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**Three’s Company and a New Home**

Since the last newsletter in June there has been a lot going on with the Green Building Council. We are pleased to announce that Maggie Leslie is onboard full-time as the GBC’s second employee! She is getting a great deal accomplished as Program Director and working with the Healthy Built Homes program. In addition, the AmeriCorps Member, Rachel DellaValle has started her work for the Council. She will be serving with the Council for the next year as the Education and Outreach Coordinator.

We are thrilled to have a home. The Green Building Council is excited to announce our new office space at 378-E Haywood Rd. in West Asheville. Country Classic Realty is going to be our first Healthy Built Homes “Oak level” sponsor in trade for a reduced rent fee on our office space. Please come visit us! We are located diagonally across from Gas-Up in a house with Country Classic Realty and Earthwood.

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**Platinum Sponsors Corner**

**Warmboard**

[www.warmboard.com](http://www.warmboard.com)

919-644-1675

kgarbee@warmboard.com

Warmboard combines a structural subfloor and a thermodynamically sophisticated radiant panel into one simple component of your radiant heating system. Warmboard begins with a stiff, strong, 1-1/8" thick, 4' X 8' sheet of tongue and groove, weather-resistant plywood. A modular pattern of channels is cut into the top surface. A thick sheet of aluminum is stamped to match the channel pattern and is permanently bonded to each panel.

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**HealthyBuilt Homes Update**

The number of homes certified as of 10/03/2006 is 33!
The number of homes in progress as of 10/03/2006 is 366!

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**Events Review**

S.E.E. Expo Success

The Green Building Council had a major role at this year’s Southern Energy and Environment Expo. Thanks to the number of volunteers who came out to staff the booth and inform visitors of the Council and various green building products. Matt and Maggie each taught classes on Healthy Built Homes. Last but not least, both of the “Green Home Tours” sold out! These guided tours went off without a hitch thanks to Maggie who coordinated them, the gracious home-owners who opened their doors, and A-B Technical Community College for donating the comfortable air-conditioned vans.
Introduction - Green Cities

Green cities strive to be sustainable within the limits set by nature. Sustainability at its most basic, is the ability to meet current needs without compromising the needs of future generations. Presently we are a long way from that ideal both in Asheville, North Carolina, or Portland, Oregon and definitely as a global community. We are flooding the atmosphere with man made chemicals that lead to global warming, human disease, and contaminated water. The glaciers are receding and the deserts are advancing. The fast population growth of humans is depleting our natural systems ability to maintain and regenerate. The realization that we are living beyond our ecological means has lead cities across the world to adopt measures to address the situation. Cities seem to be leading the way in the US where there is an absence of a strong federal commitment. Cities are now about 80% of the country’s population and with local support can inspire change with incentives and mandates. They are finding as they improve their energy efficiency through conservation and renewable generation they are also saving money and increasing jobs while profits remain in the community.

Growth as a City

Asheville is uniquely situated on the French Broad River amongst protected forests and within a short distance to many recreational activities such as white water sports, hiking and biking trails. It has grown 11.8 % since 1990 though most of that growth has come from annexation. Such growth increases the distance for providing services and the vehicle miles traveled (VMT). VMT’s along with electric generation per capita are increasing much faster than population growth. In the Asheville metro region, the VMT grew 4 percent per year between 1995 and 1998, while the local population grew only about 1.5 percent annually, (The Brookings Institute 2000). Increased VMT’s and increased electric generation translate into more pollution because of the burning of fossil fuels.

Water Quality

Asheville has clean drinking water that comes mainly from reservoirs within 20,000 acres of protected forests. “After treatment, the water travels though over 1,600 miles of water lines and is stored in 20 reservoirs located throughout the distribution system. Each day, our water system delivers an average of 21 million gallons of water per day to over 118,000 people.” (Regional Water Authority Water Quality Report ) Unaccounted-for water has been decreased by over a million gallons a day, down to 26% from 32%. That is still a lot of water not down the drain. Infrastructure and a political resolution to control of the water authority are serious unresolved issues.
How Green is the City of Asheville? An Ecological Assessment by Boone Guyton (cont’d)

Air Quality
Air quality in Asheville is within the EPA’s safe limits though not by a lot for Ozone and fine particulates.“Our ozone levels are increasing. Since 1990, the monitored ozone levels on the worst summer days in Asheville have increased by as much as 25%. In addition, we are now worried about fine particulate levels in the area. Fine particulates are responsible for the decreased mountain views in the summer time, and are also a cause of increased cardiopulmonary disease, lung cancer, preterm births, and premature deaths.” (WNC Regional Air Quality Agency)

