

# Southface Energy Institute

*responsible solutions for environmental living*

- Education and Research
- Policy
- Green Building Services
  - commercial
  - residential
  - communities
- Greenprints
  - USGBC Green Build, Nov 9-11
  - March 23-24, 2006



Responsible Solutions for Environmental Living

[www.southface.org](http://www.southface.org)

# Southface Energy and Environmental Resource Center

- Conserves natural resources
- Reduces air and water pollution
- Provides a healthy indoor environment

—



# Eco Office

Architect

Lord, Aeck & Sargent, Inc.

Contractor—

Eco Office Contractors: A  
Consortium of Green Builders

DPR Construction

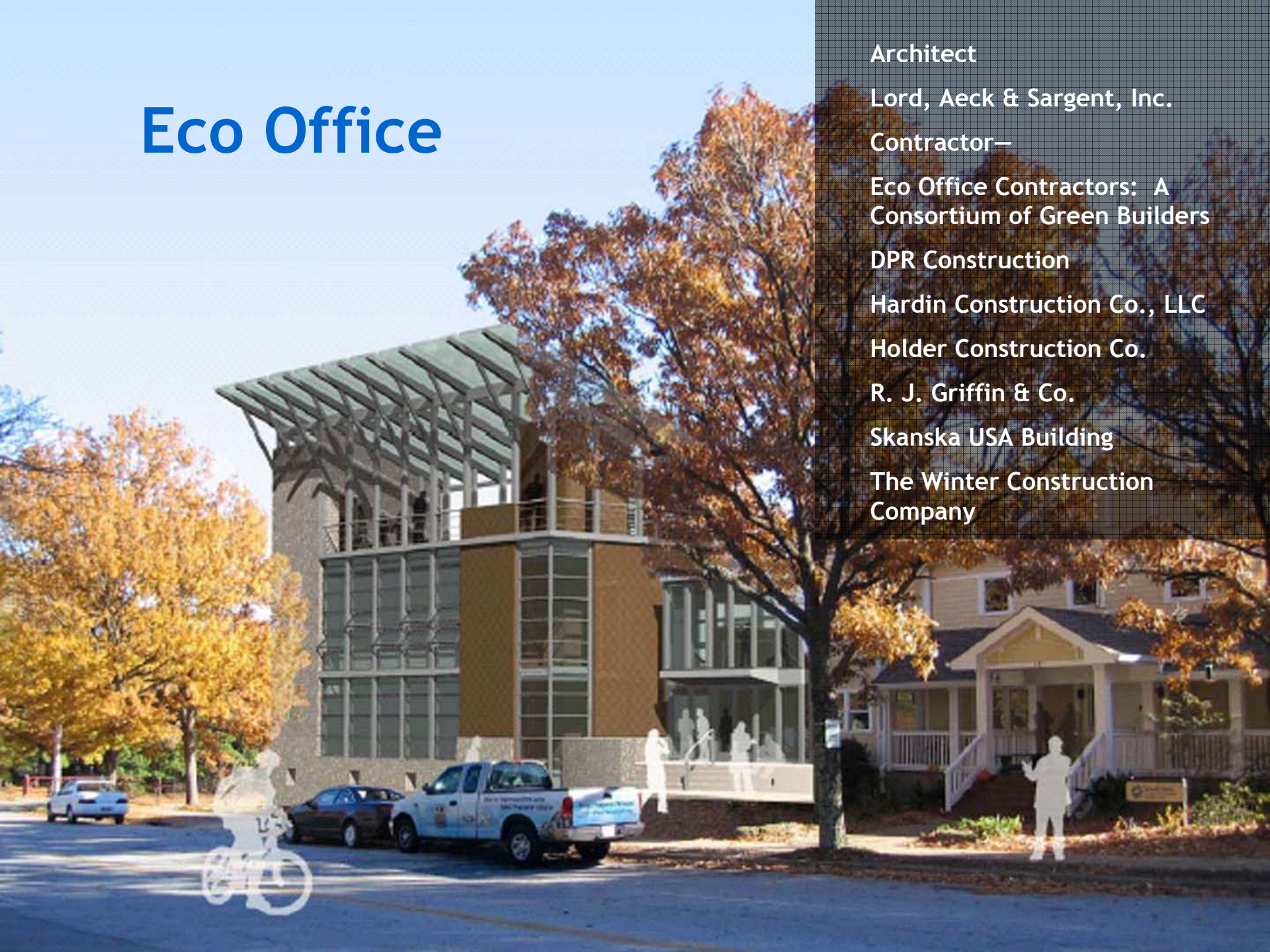
Hardin Construction Co., LLC

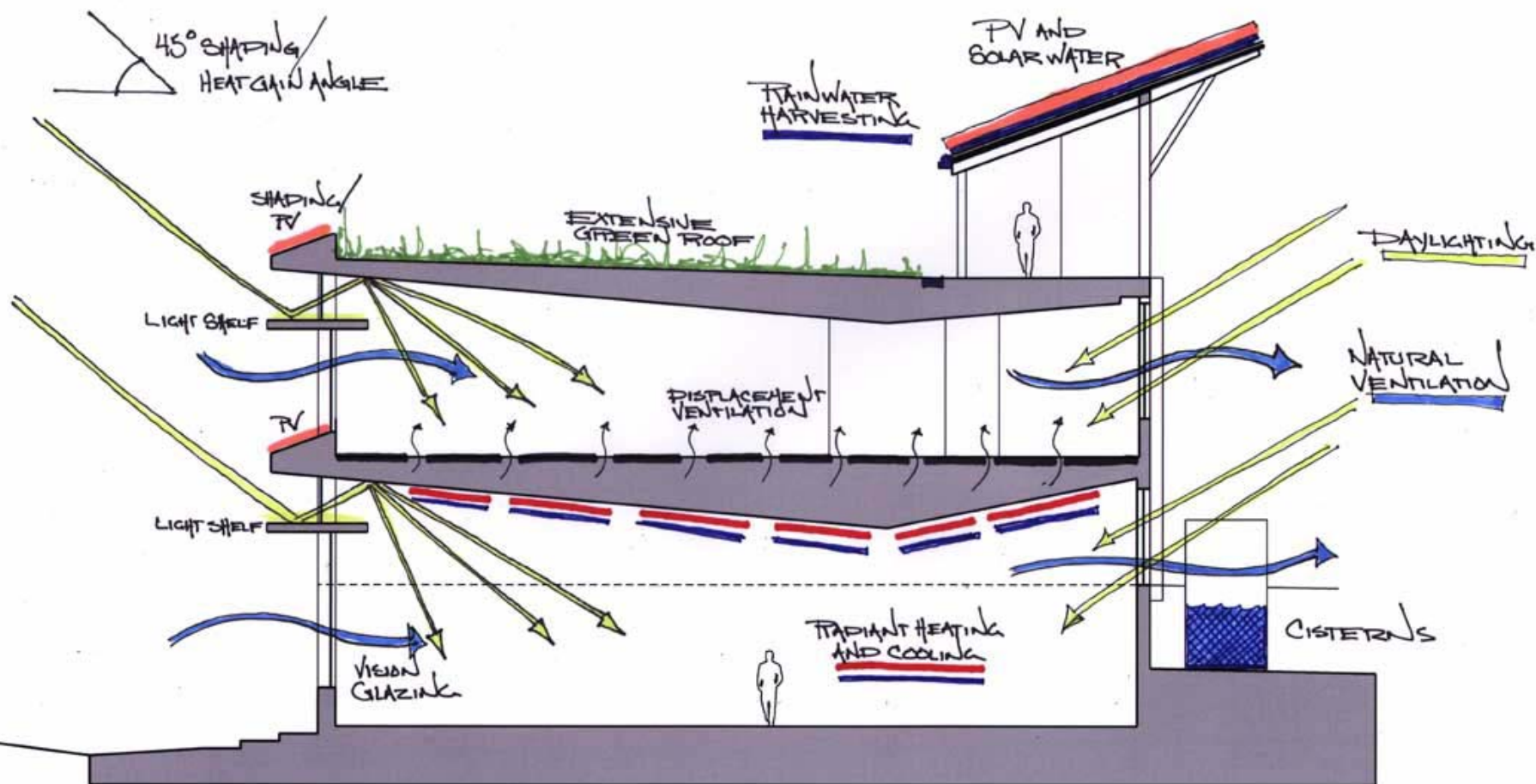
Holder Construction Co.

R. J. Griffin & Co.

Skanska USA Building

The Winter Construction  
Company





## TYPICAL SECTION



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# Eco Office

- Off-the-shelf technology
- Integration is key
- ID and eliminate market barriers



# Southface Green Building Services

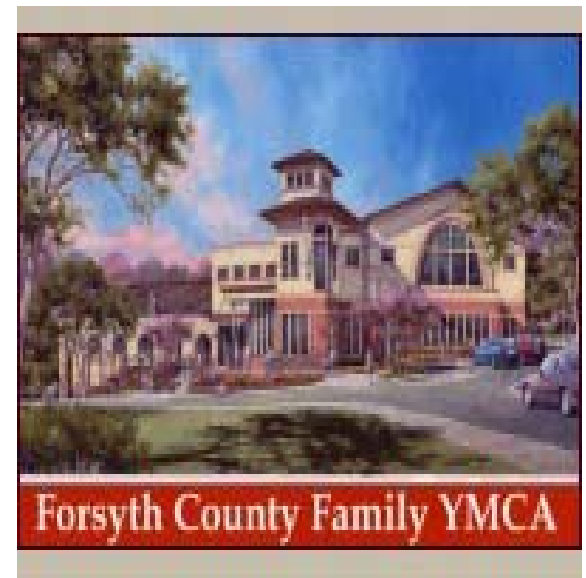


Klaus Advanced Computer Science



LEED™

Atlanta Community Food Bank



# Why Green Homes?

- Enhanced health
- Lower utility costs
- Reduced maintenance
- Greater comfort
- Higher resale value
- Cleaner environment

