



Sustainable Industry Sector Retrospectives

**Background Briefs for Better Sustainability Decisions
In Collaboration with *Sustainable Industries Magazine***

GREEN BUILDING: A Retrospective on the History of LEED Certification

Introduction

Sustainable Industries has been the leading business magazine on the West Coast covering core sustainability sectors with integrity, thoroughness and vision since 2003. Using the *Magazine* as our source information, the Institute's Retrospective Industry Reports offer insights on the trajectory and chronology of the sector starting from the time the sector first emerged. In key sustainability sectors such as Clean Energy, Green Building, Sustainable Food, Farming and Transportation, we identify key highlights, when they occurred, and who played a key role. We investigate and reveal how the sector changed over time, what shifts took place, what patterns emerged, and what conditions underlined the changes. The information we supply will enable those making assessments to understand the historical context in which they were made.

Our LEED Retrospective Report offers a rare and needed historical analysis of the rating system and provides highlights of LEED's history, growth, and development, and the challenges and trends that have impacted its refinement. Through an examination of *Sustainable Industries Magazine* over a ten-year period, we will chronicle the evolution of the LEED rating system.

About LEED

LEED stands for Leadership in Energy and Environmental Design and is an independent, third-party verification rating system that provides a method of standardization and oversight for environmental performance designed for new and existing commercial, institutional and residential buildings. Performance focuses on human and environmental health in five key areas including sustainable site development, water savings, energy efficiency, materials selection and indoor environmental quality. The idea for LEED was in part inspired by the desire to create a U.S. version of the U.K.'s Building Research Establishment Environmental Assessment Method, or BREEAM, as well as Canada's Building Environmental Performance Assessment Criteria, or BEPAC¹.

¹ The LEED rating system was created by innovators and early adopters in the green building sector including architects, engineers, design consultants, product manufacturers, developers and others, to measure environmental performance from a whole building perspective over the building's life cycle. The creation of LEED occurred in the early 1990s. Please consult with the USGBC (<https://new.usgbc.org/>) for further information.

Historical Highlights

- 1998: USGBC launched first pilot - LEED version 1.0 in August
- 2000: USGBC launched LEED Green Building Rating System version 2.0
- 2003: USGBC becomes a nonprofit entity
- 2004: USGBC has staff of 50, 70 chapters, and a budget of \$17 million
- 2004: By mid-year there are 1400 total LEED projects certified in 50 states
- 2004: First Canadian building to be LEED Gold certified is National Works Yard
- 2005: USGBC to pilot LEED-certification program for homes
- 2005: USGBC launched LEED-Existing Buildings (EB)
- 2005: USGBC launched LEED-Commercial Interiors (CI)
- 2005: USGBC launched LEED-New Construction 2.0 (NC 2.0)
- 2005: Schools and colleges increasingly building LEED designed residence halls
- 2005: LEED has 2000 certified buildings in U.S.
- 2006: Vancouver, Canada's Aquarium is first LEED Gold aquarium in the world
- 2006: High-end hotel chains starting to go LEED Platinum in North & South America
- 2006: 53% of LEED certified buildings did not qualify for Energy Star label
- 2006: LEED building certification goes digital with Adobe Systems
- 2007: LEED Platinum 4-Unit Kenton Living Building in Portland, OR, is world's first certified "Living Building"
- 2007: LEED certified building boom in San Francisco with 60 projects
- 2007: First sports stadium to go LEED certified is Baltimore Nationals Park
- 2007: LEED certification focus on historic building renovation
- 2007: LEED rating system release of version 3.0
- 2008: Dubai seeking LEED criteria, India seeking LEED compliance buildings, China building LEED certified buildings, China adopting U.S. criteria for green home building
- 2008: LEED certified buildings are becoming defacto standard in U.S.
- 2008: Calgary, Canada—all city structures must meet CaCBC LEED standards; LEED Gold certification for all commercial building construction
- 2008: LEED-ND and 3.0 aligning with Smart Growth America standards
- 2009: LEED certification is driving all new commercial building in India and China
- 2009: West Coast shopping malls transform into "lifestyle centers," becoming LEED-ND
- 2009: USGBC launches Building Performance Institute (BPI) for measuring energy efficiency, providing training for energy audits and energy retrofitting work
- 2009: USGBC launches LEED-Neighborhood Design (ND) integrating principles of smart growth, urbanism and green building
- 2010: Oberlin Project in Ohio becomes first LEED-Platinum neighborhood
- 2010: 100 college campuses are LEED certified in U.S. with sustainability programs
- 2010: USGBC begins collecting metrics on energy/water use for every LEED certified building
- 2011: LEED certified building reports increased growth again—after two-year fall off
- 2011: Pentagon Department of Defense Office Complex, a \$1B LEED Gold certification
- 2011: USGBC launches The App Lab, part of its LEED Automation Program
- 2012: USGBC commercial expansion targeting industry, warehouses, distribution centers

