

**Partner Update**

March – April 2000

Office of Energy Efficiency and Renewable Energy

**Profile**

Chief Rita Hutcheson

**Using a Fire Station to Ignite a Partnership**

Sometimes, help can be found in the most unlikely of places. Just ask **Rita Hutcheson**, chief of the Thurston County Fire District 4 in Rainier, WA.

Initially Hutcheson was

seeking a cost-effective way to replace the concrete block garage-style structure dating back to the '50s that housed the fire station and police department in this economically depressed corner of western Washington state. Eighteen months ago, she stumbled upon the Rebuild America program while taking a grant writing course in Reno, NV. The instructor was involved with a Rebuild Nevada partner that was using alternative technologies in designing a public golf course (*Partner Update, July-August 1999*). She steered Hutcheson to Seattle Regional Team Leader **Paul Johnson** who helped set things in motion. Program Representative **Scott Wolf** followed up by giving a Rebuild America presentation to the fire district's commissioners, town council members and interested citizens that helped to ignite interest.

"It's an outstanding opportunity for us," says Hutcheson, who leads the Thurston County Fire District 4 partnership. "It gave us some hope and

*Continued on page 11***Rebuild Austin Honored as 250th Partnership**

**Rebuild Austin** (TX) hosted the 250th Rebuild America Partnership Celebration in grand Texas style on February 17.

U.S. Department of Energy (DOE) Secretary **Bill Richardson** joined U.S. Congressman **Lloyd Doggett**, Austin Mayor **Kirk Watson**, partnership representatives **Rev. Marvin C. Griffin** and **I.Q. Hurdle**, and other local and state officials at a neighborhood block party outside the historic Ebenezer Baptist Church to honor Austin as the 250th Partnership. The occasion, an eagerly awaited milestone for Rebuild America, culminated with Mayor Watson declaring February 17 as "Rebuild America Day" throughout Austin.

The Rebuild Austin partnership plans to transform buildings in the economically depressed East Austin neighborhood surrounding Ebenezer Church into models of energy efficiency. Targeted buildings include the Ebenezer Baptist Church, an educational center, a daycare center, small businesses, senior housing and



*Austin City Council Member Willie Lewis, left, joins Energy Secretary Bill Richardson at the Rebuild Austin event.*

low-income housing. One building will be converted into a training center to provide job skills for local residents and new business opportunities for the community. Austin Energy, the local utility and a Rebuild Austin partner, has donated a 6-kw roof-mounted photovoltaic panel system for the daycare center. MetalOptics, a manufacturer of efficient lighting fixtures, has donated over 50 energy-saving fixtures to the church.

"By working through a church-based neighborhood, Rebuild Austin and DOE are successfully addressing community concerns

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# Rebuilding Shelby: A Historical Perspective

Livermush, a little-known delicacy, is just one of many special qualities the town of Shelby, NC has to offer, according to Ted Alexander, partnership leader of Rebuild Shelby and executive director of the Uptown Shelby Association. But perhaps this charming small town is better known for its remarkable historic district that serves as a draw for visitors. Alexander addressed how the town is revitalizing its historic district and creating a catalyst for economic development with the help of Rebuild America, the Community Education for Enterprise Development and the National Main Street programs at a lecture at the National Building Museum in Washington, D.C., on February 17. Titled “Community Revitalization Through Energy Savings,” the lecture was part of the Buildings for the 21st Century Lecture Series presented by DOE’s Office of Building Technology, State and Community Programs.

Alexander shared the town’s experience in seeking to blend the goals of energy efficiency, small business development and historic preservation without compromising the character or features of the buildings. The results have proven to be anything but “mush.” During the past several years, Rebuild Shelby has completed 13 building retrofit projects and two efficient new construction projects. Total project costs to date have exceeded \$9 million dollars, \$1.3 million of which was spent on energy conservation measures. Rebuild Shelby is now working on four more projects that include the historic uptown Rodgers Theater, built in 1936.

Many Rebuild Shelby projects have benefited from the expertise of the Department of Energy, Oak Ridge National Laboratory and the architectural firm of Holland, Harrick and Patterson, a key Rebuild Shelby partner.

