



July 2007

Green Pages

A guide to green development practices, standards, education, and construction resources in Florida.



Contents

- Green building promoters and leaders
- Standards for measuring greenness
- Green resources for local governments, builders, and developers

Table of Contents

Introduction

What is Green Building?	4
Why build green?	5
Costs of Green Building	6
2007 Florida Legislature	7

Green Programs and Organizations

U.S. Green Building Council	9
Leadership in Energy and Environmental Design (LEED)	10
Green Globes	11
Florida Green Building Coalition	12
Florida Green Lodging	13
Florida Water Star	13
Florida Yards and Neighborhoods	13
ENERGY STAR Program	14
Partnership for Advancing Technology in Housing	14
Healthy Building Network	15
Green Building Initiative	15

Resources for Professionals

Professional Development Resources	18
Building Products and Services	19 –24

Introduction

What is Green Building?

Green Building is the practice of increasing the efficiency with which buildings and their sites use and harvest energy, water, and materials, and reducing building impacts on human health and the environment. This is achieved through better site, planning, construction, operation, and maintenance.

There is no one definition for green building but the principle behind the movement is the same: using materials and resources responsibly to reduce impact on the environment. Two definitions of green building used by U.S. Government agencies are below.

Green or sustainable building is the practice of creating healthier and more resource-efficient models of construction, renovation, operation, maintenance, and demolition.

- U.S. Environmental Protection Agency

Green buildings are environmentally responsible, healthier, and more profitable when compared with conventional buildings.

-The United States Green Building Council

The Future of Shopping Centers

Professionals in the shopping center industry agree that their future looks green. The survey results of approximately 1,000 International Council Shopping Centers members are below:

The majority of respondents strongly agreed that future shopping center properties will increasingly be part of mixed-use developments (85.1 [percent]). ICSC members surely envision a marketplace characterized by the live-work play environment provided by the mixed-use development.

Surveyed members were keen to endorse the environment as a top long-term priority and that “greener” shopping center properties are the wave of the future. Respondents strongly agreed that the industry will utilize more sustainable energy sources and generally will be more eco-friendly (80.7 [percent]).

The future of shopping centers are less auto-dependant, mixed use, places of residence, and green.

-Herston E. Powers, *Research Review*, International Council of Shopping Centers. Vol. 14, No. 1, 2007

Introduction

Why Build Green?

Environmental Benefits

- Reduce pollution
- Conserve water
- Reduce energy consumption
- Improve air quality
- Improve stormwater quality
- Enhance local ecosystems

Economic Benefits

- Reduce energy costs
- Reduce water use
- Lengthen the life of the structure

Health and Community Benefits

- Reduce the demand for local utilities
- Promote healthy environment within the structure
- Improve air quality within the structure
- Take advantage of natural lighting to improve the quality of life within the structure

PNC Financial Services Group Reaps the Benefits of Going Green

PNC has constructed 27 of its planned 117 LEED-rated bank branches on the East Coast. Each cost \$100,000 less to build than a standard bank branch, uses 40% to 50% less energy, and was ready to go in 45 fewer days.

-Charles Lockwood, *As Green as the Grass Outside*, Barron's, The Down Jones Business and Financial Weekly, December 25, 2006.



PNC Green Branch SM Photo source: Pittsburgh Post-Gazette

Introduction

What are the costs for building green?

Green buildings enhance and protect ecosystems and biodiversity, improve air and water quality, reduce solid waste, and conserve natural resources. However, green buildings are not just a benefit for environment, the energy savings over a few years can recover the cost of the initial investment in green technology. Below is what the experts are saying about the initial costs and savings over time of green projects.

Greg Kats, principle of Capital E—a consultancy that specializes in LEED buildings—summarized his conclusions from extensive research on green buildings throughout the US in his report to California’s Sustainable Building Task Force.

