Green Architecture: Better Ways to Build America’s Future
Building Livable Communities with Transit

What’s the Problem?

• Global climate change has been declared by the UN as unequivocal and as very likely rooted in human activity reflecting scientific consensus.
• With only 3% of the world population, the US consumes 25% of all fossil fuels globally.
• The US generates as much CO₂ annually as would result from burning every tree in Canada.
• Buildings use over 45% of energy consumed and produce 17% of all greenhouse gases (GHG) released in the United States.
The US was assigned a reduction of 7% emissions of the named GHG's from a 1990 baseline to be met by 2008/2012.
US Conference of Mayors

On February 16, 2005 Seattle Mayor Greg Nichols launched an initiative for 141 Mayors to endorse the Kyoto Protocol.

To date, 884 mayors from cities in all 50 states have signed the US Conference of Mayors’ Climate Protection Agreement representing a population of nearly 81 million Americans.
Green Mandates

• The federal government has provided green roof and commercial building green tax credits through 2013.
• Many states and municipalities have enacted legislation to encourage the adoption of sustainable principles.
• Most are soft incentives or apply only to public construction projects.
• Some cities are now mandating green building certification for all projects.
• A wide variety of local standards exist.
Green Building Ordinances

• What standards should be followed?
• What level of environmental response is being sought at whose expense?
• How is compliance determined?
• Are there any special incentives?
• Are there any special fees?
• How are ongoing building operations addressed?
What is Green Architecture?
Green Architecture
Conscience Driven Design

• Building to meet the needs of the present so as not to compromise the ability of future generations to meet their needs.

• Building so that all the children of all the species are cared for for all time.
Green Strategies

• Sustainable Site Planning
• Water Conservation and Protection
• Energy Conservation and Generation
  - Lighting and Appliances
• Material & Resource Efficiencies
  - Recycled and Renewable Materials
• Indoor Environmental Quality
  - Moisture and Pollutant Control and Ventilation
• Building Durability and Reclamation
  - Waste Management
• Innovation and Education – Changing Users
First: Reduce Demand and Encourage Conservation

- Metering shows residents how they are consuming resources.
- Draught tolerant planting reduces irrigation needs.
- Motion detection switches turn off lights in unoccupied rooms.
Protect Water Resources

- MARTA’s rainwater harvesting tanks

- Pervious concrete allows percolation

- Storm runoff filtration protects streams
Incorporate Renewable Energy

Renewable Energy can include a wide variety of technologies like solar and wind plants or new forms of hydroelectric power that don’t require building dams.
Use Rapidly Renewable Materials

Bamboo, Cork Flooring
Interface Carpet Tiles
Strive for Zero Energy Buildings

- The Main Station in Stuttgart, designed by Ingenhoven Architekten of Dusseldorf will achieve net-zero site energy when it’s completed in 2013.
- It typifies the principle of energy reduction first.
- It uses passive ventilation having the trains help move air through the space.
- Daylighting reduces power demands and photovoltaic cells produce a portion of the electric energy needed.
Green Architecture:

Principle Green Building Rating Systems

LEED, Green Globes, and Earth Craft Homes
LEED Ratings Program

- LEED = Leadership in Energy and Environmental Design
- Created in 1998 by US Green Building Council, a private trade association.
- Most widely accepted rating system now offers several applications for different project types.
- Awards four levels of certification based on point score achieved.
- Requires submittal of complete project records for verification by USGBC.
# LEED NC Worksheet

**Date:** June 12, 2008  
**LEED for New Construction v2.2**  
**Lexington Square Mixed-Use Development**  
**Baltimore, Maryland**

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<th>No</th>
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**Credits Pursued**
Primary Advantages to LEED

- Acceptance by local and state boards overseeing sustainable initiatives.
- Acceptance by lenders and investors seeking greener portfolios.
- Applicability to a broad range of project types from neighborhood development and new construction to building renovations and commercial interiors.
- LEED Accredited Professional certification establishes green designer credentials.
Green Globes Rating Program

- Program developed by the Green Building Initiative, a non-profit agency seeking easier alternative to LEED.
- Interactive web-based assessment tool to allow self-assessment with on-line support.
- ANSI standard improves US applicability and eligibility under new regulatory environments.
- Assesses life cycle impact and embodied energy in product selections.
- Employs 1000 point scale for assessment.
Green Globes Advantages

• Web-based assessment allows real time impact review during design process.
• Life cycle cost focus leads to long-term economic benefits for institutional owners.
• Provides standards for building management and operations and continual improvement of existing commercial buildings.
• Includes residential standards for high performance homes.
• Final certification subject to field verification.
Earth Craft House Certification

• Originated by Atlanta Home Builders Association and Southface Energy Institute for single family homes.

