



Buildings for the 21st Century

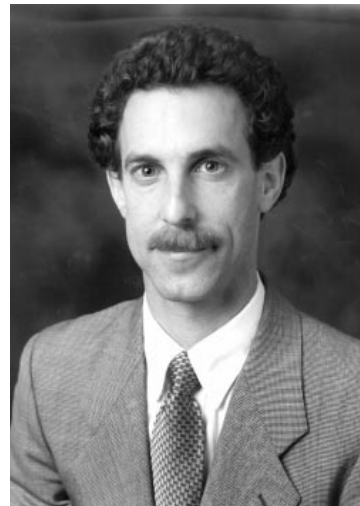
Volume 1

News You Can Use

Office of Building Technology, State and Community Programs

Welcome

Welcome to the first edition of Buildings for the 21st Century. We have specifically designed this newsletter for you, the Department of Energy (DOE), Office of Energy Efficiency and Renewable Energy stakeholders with interest in our Building Technology, State and Community Programs (BTS). As you will read in this issue, BTS is reorganizing to accomplish its mission better and work more effectively with its industry and research partners. We want to do our best to give you the information and services you need to improve the energy efficiency of buildings in the United States.



Assistant Secretary, Dan Reicher

We will bring you the latest news from BTS research efforts and programs such as ENERGY STAR®, Building America, and Rebuild America. We'll let you know what is new on our Web site, and let you know of upcoming events. We'll tell you about BTS activities at DOE's regional support offices and announce our latest partnerships.

There is tremendous potential for accelerating the application of energy efficiency and renewable energy technologies in our Nation's building inventory. DOE involves the building industry and consumers in meeting this national challenge through hundreds of projects that overcome financial and regulatory barriers and address significant economic and environmental opportunities. We are working together to develop roadmaps that will guide BTS research and development toward the needs of the next millennium.

Programs such as EnergySmart Schools and ENERGY STAR® showcase BTS partnerships with other government agencies and the private sector. These programs are distinguished by results—efficiency and productivity of operations, reduced pollution, cost savings, diversification of energy supplies and most importantly—a robust economy, keeping energy dollars in the community.

As we tackle the tough national energy challenges ahead, the DOE, through the Office of Energy Efficiency and Renewable Energy will continue these and other vital BTS partnerships, for the benefit of our citizens and businesses in communities from coast to coast.

We invite your comments. Please let us know how we can better serve and inform you by contacting us at:

The Building Technology, State and Community Programs Office: 1-202-586-9240

The Energy Efficiency and Renewable Energy Clearinghouse: 1-800-DOE-3732

The Energy Efficiency and Renewable Energy Web site: www.eren.doe.gov/buildings

Partnership News:

EnergySmart Schools

DOE is getting ready to go back to school. Well, actually, to go back to schools.

On October 5th, Secretary of Energy Bill Richardson and Secretary of Education Richard Riley announced the kick-off of a new initiative to save billions of dollars in school energy costs and redirect the savings toward children's education.

"This initiative is both a partnership and a challenge," said Secretary Richardson. "We challenge our country's school administrators and teachers to join us and private sector groups in using smart energy practices in both new and existing schools. Not only are the potential cost savings tremendous but, energy improvements can result in a better school environment increasing the productivity of both teachers and students."

The EnergySmart Schools project is a partnership among government and educational institutions, public utilities, energy service companies, builders, equipment suppliers, national education and energy associations, and community groups. The project's goals are to reduce energy consumption and expand the use of clean energy technologies to develop incentives to reinvest energy savings in education needs to improve the indoor environment in schools and to increase awareness of energy-related issues in schools.

Ten action items to achieve the goals of the project were developed by the partnership:

- Establish aggressive partnership goals, including goals for energy savings, dollar savings, and emission reductions
- Disseminate information on energy efficiency and renewable energy to new and existing schools
- Provide training and technical assistance to school districts
- Remove barriers to innovative financing and retention of energy savings
- Develop energy and environmental education programs and curricula
- Conduct studies that quantify the impact of energy technologies on learning and health
- Develop model design and construction specifications
- Demonstrate advanced technologies
- Recognize achievements of both the schools and the partnership
- Hold quarterly progress meetings.