The First National Bank, a historic landmark, has undergone one of the most extensive renovations to date. Energy-efficient windows with low-e technology and argon-filled double panes were installed. Insulation was added and a more efficient HVAC system was installed. Lighting upgrades included T-5 electronic ballasts and modern fluorescent lighting systems. With its facade restored and building envelope rendered energy efficient, the bank now provides a

comfortable, efficient and welcoming environment. Shelby’s City Hall, built in 1939, is currently undergoing



*A house built in Shelby in 1936 gets a new life as an insurance office.*

## View from DC

By Mark Bailey

It is appropriate that Rebuild Austin, our 250th partnership, embraces a key Rebuild America theme of using energy efficiency as a catalyst for community improvement and economic development. Led by the East Austin Economic Development Corp. (EAEDC), Rebuild Austin has a strong partner in the church-based community that is redeveloping its neighborhood. Much of the groundwork that challenges new partnerships is already in place, leaving Rebuild Austin well positioned to help boost community redevelopment efforts by introducing an energy-efficiency component. Rebuild Austin is a case in point about how to structure a successful partnership by working within the existing framework of a community and a worthy role model for new partnerships.

In addition to reaching the 250th partnership milestone, Rebuild America is making steady progress in directing outreach efforts to areas where we can have the most impact. Rebuild America has developed strategic partnerships with the following organizations:

- The Association of Higher Education Facilities Officers
- National Association of Housing Redevelopment Officials
- National Association of State Energy Officials
- National Association of Energy Service Companies (NAESCO)
- National Conference of State Legislatures
- Health & Human Services/Head Start Program, Southeastern Region

Rebuild America and our Strategic Partners share mutual target audiences as defined by the Rebuild America market sectors: higher education, K-12 schools, commercial, public and assisted housing, and municipal and state government. With the help of our Strategic Partners, Rebuild America seeks to convey the

Created by Congress in 1996, the Presidio Trust is charged with preserving and enhancing the Presidio, a former military base, as part of the National Park System while achieving financial self-sufficiency by fiscal year 2013. Leasing and other activities must generate the \$37 million required annually to make non-coastal areas of the park financially self-sufficient and fund long-term infrastructure improvements. In 1995, the Presidio Alliance was created as an advocate for Presidio tenants and the public. In 1999, the two organizations joined the Rebuild America program as Rebuild Presidio.

# Rebuild Presidio: Getting Tenants to Buy into Energy Efficiency

By **Laura Keresty**

**Rebuild Presidio** faces a particularly difficult challenge of how to preserve and enhance the Presidio while achieving financial self-sufficiency over the next decade. The partnership strives to positively effect tenant behavior through education. Generating the millions of dollars needed to upkeep a national park is hard work, but convincing tenants to be energy conscious without a billing system based on energy consumption is harder still. Tenant utility costs are typically included in lease agreements at a fixed, rather than a variable, rate.

To address energy-efficiency issues, Rebuild Presidio has leveraged a number of resources – Green Building Guidelines, sub-metering and utility grant money – all of which will prove to help meet the needs of both the Trust and its tenants.

Here are some of the ways Rebuild Presidio is addressing its efficiency challenges:

## **Challenge #1: Tenancy of Historic Buildings**

Some 470 of the park's 770 buildings are historic, representing at least nine major architectural styles that span the Presidio's 222-year history. Designated as a National Landmark District in 1962, the Presidio must take special care in upgrading these cultural treasures to state and federal standards. The fact remains that tenants of historic buildings are not

subject to California State Energy Efficiency Code.

**Solution:** For the first time, Green Building Guidelines were published that incorporate environmentally sensitive construction practices into historic building rehabilitation. Use of sustainable elements will reduce energy usage by 30 percent by 2001, four years sooner than the federal government requires.

## **Challenge #2: Energy Monitoring**

The oldest continuously operated military post in the nation, the 1,480-acre Presidio functioned as a unit with a single utility meter. Specific information about each building is not available.

**Solution:** In September 1999, sub-meters were installed, allowing energy usage monitoring of individual buildings. Non-residential tenants will access their energy use history through a park-wide energy management system. The data provides the information needed to quantify energy saving efforts.

## **Challenge #3: Credible Source of Information**

Small businesses do not generally have access to information about successful projects within their community or the resources for research and training. They may be skeptical of information from service providers.

**Solution:** With the aid of a \$200,000 grant from Pacific Gas and Electric Company (the Presidio's local utility provider), an Energy Efficiency Community Outreach Program will be

implemented this year to motivate Presidio tenants to exercise wise energy use practices. Rebuild Presidio's credibility comes from providing information as agents of awareness without direct financial benefit.



*The scenic Presidio grounds overlook the Golden Gate Bridge.*

- A door-to-door membership campaign will urge commercial tenants to join the energy-efficiency program, which will educate organizations about their energy consumption and conservation methods.
- A "buying group" will make energy products more accessible to small businesses.
- Success stories will illustrate how simple behavioral changes affect energy use, helping tenants understand the labor and maintenance savings

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# Real Solutions for Real Problems: Peer Forum Brings Out Partnerships' Best

Nearly 100 partnership representatives and leaders traveled to Portland, OR to learn from each other at the Seattle Region's fourth Peer Forum, March 1-3.

