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Green Building Rating Systems:

LEED and More

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Energy Ace, Inc.

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Learning Objectives

At the end of this program, participants will be able to:

1) Participants will learn the history and role of green building rating systems in the US, namely LEED & Green Globes
2) Participants will learn how each green building rating system is applied to the integrated design and construction of a building
3) Participants will about the rating systems, categories, scoring, pricing, and function of LEED and Green Globes- similarities and differences
4) Participants will learn about the market-based perspective of LEED and Green Globes and how to best select the most appropriate green building rating system for a given project.

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The Next Duopoly?

THE HOME DEPOT®

LOWE'S®

verizon

VS

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Multiplication of Green Building Rating Systems

First, 1998, there was one - LEED

Next, Energy Star for Buildings – 1999, then Green Globes - 2004

Like Rabbits, we now have more – Earth Advantage (2005), EESCA (2008), EarthCraft (2010)…

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The Menu of Building Rating Systems

LEED

Georgia

EESCA

Energy Star

Green Globes

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LEED, Green Globes, Others

- LEED – 95% of green building market
- Green Globes – 5% of green building market
- Earth Advantage - <1% of green building market
- Energy Star – 19,500 buildings, >3 billion square feet (Atlanta #3 in US)

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LEED

- LEED – 95% of green building market
- Internationally recognized and respected
- Many versions to suit diverse bldg types – NC, CI, retail, healthcare, existing bldgs…..
- A new version, v4, expected in 2013
- Prerequisites – commissioning, energy modeling, others

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Green Globes

- Green Globes – 5% of green building market
- Easier than LEED – interactive online tool
- Cheaper than LEED due to no prerequisites
- Perceived by some as a lesser standard, due to no prerequisites

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Others – Peach Points

- Required by law for state funded bldgs in GA
- > 10,000SF, renovation > 50% of value, change in occupancy, roof, tenant fit-out
- Mandates Fundamental Commissioning, water use reduction, use of Georgia materials
- Optional – to earn “Peaches,” Enhanced Commissioning, greater water reduction, greater use of GA materials, improved energy efficiency

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Others – Earth Advantage

- Earth Advantage - <1% of green building market
- Concentrated in Pacific Northwest but aiming to go national
- Up to 100,000SF
- Uses a well-respected design guide as its reference

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Even More Others

- AASHE – STARS
- NAHB National Green Building Standard
- Energy Star

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LEED and Green Globes

- LEED is the market leader
  - 13,500 certified buildings in US
  - 135 in Atlanta area
- Green Globes is the challenger
  - 725 Certified Buildings in US
  - Four in Atlanta area, Six in GA
    - VA Hospital in Decatur
    - Newell Rubbermaid
    - Energy Ace

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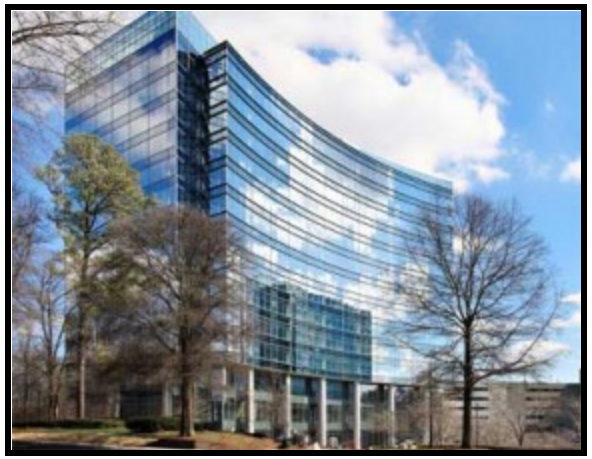
Gaining Traction in the Market

400 Green Globes Certified Buildings in the U.S. as of Jan, 2012; 725 as of Oct 2012



Rubbermaid

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Georgia State University
Student Recreation Center

Energy Ace Offices

University of South
Carolina Harper-Elliott
Student Housing

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Two systems both derived from BREEAM, the UK-based building rating system

breeam

GREEN GLOBES™

80%-85% overlap between LEED & Green Globes credits/available points – *Univ. of Minn., 2006*