The EnergySmart Schools Partnership currently includes such industry groups as the American Institute of Architects and the Passive Solar Industries Council; utilities, such as Boston Edison and Southern California Edison; school groups, such as the Council of Great City Schools; building material suppliers, such as Honeywell Inc., Johnson Controls Inc., and Owens Corning; and governmental groups, such as the U.S. Conference of Mayors.

The Department of Energy will use its existing programs including Rebuild America, Clean Cities, the President's Million Solar Roofs

see *EnergySmart Schools* on page two →



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In concrete terms, the strategic plan outlines a reorganization of BTS to strengthen and better focus the organization.



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The State Energy Program has been instrumental in the implementation of more than 8,000 state conservation projects since 1983.



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This solar-powered fountain will be part of the "Under the Sun: An Outdoor Exhibition of Light" this summer.

Initiative, the State Energy Program, and ENERGY STAR® (a joint DOE/EPA program) to implement the EnergySmart Schools initiative. BTS will have a strong involvement with the partnership because of its many ties to these BTS programs.

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Or visit the EnergySmart Schools Web site at:
www.eren.doe.gov/energysmartschools

The Grafton Middle School/High School in Virginia Beach, Virginia, is a prime example of the EnergySmart Schools concept. The school's architecture incorporates watersource heat pumps above second-floor corridors, daylighting, and an advanced ventilation system.



Reshaping BTS for You

BTS has a long and varied history. Over a span of 20 years, evolving legislation and changing administration priorities have shaped the current and past BTS programs. The shifts in priorities and direction resulted in many small programs working with specific groups of stakeholders. In recent years, we started hearing (from people like you) that BTS seemed to lack focus, that our programs were fragmented and sometimes redundant, and that our lack of coordination was causing us to miss good opportunities.

Our first action was to generate a strategic plan that is realistic about where we are now and where we need to go. The plan establishes a three-part process to build a framework for our activities and achieve better integration of our programs. First, we will analyze trends in energy use and anticipate the impact of program options. Second, we will solicit the involvement of stakeholders like you to help us identify opportunities, set priorities, review goals, and expand our partnerships. Third, we will submit our programs to continuous external and internal evaluation.

In concrete terms, the strategic plan outlines a new way of doing business in BTS to strengthen and better focus the organization. It calls for the development of a peer review process and encourages greater competition for our research, devel-

opment, and deployment (RD&D) funds. In addition, we have initiated a roadmapping effort that will give stakeholders like you an opportunity to tell us where we might best focus our technology and deployment efforts (see the sidebar article, "Mapping Our Future").

This seems like a fortuitous time to expand BTS' focus. Between now and 2010, we anticipate the construction of 21 million new homes and more than 19 billion square feet of new commercial and industrial buildings in the United States. These buildings will help shape the energy usage of the U.S. buildings sector throughout the 21st century. They will have a major impact on our environment and our economy.

In terms of the environment, energy consumption in buildings currently represents 35% of U.S. carbon dioxide emissions; 47% of sulfur dioxide emissions; and 22% of nitrogen oxide emissions. The BTS plan, given funding resources, will reduce carbon emissions by more than 38 million metric tons in 2010 and more than 105 million metric tons in 2020.

As for the U.S. economy, the total investment in the buildings sector was \$600 billion in 1995, more than 8% of the Gross Domestic Product. This includes nearly \$400 billion in new construction and \$200 billion for building renovation, modifications and repair. BTS technologies can reduce the energy use in these buildings, resulting in more affordable housing for private citizens and lower overhead for commercial enterprises.

BTS-sponsored research and development (R&D) in buildings technologies assures that our country can construct buildings that incorporate the latest technologies to achieve both energy efficiency and cost effectiveness. On a national level, this results in greater competitiveness in the global marketplace. Building costs and building energy expenses are part of running any business, so minimizing these costs are a part of keeping our economy strong.

