

PARTNER UPDATE

Weatherization and Intergovernmental Program

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New Youth Center Benefits Residents and Environment

A youth facility under construction in Christiansburg, VA, is being built to help at-risk teenage boys overcome their troubled pasts. It will also help the environment by using less energy, thanks to a Rebuild America partnership led by Community Housing Partners Corporation (CHPC).

The TEKOA Boys Residential Campus is designed to be a calm, peaceful place for its residents to overcome their emotional, psychological and social challenges. The design is centered around an inner courtyard – a quiet space for reflection.

CHPC, the center's builder and operator, is a community development corporation that began as a weatherization program in 1975 to help low-income rural families with home repairs and energy-efficiency projects. Over the years, the non-profit organization's services have grown to include project development and economic and social services, both in Virginia and parts of Florida.

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University of Arkansas at Fayetteville: a peaceful campus growing more efficient.

University of Arkansas Treats Campus Utilities as a Business

Financing is one of the central challenges for upgrading the buildings on a university campus, and part of that challenge is the need to make clear where the money is going and what additional cash flows may be needed.

The Physical Plant Department of the University of Arkansas at Fayetteville decided to try adopting a business model for its utility operations. That restructuring helped cement the commitment of officials when it came time to seek approval for borrowing millions of dollars for energy-efficiency improvements and infrastructure expansions.

Like a well-run business, the utility operations accumulate financial data as they purchase energy while delivering electricity, steam and chilled water to 85 buildings around the campus. The utility operations charge a fee to the buildings as a commercial enterprise would to its customers, despite the fact that the campus operations are an in-house transfer of resources.

"We build these financing streams into the system," says Scott Turley, associate director for design and utilities at the University of Arkansas at Fayetteville. "We are an entity that functions like a utility company. It makes the financing of it all work smoothly."

The resulting performance records made it easier for the managers of the

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The Professionals Explore Multifamily Buildings at Meeting



Rick Diamond

The U.S. Department of Energy (DOE) joined in sponsoring the Multifamily Buildings 2003 Conference in New York City June 9-11. The international conference brought together about 400 technical experts in the multifamily buildings field to discuss new energy

and architectural practices, technologies and solutions for multifamily buildings, including public and affordable housing.

“The Department of Energy is a full partner in the efforts to promote energy awareness and efficiency in the building industry,” writes David Garman, assistant secretary for energy efficiency and renewable energy. “We support the efforts and accomplishments of those who will bring the best new ideas, knowledge and thinking to the forefront of this effort.”

The conference was held at the Marriott Financial Center in the heart of New York’s financial district. Because many of its residents live in multifamily or affordable buildings, New York City was an appropriate location for the conference. Local design and technical professionals were on hand to share new innovations in city buildings.

The conference served as a training workshop for architects, engineers, energy specialists and other professionals who specialize in multifamily buildings. Several Rebuild America and Boston Regional Office representatives attended the conference to receive and contribute information on advanced topics in the field.

Session topics ranged from health and management of buildings to energy policy and financing.

The Targeted Residential Energy Analysis Tools (TREAT) software, funded by the New York State Energy Research and Development Authority through the Building Performance Market Enhancement Initiative, was highlighted in a conference session. The presenter and president of Performance Systems Development, Greg Thomas, showcased how TREAT was developed and the value it gives

professionals in residential and multifamily housing in their energy analysis. The software was recently approved by DOE for use in the Weatherization Assistance Program for single-family homes, mobile homes and multifamily buildings. The New York State Division of Housing and Community Renewal is currently exploring the use of TREAT in its statewide weatherization program.

Matt Pesce, Rebuild America housing sector coordinator, participated in two presentations on performance contracting. He discussed the financial and energy successes in performance contracts as well as potential barriers in the process. The 83 performance contracts that Pesce discussed have yielded \$192.4 million in financed and leveraged investment and \$24.9 million in annual savings.

Other presenters and subjects included: Louis McArthur, partnership representative, Louisiana Department of Natural Resources, “Financing Energy Projects: Changing Role of States and Municipalities”; Rick Diamond, products and services representative, Lawrence Berkeley National Laboratory, “Ventilation, Air Infiltration, IAQ and Health”; Cyane Dandridge, program coordinator, “ENERGY STAR®” and “Technologies and Occupant Behaviors and Impacts.”

One major focus of the conference was cutting-edge energy-efficient technologies used in multifamily and affordable housing facilities. Sponsors of the event showcased these innovative products in the exhibit hall. Several of the technologies displayed at the conference and mentioned in sessions were available through rebate programs, including select ENERGY STAR products. Attendees were able to take these incentives back to their communities

for use by residents and property owners.

Participants found the knowledge about implementing energy-saving technologies and their long-term benefits to be more valuable than the rebates. Many learned that property owners and residents are more likely to institute energy solutions if they understand the financial benefits that accompany energy savings.



The Association for Energy Affordability Inc. planned and managed the Multifamily Buildings 2003 Conference. Other principal conference sponsors included the New York State Energy Research and Development Authority, the New York City Housing Authority and DOE.

