

SPECIAL ADVERTISING FEATURE

BUILDING A GREENER FUTURE

More companies are realizing that buildings can be environmentally friendly, cost efficient, and beautiful as well.



Some business trends take time to establish themselves.

But others set down roots in the marketplace and grow quickly. Often these paradigm shifts create tremendous benefits for corporations, their customers and employees, and other stakeholders.

There's no better example of this than the worldwide green building movement. From its inception, the crusade aimed to achieve a transformation of the status quo. In the words of the U.S. Green Building Council (USGBC), a Washington, D.C.-based organization founded in 1993 to promote and facilitate this trend, "Imagine designing, building, living, and working in buildings that enhance their occupants' health and productivity, conserve the earth's resources, and contribute to their owners' financial success. That's what green buildings are all about."

Large, recent increases in energy costs, inflation, rising water costs, and other financial pressures have all combined to add momentum to this phenomenon. But, as with other socially responsible business strategies, the green building movement pursues a triple bottom line that makes sound sense in any economic environment: environmental benefits (for local neighborhoods and the planet as a whole); social benefits (for the people who work or live in them or in their communities); and financial benefits (generally measured in terms of lower operating costs for companies, both in the short-term and during the entire life of the building, its equipment, and other key features).

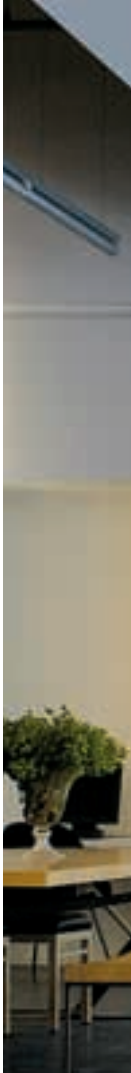
Successful examples abound. Take the Harvard School of Public Health, which carried out a green renovation of a 40,000-square-foot landmark building in

Boston that had once served as a Sears-Roebuck warehouse. Low-flow technology, light sensors, and under-floor ventilation were among the environmentally responsible techniques utilized. The result was a 20% reduction in water use, a 40% reduction in lighting demand, and productivity gains so significant that all combined benefits paid for the cost of green features in just ten months.

Traditionally, it was difficult for owners, operators, and users to figure out what it meant for a building to be environmentally responsible—and how to accomplish it, with decisions that would also make financial sense. But for Harvard and others involved in private and public sector building projects, the process of "going green" is easier than ever these days. That's due to a voluntary certification process, launched by the USGBC in 2000, that was recently upgraded and streamlined to make it more user-friendly and efficient than ever.

The process, known as LEED (for Leadership in Energy and Environmental Design), offers industry benchmarks, independent assessment, and various green building certification levels, culminating in a "platinum" rating for new buildings that achieve the highest level of environmental responsibility. So far, more than 400 buildings have been certified by LEED and about 3,400 projects, representing about a half billion square feet, have registered their intention to seek certification.

LEED's impact on the entire building community—everyone from owners, architects, contractors, and designers to manufacturers, suppliers, real



estate management firms and even bankers and investors—has been impressive. Bob Fox is a good example. As a partner of New York City's Cook & Fox Architects, he is committed to achieving LEED ratings for all the projects his firm works on, including the high-visibility Bank of America headquarters building at One Bryant Park in Manhattan, which is pursuing a platinum rating.

"Our projects include a number of large residential

Look at the Numbers

Fortunately, the financial and business rationales that underlie green buildings are just as strong as the environmental and social ones. Here the numbers tell a powerful story. According to the USGBC, green strategies have the potential to achieve a 40% reduction in water use by office buildings. They could reduce energy costs and harmful emissions from power generation by 30%. They could divert 50% to 75% of construction and demolition waste for



projects, an office building, even a private home in the Hamptons on Long Island," he says. "Every one of them has been carefully examined by our whole team in order to determine the solution that works best for the environment while also fitting within the client's budget."

Fox pauses, then adds, "Nobody's going to write a blank check. Our clients want to do the right thing, but their green strategies need to make financial sense too. That's the reality for all of us."

Green chic: interior design ideas at Interface's showroom in Atlanta

recycling purposes and productive use elsewhere.

These alone can add up to significant cost savings. But there's another reason why this movement has gained such momentum. As Rick Fedrizzi, USGBC's president, CEO, and founding chairman, emphasizes, "People spend 90% of their time indoors each day. Green buildings can have a huge impact on our lives as well as

our environment.” Indeed, the creation of healthy atmospheres to work in, with more daylight and better thermal comfort, could increase worker productivity by as much as \$180 billion. They could save as much as \$58 billion in reduced sick-time costs.

Some executives fear that the cost of green strategies when constructing, renovating, or operating a building will be too high. But key numbers demonstrate the opposite: Thanks to competitive developments in the marketplace, green design elements are now estimated to add no more than 2%—and sometimes nothing at all—to construction costs.

