



WNC Green Building Council News

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Western North Carolina Green Building Council
proudly introduces
New for 2006! **Green Building 101**
For building industry professionals from the region and beyond to acquire a comprehensive understanding of green building and related topics from leaders in the field.

January 19	Green Building Basics
February 7	Water Conservation
March	Native Landscaping
March	Healthy Built Homes
April	Site Design and Development
May	Mold and Mildew
June	HVAC Systems
July	Green Products and Materials
August	Alternative Framing
September	Alternative Energy Technologies
October	Finances of Building Green
November	How to Market Green Buildings
December	Staying Green Once Occupied

- ✓ Professionals completing the program will be listed as resources on a Green Building 101 Program webpage within WNCGBC's website.
- ✓ Continuing education units offered for architects (3.5 AIA CEUs), engineers, appraisers, planners and ECO Realtors!

Cost:
Non-member \$100
WNCGBC member \$80
When you've taken 7 courses, 8th one is free!

For more information or to register, contact us at:
info@wncgbc.org or (828) 232-5080

WNCGBC
PO Box 17026
Asheville, NC 28816

Platinum Sponsors Corner



Southeast Ecological Design, Inc.
www.ecologicaldesign.net
info@ecologicaldesign.net
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SouthEast Ecological Design is a fully licensed ecological general contracting company. We offer many services including in house design services, green and natural building, additions, remodels, restorations, sustainable forestry services, land use consultation, permaculture design, and ecological restoration. We serve clients who desire finely crafted structures that are healthier, more comfortable, and more harmonious with their specific site and needs.

MATHEWS ARCHITECTURE, P.A.
Matthews Architecture, P.A.
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828-253-4300
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HealthyBuilt Homes Update

The number of homes certified as of 2/25/2006 is 21!

The number of homes in progress as of 2/25/2006 is 53!

Green Homes For Sale!

The WNCGBC is developing a Green Homes For Sale webpage. After years of getting many calls from people looking for green homes we decided to bring those people together that are building green homes and the consumers that are looking for them.

We are hoping to have our first home for sale posted soon so check our website at www.wncgbc.org.

If you are interested in listing a home please contact Matt Siegel to discuss fees and details. 828-232-5080 or info@wncgbc.org.

Eco Real Estate Professionals by Mary Love

In the spring of 2005 an amazing event occurred. Representatives from the Asheville Board of Realtors, various non-profit organizations, and local colleges gathered to discuss sustainability and impact that housing has on the environment. In just a few short months this taskforce create a CE course that was approved by the NC Board of Realtors and established a designation course that is currently being examined for state as well as nation wide certification for Realtors.

The Asheville Board of Realtors and its partners developed the Eco-agent course for two reasons. First, it is the right thing to do. As we enter the twenty-first century, it is clear that many of humankind's actions are out of balance with the natural world. The continuation of the relatively high quality of life we enjoy and arguably humankind's very survival are dependent on changing how we relate of to our environment. For many people, the decisions that they make around buying a home or buying property will be among the most important decisions they make for the environment-good or bad. The real estate agent serves not only as the broker for the transaction but also as a resource to one or more parties in the transaction. We believe that one of the services licensees can and should provide is access to the information and resources that a client wants and needs about environmental issues.

Eco Real Estate professionals who have practical tools and resources can help sort through issues such as mold, radon, and poor indoor air quality. They offer clients references and resources and they can provide real solutions to real challenges we all meet.

"For many people, the decisions that they make around buying a home or buying property will be among the most important decisions they make for the environment-good or bad. "

In order to obtain the certification the REALTOR® must complete 36 hours of training. Currently, the program is divided into core and elective courses. Core courses will be provided by the Asheville Board of REALTORS®. There is a CE Course called: Environmental Issues: Resources/Healthy Choices which is 4 hours. A two day intensive seminar is also required. This course the "Inside and Outside: Environmental Issues and Real Estate" is a 16 hours.

The elective portion of the program is still under development - other offerings will be added and some of these choices may be dropped in the future. Decisions concerning the suitability of a course will be made by the Asheville Board of REALTORS®: WNCGBC is creating a curriculum that will provide elective courses to Realtors as well as the general public.