For more information on the Multifamily Buildings 2003 Conference, visit www.aeanyc.org. To learn more about TREAT, visit www.PSDConsulting.com.

High Standards Set for Schools in Maine

Through individual decisions by local school boards and changes in state law, Maine is raising the standards high on energy efficiency in its schools. Behind those changes are the efforts of diverse experts and advocates, many of them linked together through the network of Rebuild America.

A technical seminar in June on high-performance schools was only the latest event in an increasingly successful Rebuild America effort in Maine. (See sidebar, page 4.)

“Those 100-plus designers and schools officials in attendance at our workshop were there to learn how to build the kind of high-performing schools made financially possible because of opportunities set in motion by Rebuild America a year ago,” says Doug Baston, a regional customer service coordinator for the program.

Baston describes not only financial assistance but a variety of efforts by Rebuild America’s partners that led to adoption of better energy-efficiency standards.

Thanks in part to those partners, Baston guesses that as many as four out of five schools in the state over the next few years will be high-performance schools. Recent state legislation, written in consultation with the program’s partners, mandates that all new schools exceed the state’s energy code, ASHRAE 90.1-99, by at least 20 percent.

The road to those milestones started in the spring of 2002, after discussions between the Maine School Management Association (MSMA, a federation of school boards and superintendents, and a Rebuild America partnership), Efficiency Maine (the conservation program of a public system benefits fund in Maine) and the Maine Department of Education, facilitated with support from the U.S. Department of Energy’s (DOE) Boston Regional Office, in particular from Regional Team Lead Greg Davoren.

That spring, Baston proposed to Davoren that DOE support a novel program to nudge the school construction market in the direction of energy-efficient designs and technologies. It was to be based at MSMA.

Baston suggested it can be a mistake to send energy people to talk efficiency to school people - that the two are from separate cultures. His idea was for MSMA to contract with a retired school superintendent who had school construction experience and who knew personally most of the school superintendents in the state - not difficult in a state of just over a million people. The retired superintendent would “ride circuit” to sell ideas about energy efficiency to his peers. Rebuild America would then provide the energy

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View From DC

by Daniel Sze

The Board of Directors of the National School Boards Association has unanimously endorsed the Rebuild America/EnergySmart Schools program. That nod of respect from an important organization reflects the fact that so many of our projects are in schools, where our partnerships improve buildings and educations together.

Joseph S. Villani, deputy executive director of NSBA, sent the U.S. Department of Energy (DOE) a letter stressing the value of our school activities “using a holistic approach to improving the teaching and learning environment by providing resources to encourage healthy high-performance schools and energy education for the consumers of tomorrow.”

The endorsement, voted at a June 6 board meeting, also reflects the widening effects of DOE’s *Energy Design Guidelines for High Performance Schools*, a seven-book series of guidelines tailored to climate zones. Put together with contributions from the national energy laboratories and experts from the business sector, they were accompanied by the *National Best Practices Manual for Building High Performance Schools*.

Students are more comfortable, healthier and happier in schools where temperature and humidity are properly modulated and lighting is sufficient. There are ample indications that students learn better in such environments.

At a higher level of education, the National Association of College and University Business Officers and the Association of Higher Education Facilities Officers are Rebuild America Strategic Partners with their own logical interests in our work. I was happy to be chosen to speak to their co-located conference July 28 in Nashville, TN.

Rebuild America also helps educate people beyond the groves of academe. Earlier this year, the American Institute of Architects chose to make DOE/Rebuild America a Registered Provider of continuing education for members of the professional association. To AIA, another Strategic Partner, there is real value in our technical seminars and the presentations we can offer at our conferences.

Other professional societies would do well to think about such a formalized relationship. This is more than a “nice idea.” As technologies and standards change, professionals need to keep up to date. Our program, informing people about the best technologies and standards, can contribute to the education of professionals long after graduation.

Dan Sze is National Program Manager of Rebuild America. Your comments are always welcome at danielsze@rebuild.org.

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Maine Schools

expertise to back him up. He would be the salesman. Rebuild America would be tech support.

The idea became a reality through a contract with Dale Doughty, who traveled the state to interest communities and school officials in designing high-performance schools.

Rebuild America provided local decision-makers with the resources and technical assistance they needed to make informed choices.

Energy decisions often are made by default. Building orientation and solar energy gain, for example, can be fixed by the choice of a site. To affect those earliest decisions, Doughty also was responsible for intelligence gathering and outreach to engage communities before they had committed to architects, engineers, sites or designs.

After communities began thinking about high-performance schools, Efficiency Maine was persuaded to provide design incentives of as much as \$20,000 per school to help model high-performance options and capital incentives of as much as \$100,000 per school to help finance recommended measures. The Maine Department of Education then was convinced to match those incentives.

Thus a school can receive up to \$40,000 in modeling assistance and \$200,000 in capital incentives for energy-efficiency measures – plus \$10,000 from Efficiency Maine to help achieve either ENERGY STAR® or Leadership in Energy and Environmental Design (LEED) certification.

