



**STANFORD**  
GRADUATE SCHOOL OF BUSINESS

**STANFORD** SOCIAL INNOVATION *review*

## **Case Study: LEED the Way**

By Brandon Keim

Stanford Social Innovation Review  
Spring 2010

Copyright © 2010 by Leland Stanford Jr. University  
All Rights Reserved



**STANFORD**  
GRADUATE SCHOOL OF BUSINESS

Stanford Social Innovation Review  
518 Memorial Way, Stanford, CA 94305-5015  
Ph: 650-725-5399. Fax: 650-723-0516  
Email: [info@ssireview.com](mailto:info@ssireview.com), [www.ssireview.com](http://www.ssireview.com)

# Action Case Study

## LEED the Way

The LEED system is the platinum standard for green building certification, and its parent organization, the **United States Green Building Council (USGBC)**, is one of the fastest growing nonprofits in America. Here's how the USGBC maintains its strict standards while responding to diverse members in an evolving field. **BY BRANDON KEIM**

HAD THE PROTO-GREEN architect Frank Lloyd Wright lived in the 21st century, he might have built something like the Natural Resources Defense Council (NRDC) offices in Santa Monica, Calif. Although framed by a century-old structure, the retrofitted downtown site now includes the latest and best eco-friendly features. Reflective roofing and hanging plants cool its surface. Light wells suffuse the interior. Sensors allow artificial illumination only when rooms have occupants. A smart air conditioning system ignores areas that are already cool. Solar panels generate a fifth of the building's energy, and wind farms provide the rest. As a result, the building's total energy costs are 44 percent lower than those of a comparable 15,000-square-foot office space.

As befits the NRDC's mission to protect the planet, its headquarters' materials are also of the greenest caliber. Named the Robert Redford Building, its wood comes from forestry operations that meet the highest sustainability standards. Its paint and other materials emit almost no toxins. And its renovators recycled all but 2 percent of the waste they generated during construction.

For these many environmentally friendly specs, the NRDC headquarters received a platinum rating—the highest possible—by the Leadership in Energy and Environmental Design (LEED) program. Created by the United States Green Building Council (USGBC), the LEED program has become synonymous with the very idea of sustainable construction. “It's served a catalytic purpose, which is to define what a green building is, and to answer the question, ‘How good is good enough?’” says Joel Makower, cofounder of green technology publisher Clean Edge and author of *Strategies for the Green Economy*.

At the same time, the USGBC has become one of the fastest growing nonprofits in the United States, in part because the organization “created a playing field where everyone could join in the game,” says Makower. Founded in 1993 with the purpose of transforming American building practices, the USGBC certified its first structures in 2000. Today, some 20,000 organizations and companies are members of the USGBC, and more than 130,000 profes-

---

BRANDON KEIM is a freelance journalist based in Brooklyn, N.Y., who writes about science, technology, and culture. His articles have appeared in a variety of publications, including *Wired*, *Psychology Today*, *The New York Times Magazine*, and *The Atlantic*.

sionals, from contractors to developers, have earned their LEED accreditation.

But the USGBC has taken its share of heat, too. Critics have accused Leed of generating better rhetoric than practices. They point out that LEED buildings have not always performed as well as expected. And they accuse LEED of caving in to

industry demands, allowing the use of unsustainable materials.

Over time, the USGBC has responded to these critics by making the LEED program more demanding. Although some observers say the new standards are too strict, and others say they are not strict enough, both sides are still committed to LEED—evidence that the USGBC is approaching the right balance between purity and pragmatism.

“[We] aim to take the market where it's capable of going, but not to push so far that people won't go there,” says Scot Horst, senior vice president of LEED and chair of its steering committee. This balancing act requires courting a broad swath of stakeholders—many with competing interests—while maintaining strict standards. After 15 years, “enough of the market pays attention to LEED that it can have a real impact on change,” says Horst. “Now we can lead the market in ways we couldn't before, because people didn't pay attention to it.”

### BUILDING MOMENTUM

Buildings have a greater environmental impact than do cars, trucks, planes, and trains combined. According to the U.S. Environmental Protection Agency, buildings account for 12 percent of national water consumption, 40 percent of energy use, and almost half of greenhouse gas emissions. Moreover, in the next quarter century, four-fifths of America's built environment will be newly constructed or renovated.

If the United States and the rest of the developed world is going to control its pollution and rein in its waste, then it must green its buildings. Two decades ago, many people who reached this same conclusion began a flurry of green building initiatives. Yet their efforts in the United States were too disorganized to exert a market force, says Horst. “There were a lot of people doing interesting things, but there was no way to define what ‘green building’ meant,” he recalls. “Someone would put recycled content in the carpet, or solar panels on the roof, and call it ‘green.’ There was a lot of contention.”

