

U.S. Department of Energy **Developments**

Erie-Ellington Homes Cuts Ribbon on Boston Public Housing Development

On June 22nd, the Codman Square Neighborhood Development Corporation (CSNDC) and the City of Boston marked the completion of the city's newest low-income rental housing project in the Four Corners neighborhood of Dorchester with a ribbon cutting and community celebration. Fifty environmentally designed homes and a community center are well on the way to completion, with the first families already moving in.

The project, known as Erie-Ellington Homes, is unique because it raises the standard for construction and environmental performance of publicly funded housing. Erie-Ellington Homes will feature state-of-the-art "EcoDynamic" energy and environmental technologies developed by the Hickory Consortium for CSNDC through the U.S. Department of Energy's Building America program.



Ed Hancock/PIX05494

The Erie-Ellington development provides energy-efficient, low-income housing in the Dorchester area of Boston.

The new units, in traditionally designed duplex and triplex houses, feature energy-efficient panelized construction, a "tight" building envelope to promote comfort, and durable, high-quality materials such as energy-saving Pella Windows and EPA Energy Star-rated appliances. The measures developed for Erie-Ellington Homes by Building America designers are expected to save 50% annually on overall energy use compared to standard Model Energy Code homes, and 46% annually on total operating expenses for water, electricity, and heat for the project owner, Erie-Ellington Homes Limited Partnership.

"The kinds of quality, resource-conserving features used in Erie-Ellington are usually found in upper-end, eco-efficient homes," said project architect Bruce Hampton. The architect, along with energy engineer Mark Kelley, has applied Hickory's EcoDynamic building approach to the prize-winning Cambridge Cohousing and Elm Street projects—both market-rate developments. "We wanted to prove, in collaboration with CSNDC and the City of Boston, that affordable housing can be designed with quality, durability, long life, and environmental health in mind." At \$94 per square foot after rebates, construction costs for Erie-Ellington actually fall 25% below similar conventionally built housing.

The \$6.4-million project was launched when the CSNDC asked Hickory Consortium to work with them to redesign and "reknit" the neighborhood. Hickory Consortium is a Building America partnership that includes builders, architects, scientists, and manufacturers working together to provide energy-efficient and safe homes at costs comparable to or less than those of traditional homes.

For more information on this project, please contact Mark Kelley at (617) 491-1888 or dragon@world.std.com. ★

Ground-Breaking News

- 1 **Erie-Ellington Homes Cuts Ribbon on Boston Public Housing Development**
- 2 **Partnership Produces First Energy-Efficient Manufactured Home Built with Foam Core Panels**
- 2 **Habitat for Humanity to Dedicate Two Energy-Efficient Test Houses in East Tennessee**
- 3 **Affordable Healthy Homes Offered in Metro Atlanta**
- 3 **Upcoming Events**

Buildings for the 21st Century



U.S. Department of Energy
Office of Energy Efficiency and Renewable Energy
Office of Building Technology, State and Community Programs

Partnership Produces First Energy-Efficient Manufactured Home Built with Foam Core Panels

In June, Energy Secretary Bill Richardson announced that a manufactured home built entirely from energy-efficient foam core panels will roll off the assembly line thanks to a unique partnership between industry and the Building America program. The demonstration home, built at Champion Enterprises' Silverton, Ore., factory, is expected to have heating and cooling costs as much as 50% lower than those of a manufactured home built to the minimum Department of Housing and Urban Development code.

"The Department is pleased to be a partner in this energy-saving project," said Secretary Richardson.

"Manufactured housing comprises about 20%–30% of new U.S. home sales, so the energy savings from this particular building technology could be substantial. Homes built with this technology will also allow their owners to use their hard-earned dollars for purposes other than heating and cooling."

This event is unique for two reasons. It demonstrates that the nation's largest builder of manufactured housing believes in this energy-saving technology. And, it marks the first assembly line construction of a manufactured home built with foam core panels, also known as structural insulated panels (see photo, upper right). Project partners include two foam core panel manufacturers, Precision Building Products of Boise, Idaho, and Premier Building Systems of Fife, Wash., as well as several other building product suppliers.