During 2002-03, Doughty has been in touch with virtually every Maine school district that is contemplating construction, and he has enlisted about 80 percent of them in this program. That means four out of five new schools in Maine should be high-performance schools.

To insure that each new school is operated properly, Efficiency Maine also will require that the facility staff enroll in the Building Operator Certification Program operated by the Northeast Energy Efficiency Partnership, another Rebuild America partnership. Efficiency Maine pays the \$1,600 tuition cost.

“Most of these new schools will become EnergySmart schools in the best sense of those words,” Baston says.

In what Baston calls the “final market transformation victory,” the effort in Maine communities and at Efficiency Maine and MSMA led state Sen. Christopher Hall, chairman of the Maine Legislature’s Utilities and Energy Committee, to introduce legislation requiring that all new schools constructed in the state exceed ASHRAE 90.1-99 by at least 20 percent.

That efficiency standard is a minimum code recommendation by the American Society of Heating, Refrigerating and Air-Conditioning Engineers. It is for all buildings except low-rise residential buildings.

“I think we have established a complementary set of incentives and regulations that makes it likely that any new school built here in Maine will be a high-performing school,” Baston says. “In a little state, a few folks with commitment and a vision can make a real difference. They can change the way things are done.”

For more information, contact Doug Baston, 207-882-7221, email DCBaston@aol.com.

Good Business in Maine

Rebuild America brought the technical expertise of its Business Partners to a June 6 seminar in Portland, ME, to help maintain the momentum toward building energy-efficient schools in that state.

The High Performance Schools Design and Technologies Seminar, held on the campus of the University of Southern Maine, was the second of 14 planned seminars teaming Business Partners and other businesses with program specialists to explain the specialized worlds of lighting, roofing, air quality, mechanical systems and other relevant topics. For Maine, the seminar was tailored to a cold and humid climate, one of seven climatic regions as designated in the U.S. Department of Energy’s series of *Energy Design Guidelines for High Performance Schools*.

More than 100 people attended the seminar, including people from New Hampshire, Vermont and Massachusetts as well as Maine. There were more than 40 architects and engineers in attendance. The split between school and professional personnel was roughly 50-50.

The Maine Public Utilities Commission was a cosponsor, along with Rebuild America, whose National EnergySmart Schools Sector Technical Analyst Larry Schoff served as a presenter and facilitator. Business Partners whose specialists gave presentations included Magnaray, Wattstopper, McQuay International and Sarnafil. Other presentations were offered by two local companies, Semple & Drane Architects and Turner Building Science.

For more information, contact Larry Schoff, 540-961-2184, email lschoff@rev.net or Doug Baston, 207-882-7221, email DCBaston@aol.com.

Texas Energy Office Opens Eyes With Report on Efficiency Activity

Texans are learning what they themselves have begun to accomplish in energy efficiency, now that a report has been issued on state-mandated progress on reducing air pollution.

The State Energy Conservation Office (SECO) released the report, *Clean Air Through Energy Efficiency*, in May with help from Rebuild America. It has since been circulating in the state capital and other cities and towns, where officials at various levels of state and local government are discovering that they have been achieving more than most of them may have expected.

What set so much of the action in motion was a piece of legislation that came to be known as the Texas Emissions Reduction Plan (a.k.a. Senate Bill 5, or SB5), an amendment of the state Health and Safety Code. SB5 was written to reduce air emissions and included mandates for reductions in electricity consumption. It requires political subdivisions of 41 counties (originally 38) to: implement all cost-effective energy-efficiency measures to reduce electricity consumption in government facilities and operations; set a goal of cutting that electricity consumption by 5 percent each year for five years beginning Jan. 1, 2002; and report the efforts and progress annually.

To help those political subdivisions, the Texas Energy Partnership was formed. It combines the resources of SECO, Rebuild America and ENERGY STAR®, a joint program of the U.S. Department of Energy and the U.S. Environmental Protection Agency.

Through a very wide array of retrofits, alternative-energy installations and operational changes, local governments across Texas are reducing electricity consumption and at the same time saving money and restraining air emissions.

“Energy savings are grabbing attention,” says Mike Myers, a Rebuild America customer service coordinator based in Austin. “Energy efficiency and renewable energy are helping communities save money and reduce emissions.”

Although the mandate did not apply to the private sector, it seemed ambitious, even so. The affected counties included all of the largest cities in Texas. There were widespread concerns that the report would reveal too much inertia – city and county governments failing even to plan for action.

Instead, what was revealed was a very big state getting to work on a problem.

Among the results culled from the cities and counties: 194 political subdivisions reported data for 2001, 144 reported data for 2002 and 176 established the 5 percent-a-year reduction goal. Best of all, electricity consumption was cut 6



percent by jurisdictions providing both a 2001 baseline and 2002 data.

The data came from the jurisdictions' self-reporting, which was funneled into the Texas Energy Partnership. The partnership team sifted the data and a mass of local program examples into suitable form for an overview report.

