

Bringing energy technology ideas to New Hampshire's businesses, cities, towns, and schools.

Program offers training on high-performance schools

A regional "Workshop on High Performance, Energy-Efficient School Design and Construction" drew 75 attendees in Portsmouth on January 10.

Sponsored by the regional Partnership for High Performance Schools, the workshop offered school board members, school administrative personnel, school facilities managers, and local school building committee members a day of resources, technical assistance opportunities, and a sound rationale for choosing a high performance school building in the first place.

The Partnership for High Performance Schools, a collaboration of the Rebuild New Hampshire program at the New Hampshire Governor's Office of Energy and Community Services, the Northeast Energy Efficiency Partnerships, and the Boston Regional Office of the US Department of Energy, is seeking to make high performance building design and construction techniques and practices more widely accepted and used.

Deane Evans, Research Professor at the New Jersey Institute of Technology, presented and discussed *High Performance School Buildings: Resource and Strategy Guide*, pointing out the educational, economic, and environmental benefits and advantages of high performance buildings. He answered questions about the "building blocks" that go into creating and maintaining such a structure.

An afternoon panel of school leaders already involved in high performance building planning and execution offered "lessons learned" and answered questions on "how to do it." The day ended with break-out sessions to allow state-specific discussions of opportunities and hurdles. The overall goals for the day were to identify school districts contemplating new or renovation construction to be sure they are given the opportunity to consider the benefits of choosing a high performance building to meet their needs. The Partnership is planning to provide follow-up guidance and assistance to those districts that seek it.

For more information about the workshop, contact Jim Rutherford at the Northeast Energy Efficiency Partnerships (jrutherford@neep.org), or Kirk Stone at the Rebuild New Hampshire Program (kstone@gov.state.nh.us).



Officials including Governor Jeanne Shaheen participate in ribbon cutting at Wassau plant.

New co-gen turbine powers Groveton paper mill

Employing new turbine and waste-heat recovery technologies, Wausau-Mosinee's new electric and steam generating plant saves the Groveton mill money and reduces pollution.

The natural-gas fired turbine generates 7.5 megawatts—all the electricity the plant needs—while heat from its exhaust produces steam to run the plant's paper-making process.

GSCCC Joins National Clean Cities Programs

Last month, the Granite State Clean Cities Coalition (GSCCC) was accepted into the U. S. Department of Energy's National Clean Cities Program.

A project of the Governor's Office of Energy and Community Services and the NH Department of Environmental Services, GSCCC is working to expand alternative fuels use with the dual goal of reducing air pollution and lessening U.S. dependence on foreign oil.

The Coalition is planning a designation ceremony for May 31.

Clean Cities brings together local and national leaders in business and government to advance its goals. The initiative provides access to government grants for the purpose of advancing fuel choices in transportation through the actual purchase of vehicles or creation of a new fuel infrastructure.

For information, visit our website at www.nhecs.org.

How much is how much?

Ever wonder how much pollution you save when you reduce electric use?

In N.H., each kilowatt hour used creates 14.8 lbs. of CO₂; .1 lb. of sulfur dioxide (SO_x); and .03 lbs of nitrous oxide (NO_x).

For more information, visit nhecs.org.

Groundsource heat pumps important clean energy source

Groundsource heat pumps (GHPs) are already in use in New Hampshire, allowing Granite State residents to tap into the earth's energy.

As the name implies, a groundsource heat pump is a means of drawing water—warmed or cooled by the ground temperatures (warmer than outside air in the winter and cooler in the summer) — into a building through underground pipes.

Their benefits are beginning to be used in commercial applica-

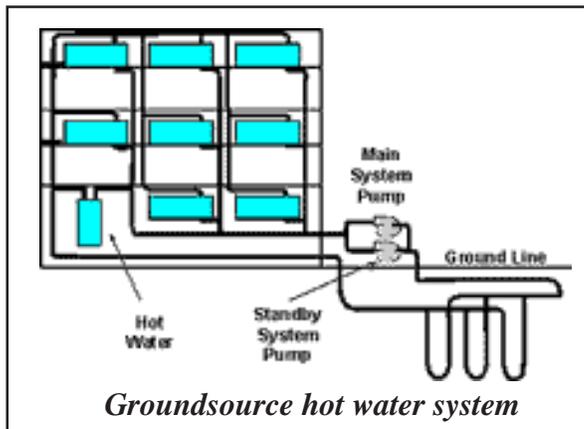
tions as well. The technology can be applied to virtually any size building. GHP energy cost savings vary, but New Hampshire, with cold winters and relatively hot summers, is well suited for GHPs.

In commercial buildings, typical energy savings range between 45 and 70 per-

cent—and maintenance costs about 50 percent—compared to conventional equipment.

reduced heating and cooling costs, other GHP advantages include using 25% less refrigerant than split-system air-source heat pumps or AC systems, reduced interior space requirements and quieter operation.

