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## NEWS

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## Selling Consumers On Advanced Building Technology

For builders and remodelers who use advanced technologies, the benefits for homeowners are clear. Who wouldn't want a home that is more comfortable and efficient? Or one that requires less maintenance or has better air quality? But despite their advantages, these technologies do not sell themselves.

In fact, homeowners often perceive them as costly upgrades with intangible benefits. Many homeowners are resistant to advanced technology for the same reasons that builders may have initially questioned it. They do not know how the technology will benefit them, or if the benefit is worth a higher initial cost.

This is precisely why builders are in an ideal position to educate their clients about new technology, according to Dana Bres, a research engineer with the U.S. Department of Housing and Urban Development's Office of Policy Development and Research ([www.huduser.org](http://www.huduser.org)). "Builders who want to use a technology have to first decide if they can make money on it," says Bres. Homebuyers make a similar decision, by considering the first cost and the life-cycle cost.

### Making the Intangible Real

For Asdal Builders, LLC ([www.asdal-builders.com](http://www.asdal-builders.com)), in Chester, N.J., homebuyer education includes flooding the customer with the results of their innovative whole-house approach to home restoration. "We email [homebuyers] a research report instead of brochures," says Bill Asdal, the company's president. "It includes a full discussion of price modeling. Customers are overwhelmed." Asdal explains that having solid research and data to back up their claims helps translate intangible benefits into valuable upgrades.

John Wesley Miller, president of John Wesley Miller Companies ([www.johnwesleymillercompanies.com](http://www.johnwesleymillercompanies.com)),

a Tucson, Ariz.-based home builder who employs energy conservation and green building practices, relies on a similar approach. "We provide customers with factual information that they can use, such as the tons of coal their [highly energy-efficient] house can save each year," Miller says.

### The Power of the Media

Asdal and Miller also agree that working with the media is critical to educating consumers. Working with a public relations firm or having a PR person on staff can help, but even small builders who can't afford those luxuries can familiarize themselves with real estate reporters from local newspapers and radio and television stations.

When approaching the media, builders should know as much as possible about their technology and why it is important for consumers to consider.

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Seeing is believing. Translate intangible benefits into real results for a bigger impact. At Armory Park del Sol's Zero Energy demo home, potential homebuyers are stunned to see the meter spinning backwards.

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## Affordable, Accessible, Low-Impact: Braemoor Woods Field Evaluation

When the owner of a substantial piece of undeveloped land in Salem, N.H., first approached him, developer/builder Steve Lewis knew that he had received an exceptional opportunity.

The owner's family had owned the land for 10 generations and had kept it in pristine condition, making it a rare acquisition, especially for its location in one of the state's fastest growing areas.

"It looked more like a state park than a piece of land in a growing suburban area," says Lewis. The owner, who included a "green" building obligation in the purchase agreement, sought Lewis out for his reputation for environmentally-sensitive building and land development. "The land deserved a more extensive and innovative usage plan."

Now, after three years in the proposal and planning stage, construction has begun on the ambitious Braemoor Woods project, which will offer a variety of affordable and accessible housing that strives to leave little negative impact on the environment.

The project will incorporate low impact development (LID) strategies, which aim to protect natural resources and reduce infrastructure costs. For example, the project will use bio-retention, an alternative to conventional

stormwater drainage. Unlike traditional "collect and convey" drainage, which uses a series of pipes to capture stormwater and move it off site, bio-retention uses vegetation to slow down the velocity of water drainage, allowing it to infiltrate the ground, and return to the water table.

Other LID strategies will include grass swales and underdrains. Grass swales provide an alternative to curb-and-gutter systems by using vegetation to reduce runoff velocity and allow filtration. Infiltration trenches will help address high-flow scenarios, and underdrains will capture water during high-flow storm events and prevent ponding at the surface.

Braemoor Woods will maintain its original park-like setting by incorporating techniques from the National Arbor Day Foundation and NAHB's Building With Trees program. Fifty percent of trees on the site will be kept, and protective covenants will enforce stringent wood-cutting restrictions. The plans also call for a pedestrian-oriented layout, with sidewalks that meander away from streets and through wooded areas.

The 142-unit development will feature single-family homes, condominiums and rental apartments, and will include low-income tax credit units

and age-restricted rental and condominium units.

Units will incorporate universal design and accessible features, such as 36-inch hallways, master bedrooms located on the main floor and accessible entryways, bathrooms and kitchens. Some units will be fully accessible, or immediately functional for a disabled person. Other "adaptable" units can be upgraded quickly to full accessibility, which allows residents to age in place more easily.

Units will also employ several PATH technologies, including energy-efficient HVAC systems, efficient plumbing systems, and precast concrete foundations and first-floor walls.

Throughout the project's development, the NAHB Research Center has assisted in reviewing building and site plans, integrating LID technologies, and recommending accessible housing technologies.