Clean Air Through Energy Efficiency highlights actions taken around the state, from delamping vending machines to devising comprehensive citywide energy policies. The many local program details help explain the achievements in cutting electricity consumption.

Galveston, for example, committed itself to complying with SB5, hired an energy manager and began work with an energy service company. Plano replaced existing traffic signals with light-emitting diode (LED) technology, and Austin is doing the same. Dallas County plans to initiate a building commissioning program. Fort Worth is finalizing detailed audits on 500,000 square feet of buildings.

Substantial results in the first year under SB5 were not assured. The primary necessities of the first year of action were the formation of energy-efficiency plans, the establishment of electricity consumption baselines and the dissemination of information to shape plans.

SECO – under Director Dub Taylor and Deputy Director Perry Been – with Rebuild America and ENERGY STAR did more than produce a report.

“The Partnership provides information on setting goals, determining strategies, and providing leadership support,” explains Taylor in his introductory letter in the report. “In addition, the Partnership has produced brochures, a resource CD, a Web site and numerous workshops.”

For more information, contact Mike Myers, 512-280-7569, email mt4myers@aol.com, or visit www.texasenergypartnership.org, where a PDF of the report is posted under the “News and Events” section.

TECHNOLOGY:

Taking Lighting to the Next Level of Efficiency With R&D Advances in Solid-State Technologies



Most people don't think about light-emitting diodes (LEDs), despite the widening application of this technology in recent years. LEDs illuminate alarm clocks, exit signs, cell phone displays and even flashlights for camping. You've probably seen them while driving - being used in traffic signals or taillights. Although solid-state lighting can reduce electricity costs - an LED traffic light uses up to 90 percent less energy - the technology holds the bigger promise of revolutionizing lighting as we know it.

LEDs consist of inorganic semiconductor material, such as gallium nitride, and a diode. One-way electric current is passed through the diode causing the material to produce light. "It's one of the simplest semiconductor devices you can imagine," explains Jeff Tsao, principal member of technical staff at Sandia National Laboratories.

Organic light-emitting diodes (OLEDs) work on the same principle but use organic materials. LEDs are expensive to produce because of the materials involved. Researchers think that OLEDs will make this technology more affordable by using less expensive semiconductors. However, the technology is less mature than LEDs, which have been around for many years.

Solid-state lighting technologies have the potential to greatly reduce energy consumed by lighting fixtures. Although the incandescent light bulb has been the workhorse of the lighting industry since its introduction, Edison's invention is much better at producing heat than light. Nearly 90 percent of the energy used to illuminate an incandescent bulb is wasted as heat.

If solid-state lighting doubles the aggregate efficiency of lighting, and the technology is widely adopted, then electricity consumption for lighting could be cut in half. If this scenario occurs by 2025, it is projected that consumers in the United States could save \$35 billion per year.

According to Sandia National Laboratories, LEDs produce more light per watt than incandescent lights, and can last up to 20 times longer. However, fluorescent technology produces more light per watt than current solid-state lighting. With advances in the field, researchers expect that LEDs will become much more efficient, producing twice as much light output as a fluorescent lamp using the same amount of energy. LEDs may one day last for 100,000 hours before needing to be replaced.

Producing cost-effective white LEDs would dramatically increase the market penetration of solid-state lighting. When measured in cost per lumen (light output), though, white LEDs are 200 times more costly than traditional lighting sources, according to Sandia National Laboratories.

DOE Analysis

A report produced by the U.S. Department of Energy (DOE) and the Optoelectronics Industry Development Association (OIDA) on the potential of solid-state lighting outlines the various methods to produce white light from LEDs. One process uses a blue LED with a yellow phosphor coating that gives the appearance of white light. Although this method is the most common for current commercial applications, there are color quality concerns.

Another method uses ultraviolet (UV) LEDs and multiple phosphors to produce various colors that, when combined, appear as white light. Researchers will need to find better phosphors and increase efficiency if this method is to become widely used. Sandia National Laboratories recently announced its researchers are using quantum dots - nanoparticles measuring one-billionth of a meter in length - with UV LEDs. This method promises better light quality and control.

A third approach uses three or more colors to produce white light, although it can be costly. However, the DOE/OIDA report states that this method has the best long-term potential to produce high-quality white light efficiently enough to compete with other lighting sources.

Overcoming the technical obstacles preventing white

LEDs from being cost-effective and quickly commercialized will require a sustained commitment by the federal government, industry and academia, according to the DOE/OIDA report.

Legislative Proposals

To further the research and application of this technology, U.S. Sens. Jeff Bingaman (D-NM) and Mike DeWine (R-OH) introduced a bill in July 2001 calling for DOE to lead the Next Generation Lighting Initiative (NGLI). The program would engage private industry and universities by awarding competitive grants that support research, development and deployment of solid-state lighting technologies based on white LEDs and OLEDs.

The Next Generation Lighting Initiative was included in the Senate's version of the Energy Policy Act of 2002. The bill was sent to a House-Senate Conference Committee to resolve the differences in the legislation between the House and Senate versions, but Congress failed to vote on the Energy Policy Act that year.