For more information, contact Michael Baechler at (503) 417-7553 or



Michael Baechler/PIX03903

These foam core panels manufactured by Champion Enterprises will help houses meet Energy Secretary Bill Richardson's goals for energy-efficiency.

michael.baechler@ornl.gov or visit the project Web site at www.pnnl-sips.org.★

Habitat for Humanity to Dedicate Two Energy-Efficient Test Houses in East Tennessee

A partnership between Building America, Habitat for Humanity, and the Insulating Concrete Forms Association has been formed in the hills of eastern Tennessee near the Oak Ridge National Laboratory (ORNL). The focus of the collaboration is the recently completed construction of two energy-efficient Habitat Houses. These houses were built for two reasons: to help answer important energy performance questions on innovative building technologies and to provide energy-efficient, Habitat for Humanity housing to eligible homeowners.

This partnership grew out of a four-year energy efficiency study under way at ORNL. More than 100 different types of walls have been tested and

analyzed in a consistent manner and reported by ORNL. Future homeowners and builders can also use an Internet tool, located at www.ornl.gov/roofs+walls/calculators/wholewall/index.html, to obtain energy performance measurements for different wall systems for their new home. This information can be used to make comparisons between traditional wood-frame construction, insulating concrete forms, metal, structural insulating panels, autoclave concrete blocks, straw bale, and many other types of residential wall system options.

These two houses will help building scientists determine the effects of insulated concrete forms, residential building thermal mass, air-tightness, and ground coupling on whole-building energy performance.

For more information, please contact Pat Love at (865) 574-4346 or lovepm@ornl.gov.★

Affordable, Healthy Homes Offered in Metro Atlanta

Building Science Consortium and Health-E Community Enterprises worked together to design a series of exceptionally healthy, energy-efficient houses for entry-level homebuyers in the Atlanta area. This Building America project was made possible through a unique partnership between these two organizations and the American Lung Association, Wachovia Bank, Fulton-Atlanta Community Action Authority, Fannie Mae, and Southface Energy Institute. To present, three houses have been built in this community, with a total expected build-out of 33.

These healthy houses are expected to save homeowners as much as 50% on their energy bills compared to typical houses in Atlanta, resulting in average monthly heating and cooling bills lower than \$38 per month.

To achieve this goal, the builder is installing high-efficiency air-source heat pumps to provide heating and cooling for the houses. In addition, windows with low-e, spectrally selective glass help to limit heat loss during the winter and solar gain during the summer. Further energy savings result from advanced 2' x 6' wall framing, low air infiltration, and placement of the ducts inside a sealed and insulated crawl space.

A healthier living environment is created by adding a supply ventilation system to provide an appropriate amount of fresh air to the occupants, and by using a dehumidifier to control the humidity inside the house during the summer. Drafts are reduced by tightening the building envelope and using high-performance windows.

These changes are accomplished with minimal effect on the initial cost

Upcoming Events	
September 20–21, 2000	Building America team meeting — Pittsburgh, Penn.
September 28–30, 2000	California Real Estate Inspection Association Fall Educational Conference — Anaheim, Calif. (BSC presenting)
October 1, 2000	Hedgewood's New American Home prototype complete — Atlanta, Ga. (IBACOS)
October 5–7, 2000	Colorado Association of Home Builders, 2000 Rocky Mountain Builder Conference — Beaver Creek, Colo. (BSC presenting)
October 11–12, 2000	Network Leadership Meeting — Pittsburgh, Penn. (IBACOS)
October 13–15, 2000	Habitat for Humanity Southeast Regional Conference Training for Construction Managers — Orlando, Fla. (IHP)
October 14, 2000	Artistic Homes opening, Parade of Homes — Albuquerque, N.M. (BSC)
October 16–17, 2000	Building America performance analysis training — Boston, Mass.
October 19–20, 2000	Annual Meeting of Quality Modular Building Task Force — Annapolis, Md. (Hickory)
October 19–20, 2000	CARB team meeting and ribbon-cutting ceremony for Mitchell Homes community project — Pensacola, Fla.
October 22–25, 2000	Benchmark 2000 Quality Conference — Pasadena, Calif.
October 25–28, 2000	EEBA Excellence in Building Conference and Exhibition — Denver, Colo.
November 6–8, 2000	FEMA/PATH "Durability and Disaster Mitigation in Wood-Frame Housing" Conference — Madison, Wis.
November 15–17, 2000	Idaho Energy Conference — Sun Valley, Idaho (BSC presenting)
January 27–31, 2001	ASHRAE Winter Meeting — Atlanta, Ga.
February 9–12, 2001	International Builders' Show — Atlanta, Ga.★

of construction. Cost savings are achieved by reducing the size of the air conditioner and using shorter supply air ducts. The end result is a house design that is healthy, efficient, and affordable to the average homebuyer.