We see Federal R&D as being especially important to the building industry. Because of the fragmented nature of the construction industry, few firms spend money on R&D. In fact, private-industry R&D expenditures for the buildings sector as a whole are less than 0.5% of sales, while the national average in other industries is closer to 3.5%. Federal R&D is needed to fill the gap and help keep our nation's building practices on the forefront of technology.

As we move forward with the implementation of our strategic plan, we'll be reshaping our RD&D efforts, refocusing our deployment activities, and working to assure that we're doing our best to serve stakeholders like you. We'll keep you posted on these activities through this newsletter, and we welcome your input.

To read the BTS strategic plan, visit our Web site at:
www.eren.doe.gov/buildings/office.html

VISION
A healthier, more prosperous
future through the wise use
of energy in buildings
and communities.



Mapping Our Future

An essential aspect of the BTS strategic plan is the roadmapping effort, in which we work with industry representatives and other stakeholders to build a vision and a roadmap for major sectors of the building industry. Roadmapping creates a shared vision among diverse groups and provides a framework for activities that develop and accelerate the adoption of new technologies in the marketplace.

"Our role is to help organize the different groups within the industry and to get them to focus on how to make their entire industry better," says Dennis Clough, who is heading the BTS roadmapping effort for the lighting industry.

"Oftentimes, industry advances are difficult to achieve when each company works independently," says Clough. "But when you get all of them to try to work together, you can move everything forward because of the momentum you create with a larger, coordinated effort."

"We have all these different organizations that are investing a lot of their own time and money to participate in this effort. They're willing to do it because ultimately it will reflect back on their bottom line. It's the concept of enlightened self-interest: 'If we make everything better for everyone, then it will make it better for us as well.'"

The BTS roadmapping process has three steps:

- Visioning, in which industry leaders work with BTS to develop a unified vision statement of where they want their industry sector to be in 2020.
- Roadmapping, which involves a series of workshops to develop a strategy for achieving the vision.
- Implementation, in which BTS and industry align their research, development and deployment efforts to follow the strategies determined in the roadmapping effort.

"We determine the barriers that currently are keeping the industry from achieving the vision and then discuss the activities necessary to overcome those barriers," says Clough. "That activities list will end up being the fundamental component of the technology roadmap."

Visions have been developed for three initially selected technology areas: commercial whole buildings, windows, and lighting. A series of workshops is currently underway to develop the roadmaps. Information obtained from these workshops will be used to develop a draft roadmap, which will be reviewed by industry and other stakeholders.

The intention is to use these industry-driven roadmaps as guidance in the development of more robust R&D agendas. Once the roadmaps are developed, BTS can work in partnership with industry to implement them.

"The effort is important to help DOE demonstrate to industry that we are actively aligning our research agenda to meet their needs," says Bill Noel, who is heading the roadmapping effort for the windows industry.

Dru Crawley, who is leading the roadmapping effort for commercial buildings, agrees. "It really is giving us some true direction for our R&D program," says Crawley.

To check the latest progress on the technology roadmaps, see:

www.eren.doe.gov/buildings/technology_roadmaps/technology_roadmaps.html

Marquee Programs

The State Energy Program

Buildings and beyond...Lighting retrofits. Car pools. Energy-efficient manufacturing. Wind turbines. Energy education in schools. Irrigation practices. Sustainable planning. Revolving loan programs. Photovoltaic systems. Building energy codes. Public transportation. Industrial waste heat reclamation. Geothermal heat pumps. Energy performance contracting. Manufactured homes. Telecommuting. Appliance rebate programs. More efficient fish trawling. Recycling industrial by-products. Whole building designs. Alternative fuels. And the list goes on.

Not many programs can claim such diverse activities as those listed above, yet BTS' State Energy Program (SEP) counts these and many more among their tally of successful efforts. In a new publication, *State Energy Program Results: More Projects That Work*, the SEP has compiled literally hundreds of success stories from all 50 States, plus six territories.