Integrating “sustainable” or “green” building practices into the construction of state buildings is a solid financial investment. In the most comprehensive analysis of the financial costs and benefits of green building conducted to date, this report finds that a minimal upfront investment of about two percent of construction costs typically yields life cycle savings of over ten times the initial investment. For example, an initial **upfront investment of up to \$100,000** to incorporate green building features into a \$5 million project would result in a **savings of at least \$1 million** over the life of the building, assumed conservatively to be 20 years.

—Greg Kats, *A Report to California’s Sustainable Building Task Force*, October 2003 [emphasis added]

View the report: www.ciwmb.ca.gov/greenbuilding/Design/CostBenefit/Report.pdf

In an October 2004 report to the U.S. General Building Administration, Steven Winter Associates contrasts the difference in costs for LEED Certified office building and courthouse to a non LEED building of each type. A summary table is found below.

For the full report visit: <http://www.wbdg.org/ccb/GSAMAN/gsaleed.pdf>

Costs and Benefits of LEED Certified US General Building Administration Buildings			
	Construction Costs compared to non LEED buildings	Average Annual Energy Savings	Increase in Building Budget for Green Building Technology
Courthouse	-0.4 to 1.0%	17%	2.5 to 4.0 %
Office building	1.4 to 2.1%	14%	2.5 to 4.0%

Source: GSA LEED Cost Study Report, Steven Winter Assoc. , Oct 2004

Introduction

The Florida Legislature and Green Building

The Florida Government is investing in green building. HB 7123 is a revision of the Florida Renewable Energy Technologies and Energy Efficiency Act. The bill has many components, but the specific focus is on setting an example in the State for how to build green.

The bill requires all county, municipal, and public community college buildings to be constructed in accordance with the United States Green Building Council's (USGBC) Leadership in Energy and Environmental Design (LEEDs) program, the Green Building Initiative's Green Globes program, or any other nationally-recognized, green building system approved by the Department of Management Services DMS (DMS). Governor Crist did not sign the bill, stating that it was not strong enough and has established a committee to work on the issue this year.

Green Building Rating Programs			
Types of Certification	USGBC LEED	Green Globes	Florida Green Building Coalition
New Construction			
Existing Construction			
Commercial			
Commercial Interiors			
Retail			
Office			
Schools			
Local Government Standard			
Homes			
High Rise			
Neighborhood			

Green Programs and Organizations



Photo by: Steven Dowell, Orlando Sentinel July 3, 2007

A Zellwood Station resident looks over her beautiful low-maintenance, drought-tolerant, Florida-Friendly yard.

United States Green Building Council

The US Green Building Council (USGBC) is a coalition of the building industry's professional leaders that work to promote buildings that are environmentally responsible, profitable and healthy places to live and work. The purpose of the Council as stated on the USGBC website is "to transform the way buildings and communities are designed, built and operated, enabling an environmentally and socially responsible, healthy, and prosperous environment that improves the quality of life."

The USGBC webpage is an excellent place to learn or keep current with the guiding principles for green building and the programs and services offered.

These programs include:

- USGBC membership
- Leadership in Energy and Environmental Design (LEED) program
 - LEED project certification
 - LEED registered and certified projects lists
 - Online classes and LEED professionals accreditation
 - USGBC publications and research
 - Resources for product manufacturers and service providers

For more information visit: www.usgbc.org

Below is the address for the Central Florida Chapter of the USGBC website:

<http://chapters.usgbc.org/centralflorida/>

LEED Rating Systems

The USGBC has paved the way for green accreditation and certification standards by creating LEED Rating Systems for many projects and building types. Mouse over the list below for direct links or visit www.usgbc.org and look for LEED Rating Systems under the LEED tab.

