



# Setting Sustainable Goals Using LEED

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Energy 2002  
Palm Springs, CA  
June 3, 2002



# The U.S. Green Building Council

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LEED™ Workshop 



# U.S. Green Building Council

- National, non-profit organization with 1200+ members nationwide
- Voluntary, diverse membership that operates on consensus principles
- Developer and administrative authority of the LEED™ Green Building Rating System
- Purpose is to:
  - Integrate
  - Lead
  - Educate



# Environmental Impacts of Buildings

- Commercial, institutional, and residential buildings and operations account for:
  - 65.2% of total U.S. electricity use
  - >36% of total U.S. primary energy use
  - 35 - 40 % of municipal solid waste
  - 25 - 30 % of wood & raw materials use
  - 136 million tons of construction/demolition waste
  - 12 % of potable water use in U.S.
  - 30% of green house gas emissions that contribute to global climate change and acid rain.
  - 40% (3 billion tons annually) of raw materials use globally



# What is Green Design?

- Integrated systems design and construction that significantly reduces or eliminates the negative impact of the built environment in the following:
  - Site conservation and sustainable planning
  - Water conservation and efficiency
  - Energy efficiency and renewable energy
  - Conservation of materials and resources
  - Indoor environmental quality/human factors

Energy Resource Center  
Southern California Gas Company  
A Sempra Energy Company  
Downey, California



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# Sustainable Building Benchmarks

- LEED™ Certified Building
- Sustainable siting
- 30% + below ASHRAE 90.1
- Indoor Air Quality thresholds
- 50% to 75%+ waste diversion from landfill
- 20% recycled content products
- Daylight penetration into core of building
- % renewable energy production
- Individual thermal comfort & control



# Benefits of Green Design

- Environmental benefits
  - Reduce impact on the environment
- Economic benefits
  - Improve the bottom line
- Health and Safety benefits
  - Enhance occupant comfort



## Does it Cost More?

- If the stakeholder is committed at the project conception..AND
- The design and construction team has moderate sustainability design and construction experience....
- A LEED™ Certified building can be achieved on a conventional building budget





# The Evolution of the LEED™ Rating System

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A synopsis of the LEED™ Green  
Building Rating System  
Development



|  <b>LEED™ User List</b> |   |   |
|--|---|---|
| <b>Commercial Real Estate</b>  | Harwood Management<br>Trammel Crow  |   |
| <b>Corporate</b>   | Alcoa<br>Armstrong<br>Herman Miller<br>Johnson Controls<br>Kandalama Hotels<br>Monsanto   | People Soft Corporation<br>SC Johnson Wax<br>Southern California Gas<br>Steelcase<br>Sellen Construction<br>Owens Corning   |
| <b>Department of Defense</b>   | Air Force<br>Navy   | Pentagon  |
| <b>Federal Agencies</b>  | Department of Interior Park Service<br>EPA<br>FAA<br>Healthcare Financing Administration  | State Department<br>DOE/NREL<br>GSA   |
| <b>Higher Education</b>  | Carnegie Mellon Institute<br>Colorado College<br>Connecticut College<br>Evergreen State College<br>Lewis and Clark College<br>Massachusetts Institute of Technology<br>Montana State University | Northland College<br>Oberlin College<br>Pima County Community College<br>University of California at Santa Barbara<br>University of North Carolina Asheville<br>University of Texas<br>University of Nebraska<br>University of Wisconsin            |
| <b>Organizations</b>   | Brainierd Foundation<br>Chesapeake Bay Foundation<br>Natural Resources Defense Council  | Salt Lake Olympic Committee<br>Tides Foundation<br>The Green Institute  |
| <b>Public Authorities</b>  | Arlington County Virginia<br>City of Denver<br>City of Los Angeles<br>City of San Diego<br>City of Santa Monica<br>City of Seattle<br>Glendale Unified School District<br>Hannipon County       | King County Washington<br>Marion County, Oregon<br>New York City of Design and Construction<br>New York Transit Authority<br>O'Hare Development Authority<br>Pennsylvania Department of Environmental Protection<br>Pittsburgh Auditorium Authority |



## Federal Use of LEED™

- **General Services Administration (GSA)**
  - LEED™ Certified by 2003
- **US Air Force**
  - LEED™ Application Guide for Residential
- **US Army Corps of Engineers**
  - Adoption of LEED™ (SPiRiT)
- **Department of State**
  - LEED™ Certified Embassies
- **Department of Energy (DOE)**
- **Environmental Protection Agency (EPA)**
- **Federal Energy Management Program (FEMP)**
- **US Navy**