The initiative was included in H.R. 6, the Energy Policy Act

While solid-state technologies will have a great impact on reducing energy use for lighting, their potential goes far beyond being a replacement for fluorescent lamps and incandescent lights.

of 2003, passed by the House of Representatives on April 11 and sent to the Senate. H.R. 6 authorizes \$450 million for the initiative through fiscal year 2012.

The proposed Energy Policy Act of 2003 (S. 14) included a provision for the Next Generation Lighting Initiative to receive \$450 million over a decade. The full Senate chose to revert to its 2002 energy bill, which has a similar funding provision for the initiative. That set the stage for House-Senate Conference Committee negotiations after August.

Glowing Desks and Curtains

LEDs have already made significant market penetration in exit lighting and traffic signals. Steve Johnson, group leader for lighting research at Lawrence Berkeley National Laboratory, expects the next market breakthrough to be perimeter and stairwell lighting. LEDs will soon be more common in task lamps and counter lighting.

While solid-state technologies will have a great impact on

Light Source	Efficiency	Lifetime
Incandescent bulb	16 lumens/watt	1000 hours
Fluorescent lamp	85 lumens/watt	10,000 hours
Today's white LEDs	25 lumens/watt	20,000 hours
Future white LEDs	up to 200 lumens/watt	100,000 hours

reducing energy use for lighting, their potential goes far beyond being a replacement for fluorescent lamps and incandescent lights.

Sheila Kennedy, AIA, a principal of Kennedy & Violic Architecture, presented a lecture at the National Building Museum this spring addressing the vision of a paradigm shift in lighting as a result of solid-state lighting.

Kennedy designed an electroluminescent desk with support from the Lighting Research and Development Program of DOE's Building Technologies Program and technical assistance from Novatech Inc. The plywood desk incorporates thin, flexible polymer film coated with phosphors. The film illuminates when electric current is

introduced. With the OLED turned on, the desk becomes a light source, giving off a cool, bluish hue. Computers can customize the lighting color or intensity. Circuitry is built into the desk so users can control the light through touch sensors imbedded in the desk. Data ports allow the integration of digital hardware.

Kennedy's firm is also experimenting with curtains that give off light. This technology could be used in various applications such as high-tech clothing for medical or military purposes.

This technology may spark an explosion of creativity in the design industry. It will give architects and designers more options: walls or ceilings that illuminate, interactive displays in windows, and lighting that changes color to set a mood in a room. At an office you could change the lighting to use the best color for a particular task, explains Johnson.

Solid-state lighting allows light to convey information. Just look at the LED count-down walk signals being installed at crosswalks around the country, Tsao says.

The technology will allow better lighting control while using small amounts of energy. However, energy efficiency will probably be the last thing on someone's mind the first time they see a wall glow.

For more information, visit Sandia National Laboratories' Web site on solid-state lighting at <http://lighting.sandia.gov> or read the DOE/OIDA report at http://lighting.sandia.gov/lightingdocs/OIDA_SSL_Roadmap_Summary_2002.pdf.

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New Youth Center

By helping families and communities save energy dollars while encouraging sustainable economic development, the organization's work complements Rebuild America's mission to improve communities through energy efficiency.

To increase the energy efficiency of the complex, Rebuild Virginia supported a workshop for CHPC staff addressing the LEED (Leadership in Energy and Environmental Design) Green Building Rating System™. Tom Fisher, at the time an architect with The Folsom Group, led the workshop. He is serving as the sustainable building consultant for this project, working with 2RW – a Rebuild America Business Partner and the mechanical, electrical and plumbing consultants.

"As advocates for green building, energy efficiency and sustainability, we thought we'd use this building as a model," says Colin Arnold, CHPC's staff architect, who designed the facility.

As a result of the workshop, Arnold altered the project plans to conform to LEED guidelines. "They are fortunate to have Arnold on staff," says Annette Osso, with Rebuild Virginia. "It is unusual to have an architect on staff at a community development corporation," she notes.

CHPC registered the project with the LEED program, and is aiming for gold-level certification.

The 10,800-square-foot complex is being built next to an existing classroom building operated by CHPC. The center is being constructed around a hilltop, rather than on top of it, on an existing clearing. Arnold notes that no trees were removed from the site.

The facility will consist of two buildings – one for dormitory rooms, administrative offices and a meeting room and a second that will house the dining hall and kitchen.

Floor-to-ceiling windows will fill the complex with natural light, while window glazing and deep overhangs prevent the harsh summer sun from overheating the building. The buildings are oriented on an east-west axis to maximize southern exposure. Colored concrete floor slabs will serve as latent heat sources when energy from the low winter sun is absorbed and then released by the material.

Light from man-made sources will be energy efficient. Not a single energy-wasting incandescent light was included in the design. Instead, compact fluorescent light bulbs and fluorescent lights with high-efficiency ballasts will be installed throughout. Arnold is also proposing to use occupancy sensors to further reduce lighting costs.