**Paul Johnson**, Seattle Regional Team Leader, said the purpose of the Forum was to "provide partnerships a chance to learn new techniques by interacting with their peers, discover resources available through Rebuild America, and understand the relationship between community improvement, energy efficiency and environmental issues." **Cyane Dandridge (Strategic Energy Innovations)**, **Curt Nichols (Portland Partners for Energy Efficiency)**, **Ken Baker** and **Sue Seifert (Rebuild Idaho)** collaborated in planning the Forum.

On the first day, Baker and Seifert led everyone through the small-group "Getting to Go" simulation, which Baker explained:

"We want reps to experience what their partnership champions face, so in the game each rep role-plays a city official or community member. They have to build a group consensus around Rebuild America and move it forward, working within their prescribed role's agenda and responsibilities."

**Janice Boman** of Seattle City Light said "Getting to Go" offered insights on overcoming challenges, noting that "we had to confront conflicting priorities, navigate hidden agendas and answer citizens' pointed questions – a good reflection of what we face in the field."

The Forum's sponsors were current and potential Rebuild America Business Partners, including Avista Corporation, NORESCO and Portland General Electric. The majority of the Forum was devoted to exploring practical solutions for issues that partnership leaders are facing now.

**Mike Heidemann** described the **Pershing County (NV) School District's** challenge: "We have roughly 1,000 students in a community of just under 3,000, located in one of the largest counties in the country. Plus, we're 100 miles from Reno, and it is difficult to interest contractors in our projects."

At more than a dozen tables, peer groups brainstormed creative solutions. Their suggestions included partnering with the five neighboring communities that, unbeknownst to one another, are also Rebuild America partnerships; expanding the project to include civic and large commercial buildings;

exploring on-site power generation like solar and micro-turbines; and enlisting utility providers with Rebuild America Business Partners to leverage available resources.



*Larry Schoff, Rebuild America K-12 schools representative, makes a point during a Peer Forum role-playing exercise.*

"The feedback was amazing," Heidemann said. "It was fantastic to have so much enthusiasm and expertise focused on helping my partnership succeed. We're definitely energized to go back home and make this work."

Seifert was also thrilled with the hundreds of networking connections made, project questions answered and creative solutions found.

"Helping each other succeed, that's what Rebuild America is all about," she said.

## Rebuild Presidio

*Continued from page 3*

associated with energy-efficient products.

A main focus of the Presidio mission is to become a model of sustainability through the use of new technologies in the areas of green building, recycling, water conservation, waste management, transportation alternatives and energy management. Measurement tools will provide information on the program's success and continue to inspire Presidio tenants about energy efficiency

and the importance of such a commitment. The benefits from the Rebuild Presidio partnership abound, but not without the building of community through this transition from active Army base to National Park, as landlord and tenant together.

*Laura Keresty, executive director of Presidio Alliance, is partnership leader of Rebuild Presidio. For more information, contact the Alliance at 415-561-3993 or e-mail [pal@igr.org](mailto:pal@igr.org).*

## Rebuild America Briefs

### View from D.C.

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benefits of boosting energy efficiency in buildings to those who make or influence decisions about how buildings operate.

With NAESCO, for example, Rebuild America works to connect companies who offer services and advice with communities that are looking for information. Strategic partnerships offer Rebuild America some key advantages, including:

- Greater avenues for communication to our target audiences
- Combined technical resources to reach these audience with information about building energy efficiency
- An ability to disseminate information and provide endorsement/support of energy-efficient technologies and practices

Through our Strategic Partner relationships, Rebuild America will gain a better understanding of the needs and motivations of our different target audiences and how to best help them. We will discover the most effective ways to engage these large memberships in energy-efficiency projects and learn more about the barriers and obstacles they face in implementing building retrofits.

*Mark Bailey is national program manager of Rebuild America.*

**DOE staff assists Superintendents Club...** Staff from Argonne National Laboratory, Brookhaven National Laboratory, and the Boston Regional Office spoke at an emergency meeting of the Superintendents Club of New York City on February 23, called in response to the high cost of heating oil in the Northeast. The meeting focused on immediate measures building owners and superintendents can take to operate heating and hot water systems at greater efficiency to cut oil consumption without threatening the comfort of tenants.