- New commercial construction and major renovation projects
- Guidelines for multiple buildings and on-campus building projects
- Existing building operations and maintenance
- Commercial interiors projects
- Core and shell development projects
- Homes
- Neighborhood development
- LEED for schools
- LEED for retail



Source: OUC 2006 Annual Report

Case Study

Orlando Utilities Commission Administration Building

Who better to show how to build to save energy than Orlando's own utility company! OUC is planning a 10 story, 2,000 sq foot, LEED certified building at 500 S. Orange Avenue in Downtown Orlando. The building will feature roof top solar panels, rainwater collection for irrigation, a raised floor access system and high efficiency air conditioning systems. Completion is expected in the fall of 2008. For more information visit: www.ouc.com/news/pub/ar-2006.pdf

Case Studies

The Conservatory, Celebration, FL

LEED Platinum Registered Project

Project completion anticipated in 2008. This project is a 130,000 sq. ft. energy-efficient office building. The project will have a "green roof" and cisterns to capture rainwater for toilets and irrigation.

Learn more at: www.overturedevelopment.com/

The University of Florida's Rinker Hall, Gainesville FL

LEED Gold Certified Project 2004

Rinker Hall uses many green building technologies including building orientation to utilize low-angle light for day lighting, The materials used meet stringent criteria including the location they came from, recycled content, renewable-resource content, longevity, low maintenance requirements, low toxicity, and ability to be recycled or reused at the end of a useful life.

<http://leedcasestudies.usgbc.org/overview.cfm?ProjectID=286>

Green Globes System

Green Globes environmental assessment and rating system is a result of almost a decade of research by a Canadian by a group called Building Research Establishment's Environmental Assessment Method (BREEAM). BREEAM was introduced in Canada in 1996 and has evolved and grown to become a web based rating system used in Canada and the U.K.

In 2004 the non profit organization, Green Building Initiative, acquired the rights to start Green Globes in the United States. Green Globes evaluates a project based on several criteria including: the project management, site, energy, water, resources, building materials, and solid waste, emissions and effluents, and the indoor environment. Once the application is complete a third party must verify the information on the application for a project to be fully certified.

To learn more about the Green Globes rating system visit:

www.greenglobes.com or www.thegbi.org/greenglobes/Default.asp

Florida Green Building Coalition

The Florida Green Building Coalition or FGBC is a nonprofit organization with a mission “to provide a statewide Green Building program with environmental and economic benefits.” The FGBC has developed standards and designations specific to Florida. Their current green designations include the following:

- Florida Green Home Standard
- Florida Green Development Standard
- Florida Green Local Government Standard (for counties & cities)
- Florida Green Commercial Building Standard
- Florida Green High Rise Residential Standard

The Florida Green Building Coalition’s designation process is designed to be user-friendly. The resources they have developed include: an overview of the certification process, a checklist of the criteria needed to meet the designation, and a reference guide that describes in detail how the points are earned for the Florida Green Building Coalition designations,

The standards, reference guides, checklists, and lists of projects that have received or are applying for a Florida Green Building Coalition designation can be found on the FGBC’s website: <http://floridagreenbuilding.org>.

Case Study

Lakewood Ranch Headquarters– Sarasota County

Lakewood Ranch was the first FGBC Certified Commercial Building. This building was constructed with the following green technologies: 100% green power, 100% drought tolerant landscaping, 30% reduction in water consumption in the building, more than 50% of the interior spaces have natural day lighting, more than 75% of the occupants have a view to the outside, built with more than 20% local materials, more than 50% of the construction waste was diverted to recyclers, and 100% of the exterior finishes are fire-resistant..

<http://www.lakewoodranch.com/aboutUs/environmental.cfm>

<http://floridagreenbuilding.org/news/news2007/spring2007.htm>

Florida Green Lodging Program

The Florida Green Lodging Program is promoted by the Florida Department of Environmental Protection. The purpose is to encourage the lodging industry to reduce waste production, and energy and water consumption.



For more information go to:
www.FloridaGreenLodging.org

Bonita Springs Hyatt Hotel—Two Palm Certification
 Photo Source: <http://coconutpoint.hyatt.com>

Florida Water Star Program

The Florida Water Star Program is an initiative started by the St. John's River Water Management District. The program seeks to create awareness about the need to save water and the ways that builders and homeowners can conserve water. The Water Star website states that "Florida Water Star certified homes could reduce indoor water use by more than 20 percent and outdoor water use by 40 percent or more." The Florida Water Star Program requirements overlap with some of the LEED certification requirements and the Florida Green Building Coalition certification requirements.

