

Habitat for Humanity and Green Building

How we build LEED certified, affordable home in Athens, AL

Presenter: Debra Miller, LEED AP Homes, Construction
Committee Chair, and Greg Miller, Executive Director, HFH ALC
deb@habitatalc.org; gmler@habitatalc.org



Why LEED for Homes?



Where we are coming from...

- Limestone County, AL pop: 76,135
- Build about 4 houses a year, 5 years ago 1-2
- Before building LEED (Leadership in Energy and Environmental Design) houses, our houses cost about \$50,000 to build
- 3 houses LEED Gold certified, 2 LEED Platinum, 4 in progress, with a target of Platinum

LEED for Homes

- Leadership in Energy and Environmental Design
- Program by US Green Building Council, recognized internationally
- Provides a framework for residential design to assure new home buyers that their house meets certain standards and keeps builder's quality up.

Components of LEED for Homes

- Innovation and Design Process
- Location and Linkages
- Sustainable Sites
- Water Efficiency
- Energy and Atmosphere
- Indoor Environmental Quality
- Awareness and Education

Innovation and Design Process-

What we did:

- Project planning, teamwork, and design Charrette, making sure that all the systems work together!

Location and Linkages

- Located our homes in town, close to many resources
- Located our homes on infill lots, previously developed
- Located our homes close to open space
- Attempt to orient homes for solar

Sustainable Sites – What we did

- Protected area from run off into creeks, drains
- Developed a tree plan
- Selected no invasive plants for our landscaping (prerequisite)
- Selected drought tolerant plants for our landscaping
- Reduced Local Heat Island effect with light concrete
- Used non-toxic pest control

Water Efficiency: What we did

- Used High-Efficiency Fixtures and Fittings (Water Sense, 1.28 gpf toilets or dual flush)
- Used Very high Efficiency shower heads <1.75 gpm, Water Sense lavatory faucets

Energy and Atmosphere: What we did

- Efficient Hot Water Distribution: (planning)
- Pipe insulation
- Appropriate HVAC Refrigerants & Refrigerant Charge Test
- Prescriptive Path – resulting in a HERS rating of 52, 47, mid-30s in IECC climate zone 3

Energy & Atmosphere details

- Insulation: spray foam in ceilings and walls
- Air infiltration – caulk!
- Windows upgrade
- Distribution system
- Space Heating & Cooling Equipment Upgrade
- Water Heating: insulation, electric heat pump WH in some houses, tankless gas WH in others
- Lighting (CFLs & Energy star fixtures) Appliances

Materials and Resources: What we did

- Made sure that the wood was cut efficiently
- Used environmentally friendly paints
- low VOC caulk
- Used hard (laminated) flooring
- Waste Management (recycled!!!) only .2 lbs/sf

Indoor Environmental Quality:

What we did

- Enhanced Local Exhaust, Energy Star fans, exhausted to outdoors
- Occupancy sensor for baths (or fans that include a humidistat)
- Return Airflow (jumper ducts): included in HVAC
- Better Filters to reduce indoor pollution
- Indoor Contaminant Control during Construction (cover ducts)
- Preoccupancy Flush
- Radon-Resistant Construction
- Energy recovery system

Homeowner Bottom Line

Pre-LEED, we averaged \$56/month/person in utility expenses. Post-LEED, we averaged \$19/month/person.

Points to remember

- Our build cost of \$52,500 (\$14,650 for lot)
- Habitat gets gifts in kind, which keeps some costs down
- Green Rater gave us a break on his rate
- Home Depot grants helped
- Some trades charged us reduced rates

Resources

- Green Rater (for us, Joe Cooper at EcoSouth)
- USGBC – web site, publications, classes
- Magazines (EcoHome, GreenSource)
- Networking (Green Drinks – www.hssvgreendrinks.org)
- Lots of others related sites on web

Contact Information

- Contact information: Debra Miller or Greg Miller
email: deb@habitatalc.org or gmler@habitatalc.org
- Website: www.habitatalc.org