*For more information, contact Jim Cavallo, Argonne National Laboratory at 630-252-8688 or Tom Butcher, Brookhaven National Laboratory at 631-344-7916.*

**Rebuild Little Rock gets high marks...** Rebuild Little Rock's participation in the U.S. Department of Energy's "Lighting in the Library" activity was featured in the *Christian Science Monitor* on January 18. The article describes the efforts of ninth graders at Central High School to track energy performance and areas of potential savings. The students are calculating the amount of electricity used to light school libraries and examining the feasibility of investing in energy-efficient lighting fixtures for all five Little Rock high schools. At the end of the school year, the students will present their findings to the Little Rock School Board. Teachers call this a "groundbreaking initiative" that effectively will incorporate an energy component into the existing curriculum and put student recommendations into action.

*To review the article, visit <http://abcnews.go.com/sections/science/DailyNews/physics000118.html>*

**Targeting energy waste...** The City of Reno partnership is completing an energy retrofit aimed at saving \$1.6 million in energy costs over the next 20 years. Sempra Energy Services, Inc., a Rebuild America Business Partner, worked with the City to install new lighting in city buildings and park structures, variable drives on hot water pumps, and more efficient controls on heating and cooling systems. Seven City facilities will be equipped with Energy Management Systems to make it possible to monitor and control energy use remotely and to troubleshoot the building's mechanical systems from a central location. An April 30 partner recognition event is planned with Mayor **Jeff Griffin** serving as guest of honor.

**Finding Greener Pastures in the Desert...** The City of Scottsdale (AZ), a partner with **Rebuild Arizona**, is finding things a little greener around the city these days, thanks to the city's active Solar Energy Program and Environmental Year programs. In October, the city and their partner, Arizona Public Service Company (APS), held a dedication ceremony to celebrate their first solar installation on public property in Arizona. The project encompassed installation of an 8,000 square-foot, 34-kw photovoltaic roofing on employee parking lot carports at the City's Via Linda Campus. This solar roofing system will generate enough clean, renewable energy to power seven to 10 homes involved in the Solar Energy Program. The city and APS have completed their installation plan for 2000 that includes four new projects that equal approximately 50 kw.

*For more information about their Solar Energy Program, visit the city's web site at <http://www.ci.scottsdale.az.us/environmental/Events/CYSolar.asp>*



## Upcoming Events

### Meeting the Press

Rebuild America's 250th partnership celebration in Austin attracted strong local media interest, especially from television news stations. NBC, CBS, ABC and FOX affiliates were all on site and the story aired 12 times. The presence of Secretary Richardson gave the story some "bounce" and the Secretary fielded some press questions about rising fuel prices as well as queries about Rebuild America and Rebuild Austin. Mike Myers, DOE representative for Texas, Rev. Griffin and members of the Ebenezer Church community were also interviewed. The Austin American-Statesman, the city daily, weighed in with a top story for their Metro & State section titled, "An efficient blessing for a house of prayer." Richardson was quoted as saying: "We have got to conserve energy. We have to look at renewables – wind, solar, biomass."

*The Austin American-Statesman was among the many news outlets covering the event.*

An efficient blessing  
for a house of prayer

### April

April 12-13 – **Rebuild America Denver Regional Peer Exchange**, Denver, CO. Contact Dave Waltzman, Denver Regional Team Leader at 303-275-4821.

April 17-19 – **Rebuild America Boston Regional Peer Exchange**, Boston, MA. Contact Greg Davoren, Boston Regional Team Leader at 617-565-9706.

April 19-20 – **GlobalCon 2000: Energy & Facility Management for the New Millennium**, Dallas, TX (Dallas Convention Center). Phone 770-279-4388 or visit [www.aeecenter.org](http://www.aeecenter.org).

April 20-22 – **Soltech 2000**, Washington, DC (State Dept. Auditorium). Visit [www.seia.org](http://www.seia.org).

April 20-21 – **Transportation 2000: Options for a New Millennium**, Portland, OR (Portland Hilton). Contact Mark Kendall or Curt Nichols at 503-378-4040 or 503-823-7418.

April 22 – **Earth Day 2000**, nationwide. Contact Michael Closson, Earth Day Network at 206-876-2000, x213; fax: 206-682-1184; or e-mail [mclosson@earthday.net](mailto:mclosson@earthday.net).

April 28 – **School Building Day**, nationwide. Sponsored by CEFPI. Visit [www.cefpi.org](http://www.cefpi.org).

April 30 – **City of Reno, NV partner recognition event**. Contact Allie Smith at 702-454-6502 or e-mail [rebuildnevada@hotmail.com](mailto:rebuildnevada@hotmail.com).

### May

May 1-4 – **Energy Performance Contracting Workshop**, Chicago, IL. Contact Cara Applegate, Rebuild America at 301-588-9387.

May 3-5 – **8th National Conference on Building Commissioning**, Kansas City, MO. Contact Carolyn Dasher, PEI at 503-248-4636 x204.

