its Btus per square foot total.

Events Calendar

NATIONAL POLLUTION PREVENTION ROUNDTABLE
Where: Boston, Massachusetts
When: March 21 to 24, 2000
Contact: 202 466-3908

The National Pollution Prevention Roundtable's Spring Conference will focus on the latest in pollution prevention policy and regulatory and technical assistance initiatives. Plenary sessions will feature lawmakers and other high-ranking government officials who will discuss ways that pollution prevention can be included in federal policy, as well as at the state and local level.

FEDERAL UTILITY PARTNERSHIP WORKING GROUP/EDISON ELECTRIC INSTITUTE NATIONAL ACCOUNTS WORKSHOP
Where: New Orleans, Louisianna
Date: April 17 to 18, 2000
Contact: Melissa Hatcher at 202 479-2748 or mhatcher@energeticsinc.com.

Topics of discussion for this workshop will include updates of the FEMP Utility Services Program, the White House workshop, utility commitment, status of federal energy projects, Executive Order 13123 working group, and implementation of utility contracts at federal sites. Registration and detailed information on the National Accounts Workshop is available at <www.eei.org/na/>.

LABORATORIES FOR THE 21ST CENTURY
Where: San Francisco, California
When: September 6 to 8, 2000
Contact: FEMP Workshop Hotline, 703 243-8343

Sponsored by EPA, FEMP, NAPE, and AIA the goal of the conference is to help private and public sector laboratory designers, engineers, owners, and operators work together to reduce costs and increase laboratory design and operational efficiency. There will be presentations on efficiency; renewable energy; and designing, building, and operating low-energy laboratory buildings. For additional information, please visit <www.epa.gov/labs21century>.

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