The first 16 hour core curriculum seminar was held in the fall of 2005. There are currently four certified Eco-agents:

Mary Love—The Gleason Team

Debra Marshall—Century 21

Ginny Lentz—Beverly -Hanks

Mary Ellen Brown—Keller Williams

In true community spirit, this course is a collaboration of real estate professionals and environmental specialists in the many fields covered. It is the hope of everyone that this will be a well-used resource all over North Carolina and eventually the United States. Please check www.abr-nc.com for current updates about the course and newly certificated Eco-agents.

Mary Love is a real estate consultant who focus is on Eco-development and HealthyBuilt Homes. She is a proud member of WNC Green Building Council. She can be contacted at 828-279-6723 or marylove@charter.net

Green Building in Its Simplest Form by Cindy Meehan-Patton

Defining Green Building should be simplified so everyone can understand the general meaning of this important profession. I have been in the field of green design for over 15 years and this is what it encompasses to me: “Building Healthier for You and the Environment”.

It is that simple, and like many things in life, it is that complex. As an individual with health challenges resulting from toxic chemically derived building materials and toxic mold in structures, I can only speak from the standpoint of *what I know really works* to alleviate this common problem in our homes.

I am not alone in this challenge. According to the Mayo Clinic, recent studies have linked mold to a 300% increase of Asthma rates over the past 20 years. I have helped many folks eliminate the chemical toxins from their environments—simply so they could stay alive and well.

Building healthier can involve different methods and materials for different people. Two of the more popular methods involve a reliance on the sun (solar) and natural materials like wood for heating create a healthier environment for their families and the environment. Some think that creating and maintaining clean indoor air quality is our best chance for staying healthy in an unhealthy environment. These are both good ways to build. And both ways can take advantage of the many new materials that are being made today that are more respectful of the environment and people’s health. This is good news.

There are, however, some facts about our climate here in Western North Carolina that can influence both of these building methods. We are in a mixed-humid climate zone according to the EPA and EEBA (*Energy and Environment Building Association*). This means that for over 200 days out of 365; we have outdoor humidity levels between 75 – 100%. The recipe of high humidity and reliance on natural ventilation (opening of windows) in homes creates toxic mold indoors.

Given this fact, green building should have an end result of keeping the home dry inside and out. Moisture migrates indoors in several ways and moist air, unlike arid air, finds the first porous surface it can and it makes a home- and then it grows and moves. This is where visible mold comes into play, especially if the humidity is constantly above 60%, inside and out.

Can an *active* solar home have an end result of staying dry, inside and out? It takes so much electrical energy to run a mechanical ventilation system that a PV (Photovoltaic) system cannot handle the load. This is a complaint I hear often from people who are building solar or who have built solar and are now faced with mold because of their reliance on natural ventilation for cooling. We need to find a non-toxic, affordable solution to this problem along with a lowering of the cost of PV panels (tax credits do help) in order for solar building to become more affordable and healthy.

I believe the best way to ensure a healthy built home or green home is to build it tight and ventilate it right. The other essential ingredient to this recipe is to use not-toxic materials on the inside of the home. There are many mechanical ventilation systems on the market now including ERV’s (Energy Recovery Units) and HRV’s (Heat Recovery Units). Both types exhaust stale air and bring controlled amounts of fresh (and filtered) air in. Neither has the dehumidification capacity needed in a mixed humid climate. (*Story continued on next page*).

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Green Building in Its Simplest Form (Cont'd)

There is another system that brings a controlled amount of fresh air in, filters it and acts as a whole house dehumidifier, but leaves out the exhaust part of the equation. This seems to work well in this area, because you end up with a positive pressure in your home at all times. According to *Building Science Corporation* even the tightest home will have weep holes in it and when a house has a constant positive pressure in it; that stale air will find its way out.

Biblically, mold is a curse brought upon people. God created us as living, organic people. He also created the beautiful world we live in to sustain us. According to the Bible, God created man and gave us His own breath, and put us into the world God created for us. In the world's simplest form, the sustenance we drew from consisted of water, air, plants and animals. There is no mention of toxins in the beginning. This is part of our separation, thus creating illness. God appointed us to take care of His creation, not to harm it. It is amazing that our Creator still loves us regardless, and that in an instant, He can fix what has been harmed by His most precious creation, people!