## State & Local Use of LEED™

### ■ State Users of LEED™

- New York
- Connecticut
- New Jersey
- California
- Pennsylvania
- Massachusetts
- Maryland
- Rhode Island

### ■ Local Government LEED™ Users

- Seattle, WA
- Arlington, VA
- Portland, OR
- Austin, TX
- Chicago, IL
- Santa Monica, CA
- Fairfax, VA



## LEED™ & Higher Education

- 38 Institutes of Higher Education have registered projects using LEED 2.0
- Over 3/4 of these have a laboratory component.
- The University of Hawaii is a partner in the 100,000 sq. ft. National Marine Fisheries Service/NOAA Laboratory project, Honolulu-registered as LEED 2.0



# LEED™ & Higher Education

- Oberlin College
- University of California, Santa Barbara
- University of Cincinnati--four LEED projects



# Overview of LEEDä

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## Overview of LEED™

- Green building rating system for commercial and high-rise residential
- New construction, major renovation, and built projects
- Existing, proven technologies
- Evaluates and recognizes performance in accepted green design categories
- Whole-building integrated approach



## Principles of LEED™

- Ongoing consensus development process involving many stakeholders
- Begins to define “green buildings”
- Tool to introduce, promote and guide integrated building design
- LEED™ will standardize green design in U.S. and institutionalize integrated design practices



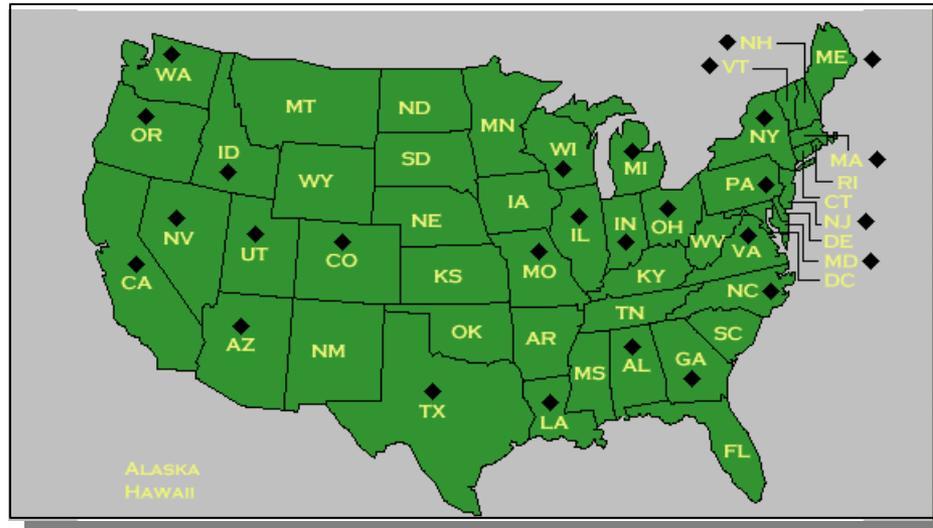
# LEED™ & Market Transformation

- The primary objective of LEED™ is to transform existing building markets so that sustainable design, construction, and operations practices become mainstream
- New Construction
- Renovations
  - Schools and Institutions
  - Healthcare
  - Residential
  - Corporate
  - Laboratories



