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In the U.S., about 340 billion gallons of fresh water are withdrawn per day from rivers, streams, and reservoirs.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

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.

Southface
Responsible Solutions for Environmental Living
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.

Southface
Responsible Solutions for Environmental Living
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
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
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

Southface
Responsible Solutions for Environmental Living
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