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Category Types Considered in Rating Building Performance

	Energy Star for Buildings and Plants	LEED-NC	Green Globes
Site Selection and Development		✓	✓
Energy Efficiency	✓	✓	✓
Water Conservation		✓	✓
Material and Resource Efficiency		✓	✓
Indoor Environmental Quality		✓	✓
Additional Categories		Innovation in Design; Regional Priority	Project Management; Emissions

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Point Systems

	Energy Star	LEED-NC	Green Globes
Levels of Certification	1	4	4
Total Points Available	100-point scale	110	500-1,000
Minimum Points Required for Certification	75 or higher	40 points, plus mandatory prerequisites	35% of points applicable to the project
Point Minimums per Category?	N/A	No	Yes

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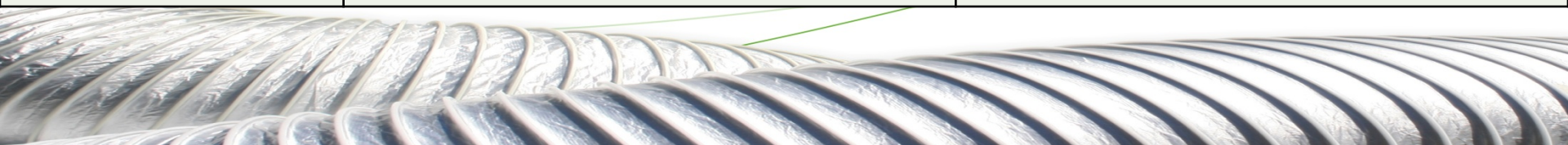
Fee Structure for a new 100,000 s.f. Green Field Office Building

Activity	Energy Star for Buildings and Plants	LEED	Green Globes
Registration	$0	$900	$500
Certification	N/A	$4,500	N/A
Stage I Assessment	N/A	N/A	$4,000
Stage II Assessment	N/A	N/A	$4,000
Consultant Fee for Administration	$1000	$30,000	$22,000
Consultant Fee for Energy Model	N/A	$18,000	N/A
Consultant Fee for Commissioning	N/A	$35,000	N/A
Totals	$1000	$88,400	$30,500

TAKEAWAYS

Criteria	LEED	Green Globes
Program Delivery	Upload calculations and affidavits to web site	Web-enabled interactive questionnaire
Energy Performance	Benchmarks against a constructed theoretical model	Benchmarks against the Energy Star Target Finder
Forest Certifications Accepted	1	4
Review Time	6 months	2 months
Prerequisites Requiring External Consultants at Client Cost	Yes	No
Certification Process	Fill out forms; upload data; await results from unknown reviewer; $500 per appeal	Green Globes Assessor is assigned & known; conducts on-site building audit with team
Cost	$$	$



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Out of a Possible 110 Points

40-49 points = Certified

50-59 points = Silver

60-79 points = Gold

80 points and above = Platinum

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Features a Sliding Scale

85-100%

70-84%

55-69%

35-54%

Green Globes Assessment and Rating System Scoring

Based on 1,000 Point System

LEED for New Construction: Construction

SS CREDIT 5.1: SITE DEVELOPMENT PROTECT OR RESTORE HABITAT

Project # 10000002168 Goodwill Chamblee

All fields and uploads are required unless otherwise noted.

ALL OPTIONS

Project site condition: Previously developed

Select one of the following:

- ○ The project will be located on an undisturbed greenfield site.
- ◉ The project will be located on a previously developed or graded site.

