



SUSTAINABLE DEVELOPMENT

CEB RPI – The Challenges of Urban Development

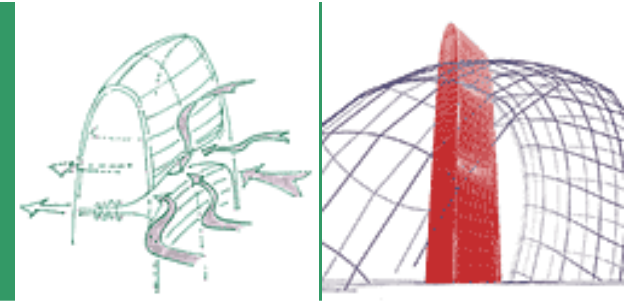
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SUSTAINABLE DEVELOPMENT

DEFINITIONS



Sustainable Development is defined as balancing the fulfillment of human needs with the protection of the natural environment, so that the development meets the needs of the present without compromising the ability of future generations to meet their own needs. In the 2005 United Nations World Summit, the UN provided an expanded definition of sustainable development that includes the “interdependent and mutually reinforcing pillars” of economic development, social development and environmental protection.

Green Building is a process that creates buildings and supporting infrastructure that minimize the use of resources; reduce harmful effects on the environment; and provide healthier environments for people.

Zero-Net Energy is self supporting development that harnesses natural energy to produce as much energy as it consumes, and **Positive Energy** development stores sufficient energy to support the building as well as the local community through efficient distribution of power.

SUSTAINABLE DEVELOPMENT

STATE EXECUTIVE ORDER



CalTrans Building, Silver LEED Project

In 2004, Governor Schwarznegger executed the Green Building Order, which directs that future construction and renovation projects larger than 10,000 square feet meet LEED-New Construction Silver criteria in order to assure their energy and environmental performance.

The state of California is also working toward achieving LEED-Existing Building certifications in buildings larger than 50,000 square feet to ensure that building occupants are incorporating energy efficiency and resource conservation measures in their building operations and maintenance.

LEED STANDARDS

RATING LEVELS



U.S. Green Building Council (USGBC) is a national non-profit group, which developed **LEED** (Leadership in Energy and Environmental Design) Standards for the certification of design, construction and operations of sustainable buildings and urban plans.

LEED assesses the following project components:

Site Planning

Water Management

Energy Management

Material Use

Indoor Environmental Air Quality

Innovation and Design Practice

Four LEED certification levels:

Certified

Silver

Gold

Platinum

LEED STANDARDS

BUILDING TYPES RATING SYSTEM



LEED Standards assess various building types, including:

New Construction *LEED for New Construction and Major Renovations is designed to guide high-performance commercial and institutional projects, with a focus on office buildings, but is also applied to multi-unit residential buildings, manufacturing plants and other uses.*

Existing Building *LEED for Existing Buildings addresses maintenance issues, including chemical use; indoor air quality; energy efficiency; water efficiency; recycling programs; exterior maintenance programs, and system upgrades to meet green building energy, water, IAQ, and lighting standards.*

Commercial Interiors *LEED for Commercial Interiors allows tenants to obtain LEED certification for tenant improvements, and focuses on high-performance interiors that are healthy work places, less costly to operate and maintain, and reduce the environmental footprint.*

Core and Shell *Addresses divisibility of responsibility between owner and tenant, and discusses base building systems, including structure, HVAC, and building envelope.*

LEED STANDARDS

MARKET SECTOR RATING SYSTEM



LEED standards also provide separate analysis for different uses, including:

Campus/Multiple Buildings *Provides direction in applying LEED New Construction standards to projects in a campus or multi-building setting, such as corporate campuses, college campuses, and government installations.*

Schools *Based on LEED for New Construction, LEED for Schools addresses issues such as classroom acoustics, master planning, mold prevention, and more. LEED for Schools is currently in the final step in the LEED development process.*