May 4-6 – **National Convention & Expo of the American Institute of Architects**, Philadelphia, PA. Contact AIA at 202-626-7396.

May 7-10 – **6th National Clean Cities Conference & Expo**, San Diego, CA. Contact Clean Cities Hotline at 800-224-8437.

May 8-10 – **Public Housing Authorities Directors Association 2000 Annual Convention & Exhibition**, Newport, RI. Visit [www.phada.org/meetings.html](http://www.phada.org/meetings.html).

May 17-18 – **Strategic Energy Forum**, Rosemont, IL. Visit [www.aeecenter.org](http://www.aeecenter.org).

May 17-19 – **National Association of Energy Service Companies (NAESCO) Mid-Year Conference**, Houston, TX. Contact [www.naesco.org](http://www.naesco.org).

May 17-20 – **National Association of Counties (NACo's) Western Interstate Region Conference**, Boise, ID. Contact John McGillicuddy at 704-336-2597.

### June

June 1-3 – **Advancing Community Sustainability**, Roanoke, VA. Visit [www.conted.vt.edu/advcom.htm](http://www.conted.vt.edu/advcom.htm) or e-mail [urban@vt.edu](mailto:urban@vt.edu).

June 6-8 – **Build USA**, Washington, DC (Washington Convention Center). Phone 800-996-3863 or visit [www.buildusashows.com](http://www.buildusashows.com).

June 6-8 – **Advanced Building Systems Technology**, Washington, D.C. Contact Andrea Larick at 216-931-9609 or [alarick@penton.com](mailto:alarick@penton.com).

June 9-13 – **US Conference of Mayors Annual Conference**, Seattle, WA. Contact Carol Edwards at 202-293-7330.

June 14-16 – **Empowerment 2000, High Performance Schools**, Madison, WI. Contact Karen Anderson, Alliance to Save Energy at 202-530-2239 or [kanderson@ase.org](mailto:kanderson@ase.org); or Dan York, Energy Center Wisconsin at 608-238-8276 or [dyork@ecw.org](mailto:dyork@ecw.org).

June 18-20 – **BOMA 2000 Annual Convention & Office Building Show**, San Diego, CA. Visit [www.boma.org](http://www.boma.org).

# Snapshot



*Dave Waltzman is the Denver Regional Team Leader for Rebuild America.*

**Vital Statistics:** Lives in Arvada, CO with wife, Robin, and three dogs: Gongga (Mr. Pretty), a Rotweiler; Dahlia, a Dalmation; and Paden, a Portuguese water dog, known as the demon of destruction. Daughter Sarah, 29, studies traditional Chinese medicine and son Adam, 27, works in computer networking.

**Current Role with Rebuild America:** Team Leader for the Denver Region and national lead for Native American tribal coordination with Rebuild America. Serves as partnership representative to several regional and state partnerships and to a number of Pueblo tribes.

**Most rewarding aspect of your work:**

Meeting people and working with communities. My marriage is a true outgrowth of a Rebuild America partnership. I met my wife, Robin, in Albuquerque last May while I was helping to develop the city partnership. She introduced me to many of the current partners and helped me so much I decided we needed to formalize the partnership. We married in August 1999.

**Your greatest Rebuild America**

**challenge:** Keeping up with the needs of the partnerships. Ideally, there is a champion in each partnership, but a vibrant, successful partnership requires an active Rebuild America representative who is on site frequently. This, coupled with the number of communities requesting briefings on the program, could keep me on the road constantly.

**What you like to do in your spare**

**time:** Golf, exercise, travel (just returned from Honduras) and relaxing with Robin and the dogs.

**Something you haven't tried but think you might be good at:**

I would love to spend more time outdoors building redwood decks, or working in a national park. After 30 or so years of managing process and pushing paper, my next career will lead me to new skills.

**A book or film you recommend:** Any comedy with Gene Wilder, like "Blazing Saddles."

**Where you'd live, if you could live anywhere in the world:** Either near the ocean or mountains, in a small town far from big city problems.

## Rebuilding Shelby

*Continued from page 2*

energy-efficiency improvements that are expected to bring the building well into the 21st century. The building suffered from heating and cooling systems that were competing against one another, out-of-date interior lighting, and little or no insulation. To address these needs, the HVAC system was replaced with a contemporary programmable system to distribute air efficiently throughout the building. The lighting system was upgraded to a modern T-5 fluorescent lighting system and insulation was placed strategically throughout the building, particularly in the attic.