Meanwhile, unrest began to simmer at the American Society of Testing and Materials (ASTM), the organization responsible for developing building guidelines and standards. One of ASTM's directors, Mike Italiano, had secured a \$10 million federal grant to seed



*The NRDC's century-old frame belies the building's modern green renovations, which earned it a LEED platinum rating.*

the green building market. Yet when Italiano's committee tried to establish standards for the projects, building industry trade groups blocked them. The groups even rejected an indoor smoking ban. "They stonewalled us," says Italiano, now CEO of investment companies Market Transformation to Sustainability and Capital Markets Partnership. "We couldn't even get anything to an initial vote."

Italiano and other dissatisfied ASTM members left and founded their own group, the USGBC. If the ASTM wouldn't step up, the USGBC would. Other early members included Rob Watson, then a senior scientist at the NRDC who founded LEED and led its steering committee until 2006; David Gottfried, the organization's first staff president and founder and managing director of Regenerative Ventures; engineers Lynn Barker and Tom Paladino, who co-chaired

LEED's original technical committee; and architects Sandy Mendler and Bill Reed.

Establishing standards was not enough, USGBC's founders agreed. To put the new standards into practice, the organization needed to make every part of the building market pay attention to them. So the embryonic USGBC invited everyone—except trade groups—to join. (Individual trade group members could sign on as long as they represented only themselves.)

A hodgepodge of interests coalesced: architects and developers, scientists and utility companies, real estate advisors, building owners, and environmentalists. The National Audubon Society signed up, as did the NRDC and the Rocky Mountain Institute. Forestry giant Georgia-Pacific, the Miller Brewing Company, the Ford Motor Company, and the Dow Chemical Corporation also joined.

In 1994, buoyed by funding from the U.S. Department of Energy and Georgia-Pacific, the USGBC formulated LEED 1.0, which included many of the very standards that the ASTM had blocked. Six years later, the organization unveiled the first 12 LEED-certified

buildings, including a dormitory at the Great Lakes Naval Training Center in North Chicago, Ill.; a food bank in Pittsburgh; and the speed skating oval for the upcoming Winter Olympics in Salt Lake City.

## LEVELS OF GENIUS

With these first buildings came the ready-for-public consumption standards of LEED 2.0. According to this system, the USGBC awarded points for various activities in five categories: sustainable site development, water savings, energy efficiency, materials and resources selection, and indoor environmental quality. Installing a reflective roof, for example, earned one point; so did reducing rainfall runoff, or relying on natural light and ventilation. Optimizing energy performance, as with the NRDC headquarters' occupancy-triggered lights, earned two points, and installing on-site renewable energy sources (such as solar panels) earned four points. Out of a possible total score of 69 points, 26 points earned LEED certification; better scores qualified for silver, gold, and platinum certifications.

"The genius of LEED, and the reason it's so successful, is that it has these multiple tiers of certification," says Nadav Malin, editor of *Environmental Building News* and chair of LEED's Materials and Resources Technical Advisory Group. "It doesn't demand a lot at the low level, but at gold and platinum, it requires serious engagement with the system." That gradient, says Malin, allows LEED to "walk this fine line between being at a level where the market can step in and play and driving a high level of performance."

Over time, the USGBC has expanded the original five categories to include dimensions for construction to existing buildings, commercial exteriors, core and shell, and residential, with health care and retail on the way. To date, the organization has accredited some 6,800 buildings and registered roughly 44,000 more, which were built according to LEED guidelines and are now awaiting the USGBC's review.

Yet LEED's effects extend beyond the members and accredited buildings. The program has also changed the marketplace for new construction and renovation. California's governor, Arnold Schwarzenegger, has ordered that all state buildings meet a LEED standard—a requirement now shared by Arizona, Missouri, and Wisconsin. Chicago requires city-owned building projects to meet standards comparable to LEED's silver level. San Francisco requires LEED for some buildings, and allows LEED developers easier passage through city building requirements. Altogether, 137 cities, 36 counties, 34 state governments, and 14 federal agencies have some sort of LEED-encouraging initiative. Even when green builders don't formally follow LEED, they often use it as a guideline.

"Green buildings command top-of-the-market rents and highest occupancy," says Italiano. "Leading financial institution portfolio managers tell their clients that if they're renovating or investing in new construction, they're throwing their money away if it's not

## CASE STUDY QUESTIONS:

How did the United States Green Building Council become one of the fastest growing nonprofits in America?