Geographic Area: Buncombe Co, NC
Year: 2005

http://www.epa.gov/air/data/index.html

The good news is that the passage of the Clean Smokestacks Act and the scrubbing going on at Progress Energy’s Skyland plant (largest single source of air emissions) will significantly reduce the emissions of sulfur dioxide and nitrogen oxide. Also, the NC Green Power Program generates electricity with renewable sources and now has nearly 7000 subscribers. As of August 2005, Green Power Program participation:
6,987 Subscribers to 17,048 blocks of power per month
Annual equivalent blocks subscribed – 204,591
Annual equivalent energy – 20,459,100 kWh

The generation of this amount of renewable energy will annually offset
16,571,628 lbs of Coal or 42,572,512 pounds of carbon dioxide (CO₂), 132,982 pounds of sulfur dioxide (SO₂) AND 53,192 pounds of nitrogen oxides (NOₓ).
This annual reduction of CO₂ emissions is environmentally equivalent to:
So far, the city of Asheville has not signed on to support this program or otherwise develop sources of renewable energy.

Transportation
The county is participating in the EPA’s clean school bus grant program to clean up school bus emissions and the city and county are both involved in upgrading their fleets to use cleaner alternative fuels including biodiesel, natural gas, electric and hybrid vehicles.

Alternative Fuel Vehicle Use in Region (Partial List)
* City of Asheville - CNG station and vehicles; Electric GEM vehicles
* MSD – 65 vehicles on Biodiesel (B-20)
* WNCRAQA – Hybrid and CNG van
* NC Div. of Air Quality, Blue Ridge Parkway, and Town of Waynesville – Hybrids
* State Motor Pool - >100 Flexfuel Vehicles (Ethanol) – Not currently using fuel
* Buncombe Co. General Services – Interest in CNG vehicles and received funding for B-20 fuel for landfill vehicles and equipment, purchased Hybrids
* Blue Ridge Biofuels – Biodiesel (B100) production and use
(Land of Sky Clean Cities Program and Clean Vehicles Coalition)
Buncombe County is purchasing six Clean Natural Gas vehicles—three Honda Civic GX’s, dedicated natural gas Civics and three Crown Victoria police vehicles that will be retrofitted to operate on natural gas through EPA certified retrofits. The County will also begin to use B20 in all its transfer station trucks, which each make twelve forty mile round trips daily from Asheville to the landfill.

Blue Ridge Biofuels will increase the availability of biodiesel in western North Carolina by selling B100 at its on site production facility in the river district near downtown Asheville and pumps throughout the region. Blue Ridge Biofuels is producing biodiesel from waste vegetable oil collected from area restaurants. A new tank and pump will be purchased with Alternative Fuel Incentive Project funds to enable sales to the University of North Carolina at Asheville, Warren Wilson College, other area fleets and the motoring public (http://www.energync.net/press/docs/041115.doc). Steve Rasmussen  Xpress Mar 30, 2005 / vol 11 issue 34 http://www.mountainx.com/news/2005/0330biodiesel.php

Our use of public transportation and non-car commuters is low compared to large cities but when compared to other cities our size in the state, we come in third.

The best by percentage of non-car commuters is 53% in New York City and in San Francisco 31% of city residents take public transportation to work, walk (10%) or bike (2%). Madison, WI has 100 miles of bikeways, over 150,000 bicycles which puts the ratio of bikes to cars in the city at 3:2. In Boulder, CO 8% take public transport daily, 26% commute without a car, taking advantage of the city’s many bike commuting trails, and pedestrian friendly downtown.

**Built Environment**

Asheville is leader in the state in terms of residential green building. The Asheville chapter of the NC Healthy Built Homes program has over 20 homes certified in the area and the forecast is for more than 100 by the end of the year. There are around 50 Energy Star homes and forecast calls for more than quadrupling that by next year.

As far as commercial buildings, The Eblen Foundation is planning a new LEED (Leadership in Environmental & Energy Design) office building. Warren Wilson has a LEED gold rating on their Admissions building. UNCA has applied for LEED on their Facilities Management Building and the Cherokee Schools are building 3 LEED Certified schools in Cherokee. Other green commercial buildings include the Eco Dorm at Warren Wilson College and the Facilities building at the Arboretum with its living roof.