Cindy Meehan-Patton is one of the founders of the non-profit WNCGBC. Contact the council for more information on green building or becoming a member. www.wncgbc.org 828-232-5080 info@wncgbc.org

Zero Energy Housing by Boone Guyton

“The concept of a zero energy house is one that produces as much energy as it consumes over a years time by combining energy efficiency with renewable energy systems.”

The Zero Energy Housing working group meeting in Knoxville Tenn. brought together a range of people from interested buyers to builders and architects and solar installers. It was sponsored in part by TVA and the Oak Ridge National Laboratories (ORNL). The concept of a zero energy house is one that produces as much energy as it consumes over a years time by combining energy efficiency with renewable energy systems. ORNL designed the 5 houses that were built in a Habitat for Humanity development in Lenoir City and were featured in a recent article in Mother Earth News This Working Group Meeting was a continuation of efforts to make these technologies available and affordable to the public.

<http://www.ornl.gov/sci/btc/>

http://www.ornl.gov/sci/btc/pdfs/ss_motherearth10_04.pdf

Also involved were the Dept of Energy's Building America program and TVA. Jeff Christian of ORNL was the designer of the houses and the main speaker. “My feeling is we- and the leaders in Washington - should put zero-energy living up there with putting a man on the moon. Let's make it the grand challenge.”

They have built 5 zero energy houses (ZEH) in the subdivision and have one as a control that was built to conventional standards. All are being monitored with sensors that show their performance on a continual basis. The ZEH's use between 46 and 54% less energy than the control and produce between 20% and 30 % of their electricity. Clearly not zero energy but the photovoltaic systems could be expanded from the 2kw grid connected system to get there. All were built with the expected attention to air sealing and efficient design details and used Structural Insulated Panels that gave them an air change per hour rate of .05- .03 which is really tight and clearly demanded mechanical ventilation.

Lenoir city is a warmer climate than Western North Carolina and there was no natural gas available at the site. The cooling load was somewhat larger than the heating load. All of the houses used Energy Efficient heat pumps and two had geothermal heat pumps. One of the coolest features of the entire presentation was the geothermal heat pump for the 5th house. It used the over cut for the house seat to run the heat exchanger loops. Using this already existing excavation instead of having to drill wells or dig long 5-7 foot deep trenches saved a major portion of installing the geothermal system.

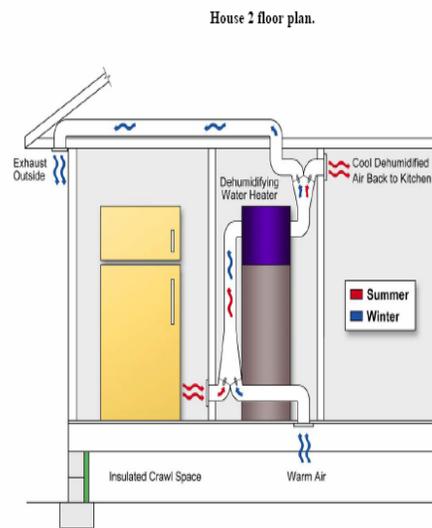
Table 3. Construction cost of test houses 1–4 and the base frame house

	Base	1	2	3	4
House	59,295	78,914	83,953	87,889	85,189
Land and infrastructure	14,500	14,500	14,500	14,500	14,500
Cost of solar	0	22,388	16,000	16,000	14,935
Total cost	73,795	115,802	115,953	122,329	114,624

The second coolest feature of the houses was in the heat pump water heater of one house that used the waste heat from the refrigerator to help heat the water and it helped dehumidify the air.

For a detailed article on the construction of the houses and their performance go to :

http://www.ornl.gov/sci/btc/pdfs/ZEB_TIR_27Sept05.pdf .



Air flow to and from the heat-pump water heater in House 2.