ANALYSIS OF INDUSTRY

Trends / Challenges / Shifts

LEED has experienced phenomenal growth in the past decade. Since launching LEED version 1.0 in 1998 and v2.0 in 2000, the certification system has grown to include a portfolio of nine rating system products that serve specific market sectors including: Homes, Neighborhood Development (ND), Commercial Interiors (CI), Core and Shell, New Construction (NC - and Major Renovations), Existing Building (Operations and Maintenance), Schools, Retail (CI), and Healthcare. The need for LEED certifications targeting many specific sectors arose from private and public sector demand in 2002, to address the complexity and variation of buildings across different sectors. In 2003, LEED was seen as the new yardstick for building design and became a highly accepted building certification system in the U.S. marketplace. The USGBC and LEED have been challenged by the certification's rapid growth coupled with the growth in green building in both the public and private sectors.

Over the past 10 years, municipal and county building codes have gone through a significant transformation to require LEED certification on new buildings, and incorporate green building practices and energy, water, and material efficiency. West Coast cities like Seattle, Portland, San Francisco and many local governments have all mandated LEED building certifications in public sector building strategies and zoning codes and implemented bold incentive programs to support green building including giving tax credits, tax breaks, grants, low-interest loans, reduced fees and priority permitting. Canada embraced LEED in 2004 with the National Works Yard, built atop a Brownfield site, representing the first Canadian building to become LEED-Gold certified, which led to a quick succession of LEED certified Canadian buildings including the B.C. Cancer Agency Research Center, Vancouver Convention Centre, Vancouver Aquarium, and to Vancouver becoming the first Canadian city to mandate that all new construction be LEED-Gold or Silver certified for the 2010 Winter Olympics. Hospitals, college residence halls, condominium complexes, high-end hotel chains, luxury residential high-rise towers, sports stadiums, and mixed-use communities—all started to adopt LEED certification for new building and building remodels.

In 2005, driven by the mega-house trend in the U.S., increasing urban and suburban sprawl, and an ever-growing single-family home carbon footprint, the USGBC launched a new certification pilot for residential houses. In 2006, LEED went digital to reduce paper waste, increase file sharing capabilities, improve access to materials, and streamline and expedite the application process. In 2008, the LEED certification spread to Dubai, India, China, and Indonesia—driving a majority of commercial building including schools, hospitals, and condominium and apartment complexes. China also adopted the U.S. criteria for residential green building. With an increasing need to protect the environment, open spaces, and fragile ecosystems coupled with Smart Growth America's recommendations to locate homes near jobs, shops, transit and schools—the LEED for Neighborhood Development Rating System (ND) was launched as the first national system for neighborhood design, and as a result, Oberlin Project in Ohio became the first LEED-Platinum neighborhood.

With the convergence of escalating gas and oil prices, rising carbon and GHG emissions, climate change, rising utility costs and stricter federal and state energy efficiency standards—USGBC

proposed new building code changes to require up to 30 percent more energy efficiency than 2006 standards for homes (aligned with the energy efficiency measures and targets in 30% Solution 2012) and commercial buildings. Additionally, in 2007 USGBC launched the Building Performance Institute (BPI) to train a workforce for measuring and retrofitting for energy efficiency. As a result, numerous residential energy performance businesses entered the marketplace to tap into the demand for more energy efficient houses and the number of house buyers buying LEED-certified homes increased. Condo buyers were also “buying green,” leading to a well performing condo market in high-quality LEED certified buildings.

