

Southface Energy Institute

responsible solutions for environmental living

- Education and Research
- Policy
- Green Building Services
 - commercial
 - residential
 - communities
- Greenprints
March 1st and 2nd, 2010



The first EarthCraft House

Southface Energy and Environmental Resource Center

- Demonstration facility built in 1996
- Reduces air and water pollution
- Conserves natural resources
- Provides a healthy indoor environment



Environmental Impacts of Buildings *Per USGBC*

- Use 30-40% of total US energy
- 60-70% of electricity
- 35-40% of municipal solid waste
- 25-30% of wood & raw materials use
- 25% of water use



In the U.S., about 340 billion gallons of fresh water are withdrawn per day from rivers, streams, and reservoirs

Regional Context - Air Quality

- Atlanta - top 10 for smog
- Electricity generation is the leading contributor to U.S. air pollution:
 - 66% of Sulfur Dioxide (acid rain)
 - 29% of Nitrogen Oxide (smog)
 - 36% of Carbon Dioxide (climate change)
 - 21% of Mercury (toxic chemicals)



Health & Safety Impacts

- EPA ranks IAQ among the top five public health environmental risks
- 30% of new and renovated buildings have unhealthy indoor air
- Increase quality of indoor air, thermal, and acoustic environment



900 Green Homes can prevent...

- 600 tons of wood
- 230 tons of drywall
- 4,300 tons CO₂
- 25,000 pounds SO₂
- 9,100 pounds NO_x

from going to landfills during construction

from going into the air annually



900 Green Homes can generate...

- \$18/month energy savings
- \$214/year savings
- \$195,810/year savings for community
- \$5.8 million saved over 30 years
- \$29.4 million economic stimulus over 30 years



Green development builds community wealth.

Energy Costs

- Middle class families pay roughly 5% of their household incomes on energy costs
- Low-Income families spend approximately 20%.... and the cost is rising



Green Building Programs

Local

- Florida Green Building Coalition
- HealthyBuilt Homes (NC)
- Jacksonville Electric (FL)
- Energy Key (AL)



Regional

- EarthCraft House



National

- Green Communities
- ALA Health House
- NAHB
- ENERGY STAR
- Environments for Living
- LEED for Homes



"Greening The American Dream"



LEED.
for HOMES



Green Building Programs - Residential Buildings

National Programs

- LEED (Leadership in Energy & Environmental Design) for Homes and Neighborhood Development
- ENERGY STAR
- Green Communities



Regional Programs

- EarthCraft House
- EarthCraft Multifamily
- EarthCraft Communities



ENERGY STAR Homes

- National program to recognize homes that are 15% more efficient than homes built to 2006 IRC (HERS index = 85)
- Requires energy modeling or Builder Option Package (BOP) with blower door and duct blaster tests
- www.energystar.gov



Air Leakage Test

Certified inspector measures the amount of air that leaks through the building envelope with a blower door test

- Minimum 15% of all units tested (worst case units selected)
- ACH 50 of 6 for CZ's 3 and 4



Duct Leakage Test

- Required: duct leakage <6% of conditioned floor area for Performance Path
- Points for duct leakage < 4% of conditioned floor area for BOP Path





Greening America's Communities



Green Communities Framework

- **Urban, Suburban, Rural**
- **New Construction**
- **Rehabilitation**
- **Moderate Rehabilitation**
- **Adaptive Re-use**
- **Single-family Detached**
- **Single-family Attached**
- **Multi-family high-,mid-,and low-rise**



Green Communities Criteria

1. Integrated Design Process
2. Location and Neighborhood Fabric
3. Site
4. Water Conservation
5. Energy Conservation
6. *Materials and Resources*
7. Healthy Living Environment
8. Operations and Management



Category 2: Location and Neighborhood Fabric

- Proximity to Existing Development
- Protecting Environmental Resources
- Proximity to Services
- Compact Development
- Walkable Neighborhoods





Category 3: Site Improvements

- Environmental Remediation
- Erosion and Sedimentation Control
- Native Landscaping
- Surface Water Management



Photo courtesy Lake County, Ohio







Category 4: Water Conservation

- Water-Conserving Appliances and Fixtures
- Efficient Irrigation





Category 5: Energy Efficiency

- Efficient Energy Use
- Energy Star Appliances
- Energy Star Lighting
- Electricity Meter
- Photovoltaic Panels/Ready





Category 7: Healthy Living Environment

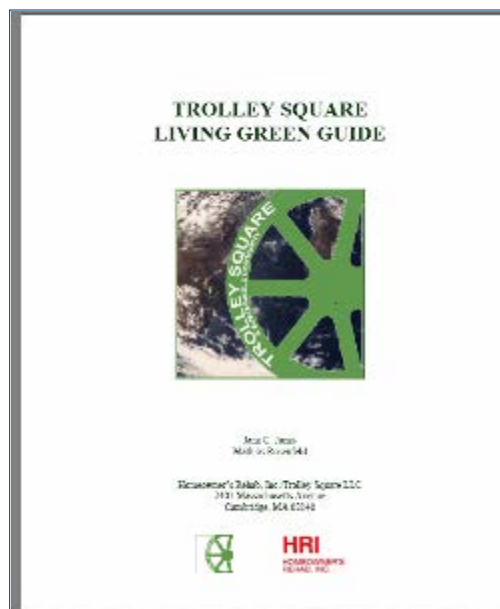
- Low Voc Paints, Primers, Adhesives and Sealants
- Non-Formaldehyde Composite Wood
- Green Label Carpet
- Exhaust Fans Vented Outdoors
- Adequate Ventilation
- Proper HVAC Sizing/Installation
- Non-mold Propagating Materials in Wet Areas
- Integrated Pest Management





Category 8: Operations and Maintenance

- Owner's Manual
- Resident's Manual
- Owner Orientation



Also Available in Spanish

Overview of the LEED for Homes Rating System

LEED for Homes aims to recognize homes which incorporate:

- The efficient use of land resources
- The efficient use of water resources
- Enhanced indoor environmental quality to safeguard the health of the home's occupants
- The efficient use of building construction resources
- The efficient use of energy resources

LEED for Homes Project Checklist

Performance Categories

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



LEED ND Categories

- Smart Location and Linkage
- Neighborhood Pattern and Design
- Green Construction and Technology
- Innovation and Design Process

A Comprehensive Standard for Green Residential Development

- EarthCraft House
- EarthCraft Renovation
- EarthCraft Multifamily
- EarthCraft Communities



EarthCraft House Categories

- Site Planning
- Building Envelope and Systems
- Appliances/Lighting
- Resource Efficient Design
- Resource Efficient Materials
- Waste Management
- Indoor Air Quality
- Indoor Water Conservation
- Outdoor Water Conservation
- Homeowner Education
- Builder Operations
- Bonus Points



EarthCraft™ Communities

Performance Categories

- Site Selection
- Water Management
- Planning and Design
- Preservation Landscape
- Community Engagement
- Green Building

Programs and Resources

Southface

www.southface.org

ENERGYSTAR

www.energystar.gov

EarthCraft House

www.earthcrafthouse.com

Green Communities

www.greencommunitiesonline.org/

US Green Building Council / LEED

www.usgbc.org