How are other buildings in cities around the country doing? Santa Monica (pop. of 91,000) ranked no.1 per capita by Sustainlane- they have 3 certified LEED buildings and 9 registered. Portland, (pop.529,000) has 78 certified and registered LEED buildings. Scottsdale Az (pop. 202,700) instituted a requirement that all municipal buildings must be LEED (Leadership in Environmental & Energy Design) Gold as of 2005.

**Renewable Energy**

Santa Monica generates 140kw of solar energy and 100% of city buildings use renewable energy, Portland got 12% of its energy from renewables, including waste methane fuel cells. Austin’s Strategic Energy Plan calls for development of 100 MW of solar and for 20% of the city to be running on renewables by 2020. Currently, there is no known electricity generation from renewable energy in the City of Asheville other than from private systems.

**Green Space**

Asheville has 885 acres of parks (3.37%), 5 miles of greenways with 5 miles more planed over the next 5 years. The city has added 20 miles of sidewalks since 1999. (Irby Brinson, Asheville Parks and Recreation)

Meanwhile, in Austin, TX, 15 percent of city space is devoted to parks and nature preserves. Minneapolis devotes 15 percent of its city land to parks and preserves and San Francisco has over 17 percent of city land in parks and nature preserves.

**Solid Waste**

In 1999, recycling and composting activities prevented about 64 million tons of material from ending up in landfills and incinerators. Today, this country recycles 28 percent of its waste, a rate that has almost doubled during the past 15 years. While recycling has grown in general, recycling of specific materials has grown even more drastically: 42 percent of all paper, 40 percent of all plastic soft drink bottles, 55 percent of all aluminum beer and soft drink cans, 57 percent of all steel packaging, and 52 percent of all major appliances are now recycled.
How Green is the City of Asheville? An Ecological Assessment by Boone Guyton (cont’d)

Solid Waste
Asheville diverts over 45% of waste from the landfill, 23% of which is through recycling. Asheville is second in the state for amount kept out of landfills. (Richard Grant, Asheville Public Works Dept.) San Francisco diverts 67% of its waste from the landfill and is trying to get to 75% waste diversion by 2010 and to zero waste by 2020. Recycling Facts- US EPA: [http://www.epa.gov/epaoswer/nonhw/muncpl/recycle.htm#overview](http://www.epa.gov/epaoswer/nonhw/muncpl/recycle.htm#overview)

Food and Agriculture
Asheville has 8 Tailgate markets and 1 year round Farmers Market. There are 7 Community Supported Agriculture farms in Buncombe Co. and 20 in WNC.

“Cutting “food miles” reduces the life cycle energy and packaging required; this diminishes air pollution, resource use and ecosystem impacts from fossil fuel dependence.” Sustainlane Overview

The Appalachian Sustainable Agriculture project leads the way in promoting local food in our area. You can find them on the web at [www.AppalachianGrown.org](http://www.AppalachianGrown.org)

Austin has nine farmers’ markets and 36 community gardens, Philadelphia has 465 community gardens, or 1 per 3,182 people, outdone only by Pittsburgh, which has 1 per 3,097. Philly also has 18 farmers’ markets.

Summary
Asheville has a lot of interest and support for reducing pollution and waste and increasing efficiency. The air quality is within EPA safe limits (though close) but the Clean Smokestacks Act is starting to kick in and alternative fuel use is growing. Asheville has a good water supply with a shaky infrastructure and a sketchy political agreement, lots of local food options and a good beginning for Green Building.

It does not have explicit support to reduce greenhouse gas emissions that address global warming and it has not begun to support renewable energy within the public sector. Global warming becomes a larger problem the more it is ignored and in order to seriously move toward environmental sustainability Asheville needs to develop a plan that includes increased efficiency and renewable energy as well as incentives for smart growth instead of sprawl and a transportation policy that starts to reduce the amount of vehicle miles we travel.

I have taken a lot of information from a Sustainlane US City Rankings ([http://www.sustainlane.com/cityindex/citypage/ranking/](http://www.sustainlane.com/cityindex/citypage/ranking/)) and America’s Top 10 Cities by Jemilah Magnusson ([http://www.thegreenguide.com/doc.mhtml?i=107&s=cities](http://www.thegreenguide.com/doc.mhtml?i=107&s=cities)). I also talked to city officials and researched local agencies and groups as well as the EPA and the DOE for local information.