Flipping through the 44-page document gives the casual reader a good overview of the program, which was established in 1996 by consolidating two energy programs—the State Energy Conservation Program (SECP) and the Institutional Conservation Program (ICP). The SECP had provided State funding for a variety of energy efficiency and renewable energy activities. The ICP program provided schools and hospitals with a technical analysis of their buildings and the installation of energy conservation measures identified in the analysis.

The State Energy Program combined these program activities and established an integrated focus. The program has also established more flexible funding mechanisms, increased local decision making, and streamlined administrative procedures. DOE Regional Support Offices provide program guidance, review and approve State plans and amendments to plans, award grants, and monitor SEP performance.

An SEP grant, managed through the New York State Energy Research and Development Authority (NYSERDA), helped fund analysis that was critical to integrating "green technology" into the 4 Times Square building, recently constructed in the heart of Manhattan. The building incorporates daylighting, fuel cell and photovoltaic energy generation, and a CFC-free HVAC system.

The program has been instrumental in the implementation of more than 8,000 state conservation projects since 1983, and 69,000 school and hospital buildings have been made more energy efficient since 1979. Additionally, for every dollar of SEP funds invested, the program has consistently leveraged four dollars of State, local, private, and PVE (Petroleum Violation Escrow) funds. Roughly 6,300 people throughout the country are employed as a result of these projects.

For more information about the State Energy Program, visit the Web site at:

www.eren.doe.gov/buildings/state_and_community/sep.html

Or contact:

State and Community Programs@ee.doe.gov
202-586-4074



Regional News

This column gives the DOE Regional Offices a chance to celebrate their successes and let us know what is happening in their regions. As you can see from the items below, our regional offices are active, innovative, and playing a major role in expanding the use of BTS technologies and services in their regions.

DRO-Sharing Products and Resources Among the States

Personnel working in the Denver Regional Office (DRO) along with the BTS Office of Codes and Standards Program are helping to strengthen collaboration and leveraging of resources among the States. In many instances, States create duplicate products and services, failing to capitalize on the strategies and lessons learned by neighboring States. The DRO is planning a multi-state electronic database and forum that will help the States share their collective wisdom and lessons learned. The database will provide easy access to existing products such as educational and training materials, marketing brochures and flyers, case studies and "how to" guidance. The States will be able to download these products and tailor them for their specific needs.

CRO-Offering Community-Based "Strategies and Solutions"

Chicago is often referred to as the "city of broad shoulders." The title seems appropriate as the Chicago Regional Office (CRO) continues to carry a wealth of BTS opportunities, information and assistance to communities in the region through State organizations and other key stakeholders. Highlights include CRO's partnership with the Illinois Housing Development Authority on a performance contracting initiative that extends the benefits of energy saving performance contracts to assisted housing development mortgagors. Now building managers with smaller energy budgets can take advantage of reducing those costs without risking capital. Another good example is the "EnergySmart" Bluffview Elementary School in Worthington, Ohio, a project that brings together a Rebuild partnership, the local utility, an elementary school within the community, and a local engineering firm to increase energy efficiency and promote renewable technologies. The CRO is also proud to have the 1998 Rebuild Partner of the Year—Webster City, Iowa—as a regional partner. The community's wide acceptance of ground source heat pumps as a technology that "makes dollars and sense" is just one example of their proactive stance on energy efficiency and renewable technologies. These are just a few of many examples of how BTS and the CRO impact regional communities.



BTS Meetings, Events & Conference Calendar

Date	Meeting Event Conference	BTS Staff Contact
June 19-September 7, 1999	Under the Sun: An Outdoor Exhibition of Light Enid Haupt Garden, Smithsonian Museum Castle Washington, DC	Wendy Butler 202-586-8252
July 13-14, 1999	National Conference on Building Energy Codes Washington, DC	Margo Appel 202-586-9495
August 9-11, 1999	Rebuild America Conference Las Vegas, NV	Mark Bailey 202-586-9424
September 15-16, 1999	International Energy and Environmental Expo Cincinnati, Ohio	Lani Macrae 202-586-9193
September 15-18, 1999	HVAC Comfortech Baltimore, Maryland	Esher Kweller 202-586-9136
September 19-22, 1999	NASEO Annual Meeting Indianapolis, Indiana	Joe Konrade 202-586-8039
September 30-October 1	STEAB Public Meeting Wilmington, NC	Bill Raup 202-586-2214
October 17-19, 1999	National Association of Housing and Redevelopment Officials Annual Conference Philadelphia, Pennsylvania	Jim Fremont 202-586-5735

Credits

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The Buildings for the 21st Century newsletter is published quarterly by the Office of Building Technology, State and Community Programs of the U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy.