*Environment*  
*Economy*  
*Equity*



# Buildings Have BIG Impact



- 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



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# Energy Efficiency in the South



## Utility Spending on Energy Efficiency (\$/capita/yr)

|             |       |
|-------------|-------|
| New England | 12.10 |
| Midwest     | 2.98  |
| Southeast   | 0.67  |

Southeast has highest household electricity consumption

# Atlanta's Challenges

- Non-point source runoff threatens Chattahoochee
- 30-year water supply
- Use more water to generate electricity than for all households
- Air quality fails Clean Air Act
- Power plants and stationary sources are major sources of CO<sub>2</sub>, NO<sub>x</sub>, mercury, particulates
- Lose 50 acres of green space per day to sprawl development



## Study links power plants to pollution deaths, illnesses

By Charles Seabrook

Microscopic particles from coal-burning power plants are contributing to the deaths of 1,630 Georgians each year and to debilitating sickness in thousands more, according to a report issued Tuesday by local and national environmental groups.

About 650 of those deaths are in metro Atlanta, the study said.

The tiny particles of soot, sulfates, dust, metals and other pollutants are known collectively as particulate matter.

"As this report documents, particulate air pollution is a serious public health hazard," said Dr. Howard Frumkin of Emory University's Rollins School of Public Health. "Power plants are an important

source of this pollution, accounting for more deaths every year than drunk driving or homicide."

Nationwide, power-plant pollution is cutting short the lives of 30,100 Americans each year, the report said. In Georgia, the pollutants are blamed for 1,050 hospitalizations and 38,200 asthma attacks annually.

The report, "Death, Disease and Dirty Power: Mortality and Health Damage Due to Air Pollution from Power Plants," was released by the Boston-based Clean Air Task Force. Clear the Air, a national campaign backed by the Pew Charitable Trusts, and the Georgia Airkeepers Campaign.

The research on which the report is based was conducted by Abt Associates using methodology that is approved

by the U.S. Environmental Protection Agency. Dr. John Spengler of the Harvard School of Public Health reviewed the study.

"These findings imply that our regulatory strategies and priorities (for air pollution) should be reconsidered," he said.

The environmental groups said 11 coal-burning plants — completely or partly owned by

company spokesman John Sell. "Nonetheless, Georgia Power takes seriously our obligation to safeguard public health when it comes to their facilities."

He said the company and other electric utilities are engaged in a variety of studies that will provide answers to some of the health issues raised in the new report and previous ones.

The study released



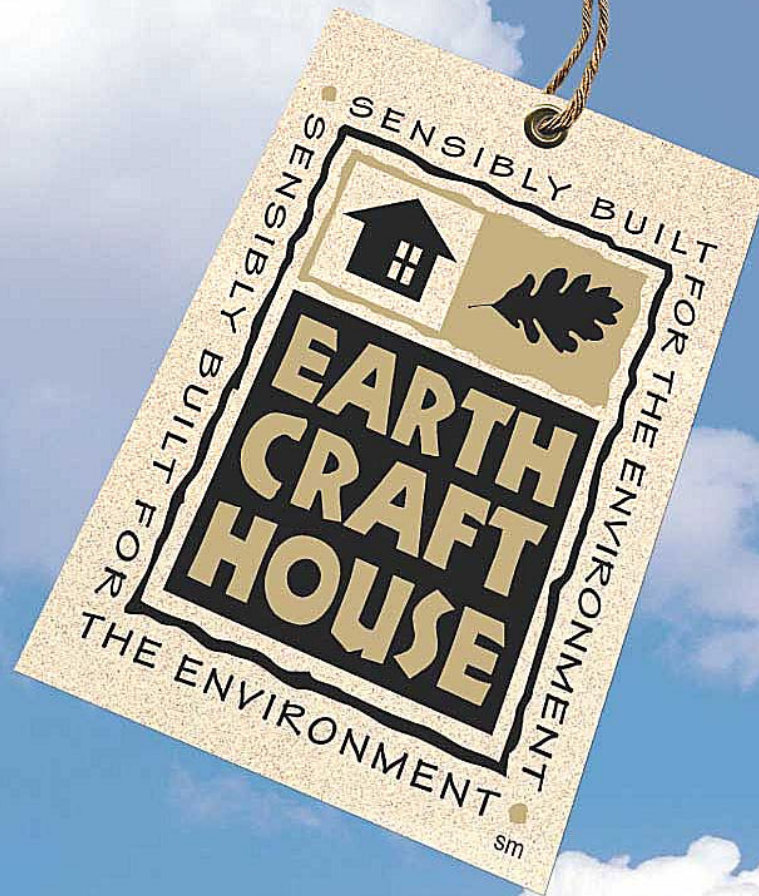
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*A new concept in home construction  
that's naturally better.*



- Guidelines
- Training
- Technical assistance
- 3<sup>rd</sup> party verification
- Marketing
- Financial incentives



EarthCraft House is now being offered by a select group of greater Atlanta home builders who are specially trained to build cost-effective, high performance homes that are good for you and good for the environment. The innovative new program includes third party inspections that ensure the value and comfort your family deserves.