PREVIOUSLY DEVELOPED

Table. Restored Site Area

Total site area restored or protected (SF):	111,487
Total site area (including building footprint) (SF):	219,174
Building footprint (SF):	27,391
Site area, excluding building footprint (SF):	191,783
Required site area restored or protected (SF) (50% of total site area):	95,892

Millennium Hall - Residence Hall/Dormitory

User: gglobes@drexel.edu

Current Project Rating

56%

Project Reports (all stage reports)
Edit Basic Project Information

Progress key: Not started | In Progress | Completed

Project Dashboard Click on any stage name or box to go to questionnaire		Sections								
		Proj Mgt	Site	Energy	Water	Resources	Emissions	Indoor Environ.	Total Questions Answered	% of Points Earned
Stages	Predesign - project init stage									
	Predesign - site analysis	N/A					N/A			N/A
	Predesign - programming									N/A
	Schematic design									
	Design development									N/A
	Construction documents									
	Contracting & construction									N/A
	Commissioning		N/A							N/A

= Goal Setting stage | = Preliminary Assessment stage | = Final Assessment stage

SECTION DESCRIPTION

This section helps to establish objectives to provide an indoor environment that is healthy and comfortable. This will influence design decisions related to lighting, views, indoor air quality, hazardous materials and acoustics issues. This section will help to ensure due diligence and may help to achieve a higher level of occupant productivity.

Millennium Hall - Residence Hall/Dormitory

User: gglobes@drexel.edu

Stage: Construction Documents (Plans and Specifications)
Section: Energy Questions

STAGE STATUS
Stage Rating 56%
Pages Answered 12 of 12

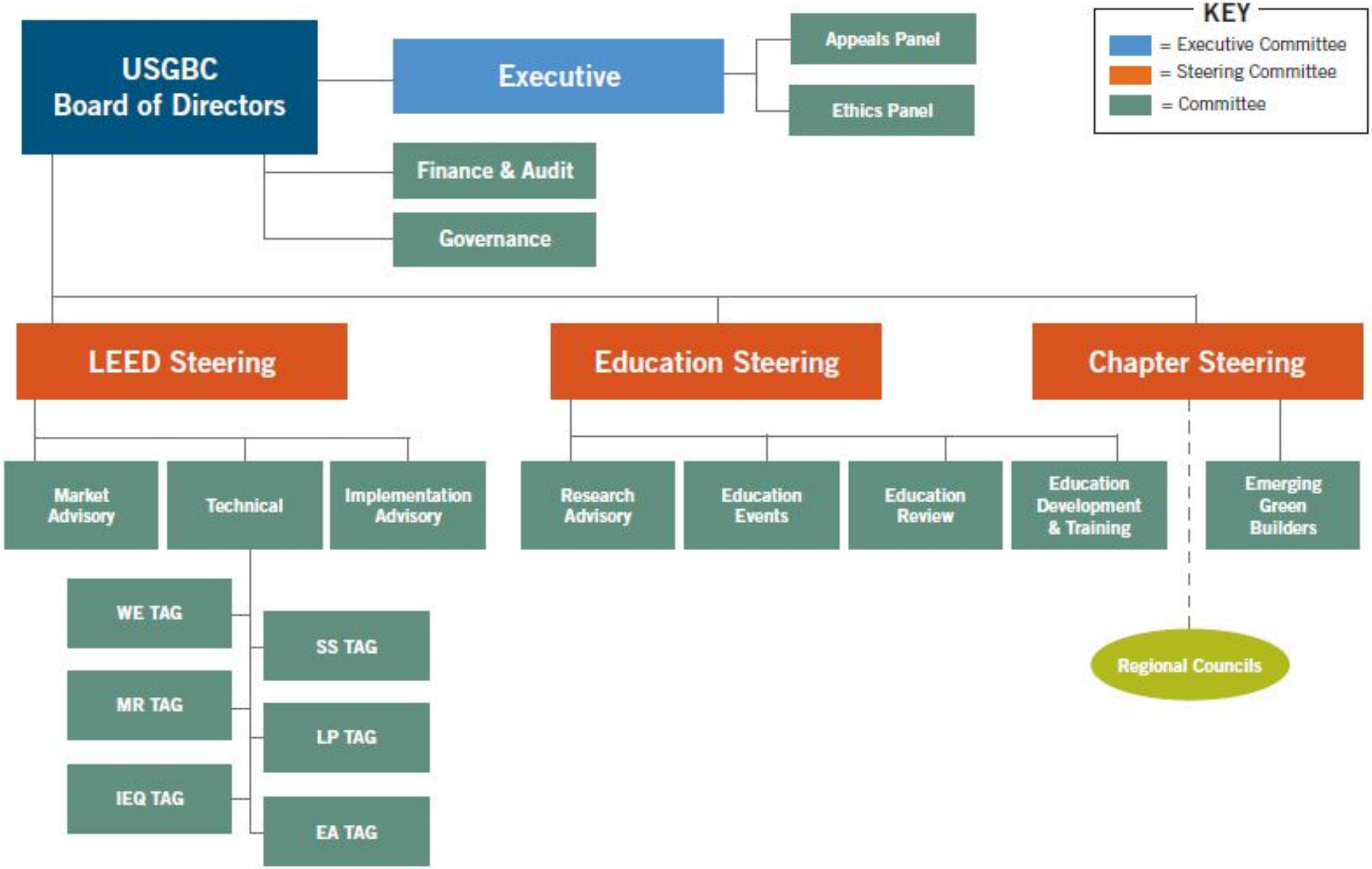
SECTION SURVEY QUESTIONS
It is not necessary to complete the questions in order or at the same time.