For more information on the healthy homes project, contact Betsy Pettit at (978) 589-5700 or Betsy@building-science.com.★





BUILDINGS FOR THE 21ST CENTURY

Buildings that are more energy-efficient, comfortable, and affordable ... that's the goal of DOE's Office of Building Technology, State and Community Programs (BTS). To accelerate the development and wide application of energy efficiency measures, BTS:

- Conducts R&D on technologies and concepts for energy efficiency, working closely with the building industry and with manufacturers of materials, equipment, and appliances
- Promotes energy/money saving opportunities to both builders and buyers of homes and commercial buildings
- Works with state and local regulatory groups to improve building codes, appliance standards, and guidelines for efficient energy use
- Provides support and grants to states and communities for deployment of energy-efficient technologies and practices.

Extra copies of this newsletter can be downloaded from http://www.eren.doe.gov/buildings/building_america/resources.shtml

September 2000, Rev. December 2001
NREL/BR-550-28583

Printed with a renewable-source ink on paper containing at least 50% wastepaper, including 20% postconsumer waste.

Visit our Web sites at:

www.eren.doe.gov/buildings/building_america



www.pathnet.org



www.energystar.gov



Building America Program

George James • Building America Program • Office of Building Systems, EE-41 • U.S. Department of Energy
1000 Independence Avenue, S.W. • Washington, DC 20585-0121 • (202) 586-9472 • fax: (202) 586-8134
e-mail: George.James@ee.doe.gov

Building Science Consortium (BSC)

Betsy Pettit • Building Science Consortium • 70 Main Street • Westford, MA 01886
(978) 589-5100 • fax: (978) 589-5103 • e-mail: Betsy@buildingscience.com

Consortium for Advanced Residential Buildings (CARB)

Steven Winter • Consortium for Advanced Residential Buildings • 50 Washington Street • Norwalk, CT 06854
(203) 852-0110 • fax: (203) 852-0741 • e-mail: swinter@snet.net

Hickory Consortium

Mark Kelley • Hickory Consortium • 85 Depot Road • Harvard, MA 01451
(617) 491-1888 • fax: (617) 491-6004 • e-mail: dragon@world.std.com

IBACOS Consortium

Brad Oberg • IBACOS Consortium • 2214 Liberty Avenue • Pittsburgh, PA 15222
(412) 765-3664 • fax: (412) 765-3738 • e-mail: boberg@ibacos.com

Industrialized Housing Partnership (IHP)

Subrato Chandra • Florida Solar Energy Center • 1679 Clearlake Road • Cocoa, FL 32922
(407) 638-1400 • fax: (407) 638-1439 • e-mail: subrato@ucf.edu

National Renewable Energy Laboratory

Ren Anderson • 1617 Cole Boulevard, MS4111 • Golden, CO 80401
(303) 384-6191 • fax: (303) 384-6226 • e-mail: ren_anderson@nrel.gov

Building America is sponsored by the U.S. Department of Energy. Field support is provided by the National Renewable Energy Laboratory (NREL).

Building America Overview

The Program

The U.S. Department of Energy's Building America Program is reengineering the American home for energy efficiency and affordability. Building America works with the residential building industry to develop and implement innovative building processes and technologies — innovations that save builders and homeowners millions of dollars in construction and energy costs. This industry-led, cost-shared partnership program uses a systems engineering approach to reduce energy use, construction time, and construction waste by as much as 50%.

The Approach

Building America's systems engineering approach unites segments of the building industry that have traditionally worked independently of one another. It forms teams of architects, engineers, builders, equipment manufacturers, material suppliers, community planners, mortgage lenders, and contractor trades. There are five teams comprising more than 180 different companies.

The Results

Each Building America team is constructing test homes and developing community-scale projects that incorporate its systems innovations. More than 1,200 energy-efficient houses have been built by the teams to date. ★