For more information on Florida Water Star visit: www.floridawaterstar.com

Florida Yards and Neighborhoods Program

The Florida Yards and Neighborhoods Program is a joint effort between the State of Florida, Florida Department of Environmental Protection, Florida Water Management Districts, and the University of Florida's IFAS Extension Services. This educational program provides resources for understanding the needs of a Florida yard, an interactive yard and plant database, and a toolkit for professionals.

Florida Yards and Neighborhoods Program has coordinators in every county. Coordinators assist builders and developers, landscape architects, and local governments with the implementation of Florida-friendly landscaping.

Learn more at: www.floridayards.org

ENERGY STAR Program

ENERGY STAR is a national program aimed to promote the use of energy efficient products and practices for homes and businesses.

“Americans, with the help of ENERGY STAR, saved enough energy in 2006 alone to avoid greenhouse gas emissions equivalent to those from 25 million cars — all while saving \$14 billion on their utility bills.” -Energy Star Website

For more information go to: <http://www.energystar.gov/>

Partnership for Advancing Technology in Housing

The Partnership for Advancing Technology in Housing or (PATH) is a public-private initiative dedicated to improving the development and use of technologies improving the quality, durability, energy efficiency, environmental performance, and affordability of America's housing. PATH is supported by the U.S Department of Housing and Urban Development.

PATH announced it's Top Ten Technologies for 2007 at the International Builders' Show in Orlando.

1. Mold Resistant Gypsum
2. Solar Water Heating
3. Recycled Concrete Substitutes and Aggregates
4. Combined Heat and Power (CHP)
5. Horizontal Axis Washer/Dryer
6. Hydrophilic, Impact-Resistant Windows
7. Super-Sized (Vertical) ICFs
8. Induction Cooktops
9. GPS for Land Development
10. Permeable Paves and Pavement

To view an interactive website displaying these technologies go to:

<http://www.pathnet.org/sp.asp?id=10587>

For more information visit: www.pathnet.org

Healthy Building Network

The Healthy Building Network (HBN) is a national collection of green building professionals, environmental and health activists and socially responsible investment advocates and who promote healthier building materials as a means of improving public health and preserving the environment.

For more information visit: <http://www.healthybuilding.net/>

Case Study

Green Affordable Modular Homes in Gulf Port Mississippi

Unity Homes is a Healthy Building Network project that demonstrates how to build green, healthy, and affordable homes. Unity Homes has recently unveiled its new energy efficient affordable product in Mississippi that improves air quality and reinvests in the community.

Learn more at: <http://www.unityhomes.net/>

Green Building Initiative

The Green Building Initiative is a non-profit group of leaders in the building industry who seek to bring green to mainstream residential and commercial construction. Their website has a variety of resources including green rating systems.

- National Association of Home Builders Green Homebuilding Guidelines
- Green Globes (tool for self documenting and rating commercial green construction)

Learn more at: <http://www.thegbi.org/gbi/>

“Green buildings generate significant economic benefits. According to the McGraw-Hill 2006 SmartMarket Report, they deliver 3.5% higher occupancy rates, 3% higher rent rates, and an average increase of 7.5% in building values; they also improve return on investment by 6.6%, on average. Some green buildings do much better.”

-Charles Lockwood, *As Green as the Grass Outside*,
Barron's, The Down Jones Business and Financial
Weekly, December 25, 2006.

Resources for Professionals



Photo by: Laura Murray

Nature, recreation, and development are seen together at Lake Ivanhoe on the edge of Downtown Orlando.

Professional Development Resources

A variety of local and online courses are available for all building industry professionals to become certified in green building technologies and practices.