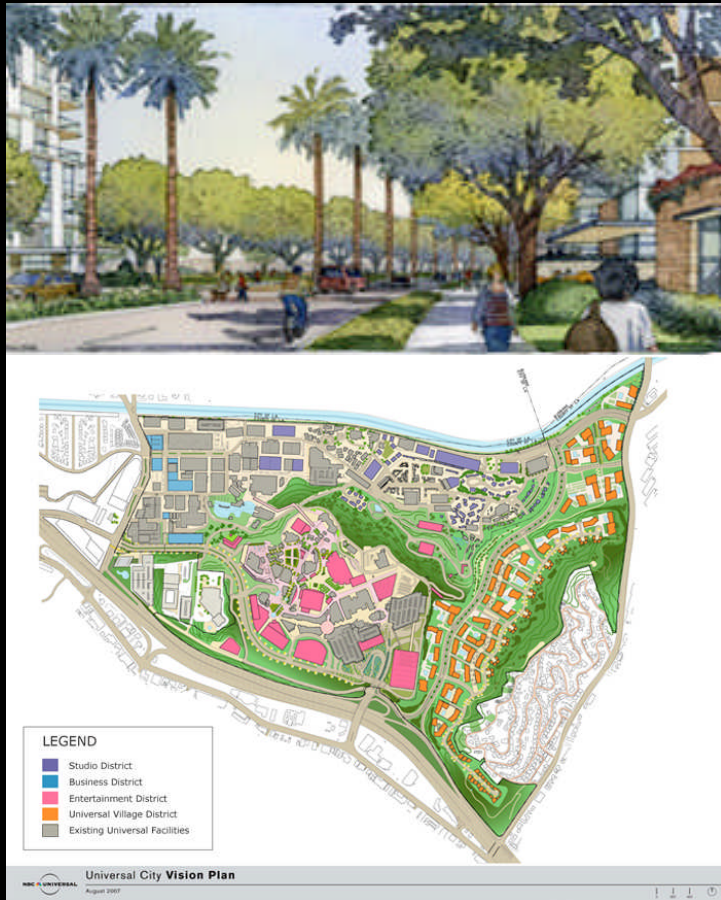
Retail *LEED for Retail addresses the unique challenges and opportunities of implementing green building strategies into retail projects, and USGBC is currently commencing a pilot test of the draft standards.*

Neighborhood Development *Current pilot program integrates the principles of smart growth, urbanism, and green building into the first national standard for neighborhood design.*

Homes *Current pilot program focuses on healthy indoor standards and energy efficient appliances, and has certified over 200 homes nationwide.*

LEED STANDARDS

NEIGHBORHOOD DEVELOPMENT PILOT PROGRAM



Universal Village, Plan and Rendering

In 2007, USGBC introduced the national Neighborhood Development Pilot Program, and will provide standards by 2009.

The Neighborhood Development Pilot Program extends LEED analysis from buildings to larger urban planning principals, and includes Universal Village as a pilot project.

The Universal Village plans include features to reduce stormwater runoff, retain significant open space, promote transit and utilize sustainable construction materials and design methods.

LEED STANDARDS

HOMES PILOT PROGRAM



Deopt Walk, an all solar power,
LEED Certified Residential Community
in Orange County

In 2000, USGBC introduced the national Homes Pilot Program, and is currently receiving and reviewing public comment.

A green home uses less energy, water and natural resources; creates less waste; and provides a healthier environment. The benefits of a LEED home include lower energy and water bills; reduced greenhouse gas emissions; and less exposure to mold, mildew and other toxins.

The 2006 Initiative for Affordable Housing promotes sustainable building practices specifically for affordable homes, and recognizes and rewards the intrinsic resource efficiencies of affordable housing within the LEED for Homes rating system.

LEED STANDARDS

CERTIFICATION PROCESS



Registration An applicant must register a project online and pay the fee (\$600), and begin preparing documentation of the project in compliance with the credit requirements current on the registration date.

Review USGBC has established a review process for registered project inquiries, called credit interpretation requests (CIRs), to ensure that rulings are consistent and available to other projects. CIRs cost \$200 per inquiry.

Certification The project must satisfy all of the prerequisites and a minimum number of points to attain a LEED rating level. The application requires project drawings, renderings, project narrative, LEED letter templates and documentation, and project checklist. The design and construction review phases may be submitted together or separately after the design and construction phases. Expedited review is available for an additional \$10,000. Project teams may appeal the rating within 25 days. The applicant must pay an additional certification fee based on floor area. USGBC refunds certification fees for Platinum LEED projects.