- Lower Utility Bills
- Healthier Indoor Air
- More Durability
- Less Maintenance
- Greater Comfort



Request the best from your builder. Ask for a new EarthCraft House. Sensibly built for the environment.

For a list of builders in your area constructing homes in a wide range of prices, visit EarthCraft House at [www.earthcrafthouse.com](http://www.earthcrafthouse.com) or call the Greater Atlanta Home Builders Association.

770 • 938 • 9900

#### Participating EarthCraft Builders

|                                      |               |
|--------------------------------------|---------------|
| Apex Homes, Inc.                     | (770)942-6355 |
| Atlantic Property Development Corp.  | (770)908-2210 |
| B.G. Henry & Associates, Inc.        | (678)474-0580 |
| BBC Builders, Inc.                   | (770)294-8730 |
| Beardslee Custom Homes               | (770)516-7738 |
| Beecham Builders, LLC                | (678)566-6651 |
| Benecki, LLC                         | (847)501-5418 |
| Bethany Construction Mgmt. Co., Inc. | (770)645-8381 |
| Brenco, Inc.                         | (770)898-8620 |
| Brewster Builders, Inc.              | (404)872-0997 |
| Brock Built                          | (404)320-7238 |
| Building Ventures, Inc.              | (770)382-9487 |
| Burnham Builders, L.P.               | (678)475-0578 |
| C & J Associates, Inc.               | (706)467-2958 |
| Cantrell Properties, Inc.            | (770)977-8480 |
| Carriage Homes, Inc.                 | (770)623-9348 |
| Champion Enterprises, Inc.           | (888)320-6437 |
| Chatham Homes, Inc.                  | (770)624-2900 |
| Cheval Custom Homes, Inc.            | (770)614-1847 |
| Club Pointe Properties, LLC          | (770)481-1950 |
| Collier & Collier, Inc.              | (678)376-1851 |
| CRI Homes, Inc.                      | (770)399-0900 |
| Crown Pointe Homes, Inc.             | (678)409-2237 |
| D.C. Woodley & Associates, Inc.      | (404)504-9324 |
| D.R. Horton - Torrey Homes           | (770)431-8311 |
| Dan Collins Homes, LLC               | (678)541-0231 |
| David Orlofsky Homes                 | (404)925-1341 |
| Discovery Technology, Inc.           | (770)429-0557 |
| Donny Brook Homes Inc.               | (678)354-6233 |
| Doug Banner Homes, LLC               | (770)569-7283 |
| Elegant Properties                   | (770)814-0925 |
| Forrest Homes, Inc.                  | (770)751-1311 |
| Fortress Construction, LLC           | (770)859-9100 |
| G. Laycock, Inc.                     | (770)442-5527 |
| G.C.S. Properties, Inc.              | (770)245-3740 |
| Hadi Builders Inc.                   | (678)838-2878 |
| Haven Properties, Inc.               | (770)752-0919 |
| Haycock Design/Build, Inc.           | (770)992-4744 |
| Health-E-Community Enterprises       | (678)410-2946 |
| Hedgewood Properties, Inc.           | (770)889-3667 |
| Hilward Kitchens Homes, Inc.         | (770)622-4111 |
| Homeland Legacy                      | (770)416-0634 |
| Hunter Blair Homes, Inc.             | (770)772-7141 |
| Jim Hogan Homes, Inc.                | (770)441-9030 |
| John Wieland Homes, Inc.             | (770)996-2400 |
| John Willis Homes, Inc.              | (770)823-1496 |
| Kathleen Day & Associates            | (770)446-1500 |
| Linda Martin Homes, Inc.             | (770)667-6574 |
| Live Oak Builders, Inc.              | (770)980-4000 |
| McConnell Homes, Inc.                | (404)874-6767 |
| McKenzie-Perry Homes                 | (770)592-9989 |
| Milhouse, Inc.                       | (678)319-0530 |
| Monogram Homes, Inc.                 | (770)623-9348 |
| Nesbitt Lord & Company               | (770)499-7021 |
| NGA Homes, Inc.                      | (770)889-6462 |
| Osley Builders                       | (770)781-2697 |
| Pete Witalis Homes, Inc.             | (770)446-5959 |
| Phoenix Communities, Ltd.            | (404)713-2636 |
| Profile Signature Homes, LLC         | (770)418-2100 |
| Residential Builders, Inc.           | (770)513-4292 |
| Richport Properties Inc.             | (770)934-0710 |
| Ridgeview Homes                      | (770)475-1675 |
| Rosewood, Inc.                       | (770)619-3022 |
| Rudy & Tony Brown Properties, LLC    | (770)813-8611 |
| Southern States Construction, LLC    | (770)642-1002 |
| The Bellemare Group, Inc.            | (404)459-8990 |
| The Davidson/Kopp Group, Inc.        | (770)932-6262 |
| Tom Nail Builders, Inc.              | (770)594-9176 |
| Vanderbilt Homes, LLC                | (770)271-8360 |
| Waterford Homes, Inc.                | (770)448-2175 |
| Webco Builders, Inc.                 | (404)876-5174 |