When a nonprofit embraces activists, governments, and corporations alike, how can it balance their competing interests?

What kinds of standards and measures should certifiers use?

How do organizations respond to constantly changing scientific findings, consumer demands, and competitors?

green." Italiano compares going non-green to building without air conditioning in the 1960s. It guarantees low-rent obsolescence.

"I've had many developers tell me, especially in major metropolitan markets, that if they don't do LEED, they look like fools," says Horst. "It establishes the values of the structures themselves. That's what sustainability is all about."

## STRUCTURAL FLAWS

Just because LEED dominates the market does not necessarily mean that the program works. A 2008 study revealed some major cracks in LEED 2.0's seemingly sturdy structure.

The USGBC commissioned the study, which examined how much energy per square foot 121 LEED-certified commercial buildings used, as compared with existing, non-LEED-certified commercial buildings in

the United States. Authored by the New Buildings Institute (NBI), and reviewed by the Environmental Protection Agency and the Department of Energy, the study found that, on average, LEED buildings used about one-fourth less energy than traditional buildings. But the numbers were not as pretty when unpacked: One in four LEED-certified buildings did *worse* than the average non-certified building.

New York City-based energy consultant Henry Gifford and architect Chris Benedict reached similarly disappointing conclusions. Using a subset of the NBI data, they compared the LEED-certified structures to newly constructed buildings—a more relevant analysis, they argued, because new buildings are generally more energy efficient. They found the LEED buildings to be almost one-third *less* efficient than the new, conventional structures.

Much ink has been spilled over how to interpret these data. Some experts say that the NBI study is stacked against LEED-certified buildings because its sample of conventional buildings included warehouses and vacant buildings, which use less energy. Meanwhile, they point out, many LEED buildings are energy-hungry laboratories and data centers, or renovations of existing buildings that would have been more efficient had they been built from scratch.

Following the 2008 NBI study, a loose consensus emerged: Although LEED-certified buildings are generally greener than traditional ones, the LEED 2.0 standards had two major deficiencies. First, they required only efficient building design and not efficient building operation. Second, LEED certification was based on expected performance rather than on actual performance. LEED was sold as "You've got a plaque, so you've got a green building," says Malin. "But until you see the energy bill, you can't promise that."

Another criticism of the LEED 2.0 standards was that they treated all buildings in all regions equally. A building in soaked Seattle received the same number of points for conserving water as did a building in parched Arizona. This is a problem because some conservation strategies have a much greater—or lesser—impact in different contexts.



### LEED 3.0

To respond to these shortcomings, the USGBC updated its LEED standards in April 2009. Called LEED 3.0, the latest guidelines account not only for what a building is designed to do, but also for what it actually does. For instance, models of building performance must account for the difference between running, say, coffeemakers and copy machines. To develop LEED 3.0, hundreds of people analyzed each of the existing and proposed guidelines.

LEED 3.0 also introduced the Buildings Performance Initiative, which requires every LEED-certified structure to collect data on its energy and water use, upon pain of losing certification. If a building proves inefficient, the USGBC does not revoke its certification. Instead, the organization works with the building's owners to improve performance. The USGBC reasons that the economic savings that come with increased efficiency are more of an incentive than is punishment. "We know that buildings are not always what we think they're trying to be," says Horst. "That's exactly the issue we're trying to address."

The updated LEED guidelines are also more climate focused. An oft-heard complaint about LEED 2.0 was that features with vastly different greenhouse gas implications received the same number of points. For instance, an energy-efficient air conditioning system received the same point as bike racks—even in buildings to which no

one biked. The new point allocations are weighted to distinguish between greater and lesser goods. They also give more credit for renewable energy sources such as solar and wind power, as well as more points to developers who work with existing buildings, rather than constructing new ones.

Addressing the problem of different regional needs, LEED 3.0 has tailored standards to each state. In Florida, for example, water conservation and solar energy receive extra points, whereas farmland preservation and protecting the Great Lakes are favored in Michigan.

LEED 3.0 also includes expanded "innovation credits"—points for strategies that aren't included in its formal guidelines, but that demonstrate an environmental benefit. These can include new practices under consideration for future inclusion, or builder-initiated improvements. They encourage exploration by providing "a pathway that's more efficient for getting new stuff into the system," says Watson, who now heads EcoTech International and is a regular USGBC member.

These changes are a testament not only to the USGBC's flexibility, but also to its strength, says Horst. "We got a lot of pushback on the Buildings Performance Initiative, mostly from lawyers" who were worried that buildings in LEED-mandating municipalities would lose certification, says Horst. "If we had done this three years ago, I'm not sure it would have flown."