GREEN BUILDING STANDARDS

OTHER PROGRAMS



Green Globes

The Green Globes environmental assessment and rating system originated in 1996 in Canada and the Green Building Initiative (GBI) acquired the rights to distribute Green Globes in the US in 2004. It became the official ANSI green building standard in 2005. GBI initially was focused on the residential market.

Green Globes rates projects according to project management, site, energy, water, resources, emissions and other impacts and indoor environment.

Where LEED requires third party certification, Green Globes provides it as an option, but allows self certification. GBI has applied to make Green Globes a consensus-based ANSI standard by 2007.

CITY OF LOS ANGELES

SUSTAINABLE BUILDING IMPLEMENTATION PROGRAM - MUNICIPAL



Silverlake Library, Gold LEED Certified Level

Since 2002, LEED “Certified” Level required for all new City building projects 7,500 sf+.

In 2007, City Council considers LEED Silver Level for certain buildings, and the Mayor states support for the action.

LA Sustainable Building Initiative adopted:

- Energy Efficiency
- Water Efficiency
- Worker Productivity
- Reduced Operations and Maintenance Cost
- Waste Reduction and Resource Conservation

CITY OF LOS ANGELES

GREEN BUILDING PROGRAM – PRIVATE SECTOR



W Hotel, LEED Certified Level

In 2007, City Council approved a motion to extend LEED standards to the private sector, and to create green building program. Working group draft recommendations:

- All projects at a baseline of sustainability compliance
- Projects with 50+units or 50,000sf require LEED Certified level
- Projects that are Silver LEED level will receive development and processing incentives, including reduced parking, additional density and FAR
- City oversight team will review sustainability level at 4 stages.

CITY OF SANTA MONICA

SUSTAINABLE CITY PROGRAM – MUNICIPAL



The 2003 Sustainable City Plan provides nine guidelines and is overseen by the Sustainable City Task Force.

The City of Santa Monica committed every City building to be Silver LEED Certified.

Santa Monica Library – Gold LEED Certified. Includes Energy Star reflective roof, electric car charging, stormwater storage to irrigate garden, solar electric panels.



Colorado Court and
Virginia Avenue Park

Colorado Court Affordable Housing – Gold LEED Certified. A partially City funded, 44-unit affordable housing project. Building will produce 92 percent of its own power with 199 solar panels and natural gas generator.

Virginia Avenue Park is Silver LEED Certified.

CITY OF SANTA MONICA

GREEN BUILDING PROGRAM – PRIVATE SECTOR



NRDC Headquarters,
Platinum LEED Level

2002 Green Building Ordinance establishes requirements for energy efficiency, recycled-content materials, and other green building standards, including residential, hotel, commercial, light industrial and retail uses. The Title 24 2005 Energy Efficiency Standards update the energy efficiency requirements.

Construction and Demolition Ordinance requires a reduction in solid waste from construction activities.

Expedited plan check for LEED projects; LEED certified grant program.

The Online Design Advisor provides sustainable requirements based on project type and size. Additional resources include online Guidelines and Green Building Resource Center.

CITY OF WEST HOLLYWOOD

Green Building Programs – Municipal and Private Development



Pacific Design
Center

Effective October 1, 2007, the Green Building Ordinance applies to new residential (3+ units) and commercial projects, tenant improvements and remodels, and specifically requires:

- 80% construction waste diverted from landfill
- Roof layout to show existing or future solar
- Construction air quality management plan
- Low VOC paint and wood finishes
- Energy Star appliances in residences
- Conserve water, minimize drainage and improve water quality through material use, irrigation systems
- Bicycle parking, City's Transportation Demand Management Program compliance
- Revised energy efficiency standards in Title 24

All projects must receive 60 points, and one incentive allowed at 90 points. LEED "Certified" projects are exempt.

All municipal new construction, renovations or public building tenant improvements to be LEED Certified level.