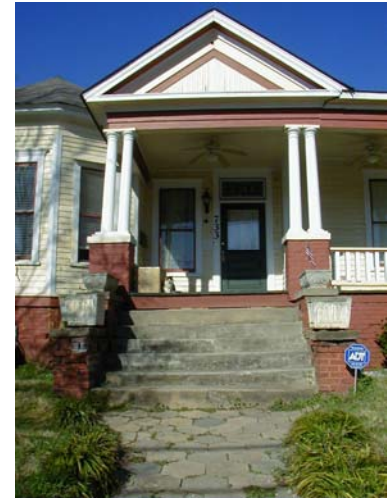


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# EarthCraft Scope

- **Single-family**  
new home and renovation
- **Multi-family**  
new home and renovation
- **Affordable housing**
- **Communities**
- **Adapted by other locales**



# Environmental Impact

## 915 EarthCraft Homes prevent:

- 4,300 tons CO<sub>2</sub>
- 25,000 pounds SO<sub>2</sub>
- 9,100 pounds NO<sub>x</sub>
- 600 tons of wood
- 230 tons of drywall

*From going into the air*

*From going to landfills*



# Integrated design key to cost effectiveness



## Winslow Oaks, Macon, Georgia

Achieve EarthCraft House and Building America standards

Workforce housing

Green site development avoided need for costly retention pond

EarthCraft House at no added cost

## *Coastal Living Homes, Savannah, GA*

- Improved envelope reduces HVAC loads
- Homes sold at higher price point
- Reduced callbacks



# Green Affordable Housing Study



Erie Ellington, Boston, MA

- **16 completed green projects had an average premium of 2.4% with range of -18% to 8%**
- **Green champion often 3<sup>rd</sup> party**
- **Commissioning/testing essential**
- **First cost vs life cycle cost prime barrier**

# Energy Efficiency Credit

|                | <i>Standard</i> | <i>Energy Efficient</i> |
|----------------|-----------------|-------------------------|
| Purchase Price | \$250,000       | \$253,000               |
| Down Payment   | \$50,000        | \$50,600                |
| Loan Amount    | \$200,000       | \$202,400               |
| Interest       | 7%              | 7%                      |
| Monthly PITI   | \$1,331         | \$1,347 (-\$16)         |
| Energy Cost    | \$220           | \$160 (+\$60)           |
| <hr/>          |                 |                         |
| Total Expenses | \$1,551         | \$1,507 (+\$44)         |

# Economic Impact

915 EarthCraft Homes generate:



Adds less than \$650 to cost

- \$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

# Emory University



**Math & Science**



**Whitehead is Southeast's first  
LEED Certified building**

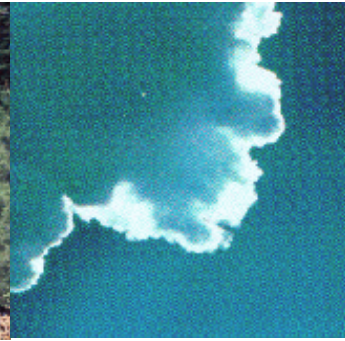
Site

Water

Energy

Materials

IEQ



# Defines Sustainable Building

Leadership in

Energy and = **LEED™**

Environmental

Design



# Green Building Rating Systems

- LEED-NC for New Construction
- LEED-CI for Commercial Interiors
- LEED-EB for Existing Buildings
- LEED-CS for Core and Shell\*
- LEED-H for Homes\*
- LEED-ND for Neighborhood Developments\*