Not everyone is entirely satisfied. One critic is Douglas Kelbaugh, the former dean of the University of Michigan's Taubman College of Architecture and Urban Design, who didn't seek LEED certification in a since-abandoned university project because he didn't con-

*Inside the NRDC's Santa Monica, Calif., headquarters, skylights bathe offices and stairwells in natural light while windows, vents, and transoms circulate ocean breezes. These features reduce electricity use.*



## Action Case Study

sider the standards sufficiently visionary. Kelbaugh thinks that energy use should be calculated per capita, rather than per square foot. “You can build bigger and bigger buildings, with better and better performance per square foot, but you’re not going to reduce the carbon footprint of a society,” says Kelbaugh. But per capita measures are harder to calculate because they must account for whether occupants are full time or part time, present at once or in shifts, and other factors. Despite his own reservations, Kelbaugh concedes that “for the average client, LEED is really fabulous.”

### MATERIAL CONCERNS

When the USGBC unveiled its first LEED buildings in 2000, it had five full-time staff members, 500 member companies and organizations, and a budget of \$1 million. By 2005, its full-time staff had grown to 60, its members to 6,000, and its budget to \$20 million. Against this background of steady growth arose a controversial, organization-wracking decision to reverse the long-standing ban on trade associations.

Advocates of enfranchising the trade associations, including USGBC cofounder and current CEO Rick Fedrizzi, argued that the USGBC was finally strong enough to resist industry attempts to stack committees or sandbag votes. They also contended that the ban allowed opponents to characterize the USGBC as anti-industry. “When local, state, and even federal officials wanted to use LEED, the trade associations would challenge them by saying: ‘The USGBC is a radical environmental group. They won’t even let us join. The government shouldn’t support such an organization,’” recalls Donald Simon, an environmental attorney who cofounded Northern California’s USGBC chapter. “Of course any company could join, but the trade organizations had the full-time staff to sell this notion. We needed to take that away from them.”

Opponents of letting in the trade associations feared an industry-led gutting of LEED’s strict standards. In 2004, they narrowly prevailed in a USGBC-wide vote to maintain the ban. But in another tight vote in 2005, the anti-ban side won. Several dozen trade groups, from the North American Insulation Manufacturers Association to the American Forest & Paper Association (AF&PA), subsequently joined. Many were longtime opponents of USGBC policies. “Taking them in provided a weapon against them,” says Simon.

Accepting trade organizations also helped the USGBC’s chances of winning accreditation from the American National Standards Institute (ANSI), an organization comparable to the ASTM. Without ANSI’s support, the USGBC had difficulty securing federal support. The USGBC filed for ANSI accreditation in 2005, and received it two years later.

As concerns LEED’s energy requirements, fears of industry sabotage have gone unrealized. But the narrative is more conflicted for building materials. “Overall, a LEED building today is going to be higher performing than it was under the old LEED system. But in terms of products, it remains neutral,” says Bill Walsh, founder of the Healthy Building Network. “It’s definitely a gap in LEED, and the USGBC knows it’s a gap, and is looking for ways to bridge it.”

The inclusion of industry group members, for example, coincided with the USGBC’s evaluation of a proposed LEED credit for



*Light-colored roofing deflects sunlight from NRDC headquarters, keeping the interior cool.*

*Meanwhile, solar panels generate about 20 percent of the building’s electricity.*

avoiding the use of polyvinyl chloride products (PVC), such as vinyl wall and floor coverings. PVC is durable and efficient, but manufacturing it produces dioxin, a poisonous compound that may cause cancer, birth defects, damage to the immune system, and other health problems. Under pressure from manufacturers and users of PVC, the USGBC decided against the anti-PVC credit.

Ironically, some of LEED’s energy-saving measures may actually encourage the use of toxic PVCs, notes Walsh. “LEED gives you credit if you use a white reflective membrane roof because that saves energy,” he explains. “But there are many different formulas for [these roofs],” including ones involving PVCs. “There’s no way in LEED to make that distinction now,” he says. LEED is now ex-

perimenting with a credit that rewards the avoidance of persistent pollutants like dioxin. But the fact that vinyl is even permitted is a measure of industry influence.

Another controversy is about wood. The USGBC gives credit only for wood that is certified by the Forest Stewardship Council (FSC), whose strict forestry and manufacture standards have been praised by environmental groups. Timber companies are pressuring the USGBC to recognize their own standard, the Sustainable Forestry Initiative (SFI). Unlike the FSC, the SFI permits the genetic modification of trees and more chemical use, and does not protect native and indigenous communities. According to environmental groups, these industry-backed standards allow logging in old-growth forests and the habitats of threatened species.