Small additional charges, when they occur, are usually more than paid for by increases in energy efficiency, lower operating costs, and other benefits over time. According to a survey of architects, engineers, and contractors conducted by McGraw-Hill Construction (MHC), respondents expected to achieve a decrease of operating costs from green building practices that ranged between 8% and 9% across industry lines. Building values were expected to increase, on average, by about 7.5%, while ROIs were expected to improve by 6.6%. Meanwhile, thanks to an undeniable green appeal, occupancy rates were projected to increase by 3.5%, despite rents that would be 3% higher on average.

These are all powerful incentives, in large part because they demonstrate that companies can boost profits and shareholder value while “doing good” at the same time. So it’s no wonder that the marketplace has responded. During 2004 approximately 2% of the nation’s new, non-residential construction market was green, with a value of approximately \$3.3 billion. By 2010, MHC forecasts that green building will range between 5% and 10% of new nonresidential construction, adding up to between \$10.2 billion and \$20.5 billion.

This is an extraordinary rate of growth, but it doesn’t surprise Daryl Dulaney, president and CEO of Siemens Building Technologies Inc., a provider of facility performance services and solutions based in Buffalo Grove, Ill. With a goal of making buildings comfortable, safe, productive, and less costly to operate, Siemens has an insider’s perspective on the global business community’s priorities.

“Energy is consistently in the top five expense items

Operating costs can decline 8% or more from green building practices, a survey reveals.



What’s the ROI?

Although many companies are motivated to carry out environment-friendly strategies, they may hesitate because of uncertainties about the ROI. Here are some useful tips to make the process easier:

■ **GOOD ECONOMIC MODELS ARE ESSENTIAL.** It’s not uncommon to see buildings in which green becomes secondary to profit considerations, especially when projects go over budget. That’s ironic, because green buildings and equipment can deliver significant economic benefits and more than pay off over time.

■ **GREEN SUPPLIERS AND MANUFACTURERS CAN FORECAST A COMPLEX STREAM OF SHORT- AND LONG-TERM COST SAVINGS.** The best partners are qualified to make comprehensive strategic recommendations, while also contributing their know-how about specific products and systems.

■ **COMPARISON SHOPPING CAN PAY OFF.** Companies of every ilk have entered this market. They have introduced a plethora of green products and services for any sized budget—everything from recycled wood flooring to green roofs.

■ **UPFRONT COSTS CAN BE OFFSET IN A VARIETY OF WAYS.** It pays to investigate the new federal energy-efficient tax credits that went into effect in January. Among incentives: Businesses can receive a 30% tax credit for installing solar equipment on buildings. In addition, some states and local utilities offer tax incentives to encourage green strategies.

■ **“SOFT” BENEFITS ARE ALSO PART OF AN ROI, EVEN WHEN THEY’RE TOUGH TO CALCULATE.** If greater exposure to sunlight, or a new-and-improved indoor comfort system, boosts employee productivity, and cuts absenteeism or health-care costs, savvy companies will factor those benefits into their green ROI, along with energy savings and other matters. Such fallout benefits are too good to ignore.

for most companies, so it has always mattered. But now it’s attracting C-level consideration,” Dulaney says. “There’s no question that the price of energy has permeated nearly all businesses and business activities. In response,” he adds, “the savviest companies already recognize that they will gain a competitive advantage by solving their energy problems quickly and effectively. This is not just about spending less on business operations—it’s about achieving an important, strategic advantage in the marketplace.”

Strategic advantage takes many forms, of course. Ford Motor Co. has achieved a remarkable 18% reduction in its energy consumption during the past five years, thanks in part to a green building commitment that has earned the auto manufacturer three LEED certifications, with three additional projects registered and awaiting certification. Its highly acclaimed revitalization of the 600-acre Ford Rouge Center, home of the Dearborn Truck Plant, includes the world’s largest “living roof,” which is a sedum-



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planted surface designed to reduce storm-water runoff, insulate the building, create oxygen, and more than double the life of the roof itself.

"When we began the Rouge project in 1999, Bill Ford challenged us to take this facility, which had been an icon of manufacturing during the 20th century, and turn it into a 21st-century icon of sustainable manufacturing," recalls Roger Gaudette, director of asset management for Ford Land, the company's real estate management division. "We had many important goals, from figuring out how to better handle storm water, to creating an improved environment for employees at our manufacturing plant."

Ford's team of experts worked to produce a business case for environment-friendly strategies, and in doing so illuminated the broad range of strategic advantages that may result from green building. "We think that there's a direct correlation between the quality of the environment in which our employees work and the quality of our vehicles," Gaudette notes. "After all, if you have employees who are unhappy about their workplace, you can't hope to create the best possible products."