\*under development

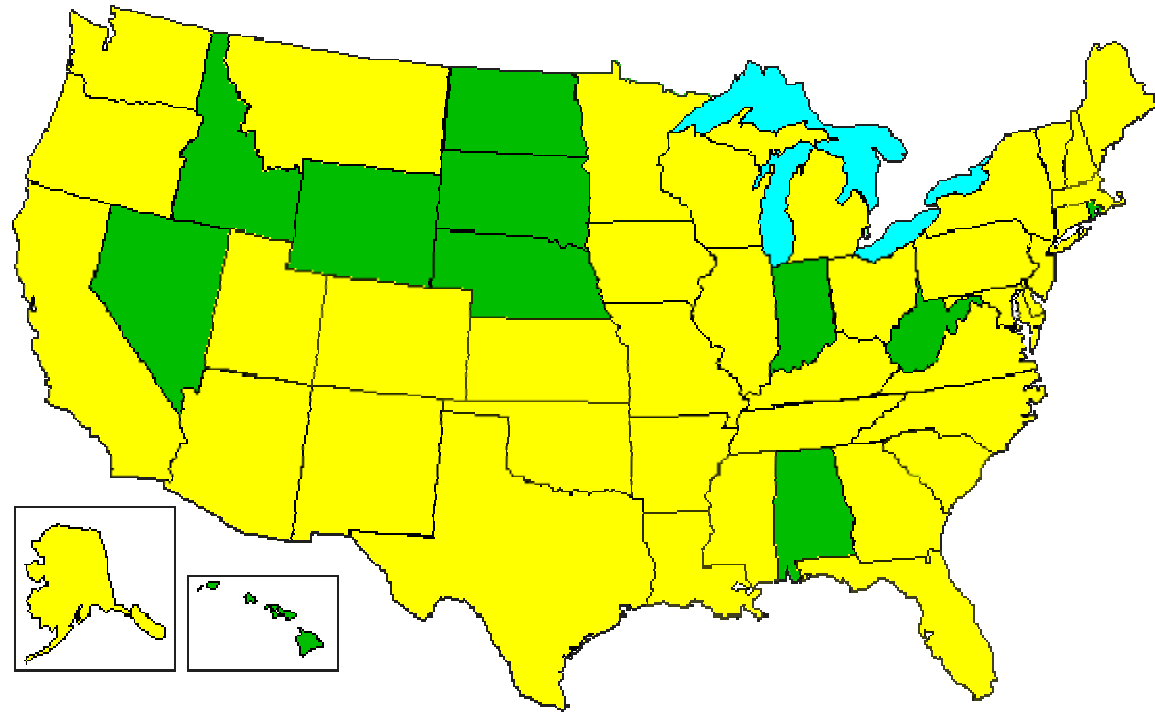
# LEED-NC Market Transformation

- 180 Certified Projects
- 1787 Registered Projects

213 M gsf

50 States

13 Countries



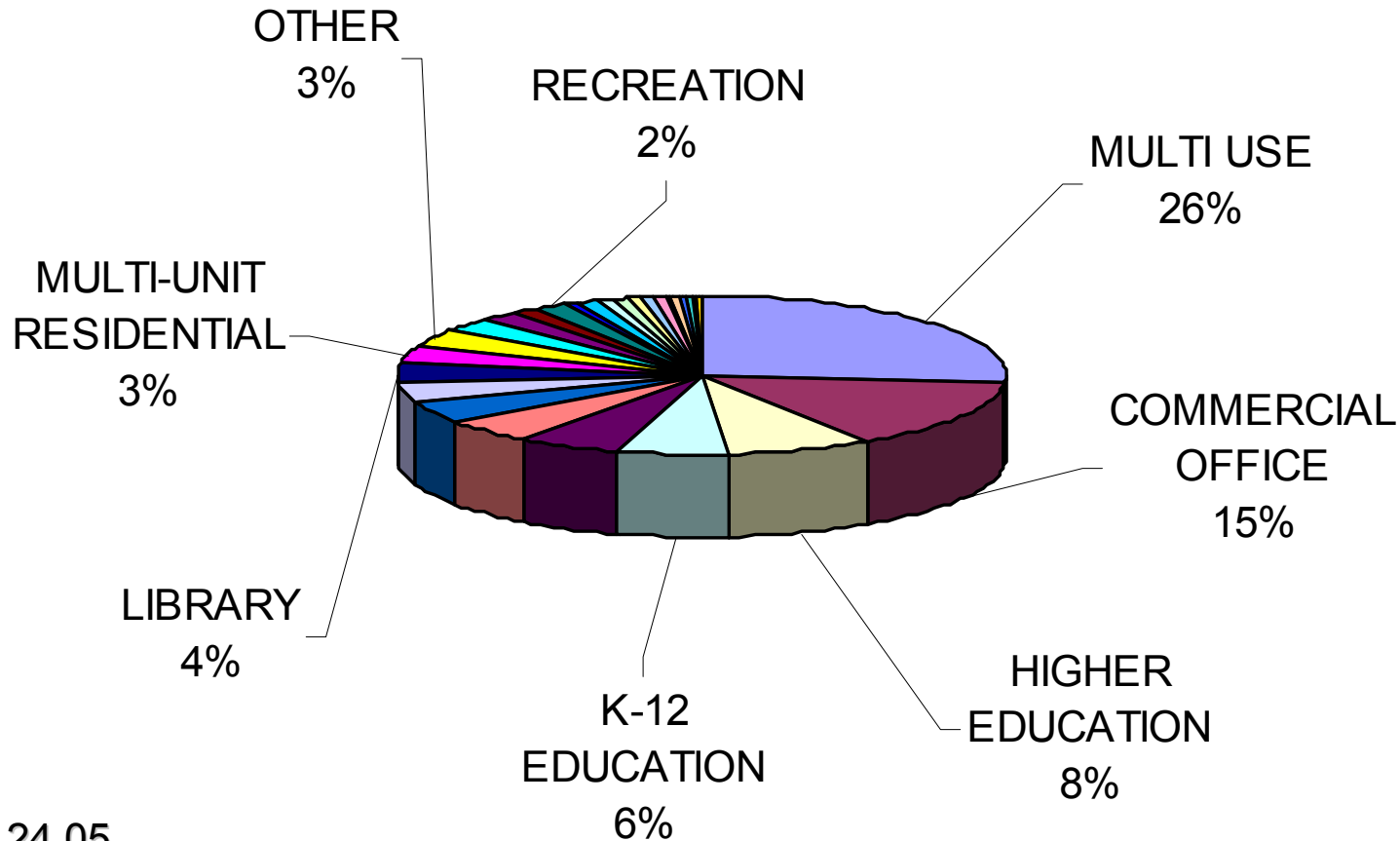
As of 02.24.05