Question	Answer	Points
Energy demand minimization		114
Space Optimization		
Has the floor area been optimized to efficiently fulfill the building's functional and spatial requirements, including circulation and services, while minimizing the amount of space that will need to be heated or cooled?	(•) Yes ( ) No ( ) N/A	2
Describe how the space is being optimized:	tight building, no extraneous areas, simple shape not a lot of service areas to heat and cool all usable	6
Will the construction process be phased?	( ) Yes (•) No ( ) N/A	2
Response to microclimate and topography		
Is the building sited and oriented to optimize the effect of microclimatic conditions for heating or cooling?	(•) Yes ( ) No	2
Describe how the building is sited and oriented to optimize effects of microclimatic conditions:	long face north and south facade take advantage of the daylighting, east and west all glass, will not get the	6

Tooltip

Review the design to check the building's functional and spatial optimization. Describe how space is being optimized. Where the project function does not merit this, mark "n/a".

USGBC NATIONAL COMMITTEE STRUCTURE



Any Steering Committee or Committee has the ability to form short term, task focused Working Groups. These are created as needed and are not represented in this chart.

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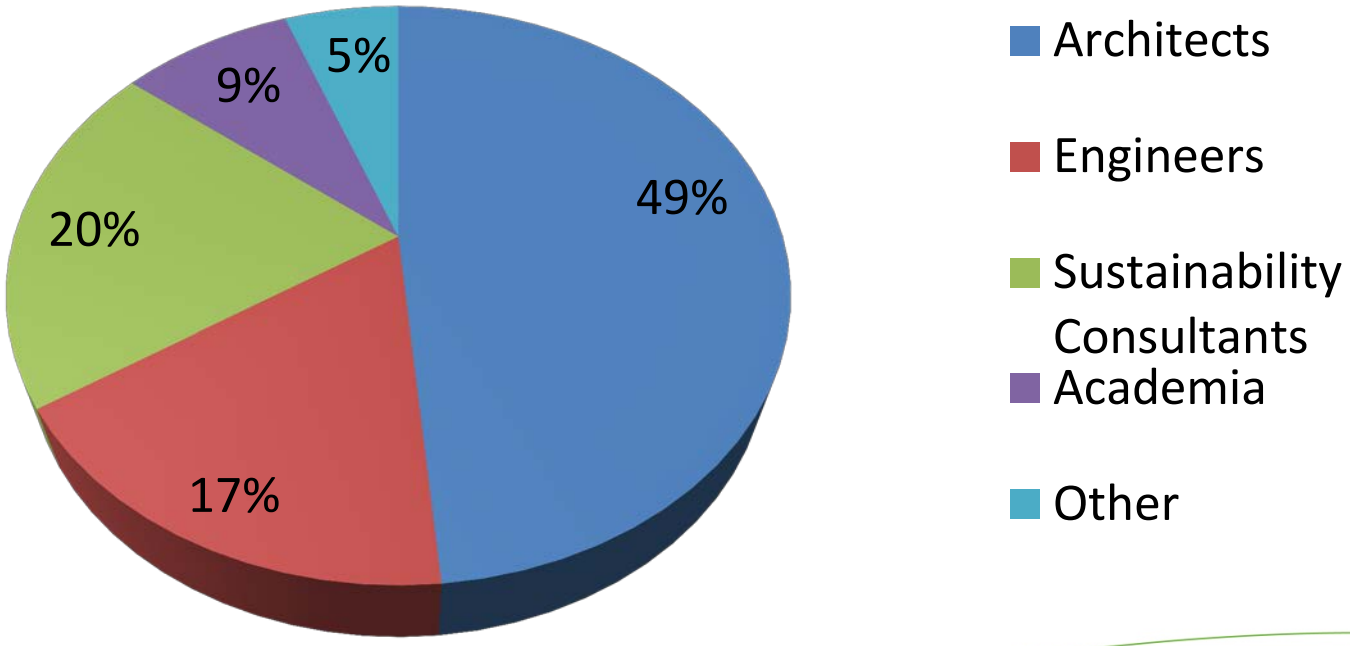
Makeup of the USGBC Steering Committees, May, 2011