U.S. Green Building Council

LEED Accreditation for Professionals

<http://www.usgbc.org/DisplayPage.aspx?CategoryID=1306>

Find a LEED Accredited Professional

<http://www.usgbc.org/LEED/AP/ViewAll.aspx?CategoryID=1306&CMSPageID=1585>

University of Central Florida

Florida Solar Energy Center

Continuing Education for Professionals including: EnergyGauge and LEED Certification Courses

http://www.fsec.ucf.edu/en/education/cont_ed/bldgs.htm

Stormwater Management Academy

Stormwater research including: green roofs, pervious pavement, cisterns, and Florida-friendly landscaping.

www.stormwater.ucf.edu

University of Florida

Training, Research and Education for Environmental Occupations
LEED and Sustainability Training (Onsite training available)

<http://www.treeo.ufl.edu/leed/>

Program for Resource Efficient Communities

Continuing Education for Professionals

http://www.energy.ufl.edu/continuing_education.htm

Florida Neighborhoods and Yards

University of Florida County Extension Offices

<http://solutionsforyourlife.ufl.edu/map/index.html>

Central Florida - <http://cfyn.ifas.ufl.edu>

Osceola County- <http://Osceola.ifas.ufl.edu>

Building Resources and Products

The following is a list of companies providing green building services is for informational purposes only and is not an endorsement by the ECFRPC.

Green Building Product and Service Databases

The National Association of Home Builders

Toolbase Service Resources

Green building technology, research, practices, and products

<http://www.toolbase.org/ToolbaseResources/level3.aspx?BucketID=2&CategoryID=17>

Green Building Pages

Product search and company listing by location or LEED category

<http://www.greenbuildingpages.com/main.html>

Building Concerns Resource Directory for Florida and Georgia

The directory provides green design, building materials, and development contacts.

<http://www.buildingconcerns.com/flga/index.htm>

Greenguard Environmental Institute

GEI provides a directory for green building materials and certifies products.

<http://www.greenguard.org>

Case Study

Green Builder—Orlando

Vision House Series 2008 demonstrates a high-end, architect designed, custom green and sustainable home in Orlando.

Learn more at:

http://greenbuildermag.com/vh_site/htm/orlando.html

Water Conservation Resources

National Resource Defense Council

Green Roofs, rain gardens, and other urban stormwater solutions.

<http://www.nrdc.org/water/pollution/rooftops/rooftops.pdf>

Low Impact Development Center

Non-Profit Research Center that provides information for protecting the environment and our water resources.

http://www.lowimpactdevelopment.org/about_us.htm

ET Water: Intelligent Water Management

Company that sells electronic irrigation controllers to prevent over watering.

<http://www.etwater.com/>

Green Roofs

Database of green roof projects

<http://www.greenroofs.com/projects/>

Roofscapes Inc

Roofscape types, projects, engineering and design services.

<http://www.roofmeadow.com/>



Photo on the left is the green roof at the University of Central Florida Student Union in 2005. The photo on the right is the same roof in 2007.
Photo source: Sam Gardner, UCF



Green roof at the University of Central Florida Student Union Photo source: Sam Gardner, UCF

Case Study

UCF Student Union

The above photo displays the Green Roof at UCF's Student Union, the second green roof in Florida. Jeffery Sonne from the Florida Solar Energy Center sums up the benefits of green roofs stating, "green roof studies have found that planted roofs significantly reduce roof temperatures and roof heat flux, and simulations indicate cooling load reductions of up to 25%."

Jeffery Sonne's analysis of data from UCF's Student Union during the summer of 2005 indicates,

significantly lower peak roof surface temperatures for the green roof compared with the conventional roof and a significant shift in when the peak temperature occurs compared to the conventional roof. Summer roof heat flux estimates show the green roof to have an average heat flux of 0.39 Btu/ft²/hr or 18.3% less than the conventional roof's average heat flux rate of 0.48 Btu/ft²/hr.

Source: Jeffery Sonne, Energy Performance Aspects of a Florida Green Roof, Florida Solar Energy Center Research. 2006.