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All statistics exclude pilot projects

# Registered Projects by Building Type



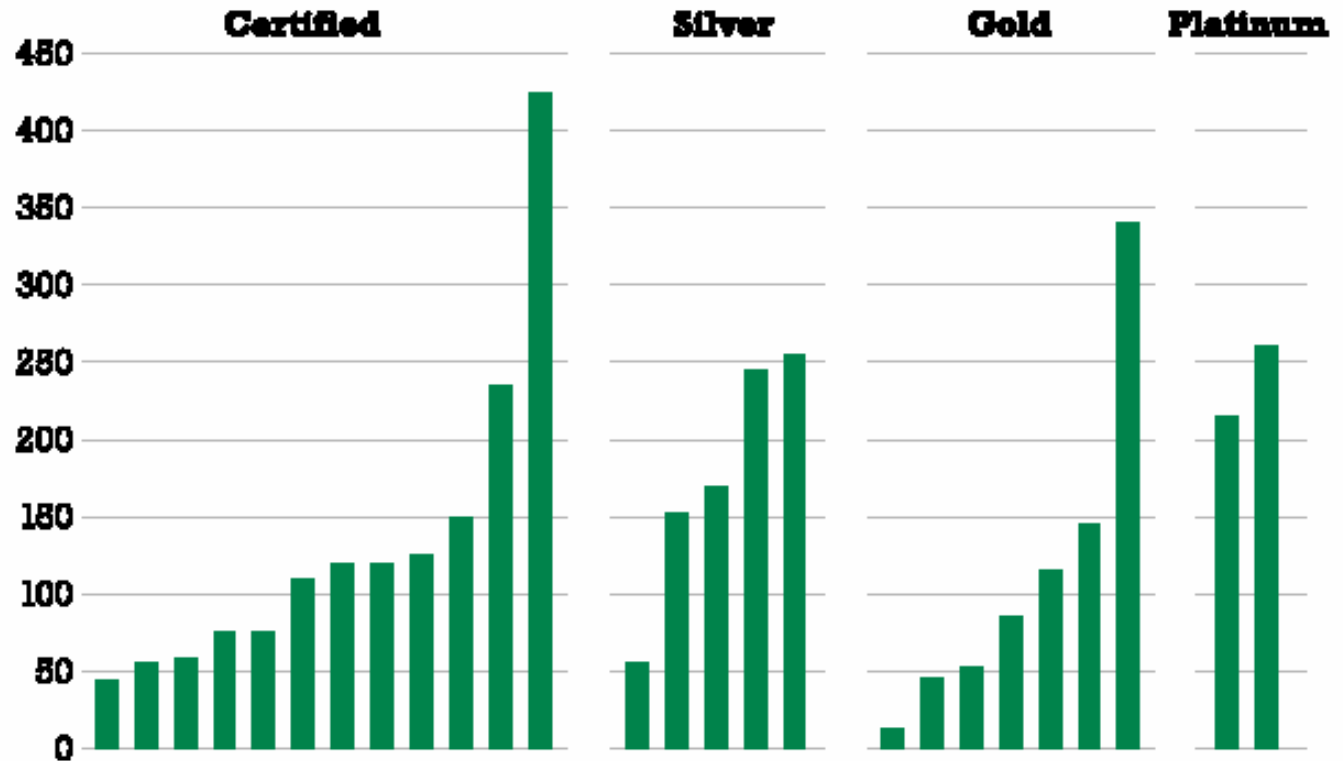
As of 02.24.05



# Cost of LEED Certified Buildings

## Cost of LEED-certified buildings

(Building costs, dollars per square foot)