The Phillip Merrill Environmental Center is constructed with certified wood and recycled materials; Ford's River Rouge plant (right) has the world's largest "living roof."



Not surprisingly, building owners and users seek—and achieve—different strategic advantages from going green. Consider the National Geographic Society, whose headquarters complex in Washington, D.C., became the first existing building to win LEED certification for its operations and maintenance practices.

This extensive renovation project included installing more efficient heating, cooling, lighting, and water-utility systems. Benefits included lower operating costs and waste-disposal expenses, as well as an ability to attract higher rents from outside tenants. Remarkably, the



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property's market value increased by \$4 for every \$1 invested. All this helped National Geographic qualify for improved credit ratings and lower interest rates on its debt instruments.

Experiences like these have helped the green building movement pick up speed. "It's a very exciting time for those of us who are involved in this movement," emphasizes Fedrizzi. "Green buildings are being built and operated. They're all around us. And there's now research to back up the benefits that were anecdotal for so long.

"We now can prove that green buildings are solid financial performers for their owners," he adds. "They have a friendly impact on the environment. People who work in green buildings are more productive and healthier. Kids perform better in green schools. Green retail stores sell more. In green manufacturing settings, there's greater output and less workplace injury." Fedrizzi pauses, then concludes, "With all these proven benefits, why wouldn't you build green?"

The Elements of Success

Here's some good news. Companies can get started with green building strategies at many different price points and levels. In fact, there are plenty of low-cost green practices that can make a real impact.

Siemens, for example, works with its customers to find the right balance between short- and long-term costs and benefits. "They can get started with very low-cost behavioral changes—what we refer to as 'turn it off, turn it down' approaches," explains Dulaney. "As they see results and become motivated to expand strategies, we work with them to assess areas in which they can achieve

Photovoltaics are used to light the atrium of the Lillis Business Complex at the University of Oregon.

larger green benefits over time. We can help them progress along a continuum that might involve incorporating newer and more efficient technologies. There's an appropriate strategy for every company."

At Ford, where 250,000 men, women, and children each year tour the Rouge facility, which also houses a green visitors' center, the auto manufacturer aims to publicize the benefits of environmentally responsible practices. "For those companies that want, or need, to start small, there are still plenty of green strategies that can make a difference," Gaudette explains. "They might decide to remove asphalt—that would entail a demolition cost, true, but then they could replace that with sustainable landscaping, which could help with storm-water runoff. They could plant trees strategically so as to reduce sun loading on their buildings and energy consumption."

Many companies soon realize that they stand to achieve significant benefits from an environment-friendly approach to their cooling systems. Well-planned unit upgrades or system re-designs can more than pay for themselves over time through re-

ductions in energy usage and leakage as well as increased equipment efficiency.

"We know that meeting our customers' needs requires HVAC [heating, ventilation, and air-conditioning] solutions with maximum efficiency and minimal impact on the environment," comments Craig Kissel, president of Trane, a global provider of indoor comfort systems and comprehensive facility solutions with headquarters in Piscataway, N.J. "At the same time, we recognize that the environmental priorities of each of our customers are different and that priorities may change over time." Kissel notes that building owners and users weigh matters like climate change, ozone depletion potential, energy efficiency, and cost considerations against "many other factors, from application demands to regional or national environmental standards."

The USGBC offers a wide range of resources and technical support to help owners and users, as well as those in the building community, achieve environmental goals that fit their budgets. Green manufacturers and suppliers can also serve as valuable partners in this process.

Here's an example. When the Donald Bren School of Environmental Science & Management in Santa Barbara, decided to create a building that would showcase environmental best practices, Trane played an important role.

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The school's goal: to exceed the state's Energy Code Title 24 standards for energy efficiency.

Green strategies that were implemented there included use of the high-efficiency Trane Model CVHE chiller, with 350-ton cooling capacity, to provide chilled water to a looping system that also served several other buildings. By using Trane's Tracer Summit control system, operators were able to continually monitor and control energy use. Thanks to high-efficiency systems like this, Donald Bren Hall exceeded California's energy code requirements by 31%.

A Modular Approach

The best thing about the green building movement is its flexibility. Some companies are only able to focus on implementing individual strategies or upgrading one or two pieces of equipment—and that's just fine. But

GM's Flex Fuel Vehicles

Rising energy costs have made the development and use of alternative energy sources a more important priority than ever. So it's no surprise that the LEED rating system encourages their use, by awarding points toward certification to buildings that provide preferred parking for alternative-fuel vehicles, install alternative-fuel refueling stations, or take other significant steps. (For more specifics, visit usgbc.org.)

With more than 1.5 million General Motors vehicles in the market that are capable of utilizing a blend of ethanol and gasoline (E85), GM is a leader in this area. "Diversifying our energy supply is of national importance," emphasizes Elizabeth Lowery, the company's vice president of environment and energy. "GM is pursuing gasoline-saving solutions on many fronts on the way to our ultimate vision of hydrogen-fuel-cell-powered transportation."

