

TOOLBASESM

NEWS

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EVHA Winning Practices Raise the Bar for Energy Efficiency

Ten years ago, the EnergyValue Housing Award (EVHA) program set out to promote and improve the energy efficiency of new homes. Since then, energy-efficiency — and EVHA winning practices — have come a long way.

Early EVHA best practices included higher R-value insulation and sealed ducts placed in conditioned space. Today, these approaches are only the tip of the iceberg. According to this year's EVHA judges, the most important winning practice of the 2005 winners is their understanding of how all parts of the home come together in a whole-house systems design approach to energy efficiency.

"The most successful applicants had the designer, builder, consultant, and contractors all involved up front, and all reading from the same script," said Mike Lubliner, EVHA judge and the senior building science specialist at the Washington State University Energy Program.

For EVHA winners, energy efficiency begins well before construction. Participating in energy programs, such as the Department of Energy's (DOE's) Building America and ENERGY STAR® programs, provides winners with preconstruction energy analysis that estimates the home's total energy usage and determines which practices are best suited for the climate. Winners then take energy efficiency a step—or several steps—further.

"The EVHA standard is now well above ENERGY STAR," said judge and former EVHA winner W. Orlo Stitt, president of Stitt Energy Systems of Rogers, Ark. Lubliner agreed saying, "The winners took the best whole-house approaches from Building America and then took it to another level, reaching for a zero-energy approach."

For example, several hot climate winners used passive solar design to diminish solar heat gain in summer and make use of it in winter. Yet one winning home went beyond passive solar home orientation and overhangs by adding a west-facing garage that buffers solar gains, stairwells that act as thermal chimneys, an open floor plan that encourages air circulation, and concrete floors that provide thermal mass.

Extra steps do not have to be complicated, and can enhance affordability. Low-e windows with low solar heat gain coefficients (SHGC) and fluorescent lighting

packages are simple, yet effective, steps in reducing energy bills. Optimum value engineering (OVE) improves a home's insulation while reducing material costs. Tubular skylights, which reduce solar heat gain in summer and heat loss in winter, can cost less to install than less-efficient, traditional skylights.

Once construction is complete, EVHA winners continue testing to verify that the



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home meets its goals. To measure air leakage, one of the best indicators of energy efficiency, all winners performed blower door tests, a practice used only sporadically among early EVHA builders. On average, EVHA winning homes are eight times tighter than the typical U.S. house today.

All winners also provided a Home Energy Rating System (HERS) score. HERS is an objective, standardized evaluation of the energy performance of a home that results in a score between 0 and 100, with 100 indicating zero purchased energy consumption. EVHA winners averaged a HERS score of over 90.

The EVHA winners will be announced at the EVHA Ceremony on January 13, 2005, during the International Builders' Show. For more information, visit the EVHA website at www.nahbr.org/evha. **IB**

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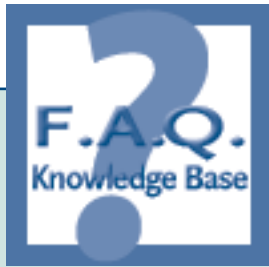
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New ToolBase.org Feature

In January, ToolBase Services will add a new feature to its line-up—a Frequently Asked Questions (FAQ) database rich with actual technical questions submitted by members of the home building industry and in-depth answers provided by ToolBase's Hotline and Ask an Expert staff. Click on the FAQ icon (like the one above) on the ToolBase portal and you'll have the option of searching the database by keyword or ToolBase category, including:

- Affordable Construction Technologies
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- Energy
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- Home Automation
- Land Use
- Manufactured & Factory-Built Housing
- Mold, Moisture & Leaks
- Natural Disasters
- Remodeling
- Seniors Housing
- Steel Framing
- Wood Frame Construction

