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July/August 2007 Issue

### Homegrown Green Building

by Maggie Leslie and Rachel Della Valle

*This green building nonprofit is working to green western North Carolina, one house at a time.*

Boasting a statewide green building certification program, renewable energy initiatives, and a group of determined building professionals, Asheville, North Carolina, has become a hub for green building practices in the Southeast. The Western North Carolina Green Building Council (WNCGBC) is facilitating this green building buzz in the Asheville area as a nonprofit organization whose mission is to promote environmentally sustainable and health-conscious building practices through community education. The organization's main goal is to educate homeowners, builders, and architects on the benefits of green building. In particular, it emphasizes

- creating energy-efficient buildings;
- increasing the use of alternative energy sources;
- promoting sustainable development;
- using green building materials;
- decreasing the use of natural resources;
- preserving topsoil and trees; and
- reducing storm water runoff.

The WNCGBC began as a casual gathering of five building professionals over food and drink in the spring of 2000. A common desire to educate others on the health and environmental impacts of design and construction led to the official formation of the council in 2001. In 2001, the WNCGBC along with Asheville's then-mayor, Leni Sitnick, organized a Mayor's Roundtable presentation on residential green building programs. Over the next few years, the council



Well-insulated, precast concrete basement walls contribute to the Beili home's energy efficiency.

continued to grow, and it organized dozens of educational events, green building tours, publications, and workshops. In 2003, members of the WNCGBC joined a statewide task force along with the North Carolina Solar Center to write guidelines for North Carolina's statewide green building program, NC HealthyBuilt Homes.

Between 2003 and 2007, the WNCGBC has awarded several grants, including the Community Foundation of WNC grant, awarded to NC HealthyBuilt Homes in June 2005 and two State Energy Office (SEO) grants. The first SEO grant was cosponsored with Mountain Housing Opportunities for the development of a green affordable housing project, Prospect Terrace, in 2004 and 2005. The second was to promote green building in Black Mountain, North Carolina, in 2006 and 2007. In addition, the WNCGBC has provided Leadership in Energy and Environmental Design (LEED) consultation on numerous local green buildings. These include buildings on the Eastern Band of Cherokee School campus, in Cherokee; the Eblen Foundation Center for Social Enterprise in Asheville; and an office building in Black Mountain.



The Beili kitchen includes radiant floor heating, a tankless water heater, Energy Star appliances, a salvaged 1950s gas range, local recycled steel cabinets, CFLs, and a low-flow plumbing fixture.

### Current Projects

The WNCGBC has administered NC HealthyBuilt Homes of Greater Asheville since the program began in 2005. This statewide green building program is third-party certified and is targeted at small- to medium-sized home builders who may not have the resources to compete with larger builders in the rapidly emerging field of green building. To have a home certified to HealthyBuilt standards, builders must achieve a rating based on points earned by incorporating various green building techniques. These techniques are outlined in detail on the HealthyBuilt Homes checklist. As of April 2007, WNCGBC had certified 48 HealthyBuilt Homes, and another 391 homes were being constructed to HealthyBuilt standards in western North Carolina.

In the years since it was founded, WNCGBC has grown to over 300 members, including individuals, families, nonprofits, and businesses. In addition to supporting many continued memberships, WNCGBC has launched a HealthyBuilt Homes Sponsorship program. This program provides companies that are not in the construction business with an opportunity to support green building while reaching a targeted audience for their product or service. Visitors to the HealthyBuilt Homes Web site and participants in HealthyBuilt programs, including homeowners, builders, and architects, see these businesses as being, like themselves, supporters of green building.

Currently, the WNCGBC continues to offer community education to the Greater Asheville area. Its Green Building 101 series focuses on specific green building topics. The series is offered every month to professionals and homeowners. Upon completing the series, professionals receive a certificate showing that they have studied green building principles and techniques. The WNCGBC also operates a free Green Building Hotline, which helps over 300 architects, builders, and homeowners a year to find sustainable building materials, energy-efficient and renewable technologies, and to locate green building and home performance professionals.