Research Center staff will also conduct field evaluations to monitor the project during and after construction. By working with Gove Environmental and the University of New Hampshire Center for Stormwater Technology Evaluation and Verification (CSTEV), the Research Center will evaluate the performance of incorporated LID tech-

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### RESOURCE REVIEW

## Design Tools to Reduce Floor Deflection

Since the invention of calculators, basic arithmetic has become easier and more error-free than working by hand. Now for the next generation of problem-solving calculators, wood product associations and manufacturers have created spreadsheet programs to put complex building material calculations at our fingertips.

Ideal for architects, engineers, builders and specifiers, both the Western Wood Products Association (WWPA) and the American Wood Council (AWC) have introduced fairly simple-to-use calculators that analyze floor assemblies constructed of dimensional lumber. These programs are available online for download and are somewhat customizable. Similar to I-joist span tables that for years have offered multiple options for deflection rating, loading and spacing, these tools enhance a specifier's ability to analyze the material options available for light-frame constructors.

Developed to market their members' products, these calculators put more control over specifying floor performance in the hands of the user. No longer is there one dimension, one span, one spacing, that fits all – floor performance can be customized to the job. You can specify finish flooring dead load, structural member spacing, species, grading and dimension, and upgrade the deflection criteria from code minimum with these programs. The WWPA program even produces a scale on the amount of deflection that can be anticipated over the span based on the design.

The programs offer practical information, but are not intended to supersede any architect's or engineer's professional judgment. To download, visit the American Wood Council website ([www.awc.org/calculators/span/calc/timbercalcstyle.asp](http://www.awc.org/calculators/span/calc/timbercalcstyle.asp)), or the Western Wood Products Association ([www.wwpa.org/\\_tech/guide/Login.asp](http://www.wwpa.org/_tech/guide/Login.asp)).



## Tech Set Offers Best Practices for HVAC Installation

Two things that top home builders' lists of "least favorite things" – punchlists and callbacks. One of the most common causes of these aggravations is heating, ventilation and air conditioning (HVAC) installation.

Through its Tech Set tools, PATH is helping builders limit callbacks by promoting affordable, durable and energy-efficient HVAC systems that maximize occupant comfort and indoor air quality. PATH's "HVAC Package for New Construction — Forced Air System" Tech Set recommends 11 standard measures builders can use when designing, specifying and installing an HVAC system.

Knowing these critical steps needed to condition the space properly will also help a builder work more effectively with his HVAC contractor. Based on this third Tech Set, PATH recommends that builders:

- Design ducts to ensure proper air distribution with the recognized industry standards published by the Air Conditioning Contractors Association's (ACCA) Manual D. Properly sized ducts can reduce initial costs and operating costs. Installing the ducts into conditioned space provides even greater efficiency and cost savings.
- Properly size and select the HVAC

system with ACCA's Manuals J and S — the industry standards for residential load calculation required by most building codes around the country — to ensure the system achieves maximum efficiency through properly sized equipment.

- Locate the outside condensing unit to ensure that exterior walls or other features do not block airflow. Additionally, the unit should be kept out of direct sunlight.
- Reserve space for ducts in the home design. Dedicate chases within the floor plan for efficient, conditioned air supply, rather than installing

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## QUALITY MATTERS

### Improve Construction Quality with Hot Spot Training

Builders who are focused on delivering high-quality homes that are built right the first time, find that initiating "hot spot training" with their trade contractors is a simple, highly effective approach to improving building practices in the field.

Hot spot training is a term used by quality-focused building professionals to describe the ongoing field training process for trade contractors. A "hot spot" is a recurring issue that requires some form of remediation in order to get a site job-ready for the next trade, or a home ready for move-in by a buyer. Consistent and thorough inspections of new construction projects by builders, trades, engineers and architects can assist in identifying shortcomings in the construction process and, subsequently, reduce the punchlist of the next home that is built and inspected.

In order to correct and discontinue the actions that cause an identified hot spot, the field training process has to be simple, specifically-focused and relevant to the regular activities performed at a jobsite. Another important element of hot spot training is that it be delivered on the jobsite, because production and site efficiency are critical to

trade contractors, and no company has the time or resources to stop work and "train" its field crews. Hot spot training materials should also be succinct and highly visual, to minimize language barriers on jobsites, and increase the likelihood that a hot spot issue will not be repeated. The use of a single sheet of paper for hot spot training with "correct" and "incorrect" photos or other graphics can be very effective.

