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ORNL, Schaad, DOE and TVA team up for zero-energy home initiative

OAK RIDGE, Tenn., Sept. 26, 2008 -- The U.S. Department of Energy's goal of a zero-energy household took a major step toward becoming a reality today with the formation of the Zero Energy Building Research Alliance, or ZEBRAlliance.

The initiative is a partnership between Oak Ridge National Laboratory and Schaad Companies, along with their architects BarberMcMurry, to develop and demonstrate new energy efficiency technologies for homes and help homeowners learn more about them.

The announcement was made at a groundbreaking ceremony for four research homes being built in Oak Ridge by Schaad Companies, a 98-year-old, family-owned business based in Knoxville and specializing in construction, real estate development, and property management and investment. Schaad is building the houses at its own expense, and DOE and TVA are sponsoring ORNL to conduct the research and educate consumers.

During the ZEBRAlliance groundbreaking, Jennifer Banner, CEO of Schaad Companies, remarked that a new era has just begun.

"Working together, the ZEBRAlliance is changing the future of home building today," Banner said.

Banner also described how new construction methods and materials are needed in the building industry the same way new types of smarter, more fuel efficient engines are needed for automobiles.

"Intelligent, cost effective innovation is powering the ZEBRAlliance," she said.

The homes, located in a residential community only minutes from ORNL, will be the first to field test several new products over the next two years such as the ClimateMaster ground-source integrated heat pump, a single unit in lieu of separate heating and cooling, water heater and dehumidifier, and new appliances from the Whirlpool Corporation.

After the construction of the homes is finished, ORNL researchers will collect data and "tweak and validate" the technological components to achieve optimal quality and efficiency of the homes.

"This collaborative effort will serve the Tennessee Valley consumer with technologies and building techniques that will help them reduce their energy consumption, saving them money and reducing electricity demand across the Valley," said Jeromy Cotten,

TVA Research Project Manager. "TVA's goal is to reduce the Valley's electricity consumption by 1,400 megawatts by the end of 2012 and these new, efficient homes will help us meet that goal."

This initial ZEBRAAlliance project marks a significant step of moving the zero-energy homes effort by ORNL, funded from the beginning by DOE and TVA, from Habitat for Humanity in Lenoir City, Tenn., to homes more typical of the region's mass market. The collaboration with Habitat for Humanity resulted in construction of five near zero energy houses from 2002 to 2007 and produced valuable information for improving future homes.

Through development of new technologies, fine-tuning existing ones and combining partners' resources, the ZEBRAAlliance seeks to continue to lower energy costs and make the technologies more affordable. The goal is to eventually lay groundwork for a home that could generate more energy than it consumes over a year but cost the same to purchase and own as a typical house.

"We commend Schaad for its leadership among Tennessee builders in joining the DOE Building America program's Builders Challenge," said Johnny Moore, assistant manager for Science, DOE Oak Ridge Operations. "This project will accelerate DOE's progress toward its goal of zero energy homes. It is a great example of science, government and industry partnering to improve the energy efficiency of new and existing buildings."

Ted Fox, deputy director, ORNL Energy and Engineering Sciences Directorate, said "ORNL is proud to be leading the development and integration of new, energy saving residential technologies as a partner in this alliance. Without the sponsorship of the DOE Building Technologies Program and TVA these achievements would not be possible."

The ZEBRAAlliance demonstration homes will consist of about 2,800 square feet of living space. Construction of a home's shell or envelope -- the part that separates the inside from outdoors -- can have an enormous impact on energy use. Each home will evaluate the affordability and performance of one of the following strategies:

-- Structural Insulated Panels (SIPs) consisting of a foam core of insulating material with oriented strand board skins.

-- An advanced stick-built wood framing system designed to reduce thermal short circuiting through structural members, provide cavities for ample thicknesses of insulation, incorporate a radiant barrier in the attic, and achieve air tightness through use of a Henry liquid applied weather resistive barrier.

-- An insulating system that stores solar energy, shaving peak cooling loads by day and passively heating by night, coupled with other envelope features to achieve air tightness and weather resistance.

--A conventional wood framing system with the insulation wrapped around the outside to eliminate thermal short circuiting through structural members, and use of a trowel applied weather resistive barrier.

ORNL is managed by UT-Battelle for the U.S. Department of Energy.

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About the ZEBRAlliance

The Zero Energy Building Research Alliance is both a research project and a residential energy efficiency campaign to raise awareness and support usage of green power, energy efficient appliances, and other products and initiatives. The founding members of the ZEBRAlliance are ORNL and the Schaad Companies. For more information, go to: <http://www.zebralliance.com>

About Tennessee Valley Authority

TVA is the nation's largest public power provider and is completely self-financed. TVA provides power to large industries and 159 power distributors that serve approximately 8.8 million consumers in seven southeastern states. TVA also manages the Tennessee River and its tributaries to provide multiple benefits, including flood damage reduction, navigation, water quality and recreation. <http://www.tva.gov/>

About Oak Ridge National Laboratory

Oak Ridge National Laboratory is the Department of Energy's largest science and energy laboratory. Managed since April 2000 by UT-Battelle, ORNL has a staff of more than 4,200, annually hosts about 3,000 guest researchers, and annual funding exceeding \$1.2 billion. As an international leader in a range of scientific areas that support the Department of Energy's mission, ORNL has six major mission roles: neutron science, energy, high-performance computing, systems biology, materials science at the nanoscale, and national security. <http://www.ornl.gov/>

About Schaad Companies

Schaad Companies is comprised of businesses owned and controlled by members of the John H. Schaad, Jr. family. Established in 1910, the businesses include residential and commercial construction, residential and commercial development, residential and commercial real estate brokerage and management services, equipment leasing, and investments. The company is actively involved in numerous community outreach endeavors and is headquartered in the historic Knollwood Manor on top of Knoxville's Bearden Hill. <http://www.schaadcompanies.com/schaad/about.asp>

About DOE's Office of Energy Efficiency and Renewable Energy

The U.S. Department of Energy's Office of Energy Efficiency and Renewable Energy manages 10 EERE programs committed to enhancing energy efficiency and productivity; bringing clean, reliable and affordable energy technologies to the marketplace; and making a difference in the everyday lives of Americans by enhancing their energy choices and their quality of life. The Building Technologies Program within EERE is the DOE sponsor of this work. [http://www1.eere.energy.gov/office\\_eere/index.html](http://www1.eere.energy.gov/office_eere/index.html)

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