"If you talk to the environmental groups, they'll tell you that LEED has made a difference in the way that forests are managed and how people purchase their wood products," says Walsh. "That's why it's of great concern that the USGBC is considering recognizing other less rigorous standards."

The USGBC has responded by starting to develop guidelines for evaluating product certification standards. The rules will apply not just to FSC and SFI, but to all certification programs as well. "It's not just about this one certification system, but how we can change how other certifications certify," says Horst. "It's almost as complex as biology itself. This is one of the biggest challenges LEED faces."

#### ENTER THE RIVAL

The forest products industry is not the only one spawning multiple certification schemes. LEED itself is facing competition in the form of Green Globes, an alternative building certification system that accepts the controversial SFI standards. Many of its proponents had previously lobbied state governments not to adopt LEED standards.

Green Globes is an offspring of the Building Research Establishment's Environmental Assessment Method, the United Kingdom's green building certification system. It is well regarded in the United Kingdom, and the Canadian government uses the Green Globes standards for building projects costing between \$1 million and \$10 million. For more expensive projects, though, the Canadian government uses LEED.

In the United States, the Green Building Initiative (GBI) runs the Green Globes program. Much of GBI's start-up funding came from the AF&PA, the American Plastics Council, and the Vinyl Institute—some of the same industry groups that resisted Italiano's efforts to green ASTM. When these groups later joined the USGBC, they pushed for weaker wood standards and resisted restrictions on vinyl. Although the groups are involved with both the USGBC and GBI, their influence on the latter is stronger.

Since arriving in the United States in 2005, the Green Globes program has amassed roughly 4,000 people "who are general supporters of GBI, from members to contributors to friends," says Mark Rossolo, GBI's director of state and local outreach. According to Rossolo, an unknown number of cities and 20 states have recognized Green Globes in some fashion, and 100 buildings have been certified by the program.

Not everyone welcomed the Green Globes program to the United States, however. In 2005, Walsh opined in *Healthy Building News*, "This is a textbook model of industry greenwash, designed to confuse the market and drive down standards by rewarding minimal efforts with a maximum public relations bonanza."

Around the same time, Bob Maddox, an executive at renewable energy company Sterling Planet and a current member of the USGBC's Energy and Atmosphere Technical Advisory Group, said that Green Globes "could be manipulated by someone with less than honorable intent, whereas you're not going to be able to do that with LEED." Maddox made his comments in an article about trade group resistance to state-level LEED mandates. He still stands behind that assessment: "[LEED] is basically the only legitimate game around," he says.

GBI rejects these characterizations. "No one person or organization is able to hold undue sway, regardless of who they are," says Rossolo. He notes that GBI works with ANSI to maintain the Green Globes. ANSI also convenes the 33-person technical committee that develops the Green Globes guidelines. "All committee meetings are open to the public, and per ANSI rules the committee is required to respond to, and satisfy, all public comments," he says.

In comparison, the USGBC has at least several hundred people at any given time in its advisory committees and ad hoc working groups, studying questions as instructed by the organization's steering committee. These committees then send their findings and proposals to the USGBC's board of directors. Any proposed changes to the USGBC's rules or LEED point system are put to the 20,000-strong membership for a vote.

"People I talk to generally regard [Green Globes] as weaker," says Makower. "Some have said that Green Globes is more user-friendly than LEED, but that LEED is much more stringent in terms of green criteria."

The best way to compare LEED and Green Globes would be with head-to-head tests of buildings certified by each system. So far, no one has organized such a competition. Indeed, the U.S. Green Globes program is so young that it won't have data of these sorts for several years to come.

In the meantime, the USGBC's strategy is to promote LEED and generally ignore Green Globes. "Doing Green Globes as opposed to nothing is great," says Watson. "My only objection is that it's positioned itself as equivalent to LEED, and it's not. It's a lighter green." According to Watson, builders who use Green Globes can eventually move on to LEED, just as students can go from two-year colleges to four-year universities. "It's a good starter standard," he says.

Regardless of its competition, LEED will continue to evolve. Its next update will be announced in 2011 and will be on the market a year after.

"LEED will never be completely correct," says Barry Giles, vice chair of the USGBC's curriculum committee. "It's an ongoing, organic process to keep moving the target, so that buildings keep getting better."

That process will continue to get faster, predicts Watson: "Now that LEED has market traction, it will be easier for things that get incorporated into LEED to move the market in a much bigger way. We now have a vehicle for continued improvement," he adds. ■