• Multi-family home program developed to include apartments and condos.

• Certification requires 200 points from a 12-section worksheet with a minimum of 75 points for Energy Efficient Building Envelope and Systems.

• Spreading to more states through southeast and mid-west regions.
Advantages to Earth Craft Home

- Worksheet format allows builder to prioritize targets for optimization.
- Southface personnel work with builder to train superintendents and subcontractors in sustainability principles.
- Field verification of actual installation ensures effectiveness of conservation and environmental control measures.
- Focus on installation results in certifiably better built housing.
Earth Craft Testing

- Training
- Design Review
- Preliminary Inspections
- Final Inspections
Green Architecture:

Dawson Company Green Building Projects

with Lane Southeast and Carter Development
Lindbergh City Center Master Plan
Lindbergh Station Neighborhood
Eon at Lindbergh

- Part of Lindbergh City Center, the 50-acre TOD at MARTA’s Lindbergh Station
- 352 Dwelling Units, 5,100 SF Retail, and a two-level, 575 car parking deck
- Largest Earth Craft Home certified multi-family development in Georgia
Earth Craft Home Certification

• Energy Conservation through proper sizing and tested installation of HVAC using high efficiency equipment.
• Material resource efficiency achieved with engineered wood studs and joists.
• Outdoor water consumption reduced through plant selection and sod limits.
• Bonus points awarded for TOD features.
The Banks Development Site
Development Summary

- 18-Acre Site with 42-Acre Park
- Two Level County Parking Deck
- City Extension of Street Grid to River
- 3 Million SF of Private Development
- $750 Million of Private Investment
- Joint Policy on Inclusion and Workforce Development
- Commitment to LEED Certification
Banks Phase 1
LEED at The Banks

- LEED Home 4-6 Story Pilot Program
- LEED CS for Retail and Office
- Possible LEED ND with Infrastructure

- Ohio Depart of Development funding is being sought to create a model project to showcase Ohio green industries and demonstrate the viability of sustainable technologies through LEED Silver and Gold certification.
Banks Mixed-Use Stacking
# The Cost of Going Green

## LEED NC Credit Checklist

<table>
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<tr>
<th>27</th>
<th>Certified</th>
<th>Silver</th>
<th>Gold</th>
<th>Additional Points</th>
<th>Total LEED Certification Cost</th>
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<td>6</td>
<td>Project Totals (pre-certification estimate)</td>
<td>Max. 65 points</td>
<td>$124,172</td>
<td>$690,000</td>
<td>$2,010,000</td>
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</table>

Notations and Assumptions:

- Project was submitted for certification prior to bidding.
- LEED credit scores of over 80 for Certified and over 90 for Silver should be targeted due to USGBC scrutiny leve.
- Administrative Costs: To be determined ($140,000+$10,000)
- Includes both USGBC LEED Certification Fees, and CSR/PMI Fees for documentation/design/Development for LEED certification.

### Target points for Certified
- Cost for Certified: $926,172 (1.88% overbase w/any LEED Item)

### Target points for Silver
- Add'l for Silver: $690,000 (3.23% overbase w/any LEED Item)

### Target points for Gold
- Add'l for Gold: $2,010,000 (7.25% overbase w/any LEED Item)

### Target points for OBDI
- Add'l for Gold: $4,580,200 (9.16% over certification, will get Gold)

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The Banks Phase 1A
Cincinnati OH
July 9, 2008

Rail-Volution
Building Livable Communities with Transit

Moody-Nolan, Inc.
Carter & Dawson
Public-Private Partnerships

- Very high-performance buildings have a higher construction cost than most private developers can underwrite.
- Public and semi-public entities typically have a lower cost of capital than private sector investors.
- Public financing allows a longer capital horizon so operating savings accrue to the project sponsors.
Successful Green Architecture

• Plan sustainability from the beginning; complete a checklist during the programming phase on the project.

• Work with local and state government on appropriate regulations and sources of funding.

• Choose the certification program that meets your overarching objectives and capital structure.