Realtors can green their business through a local ECO Realtors series that the Asheville Board of Realtors created. This set of courses is offered through the WNCGBC and other local organizations. It educates Realtors about green building features in listed homes, so that they can highlight these features when they show the homes to clients (and explain that green features increase the home's resale value). Upon completing the series, ECO Realtors receive a certificate showing that they have studied green building principles and techniques.

## Future Projects

In 2007, WNCGBC plans to launch a local carbon offset program. This program, Appalachian Offsets, will allow people to offset their carbon footprint by supporting local energy efficiency and renewable energy projects. The first of these projects is to replace 15,000 incandescent lightbulbs with CFLs in the affordable housing units owned by the city of Asheville's Housing Authority. Another project to be undertaken in collaboration with the city is to build bus stop shelters, using volunteer labor and green building materials. What better way to learn about green building than by keeping dry while waiting for the bus on a rainy spring morning!



Prospect Terrace, an affordable green development, was the pilot project for the NC HealthyBuilt Homes Program.

Finally, The WNCGBC is looking for a building to buy or land to acquire to establish a Green Eco Center in the near future. The center would house the WNCGBC and other green-minded organizations. The vision is that it will become a model of green building, and an applied educational resource.

## Project Highlights

One project that the WNCGBC has been especially proud to assist with is Mountain Housing Opportunities (MHO)'s Prospect Terrace. Prospect Terrace is an affordable green development; it was the pilot project for the NC HealthyBuilt Homes program. Out of 71 applicants, Prospect Terrace was awarded the Home Depot Foundation Award of Excellence for Affordable Housing Built Responsibly in 2006. MHO was recognized for its sustainability and affordability, and was awarded \$25,000, by the Home Depot Foundation.

Completed in 2005, Prospect Terrace consists of 17 one- to three-bedroom cottages and condominiums, built on an infill site in Asheville, North Carolina. The homes, which range from 805 to 1,500 square feet, demonstrate a variety of building techniques, systems, and materials that reduce energy use and the impact of development on our natural resources. Priced from \$110,000 to \$130,000, they provide families and individuals with homeownership opportunities that they might not otherwise be able to afford.



Solar panels on the Prospect Terrace homes provide approximately 75% of hot water needs.

Sustainable materials used throughout Prospect Terrace include cement board siding with a 50-year warranty; upgraded roofing shingles; recycled-newspaper cellulose insulation; bamboo flooring; recycled-plastic decking; recycled-content carpet made of old soda bottles; marmoleum flooring made of linseed oil, wood flour, pine rosin, cork, limestone, and jute; and various salvaged materials. Cellulose insulation is used throughout the homes, and advanced framing techniques increase the R-value of the insulation. The homes also make use of rain barrels, low-flow plumbing fixtures, and drought-tolerant landscaping with native trees and plants. A sealed crawlspace, zero-VOC paint, and fresh-air ventilation to the HVAC intake all help to improve indoor air quality (IAQ).

One of the project's most notable green features is the way in which it applies the smart-growth site development principle. Prospect Terrace is an infill development close to bus lines and within walking distance of downtown and the River Arts District. "There is so much controversy surrounding hillside development and sprawl right now, and infill really is a great solution to that," says Prospect Terrace homeowner Brittany Wager. "Living so close to downtown enabled me to sell my car and start walking to work."

Prospect Terrace's energy is supplied through a variety of sources. Solar panels meet about 75% of a family's hot water needs.

Conservation measures reduce energy needs in Prospect Terrace homes. Energy-efficient water heaters and insulated hot water pipes reduce the energy needed to heat water. As Energy Star-certified homes outfitted with Energy Star appliances, the cottages and condominiums use 30% less energy than conventional homes of the same size. "As an affordable housing developer, our first goal in building green was to reduce the monthly housing expenses of our buyers," says Mike Vance, manager of homeownership at MHO. "Less money spent on utilities and home maintenance creates less pitfalls for low- to moderate-income buyers down the road."