By 2010 several research studies conducted on LEED certified buildings revealed that up to a quarter of the buildings performed operationally below LEED energy codes and standards, driving the need to engage building owners and managers early in the design process and implement stronger energy tracking software. Now, “LEED 2012” represents the next step in the continuous improvement process and on-going development cycle of LEED, which is anticipated to launch in 2013.

List of LEED Rating Systems

Green Building Design & Construction

- LEED for New Construction
- LEED for Core & Shell
- LEED for Schools
- LEED for Retail: New Construction and Major Renovations
- LEED for Healthcare

Green Interior Design & Construction

- LEED for Commercial Interiors
- LEED for Retail: Commercial Interiors

Green Building Operations & Maintenance

- LEED for Existing Buildings: Operations & Maintenance

Green Neighborhood Development

- LEED for Neighborhood Development

Green Home Design and Construction

- LEED for Homes

Conclusions/Recommendations for Future

The development of the LEED rating system has made an enormous impact on the design and construction of new buildings and on renovation of existing buildings in the U.S. and globally. The LEED certification system changed the face of sustainable green design and building from 2000 forward, creating buildings that provide healthier living and work environments, use resources more efficiently, reduce material and solid waste, improve air and water quality, minimize a building’s impact on ecosystems, reduce carbon and greenhouse gases, lower operating costs, and promote the use of sustainable materials. With a slightly higher initial up-front cost, LEED buildings offer multiple times the initial investment over the life cycle of the

building, hold higher real estate values, higher occupancy rates, higher rents, higher sales prices, have less liability and default, have lower operational costs, and are considered lower investment risks. Plus, research shows that LEED buildings are up to 40 percent more energy efficient. However, one criticism that has been ongoing suggests that the LEED rating system does not adjust to and incorporate local environmental conditions between different locations. This may be addressed in LEED v4.

Coming soon is LEED 2012 or v4, which like other version releases, is a market-driven, consensus-based, evolving product that adapts and integrates new technologies, as well as new ideas and input from industry professionals. Launching in 2013, the new program is the result of three years of rigorous critical review, incorporating public and market comment, and refining and improving all aspects of LEED. LEED v4 will increase technical stringency and maintain new, more rigorous requirements and will represent significant improvement in carbon reduction and human health.

Research Background

We chose *Sustainable Industries Magazine* as our source of historical context because from 2003 through to the present, it has provided business and government leaders with in-depth reporting on green building, renewable energy, clean tech, energy efficiency, organic food, green marketing, finance, investment and more, on a monthly basis. No other publication has documented sustainable industries and trends more thoroughly, and on a regular basis, for the past 10 years.

This retrospective analysis is part of a larger effort by IEE to document the early beginnings of sustainability history and to share this knowledge and historical perspective to provide both a public forum for further conversation about these topics and to advance insights and knowledge from the history of sustainability to further progress sustainability efforts in the future.

Methodology & Scope

Our Industry Retrospective Reports contribute a historical perspective and knowledge base of sustainable industry research. We have analyzed and synthesized *Sustainable Industries* feature articles in order to develop an integrative framework to look at how sustainability sectors have trended, evolved, and transformed over the past 10 years. The advantage of hindsight enables us to explore how certain ideas, businesses, regulations, policies, political and legal environments, and governments have impacted and influenced key sustainable industry sectors.

Our research technique is based on a structured examination and review of published articles in *Sustainable Industries Magazine* from 2003 to the present, focusing on particular industry sectors by analyzing, synthesizing, and summarizing industry sector trends, highlights, time lines, chronology of events, and challenges. By reviewing 10 years of their articles, we ensure a breadth of industry data. The segments we have targeted for this retrospective research are business leaders and practitioners, investors and financiers, lawmakers and policy makers, scholars and academicians, and entrepreneurs.

Keywords List

USGBC, United States Green Building Council, LEED, Leadership in Energy and Environmental Design, LEED history, building rating system, LEED committees, LEED certification program, LEED certification, LEED certified, LEED rating system, LEED buildings, USGBC LEED, LEED program, green building, LEED certifications, LEED energy, LEED Council, building green, LEED green, green building certification, building life cycle, LEED Silver, LEED Gold, LEED Platinum, LEED AP, Green Globes, environmental design, environmental construction, building third party verification, sustainable building, sustainable design, Green Building Certification Institute.

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