Overall, the TEKOA Boys Residential Campus is designed to be 50 percent to 60 percent more efficient than a typical building of the same size and purpose, according to models

that follow ASHRAE 90.1 baseline standards.

Life-cycle costs were an important consideration for this complex. Because the residents are adolescent boys, the buildings are designed to take some abuse. Concrete block is used throughout, with color aggregate added to make the material look more like stone than cinder block. Arnold explains that using concrete is a bit more expensive, but worth it when you consider long-term costs and durability.

CHPC is exploring the use of water-source heat pumps, with vertical geothermal wells in the courtyard. By using the courtyard as part of the system, CHPC would not have to disturb another area of the property.

Arnold notes that geothermal is more costly to install, but it should have an eight- to 10-year payback period in this setting. Much of the savings for the complex can be attributed to the geothermal design. The building envelope will also be a significant source of energy savings.

Water conservation is also factored into the design. Low-flow plumbing fixtures will be installed so that the buildings will use 20 percent less water than a typical complex of similar size and use. Rain runoff from the roof will be used to water the landscaping.

Although excessive rain in the Mid-Atlantic region slowed construction, the facility should be finished by the end of the year. Upon completion, the center will help at-risk teenagers overcome their problems, while serving as a showcase for sustainability and environmental stewardship.

For more information, contact Colin Arnold, CHPC, at 540-382-2002 x118 or email carnold@chpc2.org.

Rebuild America Progress Calculator

Number of Partnerships:

539

Total Number of Committed or Completed Square Feet:

1,177,224,020

as of July 29, 2003

New Partnerships

Chamber of Sustainable Utilities & Infrastructure, IA
 Maharishi Vedic City, IA
 Tri-State University, IN
 Chesapeake Public Schools, VA

ChevronTexaco Buys Performance Contractor Viron Energy Services

Chevron Energy Solutions, a subsidiary of ChevronTexaco, acquired Viron Energy Services from CMS Energy in July. The move was a big vote of confidence in performance contracting, Viron's specialty.

Chevron Energy Solutions said the acquisition significantly enhanced its capabilities in performance contracting, especially in the education and state and local government markets, where Viron has won hundreds of contracts.

"We look forward to offering Viron's expertise to schools, colleges, universities, cities, counties, states and many other customers, while continuing to deliver effective energy solutions to federal agencies and commercial and industrial customers," says Jim Davis, president of Chevron Energy Solutions.

The acquisition of Viron and the federal contracts of a company called Planergy International - a subsidiary of holding company Xcel Energy Inc. - added about 180 energy professionals to Chevron Energy Solutions, expanding the company to approximately 300 employees. More than a dozen offices also were added, covering all major regions of the United States.

Chevron Energy Solutions announced the acquisition of the Planergy International contracts in 2002 and recently completed the transfer of those contracts. As a result, Chevron Energy Solutions has been designing and implementing energy-efficiency projects and integrated information systems for the federal government.

"With these two developments, Chevron Energy Solutions is well positioned to provide energy services to all institutional markets, in addition to commercial and industrial companies," Davis says.

John Mahoney, formerly president of Viron, has become chief operating officer of Chevron Energy Solutions in the expanded organization. He continues to work from Overland Park, KS, which was the home base of Viron.

"To become part of Chevron Energy Solutions' organization and ChevronTexaco's 100-plus-year history as a leader in energy opens up a world of opportunities for our customers and our employees," says Mahoney.

Chevron Energy Solutions is based in San Francisco. Its parent company, based in San Ramon, CA, is the second-largest U.S. energy company. ChevronTexaco's decision to deploy an unspecified amount of money on acquiring



Colorado's capitol complex in Denver is one of many places where Viron won contracts.

Viron - rather than redirecting the capital to other energy activities - was a signal that the quietly growing business of performance contracting is attracting more long-term interest.

A powerhouse like ChevronTexaco also provides reassurance to potential customers that the energy service company will have the financial capability and durability to make good on contracts that typically run eight to 15 years.

Other companies will provide strong competition for Chevron Energy Solutions. Affiliates of electric utilities have delved deeply into performance contracting, as in the cases of Vestar (a unit of Cincinnati-based Cinergy) and Sempra Energy Solutions (part of the Southern California electric and gas giant Sempra Energy).

Large equipment companies also have found performance contracting an appealing diversification, as in the cases of Siemens Building Technologies, Honeywell and Johnson Controls. All three are Rebuild America Business Partners, as are Vestar and Sempra Energy Solutions.

Other performance contractors can be found among the members of the National Association of Energy Service Companies (NAESCO) and the Energy Services Coalition, both of them Rebuild America Strategic Partners.

Viron, too, was a Business Partner of the program. Its parent, CMS Energy, hit the financial skids when troubles in electric power and energy trading undercut investor faith in many energy company stocks, sending market values tumbling. Like several other companies - such as rival El Paso Corp. - CMS Energy decided to sell assets to shore up its financial condition, and Viron was put up for sale.