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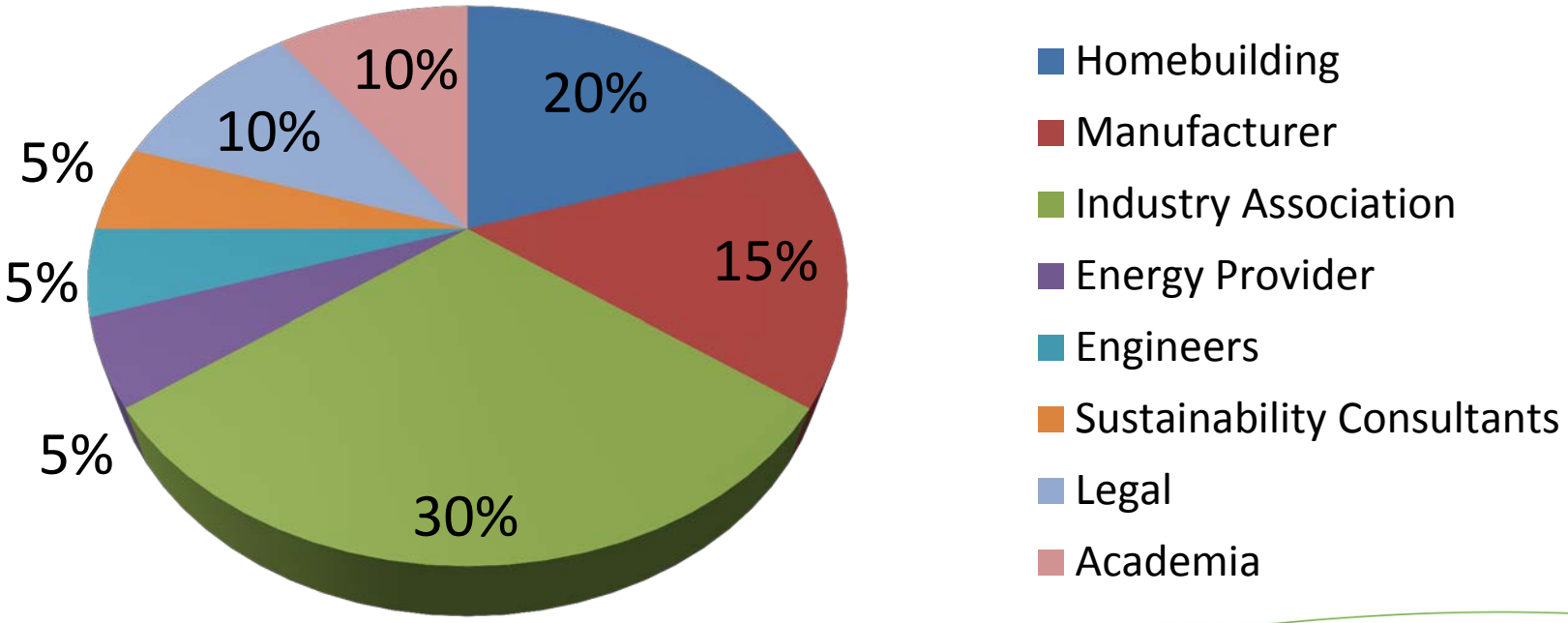
Makeup of the GBI Board, May, 2011