In an effort to raise consumer awareness and market acceptance of E85-powered vehicles, GM recently unveiled its new "Live Green Go Yellow" advertising campaign during Super Bowl XL. "E85 ethanol burns cleaner than gasoline and is a renewable domestic fuel that can enhance the nation's economy and energy security," notes Lowery.

This year, GM will offer nine E85 FlexFuel models in the U.S., including new full-sized utilities, such as the Chevy Tahoe and the GMC Yukon. These vehicles can operate with either traditional gasoline or E85, available from more than more than 400 public E85 fueling sites across the U.S. Thanks to GM's OnStar technology, car owners with subscriptions to this advisory service can locate nearby fueling sites with just a touch of a button.

For those interested in learning more about alternative fuels, GM's educational website, LiveGreenGoYellow.com, is well worth a visit. Its free tools include the "GM Cornulator," which calculates the amount of petroleum saved with E85.

others are ready to tackle the big picture, which probably includes heating, cooling, and lighting systems, and often other features as well.

During recent years, Adobe Systems Inc., the design software company, carried out a wide range of green improvements in its three-building headquarters complex in San Jose. Although the upfront cost was \$1.1 million, it was partially offset by more than \$300,000 in utility rebates. And the long-term benefits for the company as well as the environment are impressive: Thanks to a reduction in energy use of over 35% per person, Adobe is effectively reducing energy and energy-related costs by \$1 million annually. Adobe is currently pursuing LEED certification for the million-square-foot complex.

One of the most exciting things about the green building movement is, quite simply, the way that its horizons keep expanding. Bob Fox's description of Bank of America's new building seems, at times, like science fiction. The building will be about three times as efficient as a typical electrical plant and will have its own five-megawatt co-generation plant, for example, which will produce roughly 70% of the building's annual electrical needs. "At night, we're going to use some of this energy to make ice, and then during the day we'll melt it to supplement our air-conditioning system," he explains.

That, of course, is just one element in a state-of-the-art green design: "Our cellar is 80 feet deep. It consists of three levels, and we need three sub-pumps, because there are underground streams and there's water in the rock fissures." Believe it or not, that added up to a green opportunity. "We said, 'We'll put that into our water system—we'll use it to flush toilets,'" Fox says, adding, "Because of the temperature of that water, we'll also be able to use some of it in our heating and cooling systems."

What about the expense? Some of it is offset by state tax credits; New York City also decided to award the building a 25% reduction in the cost of its water. But Fox argues that some of the most effective green design elements represent no-cost additions. "When you're doing this at the new construction stage, this is equipment you'd need to buy anyhow. And consider, for example, those three water pumps in the basement. The pumps don't care where they send the water: into the sewer or into the tank. The cost is neutral, but there are many green benefits."

The Future is Now

What's next for green building? In a movement that prides itself on transformation, the biggest change is likely to come from inside the construction industry, thanks to an important breakthrough that should accelerate growth to unparalleled levels.

Here's the reason for all that optimism. The USGBC approached Adobe in the summer of 2005 regarding ways to leverage Adobe's technologies as part of the LEED refinements initiative. Thanks to a partnership between the USGBC and Adobe, the LEED certification process has been streamlined and enhanced in ways that should make it easier, quicker, and, from a variety of perspectives, just plain better. Launched in November

2005, the upgraded rating-system documentation and certification process relies upon Adobe LiveCycle server software, Adobe Acrobat desktop software, and the Adobe Portable Document Format (PDF).

Seldom do upgrades generate this level of excitement. "With LEED, there's always been a constructive tension between the market 'uptake' and the technical rigor," notes Tom Hicks, a vice president for LEED at the USGBC. "With Adobe's help, we've been able to maintain the rigor while making it easier for the market to take it up. Building teams can register for certification, provide documentation, and work their ways through the process online, without needing some special piece of software. It's now become very easy to do, and we expect many more project teams to file for certification as a result."

Adobe is equally enthusiastic. "It's especially gratifying to help the certification process go online," says Eugene Lee, vice president of vertical and solutions marketing for Adobe. "Isn't it ironic that, until now, the process of applying for green building certification required binders and binder's worth of paper?"

Not surprisingly, other changes are also on the horizon. The USGBC is exploring ways to help businesses pursue green strategies across entire portfolios, rather than on a building-by-building basis. "We're also hoping to launch a version of LEED that will introduce a 'bio-regional' green building approach," Fedrizzi reveals. "This will take into account the fact that the U.S. consists of a number of distinct regions, all of which face their own environmental challenges."

This movement will continue to expand and evolve, but one point is clear. Despite conventional wisdom, it's becoming easier to build green.

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Resource Guide

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