The ToolBase Hotline and Ask an Expert online services will no longer be available, however, the new FAQ puts all the knowledge acquired by those services at your disposal, 24 hours a day. So if you've ever wondered, "Are tankless water heaters fueled by natural gas more energy efficient than their electric counterparts?" or "What should I do about mold spots on lumber while building a home?" then the ToolBase FAQ Knowledge Base is the place for you.

www.toolbase.org

Guidelines Developed as Tool to Move Green Building Further into Mainstream

The benefits of green building—for the environment, occupant health, the economy, and energy and resource efficiency—are well-known. Yet getting started in green home building can be a challenging process. As a result, numerous home builder associations (HBAs) across the United States have developed and adopted green building programs to help their members navigate through the design and construction of green homes. Building on the success of these programs, the National Association of Home Builders (NAHB) and the NAHB Research Center, along with stakeholder group members from the home building industry, have developed the National Green Home Building Guidelines.

The Guidelines are designed to move green building even further into the mainstream by providing a tool for those without current green building programs in place, including mainstream builders who may not be served by an HBA with a green building program. They also offer an excellent way for HBAs to start a program; in addition to the Guidelines, HBAs can receive information on how to customize them for local conditions and on how to implement a local program.

The process for developing the Guidelines began in the spring of 2003, when NAHB adopted a resolution to support green building. In an effort to provide technical guidance to support the new policy, NAHB asked the Research Center to develop green building guidelines. Since then, the Research Center has researched countless techniques and identified best practices from existing local programs. The Research Center also convened a stakeholder group consisting of 64 members from the building industry—including manufacturers, government organizations, and contractors—willing to volunteer their time to develop and evaluate the Guidelines in an open, public process.

The resulting Guidelines tool includes seven primary sections: lot preparation and design; resource efficiency; energy efficiency; water efficiency; occupancy comfort and indoor environmental quality; operation, maintenance, and homeowner education; and global impact.

The tool consists of two parts; a checklist and a user guide. The checklist includes each of the green home building line items along with the associated points a builder can receive for including a line item in a project. For each line item in the checklist, the corresponding user guide provides an explanation of its intent and how to implement it, as well as additional resources for further information.

Users will quickly learn that green building goes far beyond individual components. Green design and careful attention to detail are the core of successful green building, and, accordingly, the Guidelines focus on how products are installed, rather than on the products themselves. They also emphasize the importance of "thinking green" at the start of each project; incorporating green design into a project is not easily achieved once construction has begun.

The Guidelines also take green home building to the next level by offering mainstream builders and current green building programs an opportunity to learn about and use innovative techniques not currently included in existing green building programs. For example, projects can earn points for using a life cycle assessment (LCA) tool to "compare the environmental burden effects of building materials," or by using products that come from ISO 14001 certified manufacturers.

Home builders and HBAs across the country recently had an opportunity to evaluate the tool's usefulness. Their feedback was incorporated into the pilot version to create Version 1 of the Guidelines, which will be released at the International Builders' Show (IBS), January 13-16, 2005, in Orlando, Fla. Version 1, which will be available in both hard copy and electronic formats, will be free to NAHB members. Subsequent versions of the Guidelines will become available as the Research Center gathers more feedback and new techniques become available.

For more information on the Guidelines, visit www.nahbr.org/greenguidelines. **IB**



The National Green Home Building Guidelines will provide a valuable resource for those that do not already have a green building program.



Sponsors Tutorial Townhouses at Builders' Show

The Partnership for Advancing Technology in Housing (PATH) is sponsoring the PATH Tutorial Townhouses, the centerpiece of Reed Communications' Show Village at the 2005 International Builders' Show (IBS) in Orlando, Fla. Twenty-five PATH-profiled technologies will be featured in the home to highlight PATH's principles of affordability, energy efficiency, durability, quality, reduced environmental impact, and resistance to natural disasters.

Builders are invited to the PATH Breakfast of Innovators on January 14, to view the home and hear PATH's latest technology announcement. Visitors will be offered the unique opportunity to enter through an unfinished unit of one of the townhouses, and then tour the second "move-in ready" house. This design renders the townhouses a virtual self-paced tutorial, allowing visitors a before-and-after perspective on the integration of building systems and technologies. The PATH Tutorial Townhouses are the only demonstration homes at the 2005 IBS that provide this type of instructive exhibit of the technology integration process.