The former Belk Department Store, now LaFayette Place, is another example of a local landmark brought back from the brink. The roof had caved in and the building also suffered from a bad case of "re-muddling" – a historically inaccurate renovation. Plans called for tearing it down to create a parking lot in Uptown Shelby. Rebuild Shelby stepped in and convinced local authorities that not only could

the building be saved, but it could bring in needed tax and utility revenue far beyond what the parking lot could provide. The City reallocated the \$100,000 earmarked to demolish the building to clean out its interior. A Charlotte, NC developer bought the building for \$1 and spent an additional \$1 million to convert the structure into six stores, 12 apartments, and a small parking court. Efficiency measures included insulation and high-efficiency water heaters. Not only has the project been highly successful, but the city is benefiting from tax and utility revenues that otherwise would have been lost.

So, the next time you are traveling on Interstate 85 or US 74 in North Carolina, make sure to stop by Uptown Shelby to get a taste of just how its downtown is thriving from its participation in Rebuild America and Main Street initiatives – and while you are at it, don't forget to sample the livermush!

*For more information, contact Ted Alexander at 704-484-3100.*



# White Reflective Roofing: How to Reduce Energy Consumption and Cool Urban Hot Spots

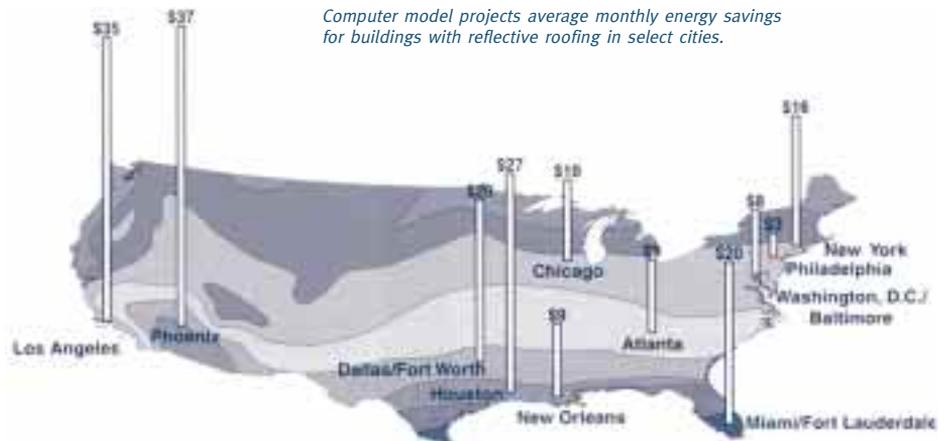
Energy service companies (ESCO's) are now studying implementing roofing programs into energy audits and performance contracting programs. Can white reflective roofing membranes have a major impact on energy conservation programs? Scientists at the Lawrence Berkeley National Laboratory (LBNL) believe that not only do they offer significant opportunities for savings, but they also can have a significant impact on cooling "urban heat islands" and improving air quality.

The growth and development in America over the past five decades, particularly in the Sunbelt, have caused dramatic shifts in average temperatures and smog development within these areas. Green has given way to dark-colored paving and black roofs. Cities such as Los Angeles, Atlanta, Phoenix, Salt Lake, Baton Rouge, Houston, and Dallas are typically 6° F - 8° F degrees Fahrenheit hotter than their surrounding areas. The dark colored surfaces absorb more solar radiation and retain thermal radiation. Black roofs typically have a 6 percent rate of reflectivity and low emissivity values that result in real roof temperatures of between 150° F - 200° F in summertime.

On the other hand, white, highly reflective roof membranes can have reflectivity and emissivity values of more than 80 percent. Roof temperatures can be more than 30 percent lower. Cooler roofs result in less heat transfer into the building, as well as into the environment. Higher urban temperatures increase cooling costs. According to LBNL, a 1-degree rise in temperature can mean a 2 percent increase in the demand for cooling power. In Los Angeles alone, this could translate into \$25 million annually.

Studies completed in 1998 by **Hashem Akbari** and **Sarah Bretz** of LBNL conclude that white, highly reflective roofing membranes – ones that reflect solar radiation and emit thermal

radiation well – can reduce cooling costs by as much as 30 percent. The extent of savings depends on the roof surface area, cooling degree days, and the extent of thermal insulation in the roof system. School buildings are ideal candidates for this improved roof system. LBNL projected savings by computer model in 11 cities and found that real savings and energy reductions not only include Sunbelt areas but also cities with



high electric rates including Chicago, New York and Washington DC.

From the practical side, roof systems need to be evaluated not only on their reflectivity, but even more so on their ability to provide extended weatherability. Roofs with a proven 25-year track record that have demonstrably low lifecycle and maintenance costs and a credible warranty program that are backed by a financially stable manufacturer should provide the base criteria. The real benefit derived from moving to white roofs will be evident in its impact on the building envelope design – and on reclaiming our environment by moving to restore the ecobalance.