The complete cost ranges from \$3,800 to \$5,200 per 350 to 400 square feet.



In addition to increased operating efficiency, translating to

Industrial Assessments jump start savings

The Industrial Assessment Center (IAC) at the University of Massachusetts provides energy audits for small and medium-sized manufacturing plants in New England.

To be eligible for IAC services, plants must have annual sales of \$75 million or less and no more than 500 employees, and with energy costs of \$1.75 million a year or less.

With funding from the U.S. Department of Energy, the IAC's no-cost energy efficiency analyses have helped more than 400 businesses with more than 39 million square feet of buildings, annual gross sales totaling \$6.8 billion and energy use of more than \$160 million annually.

In New Hampshire, the IAC has performed

nine assessments, and has four more audits scheduled.

The program objectives include plant waste reduction and productivity improvements. With a menu of more than 2,300 energy conservation

measures in their repertoire, the IAC's average recommended annual cost savings is \$30,000 annually per plant at an average payback of 15 months.

The assessments, which comprise analysis of energy con-

sumption and recommendation of cost saving measures, are performed by engineering faculty and students from UMass.

For information, visit IAC's website at www.ceere.org/iac.html.

Building Energy 2002 scheduled in March

Building Energy 2002 will take place at Tufts University in Medford, Massachusetts on March 20-23, 2002.

Organized by the North East Sustainable Energy Association (NESEA), the conference will offer solutions to some of the energy challenges facing America. Renewable energy and high-performance energy-efficient buildings offer significant environmental benefits, in-

cluding ways to increase energy security and decrease dependence on imported oil.

Building Energy 2002, will offer useful ideas you can quickly incorporate into your business or profession.

Building Energy is the premier conference and trade show bringing together experts in

the fields of renewable energy and green building. Focusing on practical solutions to

such important issues as electricity deregulation, rising energy prices, sustainable building practices and healthy, quality construction, Building Energy 2002 is designed to be a unique conference that addresses some of the



Heatpump workshop set

If your organization is considering new construction, a March 5 U. S. Department of Energy workshop on geothermal heating and cooling could be time well spent.

Hosted by the Rebuild America Program, the 8 a.m. to 4 p.m. program will include information about planning, installation, and maintenance.

There will also be discussion of how to sell your community, board, or investors on the concept.

An agenda and registration materials are available at www.nhecs.org/sep/rebuildnh.html.

The workshop will be held at the Grapone Conference Center at the Courtyard by Marriott in Concord.

most fundamental sustainability issues. The conference, sponsored by the Massachusetts Technology Collaborative's Renewable Energy Trust, will feature two workshop days and two full conference days with lunchtime tours, an interactive trade show and a public slide show.

For more information, see the NESEA website at www.nesea.org.

EPA New England creates Energy and Climate Change Team

The U.S. Environmental Protection Agency's New England Office is creating an Energy and Climate Change Team to boost energy efficiency and the use of renewable power in the region.

"The creation of the ...Team reflects my conviction that, through greater energy efficiency and development of cleaner energy sources, New England can meet its energy needs while ensuring the health of our environment," said Regional Administrator Robert Varney, the former commissioner of New Hampshire's Department of Environmental Services.

Energy use has an enormous impact on

New England's air quality, water quality, climate, forests and natural habitats. By pooling and coordinating staff resources, Varney said the new Energy and Climate Change Team will be in a better position to promote energy efficiency and renewable power, support states efforts to reduce greenhouse gas emissions and streamline permitting of energy-related facilities and infrastructure.

Among the team's specific goals is achieving the recent commitment by the New England Governors, along with the Eastern Canadian Premiers, to reduce emission of greenhouse gases to 1990 levels by 2010.

Varney said the Energy and Climate Change Team will promote increased energy efficiency through such voluntary initiatives as EPA's Energy Star Program – a program that has already saved New England businesses and organizations more than \$1.9 billion on their energy bills – and the national Performance Track Program, which has 33 New England members.

For more on energy efficiency programs, visit the EPA Energy Star website at <http://www.energystar.gov/> or the Performance Track website at www.epa.gov/region1/topics/energy-practice/prack.html.



Participants in ceremonies welcoming UNH as a RebuildNH Partner include, left to right, Jeff Brown, Rebuild America, Kirk Stone, manager of the RebuildNH program at ECS, UNH Energy Manager Jim Dombrosk, ECS Director MaryAnn Manoogian, and Christine Reinfelds, assistant director of the US Department of Energy's Boston Regional Office.

UNH energy efficiency in top 5%, DOE says

The University of New Hampshire is in the top 5 percent of energy efficient research universities in the nation, saving NH taxpayers some \$4 million annually through innovative energy savings measures, according to a study by the Oak Ridge National labs.

Results of the study were announced in

December at ceremonies in Durham marking UNH's induction as a partner in RebuildNH, a federally funded program to help municipalities and school districts become more energy efficient.