PATH-profiled technologies in the townhouses include: high wind-resistant

asphalt roof shingles; fiber-cement siding; optimized HVAC; tankless water heater; home-run plumbing with a plastic plumbing manifold; air admittance valves for venting drains; low- or no-VOC paints; bamboo flooring; recycled-content carpet; radiant barriers; ENERGY STAR-qualified windows, lighting, and appliances; and many more.

For more information on the PATH Tutorial Townhouses, visit www.pathnet.org. To RSVP for the breakfast, email info@pathnet.org. **IBS**



New Builder Resource for Innovation

Are you ready to innovate but not sure where to start? If so, PATH has a new tool just for you. At the 2005 International Builders' Show, PATH will unveil its first "Tech Set," a new resource that promotes a systems approach to technology integration.

PATH's Tech Sets will offer builders a cost-effective framework of technologies that can be used together to improve durability, energy efficiency, environmental performance, disaster resistance, and/or safety.

Each quarter PATH will launch a new Tech Set addressing an area of interest to builders and remodelers. As they are unveiled, each of the Tech Sets will be available on www.toolbase.org, along with more information about the individual technologies. In the meantime, be sure to check out PATH's Technology Inventory at www.toolbase.org/techinventory.

QUALITY MATTERS

NHQ Certified Builder Program Launched Nationwide

At the 2005 International Builders' Show, the NAHB Research Center will officially launch the national implementation of its NHQ Certified Builder program. NHQ (National Housing Quality) certification is presented to builders who have documented their quality management processes, implemented customer-focused quality assurance systems, and passed a rigorous audit by Research Center quality experts. Participation in the NHQ Certified Builder program is designed to foster consistency and quality in building practices.

The certification program is based on ISO 9000 principles, but is designed for the real-world of home building. NHQ certification programs have been shown to increase customer satisfaction, increase the likelihood of customer referrals and repeat customers, reduce or eliminate callbacks, save money by reducing cycle time, improve builder and trade contractor relations, enhance cooperation among contractors, and improve company morale and pride.

In 2004, three builders—Grayson Homes of Ellicott City, Md., KB Home Las Vegas, and Veridian Homes of Madison, Wis.—earned certification through the NHQ pilot Certified Builder program. So far, approximately 20 additional builders are on the way to earning certification in 2005.

Leah Bryant, regional general manager, KB Home said, "Building on our stringent internal quality processes, KB Home's participation in the

NHQ Certified Builder program sends a powerful quality message to our customers. So far, as a result of program implementation, [the Las Vegas division] has seen a four-day improvement on our build time with the confidence that we and our trade partners are building with a consistent commitment to quality."

Many home builders seek the third-party NHQ certification to enhance their existing quality assurance efforts. David Simon, president of Veridian Homes, said, "We are committed to the principles upon which our company was founded: quality home building, community involvement, and environmental stewardship. It's a privilege to build great homes for our customers and to be recognized for our efforts."

Achieving certification also provides a way for home builders to show their dedication to continual improvement on all levels. Cindy McAuliffe, president of Grayson Homes, said, "Participation in the NHQ Certified Builder program will ... be an observable demonstration of our quality commitment to our buyers, trades, and employees ... justifying a premium price for our homes and the Grayson Experience."

For up-to-date news on quality assurance in the home building industry, subscribe to the NHQ Program's free, monthly e-newsletter by visiting www.nahbrc.org/qualitynews. For more information on the National Housing Quality Program, visit www.nahbrc.org/quality, or email quality@nahbrc.org.