For more information, contact Peter D'Antonio, Rebuild America coordinator for Sarnafil Roofing and Waterproofing Systems, at 800-451-2502, ext. 257.

## Solutions

### Advances in HVAC Technologies Boost Energy Savings

Heating, cooling and ventilating costs are a controllable expense in new and old buildings alike. Given the significant technological improvements in the last several years, the time is ripe to achieve significant savings and maximum efficiencies for businesses, schools and communities. Advances in HVAC technology are designed to match the heating and cooling levels in buildings, via timers, sensors and other controls, with the level of indoor occupancy. These technology improvements present a larger menu of options for design teams and challenge building owners and architects to achieve optimum results.

During the early 1990s, innovative technologies emerged, but the cost of implementing them kept many building owners at bay. Those who used lifecycle costing as their criteria, however, realized they could boost the return on their property investments by reducing operating and maintenance costs. Many advanced energy-efficiency technologies have been put into practice with impressive results. Though energy costs have remained relatively low in today's market, the opportunities for saving energy have increased considerably.

#### Existing & New Equipment

Technology improvements have significantly improved efficiencies in both small and large equipment. For example, manufacturers have dramatically improved the part-load performance of chillers. This is especially important since the chiller typically operates at peak design conditions less than 1 percent of its operating hours. Manufacturers have cut chiller consumption on some models by half. Also, pulse-combustion furnaces are twice as efficient as older, gas-fired furnaces and can work extremely well in small commercial buildings.

Replacing inefficient systems with new efficient ones can pay big dividends. Case in point is the geothermal heat pump – an application that works in homes, schools, institutions and small commercial buildings. Five hundred school systems across the country use geothermal heat pumps to comfortably heat and cool buildings and to reduce energy consumption. A school district in Lincoln, NE that installed geothermal heat pumps in

four elementary schools greatly reduced its operating costs to 41 cents per square foot. This is half the average cost of virtually



*Program Representative Charles Young examines the HVAC system of a vacant bank building in Shelby, NC, built in 1962.*

identical schools in the same area utilizing conventional systems. Other benefits of geothermal pumps include reduced

maintenance costs, high comfort levels, few malfunctions and an absence of occupant complaints.

#### Controls

Computer technology has radically altered the HVAC industry during the last decade. Low-cost microprocessors have allowed sensors to perform multiple tasks, such as sensing temperature and humidity. Carbon dioxide sensors, virtually inapplicable five years ago, are now more cost effective and provide reliable ventilation control and increased comfort while saving energy.

Variable frequency drives, a breakthrough in control technology for air conditioning motors, can be applied to major HVAC components, from fans to pumps to chillers, and can substantially reduce energy use during non-peak operating periods, which is most of the time.

These advances have proven their merit in hundreds of projects in the U.S., but industry observers say these improvements are considerably underutilized by the building design community. Partnerships and building owners should be informed of the possibilities for HVAC systems and encouraged to establish energy-efficient goals for their building projects at the onset. Concurrent advances in lighting systems, high-efficiency windows, insulation and other building materials are also improving building performance. Rebuild America advocates a “whole building” approach to design and construction that combines a number of energy-efficient strategies to achieve an optimum building environment.

*For more info contact Ron Shelton at Oak Ridge National Laboratory at [srl@ornl.gov](mailto:srl@ornl.gov).*

*Next issue: a Rebuild America HVAC case study*

## Profile

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the realization that we can get something done.”

Hutcheson has also attended two Rebuild America Seattle Region Peer Forums and presented her partnership's challenge at the March 1-3 session in Portland. The support from her peers provided a “shot in the arm” and opened her eyes to new possibilities, she says.

## Public Need

Many residents of this small, agricultural community of Rainier are living below the poverty level, Hutcheson notes. Traveling 25 miles to Olympia to avail themselves of basic services poses a hardship for those who are unable to pay for fuel. Public transportation is not available.

Hutcheson began to envision a well-conceived public safety building that would also serve as a community center that could provide some of the services that people were traveling long distances to find.

“There are no adequate gathering places available,” she notes.

Plans call for a facility of 15,000 to 19,000 square feet to house emergency equipment and a public safety building/community center with office space, a conference room and classrooms. Volunteer firefighters and police will coordinate the use of the facilities for administrative, training and meeting purposes with social services providers such as the Women with Infants and Children Program (WIC), immunization services and family support programs.