Finally, the builder must provide suggestions that trade contractors can incorporate into their hot spot training to increase the quality of

a construction project. Builder support of the hot spot training process for trade contractors is a great way to improve quality management in the field. To start this part of the quality improvement process, a builder should:

- Communicate the need to have trade contractors make a continuous improvement effort on the job
- Encourage trade contractors to conduct documented inspections at key points of each job – e.g., job-ready status for next trade, close-in or cover-up, and completion
- Utilize the documented inspections of trades as the basis for the builder's own inspections
- Implement a process to correct and document any inspection items that need attention
- Analyze all inspection results to identify recurring issues and areas for process improvement (i.e., hot spots)
- Document the correct methodologies for doing work on all jobs
- Make sure the trades know the builder's priority items and preferred methods so they can incorporate them into the hot spot training process
- Modify the builder's own inspection process and documents to reflect those priorities so trades know they are making the improvements that are important to their customer
- Report the results of continuous improvement efforts back to trade contractors

Hot spot training for a builder's key trade contractors can be seamlessly integrated into the normal daily production activities, and provide a significant source for quality improvements. For more information on hot spot training techniques and its importance in quality management, visit the National Housing Quality Program pages at [www.nahbr.org/quality](http://www.nahbr.org/quality).



Photo courtesy Dico, Inc.

**Building Technology (continued from page 1)**

"If you don't blow smoke, but contact [the media] when you have something really different, they will report it," says Miller. Asdal agrees and recommends a builder or remodeler should be as accessible as possible to the media. "Whether it's giving tours or providing photos, we want to be collaborative and open."

**Creating Meaningful Partnerships**

Partnering with organizations like ENERGY STAR®, home builder associations, utilities and manufacturers can lend credibility to builders' claims and can increase their positive consumer exposure.

According to Asdal, developing third-party relationships lends invaluable integrity to a builder. His company's website includes references from a variety of credible outside sources, including manufacturers, suppliers, professional associations, architects and recent customers.

**Know Your Customer**


Although educating consumers may be the primary step to selling advanced technologies, builders must also educate themselves about their customers – and about what appeals to them.

According to Bres, this includes looking for untraditional benefits. For example, homebuyers may like the increased efficiency and convenience that tankless water heaters provide, but they may still resist the higher initial cost. "But, thinking about the cost per square footage, a traditional water heater costs much more," says Bres. "Think about the amount of space that is dedicated only to a water heater that could be used for something else. Add in the other benefits of tankless water heaters, and consumers will see an obvious benefit."

Selling is also easier when builders incorporate technologies that appeal to customers' existing interests. "We listen to what the customers say and look for technologies that attach themselves accordingly," says Mike Chapman, president of Chapman Homes ([www.chapmanhomes.com](http://www.chapmanhomes.com)) in Santa Fe, N.M. As a result, the company began incorporating water-conservation technologies into its homes. "Most homeowners are curious because reducing water usage is such a big issue in our community," says Chapman.

Most innovative builders and remodelers will face some barriers when selling advanced technologies. But for those who stay with it, the

pay-off is often well worth the challenge. "It's great to be on the front end, because that's where the money is," says Asdal.

Find out more about the advanced technologies these and other builders and remodelers are integrating, and how they market the benefits by visiting [www.toolbase.org/fieldval](http://www.toolbase.org/fieldval). 

**Braemoor Woods (continued from page 2)**

nologies by monitoring stormwater quantity and contents for one year. Further analysis will help determine the cost savings of LID techniques, their long-term performance and the effect on pollution reduction. Additional evaluations will assess the cost and performance of PATH technologies incorporated in the homes.

For more information on this project, visit [www.toolbase.org/fieldval](http://www.toolbase.org/fieldval). 

**HVAC Installation (continued from page 3)**

ducts around the structural frame. Include air returns for each room (except bathrooms) or install transfer grilles to promote good airflow.

- Install trim-able open web trusses or floor structural components that leave room for duct installation within the floor assembly. This allows you to run ductwork and other utilities without cutting structural members.
- Specify efficient equipment that meets or exceeds ENERGY STAR® qualifications.
- Provide controlled mechanical ventilation using energy-efficient methods. These can range from adding a simple and inexpensive exhaust-only fan to installing more expensive and efficient heat recovery ventilation equipment, which transfers a significant amount of energy from the exhaust air to the supply air.
- Install an ENERGY STAR® qualified programmable thermostat.
- Seal all ducts including plenum junctions with foil tape that meets UL 181 or apply mastic, the only sealant approved by the ACCA.
- Mask HVAC outlets during construction and vacuum ducts, boots and grilles before turning on the central system.
- Install a filter rated for the home's needs.

A properly trained and licensed HVAC contractor should be able to handle all of these tasks without any additional tools or training, and some of the most important recommendations require no additional expenditures. For example, ensuring the ducts are designed and sized correctly simply requires a little forethought.

To learn more about this or previous Tech Sets, visit the PATH Technology Inventory ([www.toolbase.org/techinventory](http://www.toolbase.org/techinventory)). Look for PATH's fourth Tech Set in October. 

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