



Setting Sustainable Goals Using LEED

Energy 2002
Palm Springs, CA
June 3, 2002

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The U.S. Green Building Council



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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

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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

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What is Green Design?

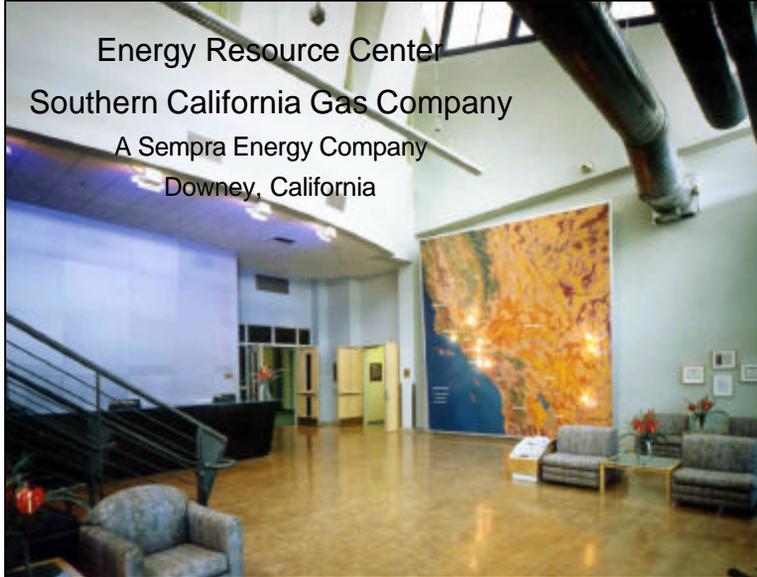
- Integrated systems design and construction that significantly reduces or eliminates the negative impact of the built environment in the following:
 - Site conservation and sustainable planning
 - Water conservation and efficiency
 - Energy efficiency and renewable energy
 - Conservation of materials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

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



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A Sempra Energy Company
Downey, California



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

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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



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The Evolution of the LEED™ Rating System

A synopsis of the LEED™ Green Building Rating System Development



LEED™ User List	
Commercial Real Estate	HarwoodManagement TranmereCrow
Corporate	Alcoa Armstrong Herman Miller Johnson Controls Kandohama Hoach Mitsubishi
Department of Defense	Air Force Navy Pentagon
Federal Agencies	Department of Interior Park Service EPA FAA Healthcare Financing Administration State Department DOE/NREL GSA
Higher Education	Carnegie Mellon Institute Colorado College Connecticut College Evergreen State College Lewis and Clark College Massachusetts Institute of Technology Montana State University Northland College Oberlin College Prins George Community College University of California at Santa Barbara University of North Carolina Asheville University of Texas University of Nebraska University of Wisconsin
Organizations	Brainerd Foundation Chesapeake Bay Foundation Natural Resources Defense Council Salt Lake Olympic Committee Tide Foundation The Green Institute
Public Authorities	Arlington County Virginia City of Denver City of Los Angeles City of San Diego City of Santa Monica City of Seattle King County Washington Marion County, Oregon New York City of Design and Construction New York Transit Authority O'Hare Development Authority Pennsylvania Department of Environmental Protection





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



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

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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

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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

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

- 325,000 gsf Laboratory



LEED™ 2.0 Registered Project

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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>	
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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

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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

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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.

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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

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Website for USGBC

www.usgbc.org

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