STATE OF CALIFORNIA

Green Building Requirements – State Buildings



CalTrans Building

Governor Arnold Schwarzenegger signed Executive Order S-20-04, regarding Green Buildings in 2004, which established the State of California's priority for energy and resource-efficient high performance buildings. The order also directs compliance with the Green Building Action Plan.

Since that time, State funded buildings have provided technical innovation in sustainable design. The CalTrans Building in Los Angeles integrates a unique exterior skin comprised of operable aluminum panels that shield the east and west facades from direct sunlight. On the south wall, a series of photovoltaic cells will generate an electric output of 92 kW, contributing to the building's sustainability. The building is Silver LEED certified.

MIXED USE – RESIDENTIAL/COMMERCIAL

BLVD 6200 *The Clarett Group*



Project Description

7.3 acre site used for surface parking

6-story, 1.13 million sf project

175,000 sf neighborhood serving retail

1,014 rental units

28 live-work units for entertainment use

100+ affordable housing units

MIXED USE – RESIDENTIAL/COMMERCIAL

BLVD 6200 *The Clarett Group*



LEED Certified Level

MTA station entrance;
MTA promotional plan

Bicycle Racks

10 Flexcar spaces;
Preferential parking for
hybrid vehicles

Recycled content
building materials and
products

Energy Star certified
appliances and
equipment

Native low-water
plants and landscape

RETAIL – COMMERCIAL USE

1130 S. Gayley *Hollywood Theater Company*



Project Description

One-story project
with rooftop
parking

10,000 sf
neighborhood
serving retail

Active streetscape
with glass
storefronts and
ground level
landscaping

RETAIL – COMMERCIAL USE

1130 S. Gayley *Hollywood Theater Company*



LEED Silver Level

Rooftop solar photovoltaic panels that shade roof and parking stalls

Recycled materials; PPG fritted glass and solar control low-e glass with recycled content; Lithocrete paving materials

Bicycle racks

Low-water plants

Energy efficient equipment

MUNICIPAL BUILDINGS

West Hollywood Library

City of West Hollywood



Project Description

Gateway to City on
West Hollywood Park

3-story, 48,000 sf

Multiple uses including
children's library,
career development
center, public meeting
rooms