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Scoring Points with Wood

Acres Certified in North America	Millions of Acres	Recognized by LEED	Recognized by Green Globes
Canadian Standards Association	179.3		✓
Sustainable Forestry Initiative	131.6		✓
Forest Stewardship Council	56.8	✓	✓
American Tree Farm System	24.4		✓

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Criticism of LEED

- Perceived as a bureaucracy
- Compliance adds 1% -4% to total cost of building project
- The web-based interface is onerous
- More expensive and time-consuming
- Slower

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Criticisms of Green Globes

- Perceived as a lesser standard of care; the GG tool lacks rigor
  - Does not require a minimum performance level
  - Requires minimal documentation
- Initial funding came from the forest industry; perception of bias in Forest Certifications
- Industry representation on the GBI Board puts industry before the environment – Dow Chemical, AGA, other manufacturers
- Lack of transparency of the online tool

Georgia Peach Green Building Rating System

Total Point Certification Level	
12-30 Points =	
31-50 Points =	
51-70 Points =	
71-100 Points =	

What's Regulated?

State Funded Facilities

All new construction building projects exceeding 10,000 sq. ft.
A renovation project that is more than 50% of the replacement value of the facility
A change in occupancy
Any roof replacement project exceeding 10,000 square feet
A commercial interior tenant fit-out project exceeding 10,000 square feet of leasable area where the state is intended to be the lessor of such property.

Requirements

1. Fundamental Commissioning
2. 15% Water Use Reduction
3. 10% Georgia Based Materials and Products

Incentives

1. Enhanced Commissioning [10 points]
2. Water Use Reduction of 25% or more [up to 20 points]
3. Georgia Based Materials and Products of 20% or more [up to 20 points]
4. Energy Use Reduction shown through Energy Modeling [up to 50 points]

SC Green Bldg Law

- "Major Facilities" in SC must meet LEED Silver or Two Green Globes
- Major Facility means new construction > 10,000SF, tenant build out > 7,500SF, renovation > 50% of value of facility, or change in occupancy
- Facility must surpass LEED or GG minimums in energy efficiency

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Energy Star Rating is the Oldest

Energy Star for Buildings and Plants

- A joint program of the U.S. EPA and Department of Energy

Earning the Energy Star Rating

- Based on actual documented energy use

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How Energy Star Works

- Determine if the building meets eligibility requirements
- Enter energy use information in Portfolio Manager
- Determine if the building achieves a rating of 75 or higher
- Submit a Statement of Energy Performance and a Data Checklist, stamped and signed by a Professional Engineer, to EPA
- Purchase and mount the plaque

ENERGY STAR

Designed to Earn the Energy Star

- A process for a project team to work toward energy efficiency goals
- Requires a building energy use simulation model
- The model must compare favorably to Target Finder (Portfolio Manager for buildings in design)

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LEED, Green Globes, Others:

Which is For You? The Challenger, the Leader, Something else?

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Which is For You?

- Conduct a LEED/Green Globes Feasibility Study
- Assess pros and cons of each system for your project; then select one (or both – why not?)

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Which is For You?

- **Relative Costs**
- **Simplicity or Complexity**
- **Public Perceptions** (faculty, staff, students, general public, peer institutions) /Brand
- **Project Size** – Green Globes may better suit the small ones

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Energy Ace University
AIA/CES Continuing Education Provider

- **What You Need To Know About Energy Modeling & Commissioning**
- **Georgia's Energy & Efficiency Act of 2008 (EESCA) Workshop**
- **Green Building Rating Systems: LEED, Green Globes & More**
- **Energy Ace: LEED & Green Globes Office Tour as a Learning Tool**
- **Others on Sustainability and Energy Conservation**

Schedule a Lunch and Learn at Your Office!

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Questions?

Thank You!

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