Windmill Installation by Ole Sorenson

The first small wind system in Haywood Co. and first residential wind system to be a producer for the NC Green Power Program, a non-profit organization who support renewable energy producers financially. Just this summer, Louis and Talitha Mes installed a 10KW (10,000 watt) wind turbine that sits on a 100-foot lattice tower near Crabtree Mountain Gap. It will produce approximately 14,000 kilowatt hours annually, enough to power their home and more. This is a grid-connected system ensuring utilities back up. When the system produces more electricity than the household needs, the excess is sent and sold to Haywood EMC.

When installing a small wind turbine, it is generally advised to have at least one acre of land. The variables involved to decide on your particular wind system, are average yearly wind speed, tower height, and your electrical needs expressed in kilowatt-hours. events to the public. They also provide a testing sight and showcase of 6 small wind turbines on Beech Mountain that is open to the public.

WNC Green Building Council ● [www.wncgbc.org](http://www.wncgbc.org) ● 828-232-5080 ● info@wncgbc.org
Western North Carolina Small Wind Initiative, a public service program sponsored by Appalachian State University and NC State Energy Office, has extensive information on their website [www.wind.appstate.edu](http://www.wind.appstate.edu) and offer classes, workshops, tours, and community events to the public. They also provide a testing site and showcase of 6 small wind turbines on Beech Mountain that is open to the public.

**Installation Details**

For prep work we looked at the wind maps to determine if there was appropriate wind class (I think it was class 3) and the customer installed an anemometer (wind measuring instrument). Then we did a site visit to look for physical signs of wind and space requirements for the tower and guy wires. Of course we considered the ridge law of NC, which in Haywood County does not include windmills. A building permit was acquired along with an electrical permit. The county required an engineer stamp from NC on the tower and an engineer inspection when tower was installed.

This is an American made windmill from Oklahoma, the Bergey XCEL with battery backup and grid-tied system. The 100 foot guyed lattice tower and wind turbine was installed with a crane the last week in June. Haywood EMC pays 2 cents per kilowatt hour and NC Green Power pays 6 cents. Because Haywood EMC is membership based utility corporation and not a large utility company like Duke or Progress Energy, they are not required to do net metering and also pay less than larger utilities. This home also has solar hot water and radiant floor heat, with plans for a photovoltaic system as well.


Small wind turbines are quite different from their larger cousins, each playing an important role to meet various energy demands. Small scale wind turbines (also know as home or residential wind turbines) can either be connected to the utility grid or stand-alone as an "off-grid" application, normally providing electrical power for home, farm, school, or business applications. Small scale wind machines can have blade length between 3ft-30ft, with a 100ft tower, and can power between 1/4 to 6 average American homes (and even more if they are energy conscious). Small wind turbines require average annual wind speeds of at least according to the American Wind Energy Association, the US is the world leader in small-scale wind energy manufacturing markets.

Large scale wind turbines (also know as utility wind turbines) are normally tied directly into the utility grid and are used to provide electrical power for entire communities and municipalities. Each of these large, "utility-scale," wind turbines can have blade lengths up to 150ft and sit on a 200ft tower, and produce enough electricity for 500-600 average homes per year. In general, small and large wind turbine systems share similar components:

- Generator and Blades to harvest the wind's energy
- Nacelle to enclose the internal components
- Braking or furling system to provide over-speed protection
- Tower to position the turbine in advantageous winds
- Wiring to transmit power to controller
- Electronic Controls to monitor the power and conditions.
After being off-grid since 1993 in our totally solar home, last year we ran an empty conduit from the Progress Energy transformer to our home. When net metering became available we decided to connect to Progress Energy. We were offered their "Sell All System" which consists of two meters. One meter running our home on Progress Energy electricity and the meter selling all of our PV Green power to Progress Energy. Being the first residence in WNC to connect to Progress Energy with this system the folks with Progress Energy did a lot of investigating and assisting in order for us to follow the correct procedure.