In addition to providing overwhelming support, the first peer exchange Hutcheson attended paid an unexpected

dividend. **Stephen Meder**, leader of the University of Hawaii partnership, attended the peer exchange. Following the meeting, Meder presented the fire district project to the Rebuild Hawaii Consortium. **Fred Creager** of the University of Hawaii School of Architecture then approached Hutcheson about having the fire district partnership



*Hutcheson takes the floor at the Peer Forum in Portland.*

serve as a project for his students. She agreed, and is now armed with five sets of architectural drawings for the new fire hall and community center.

“I stressed energy efficiency and told them to showcase some great ideas,” she says, adding that many of the plans incorporate environmentally sensitive building practices and specify recycled building materials, efficient building systems and the use of solar energy.

“We have a picture now,” Hutcheson says. “It’s not just in our minds.”

Partners joining the fire district partnership include the Town of Rainier, the Rainier Police Department, the Thurston County Health Department, and the Rainier school district.

“It’s a lot more than a building,” Hutcheson says. “It’s a center for community activity. A place to bring folks to build better communities. It’s an

opportunity for a small community to come together through teamwork and develop a sense of pride about what we can accomplish.”

Hutcheson says the partnership's greatest challenge is lack of funding: “There is no lack of enthusiasm.”

The fire district operates with 30 volunteers and one full-time employee on a \$150,000 annual budget that needs to cover training, uniforms, equipment, and vehicle maintenance. It has a 4-1/2-acre site for the planned fire hall and community center – surplus property provided by the County. A local community college has volunteered to survey the site. Hutcheson's next step is to explore opportunities for grants and funding to finance the project's construction.

A former Army colonel, Hutcheson retired in 1992 after 27 years of service. She has been a volunteer firefighter and emergency medical technician for the Thurston County Fire District 4 since 1980. A registered nurse for 33 years, she is also a part-time employee for the County's immunization program.

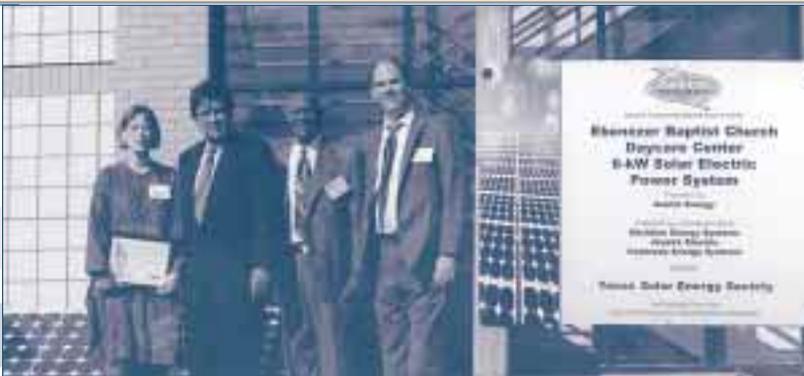
When asked how she spends her spare time, Hutcheson notes: “This is all spare time.” In addition to looking out for the people in her community, Hutcheson provides refuge for a variety of stray animals on her 17-acre farm. Her roster of free-ranging tenants includes one rooster, four dogs, four goats, four potbellied pigs, six chickens, 10 rabbits, and 16 cats. Her secret to managing all this: “I have a routine,” she says.

*For more information, contact Chief Hutcheson at 360-446-2419 or by fax at 360-446-3284.*

## Total Number of Rebuild America Partnerships

# 255

Rebuild America celebrates Rebuild Austin, its 250th partnership. From left, Kathryn Houser of Sustainable Living Association, Energy Secretary Bill Richardson, Rev. Marvin Griffin, and Mark Kaptner of Austin Energy. See cover story and pages 6-7.



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Fallon Paiute-Shoshone Tribes  
Historic Downtown Program/Rising Sun, IN  
Loogootee Community School Corporation, IN  
Muscatine Power & Water, IA  
Oxford Public Schools, CT  
Prince George's County Government, MD  
Rebuild in April (PositivEnergy), Oakland, CA  
Rebuild Long Island Partnership, Happaugue, NY  
Redevelopment Commission, City of Portage, IN  
Washoe County School District, Reno, NV



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Rebuild America is a network of community partnerships – made up of local governments and businesses – that save money by saving energy. These voluntary partnerships, working with the U.S. Department of Energy, choose the best ways to improve the energy efficiency of commercial, government and apartment buildings. Rebuild America supports them with business and technical tools and customized assistance.

By the year 2003, Rebuild America partnerships will be involved in over 2 billion square feet of building renovations, which will save \$650 million every year in energy costs, generate \$3 billion in private community investment, create 26,000 new private sector jobs, and reduce air pollution by 1.6 million tons of carbon dioxide a year.

Address Correction Requested