Experimental Smart House to be Evaluated

Award-winning architect Michael McDonough, along with a team of engineers, scientists, environmentalists, and over 100 manufacturers, is on his way to completing a house that is the "best of the best" in several technological building categories including, site construction, masonry, and thermal and moisture protection. Once just a virtual model home of the future, McDonough's "E-House" is now under construction at the edge of the Catskill Forest Preserve in New York State's Hudson Valley.

The house will integrate advanced building products and systems with traditional materials and techniques. Specifically, the home will include: radiant heating and cooling systems; an autoclaved aerated concrete-block wall system; structural insulated panels; engineered lumber trusses; a variety of new insulations; and a rainwater collection system built under the house. Rainwater collected and stored in this reservoir will be used for multiple purposes including irrigation, thermal storage, fire suppression, and snow melting. All major system functions in the home will be distance-controlled via the Internet.

The house, and particularly its reservoir rainwater system, will be the focus of a PATH field evaluation conducted this year by the NAHB Research Center. As with all

PATH field evaluations, the E-House evaluation will assist in continuing to provide the latest information on innovative building materials, processes, and systems; showcasing innovative housing projects that can serve as models for home builders across the country; and promoting focused, cooperative housing research among industry, government, and university partners.

For more information and results from previous field evaluations, visit www.toolbase.org/fieldeval. To learn more about the E-House and its progress, visit michaelsmcdonough.com/e-House/ehouse.htm. **TE**

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Working Together, Rebuilding Together

After making as many energy-efficient repairs to their home as they could, Ernest and Cathleen Butler of Arnold, Md., decided that they were just going to have to suffer through another cold winter. At least until they heard that their home had been selected as a demonstration project in the Rebuilding Together program. As part of a broader project funded by the Department of Energy to assess the potential for increasing the energy efficiency of existing homes, the NAHB Research Center partnered with Rebuilding Together to conduct an "energy audit" and make need improvements on the suburban home.

Margo Thompson and Craig Drumheller of the Research Center, along with Rebuilding Together staff, completed blower door and ductblaster testing before the repairs were made to obtain some indication of the actual benefits that were to be achieved due to energy improvements. Tests showed the building shell to have a leakage rate of 32 Air Changes per Hour at 50 Pascals, where about 7 Air Changes per Hour is considered good.

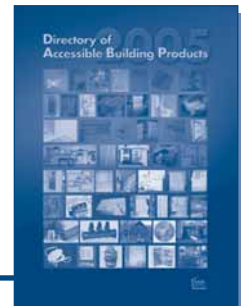
"Before the Butlers' repairs, there was no real duct system, so peripheral rooms could be as much as 10 degrees cooler," said Patrick Pyles, president of Rebuilding Together in Anne Arundel County, in a recent article in *The Capital*.

An energy-efficient checklist was also developed by Research Center engineers to identify energy improvements that are often needed in homes. A wide range of energy efficient-upgrades were identified and ultimately completed in the Butlers' home, including the insertion of insulation into the attic, ceiling, and walls, air sealing, duct sealing, and window replacement. After repairs were made in the home, infiltration was reduced. The proof will come this winter, though, to see the improvement in comfort and reduction in energy use.

For more information and resources on how to build and remodel homes to be more energy efficient, visit www.toolbase.org and click on "Energy" in the left-side navigation bar. **TE**

DIRECTORY OF ACCESSIBLE PRODUCTS NOW AVAILABLE

The 2005 Directory of Accessible Building Products will be available in January 2005, beginning at the International Builders' Show (IBS). The Directory contains useful information on products used in the home, including appliances and fixtures, windows, and doors. It also contains information on climate control products, ramps, stair lifts, and elevators. In addition, national and federal accessibility requirements, specific product dimensions, model numbers, descriptions, and contact information are all included. Featuring product photos and line drawings, the Directory provides the industry with a one-stop resource for addressing enhanced accessibility in residences. After the (IBS), the Directory will be available for purchase online at www.nahbrc.org/bookstore. For more information on how to be listed in the 2006 Directory, contact Mallika Kishen at (800) 638-8556 ext. 6234 or at mkishen@nahbrc.org.



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