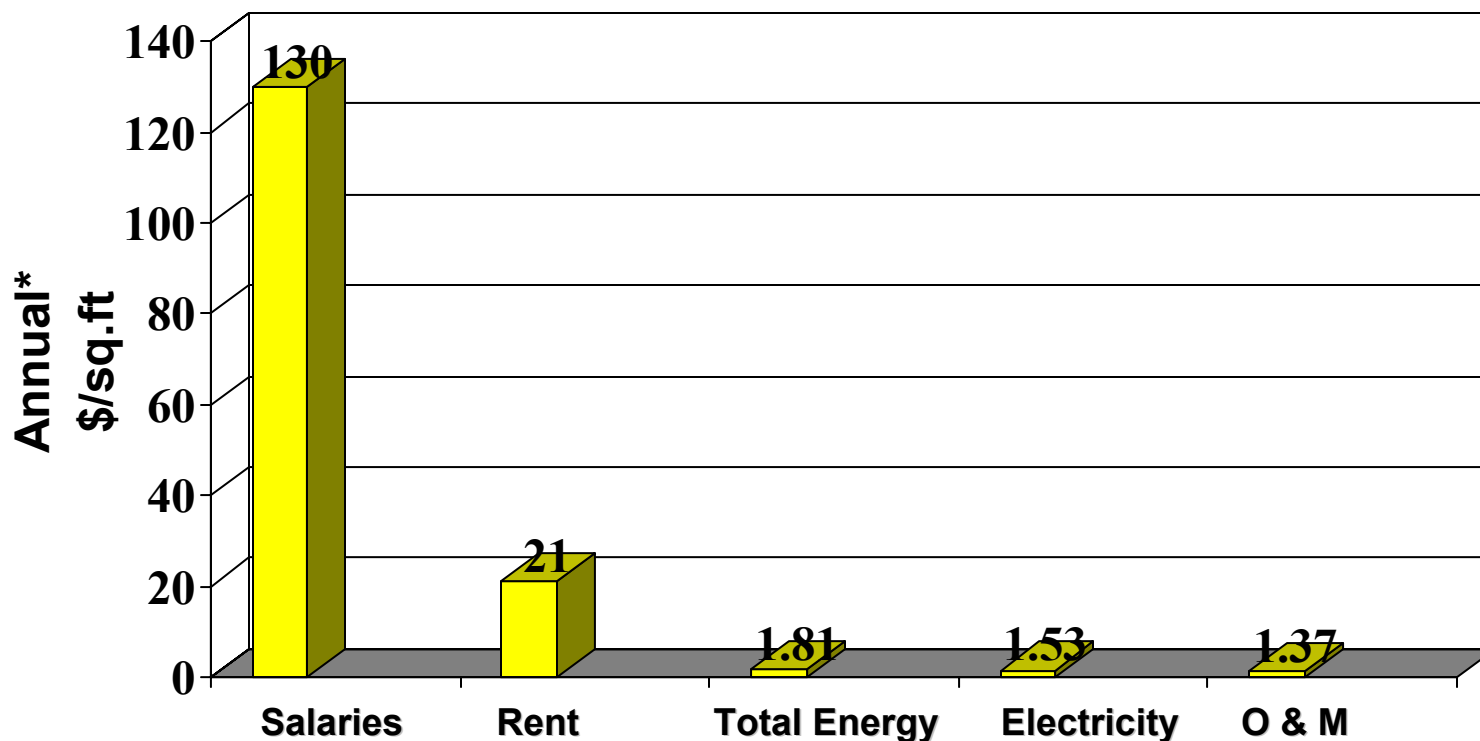
Source: USGBC, Syska Hennessy Group



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# Green Buildings & Occupants



\* 1991 Source: BOMA, EPRI, Statistical Abstract in RMI "Greening the Building and the Bottom Line, 1994

## **Glenwood Park Green Facts**

- Reused 260 million pounds of concrete under roads and pipes
- Recycled 1 million pounds of granite blocks and boulders into parks
- Recycled 250,000 pounds of metals from site
- Recycled 30 million pounds of wood chips into “waste-to-energy” - enough energy to power 900 typical homes for a year
- Pedestrian/bike/bus friendly design will save over 1.6 millions car miles per year – like taking 100 cars off roads and saving 27 human work years

## **Glenwood Park Green Facts**

- Reuse 35,000 gallons of water per week using storm and well water
- Plant over 1000 trees plus other plants, flowers, and shrubs
- Save 100 acres of open land with mixed-use, brownfield redevelopment
- 275 EarthCraft Homes will use 1.3 Megawatts less annual energy avoiding 1454 tons of CO<sub>2</sub>, 8627 lbs of Sox, and 3121 lbs of NO<sub>x</sub>
- Produce 30 CY less waste per house constructed by recycling metals, cardboard, and grinding wood and drywall waste for landscape application

# Greening the Ranch



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