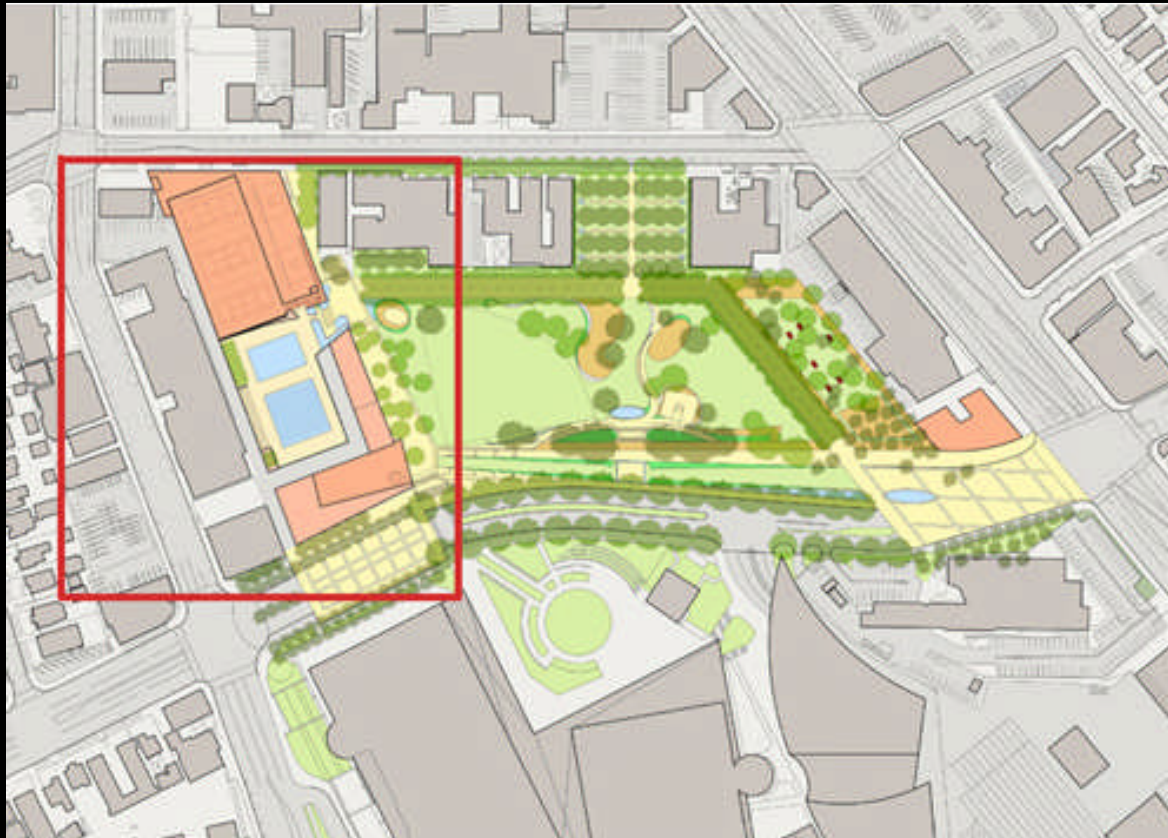
90 car parking
structure

First of four phase
master plan

MUNICIPAL BUILDINGS

West Hollywood Library

City of West Hollywood



LEED Silver Rating

Oriented to maximize use of natural sunlight and access to adjacent park

Recycled content materials

Energy efficient equipment

City Council debated Silver Rating goal due to cost

COST OF SUSTAINABLE DEVELOPMENT

USGBC FINDINGS



Pursuant to a USGBC study of 40 office and school buildings, the additional cost of green building at each performance level is:

| | |
|-----------|------|
| Certified | .66% |
| Silver | 1.9% |
| Gold | 2.2% |
| Platinum | 6.8% |

However, based on a 2006 “**Cost of Green Revisited**” study by Davis Langdon, USGBC now concludes that there is no significant increase in cost for a Certified or Silver level. The Davis Langdon study examined the cost of incorporating individual sustainable elements, the cost of green buildings compared to regular buildings with a similar program, and the cost of green buildings compared to their original budget. The study concludes that there is no significant difference in average costs for green buildings, but acknowledges the cost of documenting the process to receive certification.

COST OF SUSTAINABLE DEVELOPMENT

OTHER STUDIES



In “**The Costs and Financial Benefits of Green Buildings: A Report to California’s Sustainable Building Task Force**,” dated October 2003, Greg Kats demonstrates that sustainable building is a cost-effective investment. The study finds that a minimal investment of an additional 2 percent of construction costs results in a life cycle savings equal to 20 percent of construction costs, as well as providing added environmental and human health benefits.

The **GSA LEED Cost Study**, dated October 2004, determined that for courthouse projects, the construction and design costs increase 1 percent for Certified LEED projects, 4.3 percent for Silver LEED projects, and 8.1 percent for Gold LEED projects. For office buildings, the costs increase 2.1 percent for Certified LEED projects, 4.1 percent for Silver LEED projects and 8.2 percent for Gold LEED projects.

COST OF SUSTAINABLE DEVELOPMENT

LEED HIDDEN COSTS AND ISSUES



Hidden Costs.

The LEED certification process is expensive, time consuming and lags behind the most recent environmental building practices due to a three year period between versions.

No-Credit for Environmental Advances.

LEED does not provide credit for certain energy saving practices required in some areas, such as carbon dioxide emissions relating to a buildings operation and earthquake survivability, which conserves resources in case of disaster.

Costs Prohibitive for Non-Profit and Affordable Housing Developers.

Critics state that LEED costs too much, is easily gamed and is too bureaucratic. A LEED certification can add \$70,000 for a small building project, including consulting fees, extra design work, computer modeling, certification, energy management and LEED paperwork.

FUTURE TRENDS

TOWARDS A SUSTAINABLE FUTURE

Higher Environmental Standards for New and Existing Buildings in Major Cities

Development Incentives for Higher Level of Sustainability

City Sponsored Grants for Sustainable Design and Construction

Rebates for Installation of Energy Saving Equipment