In North Carolina Appalachian State University Energy Center and the State Energy Office have teamed up with Habitat for Humanity Catawba to build the first ZEH in the state. They have also published [Affordable Passive Solar Planbook for North Carolina](#), principal authors Laurel Elam and Jeff Tiller, P.E.. It offers 12 plans as well as guidelines and information to help construct an efficient home. http://www.tec.appstate.edu/construction/zero_energy/zero_energy.htm

The goal of a zero energy house that is affordable is a clear target for the green building community. Reducing our global warming contributions from our houses is one of our most urgent needs and combined with other green strategies, keeps the ideal of a sustainable industry obvious.

Boone Guyton member of WNC Green Building Council.

First Modular HealthyBuilt Home by Innova Homes

Innova Homes, LLC, an Asheville-based Energy Star certified builder, upped the ante with its last project – a 2,400 square foot, modular-based certified HealthyBuilt Home. Constructed as a spec home for a client in Columbia, SC, Innova Homes undertook the HealthyBuilt Home certification process as an experiment to see what level of planning, documentation and design modifications would be necessary to take its homes from Energy Star to HBH certified.

Working with Professional Building Systems of North Carolina, a modular manufacturer out of Mt. Gilead, NC, Innova negotiated certain upgrades during factory construction as well as taking advantage of current factory processes including air sealing, low-E double hung windows and use of recycled content insulation and roofing materials. Where PBS left off, Innova picked up by controlling many site-built aspects of the project and thereby gaining credits for landscaping considerations, foundation work, finishing details and other areas not constructed by the manufacturer. Innova Homes selected and installed CRI certified carpets and Energy Star appliances, and made further improvements in insulation, HVAC, lighting, and water heating.

Additional measures included: use of recycled-content building materials, formaldehyde-free insulation, low-VOC paints and low flow showerheads and faucet aerators. The REM-RATE analysis, as conducted by Home Energy Partners, indicates the home should have an annual heating and cooling cost of just under \$360.00 per year, or an average of about \$30.00 per month. The project was completed mid-January and was certified at the Silver level, just 10 points shy of Gold.

“This approach, similar to value engineering, will look for scoring opportunities that have environmental benefits, energy savings, water savings, and long-term maintenance benefits using more traditional approaches.”

As a follow-up to the Montford project, Innova Homes is working with Mountain Housing Opportunities for an infill project on Water Street in downtown Asheville. The objective will be to focus on HBH features that will reduce the operating cost of the home, while also reducing the environmental impacts. The project will emphasize upgrades that will benefit the homeowner without an increase in project costs. This approach, similar to value engineering, will look for scoring opportunities that have environmental benefits, energy savings, water savings, and long-term maintenance benefits using more traditional approaches. This includes added insulation, a sealed crawlspace, programmable thermostat, and engineered materials where practical. Innova Homes will also leverage site opportunities, including drought-resistant landscaping, tree planting and job site recycling, as many of these techniques are more of a ‘good sense’ approach, rather than additional cost features.

Another aspect of the project is to incorporate the concept of *visitability*, an idea that is strongly promoted by the Western Alliance Center for Independent Living, a not-for-profit group in Asheville that assists and advocates on behalf of individuals with disabilities. Visitability is a movement to change home construction practices so that virtually all new homes offer a few specific features to better accommodate residents or visitors who have or develop mobility impairments. This may include installing ramps (or designing to eliminate steps), providing wider doorways, and allowing for a wheelchair turning radius in bathrooms and common areas. Though not an HBH feature, it is an important social feature as we work toward eliminating accessibility barriers in homes and public and commercial buildings.

For more information or to view either project, please contact David Bennert or Tanya Williams at 828-252-9998.

The Boniskes' Energy Saving Tips

The Boniskes built their beautiful 2400 square foot fully solar custom home when green building was still off the radar in 1993. Although their home is completely off-the-grid, Ske and his wife, still have creative ways of saving energy and want people to know that you don't have to go all the way to make a difference. Here is some of their good advice:

- ◆ Replace your bulbs with compact fluorescents—they save energy, coal and the hassle of buying new bulbs all the time.
- ◆ If you are building, build small, just enough for what you need.
- ◆ Put your fans and lights on timers, this eliminates forgetting to turn the lights and fans off.
- ◆ Unplug you computers, TV's and stereo system from the wall at night and when going away. These systems use energy even when they are not turned on.
- ◆ Consider Solar hot water collectors, it's the easiest to make your money back, plus you are eligible a 35% North Carolina solar tax credit.
- ◆ Use good insulation such as cellulose insulation. Good insulation saves energy and keeps loud noises away.
- ◆ Build with solar and natural features in mind.
- ◆ Recycle building materials and look for recycled products for your home.