We were told by Progress here in Asheville and in Raleigh that we had to apply to the Federal Energy Regulatory Commission (FERC) and The North Carolina Utilities Commission (NCUC) to receive certificates to be able to connect to sell power generated as a small power generator to the utility company. Hard copies of these certificates were to be sent to the NCUC, Progress Energy in Raleigh and locally. All of the information and FERC and NCUC application forms are available on web sites furnished to me by Progress Energy and the N.C. GreenPower Program in Raleigh. We also filed forms with the N.C. GreenPower Program to pay us additional amounts ($0.18/kwh) for all of the Green power that we sell back to Progress Energy. Initially, we have signed up to buy 3 blocks of Green power from Progress Energy at $4.00/block/month (1 block = 100kwh).

When we received all of the certificates, we applied to Progress Energy to put in their cable from the transformer to our home and received information on all the specifications. Next, our electrician installed a dual meter base with inverter, disconnect switch and generator transfer switch. After the County electrical inspector approved the installation, Progress Energy came out and put in their meters.

Our first bill from Progress Energy was $29.00. This did not include any credit from them for the Green power being sold to them as the final hard copy of the NCUC certificate had not been received and forwarded to Progress Energy in Raleigh. By connecting to this system, we no longer needed our old inverters, batteries, e-meter, charge controller, control cabinet, cooling/ventilating fans for batteries and inverters, battery chargers nor the need to run propane generator to equalize charge batteries.

Net Metering is available to Progress Energy customers who operate a solar photovoltaic, wind-powered, biomass-fueled, or micro-hydro generating system located and used at the customer's primary, legal residence or business where a part or all of the electrical requirements of the customer can be primary, legal residence or business where a part or all of the electrical requirements of the customer’s energy needs can be supplied from the customer's generating system. The rated capacity of the generating system shall not supplied from Customer's generating system. The rated capacity of the generating system shall not exceed the lesser of the estimated maximum annual kilowatt demand or 20 kilowatts for a residential system or 100 kilowatts for a non-residential system. The generating system that is connected residential system or 100 kilowatts for a non-residential system. More information about Progress Energy’s Net Metering rules is available at [http://www.progress-energy.com/aboutenergy/rates/NC_NM.pdf](http://www.progress-energy.com/aboutenergy/rates/NC_NM.pdf).
Columbia Forest Products Outing

On September 12th GBC hosted a field trip to Columbia Forest Products local facility in Old Fort. Approximately thirty members went on a tour of the facility followed by lunch and a question and answer session. The folks at Columbia Forest Products were very informative about their hardwood plywood, hardwood veneer, and hardwood flooring products. Their most exciting environmentally friendly initiative is a formaldehyde-free soy-based glue product called Pure-Bond™ which is LEED compliant. This self manufactured adhesive is used in all of their products and has tested for 0.00 formaldehyde emissions. As far as their lumber goes, much of CFP’s wood is harvested sustainably from within a 100 mile radius of the plant. Only a small percentage of their wood is Forest Stewardship Council (FSC) certified because it is a market based item to them. They emphasized that if you are looking for a specific FSC item to contact them and they can get it out to you within a short time period. CFP products (FSC certified and non-certified) are available locally at Catawba Hardware in Old Fort and at locations in Greenville, SC and Knoxville, TN. Columbia Forest Products was very proud of their stewardship to the environment as well their goals to be cost-effective with resources and technology in order to stay local and keep jobs local. If you are interested in more information it is available at the GBC office or at www.columbiaforestproducts.com.

News Spotlight: Annual Solar and Green Home Tour October 7th

It was another great year at the annual Tour. Approximately 190 people from several states spent 5 hours on Saturday exploring the world of green building. There were 14 homes (thanks so much to the homeowners and builders for their time) that were on the tour with a variety of green building and renewable energy technologies ranging from bamboo flooring to a 10 KW wind turbine. If you missed the tour but would like an email version of the brochure please contact us. See you on our next tour.

WNC Green Building Council Events

October 26th & 27th: EcoAgent Course Where: Asheville, For Realtors

October 26th: Green Building 101: The Finances of Green Building Where: City of Asheville Public Works Building, 161 South Charlotte St. Time: 2-6pm. Cost: $50, $40 for WNCGBC members if registered before October 19th. $80 after October 19th.

November 1st, Healthy Built Homes Orientation Where: NC Arboretum Time: 1-5pm Cost: $49.

November 9th: Green Building 101: Marketing Green Buildings, Where: City of Asheville Public Works Building, 161 South Charlotte St. Time: 2-6pm.

For updates and other events go to www.wncgbc.org/events/calendar.php
Contact: WNCGBC at ph. 828-232-5080 or email: matt@wncgbc.org