<http://www.fsec.ucf.edu/en/publications/html/FSEC-PF-412-06/index.htm>

Energy Efficiency Resources

Energy and Environmental Building Association

Education resources, codes, programs, and systems.

<http://www.eeba.org>

Solar Energy International

Workshops and research on solar, wind, and water power.

<http://www.solarenergy.org/>

International Dark Sky Association

Program that promotes lighting fixtures and policies that reduce light pollution.

<http://www.darksky.org>

Efficient Windows Collaboration

Database of window energy efficiency, codes, materials, products., and costs.

<http://www.efficientwindows.org>

Gulf Coast Tankless Water Heater -Clearwater, FL

Heat water efficiently while saving money and natural resources.

<http://www.gulfcoasttanklesswaterheaters.com/index.html>

Solar Direct– Bradenton, FL

Solar heaters, power for lighting, and electricity

<http://shop.solardirect.com/>



Green Building Consultants

Trifecta Construction Solutions –Naples, FL

LEED Certified Professional Construction Consulting
<http://www.trifectaconstruction.com/trifecta-site.html>

Two Trails, Inc.- Sarasota, FL

Green Consulting, Builders, Certification, Education
<http://www.greenbuildingconsultant.com/index.html>

Cross Creek Initiative—Gainesville, FL

CCI is a non-profit organization of professionals and researchers who assists the public and private sectors with planning, strategizing, building, and certifying green homes and buildings.
<http://www.crosscreek.org/divisions.htm>

Other Green Building Products

Alternative Construction Company, Inc—Melbourne, FL

ACC products are high quality, environmentally friendly and socially responsible building solutions. Product benefits include: speed of build, reduced labor costs, energy efficiency, structural integrity and disaster, fire, insect, moisture, mold and mildew resistance.
<http://www.actechpanel.com/>

Alpha Spray Foam - Venice, FL

Performance insulation
<http://www.alphasprayfoam.com/index.html>

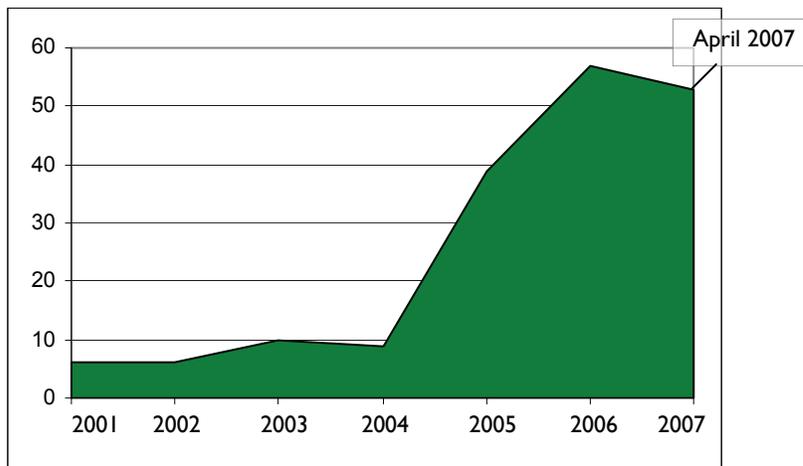
Goodwin Heart Pine - Micanopy, FL

River recovered heart pine flooring
<http://www.heartpine.com/>

Pervious Concrete

Porous concrete products.
<http://www.perviouspavement.org/>

Number of LEED Registered Projects in Florida by Year



Source: US Green Building Council LEED Registered Projects, April 12, 2007

The U. S. Green Building Council LEED Registered Projects list from April 12, 2007 reports that the **State of Florida has 184 LEED Registered Projects** and 14 LEED Certified Projects. Fifty eight of the projects were registered in the first few months of 2007.

***EAST CENTRAL
FLORIDA REGIONAL
PLANNING COUNCIL***

631 N. Wymore Road, Suite 100
Maitland, FL 32751

Phone: 407-623-1075
Fax: 407-623-1084
www.ecfrpc.org



Photo by: Phil Laurien



This document is available for downloading from our website: www.ecfrpc.org.