Typical of the efforts that have saved UNH money and electricity is a joint program of the University's Energy Office and Computer and Instructional Services. It saves \$75,000 a year by encouraging people to enable the sleep function on their PC or Mac monitors.

"A lot of people don't realize that the monitor is the thing that uses the most power," says UNH Energy Manager Jim Dombrosk.

"So if you let them sleep when they are not in use, you stop wasting money."

For information, visit the UNH Energy Office web site at www.energy.unh.edu.

New DOE software determines audit payoff

Perhaps you've considered an energy audit, but you're unsure whether it's worth the cost.

Now the U. S. Department of Energy (DOE) is offering many commercial and industrial energy users an opportunity to answer that question by measuring the efficiency of their buildings against similar facilities nationwide.

Referred to as building benchmarking, the program offers a software oppor-

tunity to gather cost and use information that will indicate whether an audit will pay for itself in energy savings.

The data entered into the "portfolio manager" can also be used to set energy performance goals, to enhance the value of the asset, and/or to receive an ENERGY STAR label for your building.

The program is available to buildings

where at least 50 percent of floor area is used for general office, professional, and administrative work, economy, mid-scale, up-scale, and upper up-scale hotel/motels, facilities for grades kindergarten through 12th grades, and supermarkets and grocery stores with a minimum of 5,000 total square feet.



New semiconductor heat-to-electricity process announced

An MIT scientist and a colleague have invented a semiconductor technology that could allow efficient, affordable production of electricity from a variety of energy sources without a turbine or similar generator.

Many researchers have worked to convert heat to electricity directly without the moving parts of a generator. Among other advantages, such a device would be virtually silent, vibration-free, and low in maintenance costs. Until now, however, the amount of electricity they produce from a

given amount of energy has been low.

The new device is two times more efficient than its closest

The new device is two times more efficient than its closest commercial competitor.

commercial competitor. "That such good results were obtained in the first generation of the new device technology ... indicates that the general approach has great promise for improved performance in more mature implementations," write Associate Professor Peter L. Hagelstein of MIT's Department of Electrical En-

gineering and Computer Science and Dr. Yan Kucherov of ENECO, Inc., in the paper they delivered at

the Materials Research Society's fall meeting in Boston.

The new technology, which essentially replaces traditional vacuum-gap technology with a multi-layer semiconductor structure, could have major implications for the recovery of waste heat from power plants and automobiles. For example, the heat lost

through engine exhausts might be captured by the technology and converted into electricity to augment or replace a vehicle's electrical and air conditioning systems. It could also be important in the primary generation of electrical power.

An added plus: the technology is environmentally friendly.

"Solid state thermal to electric energy conversion converts energy due to how electrons transport in the conductor, a process that generates no pollution," Hagelstein

said. He noted, however, that some of the materials used in the present generation of devices are toxic, which will affect the eventual disposal of the devices.

Technical development is now focused on optimizing the types of materials used in the construction of the thermal diodes.

Hagelstein is a technical consultant for ENECO, which is developing the technology and has applied for patents in the US and Europe. At least one patent has been issued.

Blaisdell is new Industries of the Futures manager

Elisabeth Blaisdell of New Castle has been named project manager for the Industries of the Future (IOF) program at the Governor's Office of Energy and Community Services (ECS).

The program, run jointly by the WasteCAP program of the Business and Industry Association (BIA), is funded by the U. S. Department of Energy to help key industries in New Hampshire become more efficient in resource and energy use.

A 1999 graduate of the University of New Hampshire with a degree in environmental science and international affairs, Blaisdell was most recently a

project coordinator for the Governor's Recycling Program and the Northeast Resource Recovery Association. She was responsible for coordinating creation of a major plastics recycling and manufacturing facility scheduled to open later this year.

In 1998, as a program specialist with the U. S. Department of State in the Bureau of Oceans, Environment, and Science, Blaisdell coordinated interagency meetings on international environmental, scientific, and technological issues.

"The focus of Industries of the Future on bringing new technologies and processes to

New Hampshire industries to make them more competitive is the kind of thing that has interested me for a

long time," Blaisdell said, "so this is a great opportunity."



New IOF Manager Betsy Blaisdell, right, and WasteCAP Executive Director Barbara Bernstein.

Industries of the Future works with companies in the wood products, metal cast-

ings, and plastics business to help find solutions that will make these energy-intensive industries more efficient and competitive. The IOF strategy is to foster partnerships between industry and government, education and research institutions to find new so-

lutions to industry needs. More information is available at www.nhiof.org.

Blaisdell said that working with New Hampshire businesses was one of the best parts of developing the plan for the new plastics facility, which will turn a mix of all plastics into "soundboard" and decking, long-lasting, recyclable products available in a range of colors and textures.

The Milton, N. H. facility will employ 35 people and use an emission-free process, Blaisdell said. "This will be a model for recycling all plastics," she added.