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Web Feature:

The Redesigned BTS Web site

The BTS Web site, located at www.eren.doe.gov/buildings, has a new look. In a clearer, cleaner format, the new home page guides users to new information written and designed just for them. We literally rearranged all the existing information according to who would want to use it. Then we grouped it all in a logical order to make it easy for users like you to navigate to the information you need.

"We've refocused the Web site so the information is directed more to specific types of people—such as homeowners, commercial building owners and operators, and researchers—rather than having a focus on just our programs and us," says Dru Crawley, who headed up the redesign project. "The program information is still there, but it's presented in the context of information our customers are looking for."

Our redesigned home page carries the new BTS "look" throughout much of the site. Our hope is that this look will make the site more visually interesting and easier to navigate, while also creating the sense of moving through a consistent set of information.

The site includes new features, like a search engine; an "About BTS" section, which includes our strategic plan; and a "News and Hot Topics" section. In addition, a number of features are highlighted on the home page, including the whole building concept; success stories and case studies; building energy data; ENERGY STAR®; technology roadmaps; software tools; rules, codes and standards; and our kid's site. We also have a "Featured Sites" button, currently linking to information about our lecture series at the National Building Museum and the EnergySmart Schools Partnership.

In the next few months, we'll be adding more new information to the site and continuing to revise the "subsites" under the home page. We'll continue to highlight these features in future editions of this newsletter.

As we move forward, we encourage you to visit the site www.eren.doe.gov/buildings, browse through it, and let us know what you think regarding things we should change or new information we should add. If something doesn't work right, let us know. If you can't find what you need on our site, let us know. Email us by hitting the Webmaster link on the bottom of any of the pages within the site, or email to webmaster.bts@nrel.gov.

Visit the BTS Web site at:
www.eren.doe.gov/buildings.



BTS Video Broadcast Trains Retailers About ENERGY STAR®

On December 21st, a video explaining the benefits of ENERGY STAR® was broadcast by satellite to the 1100 stores belonging to the Associated Volume Buyers (AVB). The video, funded by BTS, explains what the ENERGY STAR® label means, why ENERGY STAR® products are more efficient, and why they're a wise choice for consumers. Overall, the video helps the stores' sales staffs use the ENERGY STAR® label as what retailers call a "selling point."



AVB is a buying cooperative that lets independent stores aggregate their purchases to achieve the same cost breaks obtained by the large chain stores. AVB broadcasts an informative video to their member stores once a week, on a variety of topics relevant to the retail market. By contributing the ENERGY STAR® video, BTS was able to take advantage of this existing broadcast mechanism to reach a large number of retail stores.

The video was made in a mock "talk show" format, with a host interviewing Damon Benedict of the Federal Energy Technology Center. To spice up the video, short ENERGY STAR® quizzes were scattered throughout, as were testimonials from such high-visibility ENERGY STAR® manufacturers as Maytag, Andersen Windows, and Whirlpool. Scott Thigpen of the U.S. Environmental Protection Agency (a partner with DOE on the ENERGY STAR® program) also appeared in a short vignette.

Of the 1100 member stores, an estimated 300 to 600 stores viewed the video broadcast.

From Mark Ginsberg, Deputy Assistant Secretary

Office of Building Technology, State and Community Programs

"The Office of Building Technology, State and Community Programs is proud to present this inaugural issue of our newsletter. We hope you find information and news you can use. We plan to share our successes and lessons learned with you — our partners. Please feel free to suggest topics and issues we can explore together. The entire staff and I look forward to your comments and ideas for future issues."

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