Brittany Wager urges other homeowners to go green. As she says, "Just do it! Our house is an example that you don't have to spend a lot of money to build in an environmentally sensitive way. Most of the green homes you see in magazines and on television are high-end homes, but it doesn't have to be that way."

Another project that WNCGBC is proud to highlight is the Stephen Beili residence, also located in Asheville. Designed by Beili, of Studio Dionisi, Incorporated, and built by The EcoBuilders, Incorporated, this 1,450 ft<sup>2</sup> stick frame house is a Gold Level-certified HealthyBuilt Home. One of the highlights of this green home is its location within easy walking distance of Asheville's downtown businesses.



Natural daylighting is used throughout the Beili residence.

The outdoor space features native trees, mostly dogwoods, which were planted after construction. Layers of cardboard, instead of plastic, were used under mulch as biodegradable weed prevention. In addition, the forest of cherries and oaks in the backyard was preserved. "I love the natural lighting and interior colors in my house, the forest in my backyard, and the infill development aspects of walking downtown," says Beili. "I'll go days without getting in my car."

Natural daylighting is used throughout the home, especially in areas that are below grade and would normally require electric lighting during the day. Efficient lighting is provided by extensive use of CFL fixtures and bulbs. The house uses a salvaged 1950s gas range, an Energy Star dishwasher and refrigerator, and low-flow plumbing fixtures, with toilets at 1.6 gallons per minute (gpm) and kitchen faucets at 2.0 gpm.

The efficient tankless water heater provides both radiant floor heating and domestic hot water. Advanced framing, which is more efficient and uses less material, was implemented throughout the house. Extensive air sealing of the house envelope prevents air infiltration, and the precast concrete basement walls are well insulated and use less material than standard block walls. Icynene insulation throughout the home provides increased R-values.

IAQ is improved through the use of low- and zero-VOC finishes in interior spaces, a continuous fan to bring in fresh air, shower fans that run on a timer to reduce humidity, and ductless air conditioning. Beili says that the easiest part of building green was "choosing low toxic/non toxic finishes and sealers, while the most difficult aspect was figuring out the mechanical systems."

Sustainable materials in the home include an exposed concrete floor on the bottom level of the home (eliminating the need for a finished floor material) and a Max Floor zero-formaldehyde subfloor. A local sawmill provided the white pine used for the staircase, and the birch veneer plywood used for finish flooring on the upper level. Local recycled steel was used for the stair brackets and the cabinets in the kitchen.

“Where I lived before, green building was focused on natural materials,” says Beili. “Watching [the documentary film] Kilowatt Ours helped me understand why we’re focused on energy efficiency, and now I give copies to all of my clients.”

When asked what advice he would give to other potential green home builders or homeowners, Beili says, “Hold on to the green stuff, but when the budget gets tight, put off other expensive things like cabinets and landscaping until later. Hire the professionals: engineer, experienced builder, designer. Find out about solar and historic tax incentives because a home in my neighborhood had one-third of its renovations paid for through a state tax credit.”

*Maggie Leslie is the codirector of the WNCGBC and director of the HealthyBuilt Homes program of Greater Asheville. Rachel Della Valle is the outreach coordinator of the WNCGBC.*

***For more information:***

*To learn more about the WNCGBC, visit [www.wncgbc.org](http://www.wncgbc.org). For more information on green building, call WNCGBC’s free Green Building Hotline at (828)254-1995 or e-mail [info@wncgbc.org](mailto:info@wncgbc.org).*

*To learn more about HealthyBuilt Homes, visit [www.HealthyBuiltAsheville.org](http://www.HealthyBuiltAsheville.org).*

*For more information on Mountain Housing Opportunities, visit [www.mtnhousing.org](http://www.mtnhousing.org).*

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