CMS Energy sold the federal contracts of Viron to Pepco Energy Services, another utility affiliate, in February.

For more information, contact Diane Sable, 415-733-4629, email diane.sable@chevrontexaco.com, or Steve Spurgeon, 913-563-3609, email sspurgeon@viron.com, both of Chevron Energy Solutions; or visit www.chevronenergy.com.

LETTER TO THE EDITOR:

Geothermal Qualities

[Editor's Note: The March-April Partner Update included a chart on page 7 presenting cost and quality assessments based on experience in Indiana with HVAC technologies. The Geothermal Heat Pump Consortium provides differing information below. While we try to be accurate, we do not independently research all data that comes to us. We encourage anyone with information or views on Partner Update subjects to write to us.]

Dear Editor,

The March-April issue of Rebuild America's *Partner Update* newsletter contains information on geothermal heat pump systems (GHPs) that is incorrect. The article summarizes a presentation given by Thomas Durkin of Veazey Parrott Durkin & Shoulders. The following information documents the errors in the table on page seven.

The *Partner Update* article states construction costs of GHPs are \$18 per square foot. This is incorrect. According to the U.S. Department of Energy's Oak Ridge National Laboratory, the average cost for GHP systems in commercial new construction is \$14.61 per square foot. In a commercial retrofit, the average is \$11.50/sq.ft.

The *Partner Update* article puts the service life of GHPs at 12-15 years. The DOE *National Best Practices Manual for Building High Performance Schools* puts GHP service life cycle at 25-30 years. Both the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) and the Electric Power Research Institute (EPRI) have concluded that the service life for geexchange technology is 20 years.

The *Partner Update* article estimates a utility cost for GHPs of \$0.65 per square foot. This is incorrect. Rebuild Colorado provided assistance to Colorado Springs District 11 to install a GHP system that operates at just \$0.47 per square foot.

The *Partner Update* article describes the "maintenance burden" of GHPs as "poor." The DOE *National Best Practices Manual for Building High Performance Schools*, notes that GHPs "require little maintenance aside from regular cleanings of the heat exchanger coils and strainers that filter the ground water, as well as regular air filter changes."

The *Partner Update* article gives GHPs a mark of "poor" for humidity control. This is incorrect. According to DOE's Federal Energy Management Program, GHPs provide "better humidity control." ("FEMP's Geothermal Heat Pump Program," www.eren.doe.gov/femp/)

Sincerely,

Wael El-Sharif, Executive Director
Geothermal Heat Pump Consortium

Upcoming Events

September

- 3-4 Annual Energy Seminar**, presented by the Tennessee Department of Correction. Falls Creek State Park, Pikeville, TN. Contact Roger Coffelt at roger.coffelt@state.tn.us.
- 16 Energy Technology Seminar**, presented by Rebuild America and New York Energy Smart Communities. Best Western University Inn, Canton, NY. Contact Robyn Stewart at 518-432-6400 x221 or email info@eba-nys.org.
- 17-18 The 21st Annual West Coast Energy Management Congress**, presented by the Association of Energy Engineers. San Diego Concourse, San Diego, CA. Contact Ruth Marie at 770-447-5083 or email info@aeeecenter.org.
- 27-30 The Council of Educational Facility Planners International's Annual Conference**, Hyatt Regency, Rosemont, IL. Visit <http://www.cefpi.org/chicago2003>.
- 30 High Performance Schools Design and Technologies Seminar**, presented by Rebuild America/EnergySmart Schools, General Electric Lighting and Ohio Dept. of Development Office of Energy Efficiency. GE Lighting Institute, Cleveland, OH. Contact Manny Anunike at 614-466-4092 or email eanunike@odod.state.oh.us.

October

- 1-3 Sustainable Energy Expo and Conference**, Los Angeles Convention Center, Los Angeles, CA. Visit <http://www.sustainableexpo.com>.
- 2-1 High Performance Schools Design and Technologies Seminar**, presented by Rebuild America/EnergySmart Schools and Rebuild Colorado. Tri-State Generation & Transmission Association headquarters, Westminster, CO. Contact Rena Finn at 303-894-2383 or email rena.finn@state.co.us.
- 26-28 4th Annual Indoor Air Quality Tools for Schools National Symposium**, Grand Hyatt Hotel, Washington, DC. Visit <http://www.epa.gov/iaq/schools/symposium.htm>.

continued from page 1

University of Arkansas

physical-plant operations to demonstrate the effectiveness of their work and the need for improvements.

Now the Fayetteville campus has a \$26 million program of infrastructure and building improvements in the works, supported most recently by an \$18 million bond issue.

The first step in developing an overall strategy was taken in 1998, when University Chancellor John A. White called for development of a campus master plan. Then, about two years later, the Physical Plant Department developed a utility master plan. That in turn led to a facility condition assessment, with an estimate of the work that the facilities needed and how much the work would cost.

Rebuild America helped with the planning. The University of Arkansas at Fayetteville is a partner in Rebuild Fayetteville.