Solar Hot Water Collectors and PV's at the Boniske Home

Recycling Products

Champagne bottles and corks—Recycling champagne bottles after New Year's could put them back on store shelves in as little as 30 days. Champagne (and wine) corks can be sent prepaid to Yemm & Hart Ltd., 1417 Madison 308, Marquand, MO 63655. The company reprocesses the corks into a block that is sliced into thin sheets for use as tack boards, award plaques, coasters, etc. It also plans to experiment with producing wine and champagne cork floor tiles. Visit www.yemmhart.com/news+/winecorkrecycling.htm for more information. *From the Eco-Structure Newsletter.*

Green Disk's "technotrash" recycling service offers ways to recycle old CDs, DVDs, cell phones, pagers, PDAs, batteries, and print and fax cartridges among other things. Contact 1-800-305-DISK or visit www.greendisk.com. *From Co-Op America's, Real Money.*

WNC Green Building Council

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For membership application go to: www.wncgbc.org or
contact: info@wncgbc.org



Newsletter News Bits

WASTE NOT, WANT NOT

Two months after Hurricanes Katrina and Rita, it's still unclear who's going to take out the trash. New Orleans authorities are faced with 90 million tons of wreckage and lack both landfill space and new building materials. The scale and potential \$2 billion price of the clean-up task has given recycling advocates like Brad Guy, president of the Pennsylvania-based nonprofit Building Materials Reuse Association, an opportunity to make the case for reclaiming as much as 25 percent of the building materials in a 1,400-square-foot home. In fact, Guy's nonprofit is now advising the Army Corps of Engineers on the cleanup. Other nonprofits, such as Habitat for Humanity and North Carolina-based Design Corps, which creates affordable housing for migrant workers, are likely beneficiaries for any Gulf Coast recycling and reuse programs. But because municipalities must reimburse FEMA for any profits they make themselves from recycling, they may opt for quicker disposal methods, such as incineration. In the meantime, waste disposal contractors such as North Carolina-based Prime Environmental International have their fingers crossed. The developers of a chipboard-like product made from construction debris, the company asked FEMA for a storm recovery contract in February 2005. "The answer was no," says CEO Barry Fischer. Eight months and two storms later, negotiations have restarted.

Architecture, Dec 05, p 46, by Justin Tyler Clark. *From Greenclips 01/04/06*

On October 20, 2005, the NC Utilities Commission issued an order requiring the state's three investor-owned utilities to allow net metering starting on or before January 1, 2006 for PV, wind, and biomass systems with a capacity of 20 kW or less for residential systems and 100 kW or less for non-residential systems.

The following Order was issued in Docket E-100 Sub 83: Order Adopting Net Metering. The order can be viewed/printed from our website at <http://www.ncuc.commerce.state.nc.us> using the Docket Search function.

From Valerie Everette, NC Million Solar Roofs Coordinator

Business Energy Tax Credit

The Energy Policy Act of 2005 (H.R. 6) expanded the business energy tax credit for solar and geothermal energy property to include fuel cells and microturbines installed in 2006 and 2007 and to hybrid solar lighting systems installed on or after January 1, 2006. (A 10% federal energy tax credit is available to businesses that invested in or purchased solar or geothermal energy property in the United States prior to January 1, 2006.)

For eligible equipment installed from January 1, 2006 through 2007, the credit is set at 30% of expenditures for solar technologies, fuel cells and solar hybrid lighting; microturbines are eligible for a 10% credit during this two-year period. For equipment installed on or after January 1, 2008, the tax credit for solar energy property and solar hybrid lighting reverts to 10% and expires for fuel cells and microturbines. The geothermal credit remains unchanged -- at 10%.

The credit for fuel cells is capped at \$500 per 0.5 kW of capacity. The maximum microturbine credit is \$200 per kW of capacity. No maximum is specified for the other technologies.

For more information on Business and Personal Tax Credits go to www.dsireusa.org.