# LEED™ Market Transformation

- 20 Certified Projects
- 350 Registered Projects
- >57 million gsf in 40 States



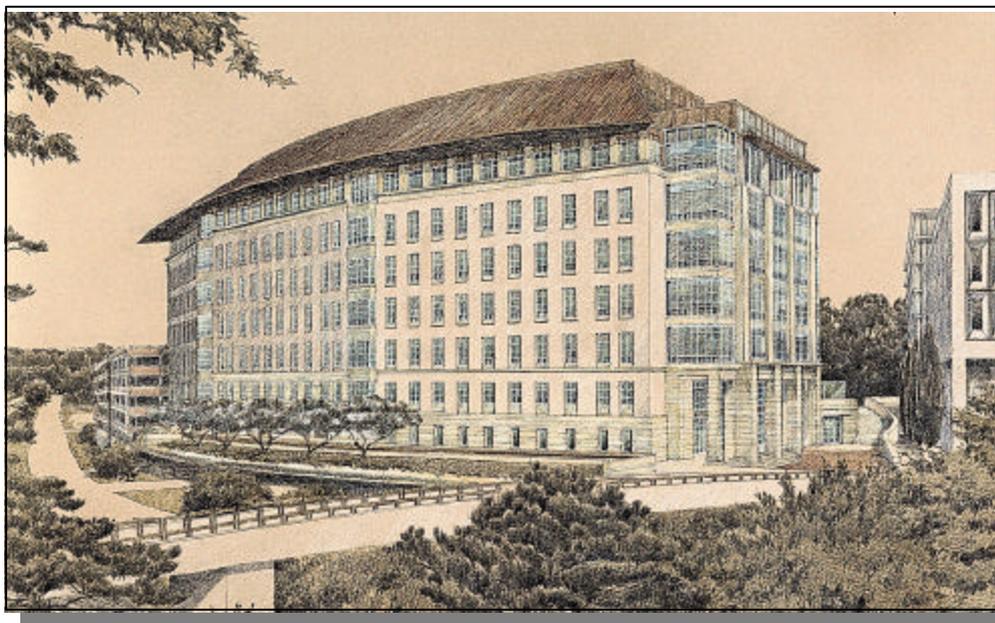
- 6 Countries
- 18 building types

\* as of 3/11/02



# Joseph B. Whitehead Research Building -- Emory Univ., Atlanta, GA

- 325,000 gsf Laboratory



**LEED™ 2.0 Registered Project**



# LEED™ Framework

- A compendium of green design elements
- An integrated design structure
- Designed to capture environmental, economic, and human health benefits
- Created for and based on the US market



## Why was LEED Created?

- Market transformation
- Define Green
- Prevent Greenwashing
- Integrate disciplines
- Promote competition



# LEED™ Rating System Design Categories

| <u>Credits</u> | <u>Points</u> |                               |
|----------------|---------------|-------------------------------|
| 8              | 14            | Sustainable Sites             |
| 3              | 5             | Water Efficiency              |
| 6              | 17            | Energy and Atmosphere         |
| 7              | 13            | Materials and Resources       |
| 8              | 15            | Indoor Environmental Quality  |
|                | 64            |                               |
|                | 4             | Design Process and Innovation |
|                | 1             | LEED™ Accredited Designer     |
|                | 69            | TOTAL Points Available        |



# LEED™ Rating System

- 5 Sustainable Design Categories
  - PLUS Design Process & Innovation
  
- Rating System Contains:
  - 7 prerequisites
  - 32 credits with 64 core points
  - 4 innovation points
  - 1 design process point



# LEED™ Rating System

- Self-assessing system to guide project development
- 4 levels of certification
  - LEED™ Certified      26 - 32 points
  - Silver Level            33 - 38 points
  - Gold Level              39 - 51 points
  - Platinum Level 52 + points



## Credit Format & Structure

- Each credit identifies the following;
  - Intent
  - Requirements
  - Technologies and Strategies
  
- Offers market transformation and educational information rather than simply a statement of required elements



## Credit Intent

- Conveys the goals and objectives of the credit
- Lists the environmental benefit and preferred outcome
- Assists in educating owners and building professionals
- Aids in the interpretation of credit compliance



## Credit Requirement

- Identifies specific elements needed to achieve the credit
- Defines actionable items
- Where practical, includes components of referenced standards and critical compliance issues



## Credit Technologies & Strategies

- Includes a summary of recommended technologies and strategies to meet the credit requirements
- Refers readers to the Reference Guide when calculation methodologies or detailed strategies are available to assist with compliance.



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# LEED for Laboratories

**Working toward LEED 3.0**

**Initiative of USGBC, EPA Labs 21, LBNL, and FEMA**

**Working toward credit additions/options that address laboratory-specific issues**

**Looking for additional sponsors/participants in developing LEED for Labs.**



## LEED Development Schedule

- 2000....Released LEED 2.0
- 2001....Solidified foundations, Tools and reference package developed
- 2002....Streamlined documentation; update LEED 2.0 w/ version 2.x
- 2003...Introduce new LEED products (LEED for Existing Buildings, Tenant Improvements.)
- 2004...Develop LEED 3.0
- 2005...Launch LEED 3.0



# Website for USGBC

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