The initial planning horizon was 10 years. It included an estimate that the student population – about 16,000 this year – will grow to 22,500 by about 2010. That in turn led to a calculation that about \$50 million would be needed in capital investment – about half of that for replacement and retrofit work of utility systems within existing buildings, and the other half for new equipment and infrastructure

accommodating greater enrollment.

University officials found the planning and the businesslike utility reorganization sufficiently impressive to give the green light to secure the needed bonds and move forward with the improvements.

“I think it’s the business model that’s enabling us to do things,” Turley says. “It’s the economic model that we’ve put together around this utility master plan that convinced people to allow this financing.”

With the financing in place, the university is improving its facilities through a variety of energy-efficient technologies, including better HVAC (heating, ventilation and air conditioning), a new and much higher-efficiency central-plant chiller, building control upgrades and other equipment retrofits.

Building metering and controls are especially noteworthy, because they allow the Physical Plant Department to verify energy savings.

“Some of the debt service comes from avoided energy costs,” Turley says. “That will help pave the way for more borrowing and improvements. As these bonds pay off, that frees up debt capacity,” Turley points out.

For more information, contact Scott Turley of the University of Arkansas at Fayetteville, 479-575-6181, or Kirk Bond, Rebuild America colleges and universities sector coordinator, 816-587-0311, email kbond@rebuild.org.

Style Counts in Efficient Lighting, Too



Torch

Style does not need to be sacrificed for the sake of efficiency. The point becomes obvious with a glance at lighting fixture designs that became finalists in Lighting for Tomorrow, the National Lighting Fixture Design Competition. The winners in the competition were announced at the American Lighting Association’s annual conference, held in May in New Orleans.

The Pacific Northwest National Laboratory (PNNL), on behalf of the U.S. Department of Energy, was one of the three organizers of the competition, along with the American Lighting Association and the Consortium for Energy Efficiency.

The Lighting for Tomorrow competition was launched in December.

To be eligible, fixture designs had to meet ENERGY STAR® standards and be rated for use in residential buildings.

Stefano Casciani of Ivalo Lighting Inc. won the top prize of \$10,000 for his design of Aliante Pendant, a pendant lamp fixture.

Among the other 10 finalists, Stephen Blackman of American Fluorescent Corp. had no less than four finalist designs, including Salem, a chandelier.

Another finalist was Manny Vieyra of Forecast for his sconce design, named Torch.

An award of \$2,500 was given for each design that qualified as a finalist.

For more information, contact Kelly Gordon of PNNL, 503-417-7558 or kelly.gordon@pnl.gov.



Salem

A Strong Energy Portfolio for a Strong America

Energy efficiency and clean, renewable energy will mean a stronger economy, a cleaner environment, and greater energy independence for America. By investing in technology breakthroughs today, our nation can look forward to a more resilient economy and secure future.

Far-reaching technology changes will be essential to America's energy future. Working with a wide array of state, community, industry, and university partners, the U.S. Department of Energy's Office of Energy Efficiency and Renewable Energy invests in a portfolio of energy technologies that will:

- Conserve energy in the residential, commercial, industrial, government, and transportation sectors
- Increase and diversify energy supply, with a focus on renewable domestic sources
- Upgrade our national energy infrastructure
- Facilitate the emergence of hydrogen technologies as a vital new "energy carrier."

The Opportunities

Biomass Program

Using domestic, plant-derived resources to meet our fuel, power, and chemical needs

Building Technologies Program

Homes, schools, and businesses that use less energy, cost less to operate, and ultimately, generate as much power as they use

Distributed Energy & Electric Reliability Program

A more reliable energy infrastructure and reduced need for new power plants

Federal Energy Management Program

Leading by example, saving energy and taxpayer dollars in federal facilities

FreedomCAR & Vehicle Technologies Program

Less dependence on foreign oil, and eventual transition to an emissions-free, petroleum-free vehicle

Geothermal Technologies Program

Tapping the earth's energy to meet our heat and power needs

Hydrogen, Fuel Cells & Infrastructure Technologies Program

Paving the way toward a hydrogen economy and net-zero carbon energy future

Industrial Technologies Program

Boosting the productivity and competitiveness of U.S. industry through improvements in energy and environmental performance

Solar Energy Technology Program

Utilizing the sun's natural energy to generate electricity and provide water and space heating

Weatherization & Intergovernmental Program

Accelerating the use of today's best energy-efficient and renewable technologies in homes, communities, and businesses

Wind & Hydropower Technologies Program

Harnessing America's abundant natural resources for clean power generation

To learn more, visit www.eere.energy.gov



U.S. Department of Energy
**Energy Efficiency
and Renewable Energy**



Rebuild America is a network of partnerships – focused on communities – that save money by saving energy.

These voluntary partnerships choose to improve the quality of life in their communities through energy efficiency. Rebuild America supports them with customized assistance backed by technical and business experts and resources.

Published bimonthly by the U.S. Department of Energy, Partner Update also incorporates news of other programs within the Office of Energy Efficiency and Renewable Energy.

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