



Executive Summary

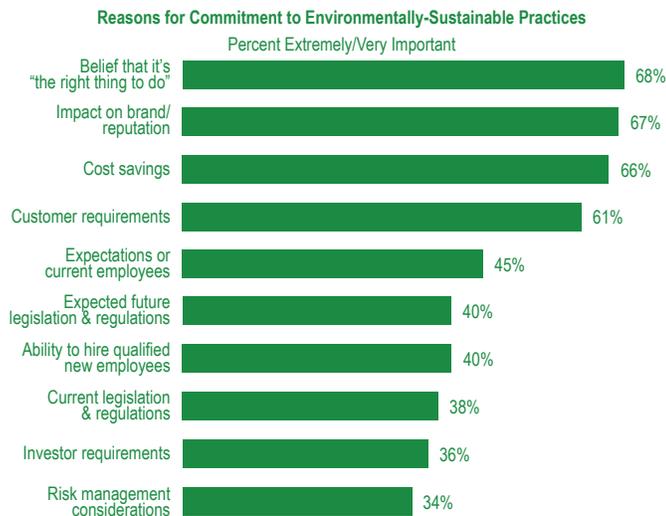
Turner Construction Company's latest Green Building Market Barometer, which surveyed more than 700 executives, found that companies remain committed to constructing environmentally-sustainable buildings. Almost all the executives participating in the 2012 survey said their companies would incorporate at least some Green features in their next construction project, citing the potential to reduce energy costs and ongoing operations and maintenance costs as the most important reasons for constructing Green buildings. While the commitment to constructing Green buildings remains high, fewer executives said their companies were likely to seek LEED certification when constructing a Green building.

Brightening Outlook for Construction Projects

Among real estate owners, developers, and corporate owner-occupants, 64% said they expect to launch construction projects over the next 12 months (up from 46% in the 2010 survey), and 71% said they expect to undertake renovation projects over the same period (up from 58% in the 2010 survey).

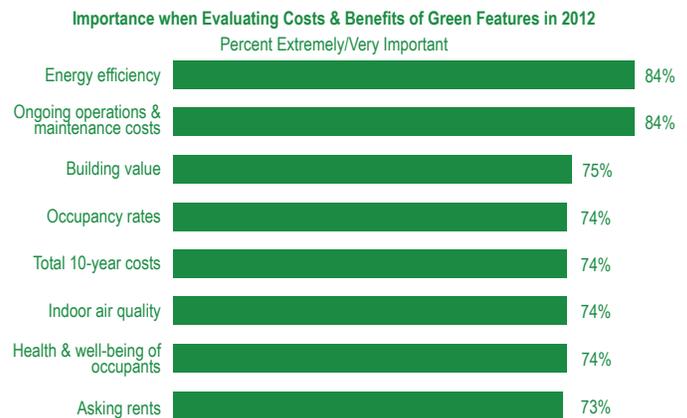
Widespread Commitment to Sustainable Practices

Fifty-six percent of executives said their companies were extremely or very committed to following environmentally-sustainable practices in their operations, while an additional 34% said they were somewhat committed. In addition to citing financial reasons for this commitment, executives were most likely to cite broader considerations as extremely or very important including belief that it's the "right thing to do," (68%), impact on brand/reputation (67%), and customer requirements (61%), along with cost savings (66%).



Reducing Energy Costs and Operating Expenses are the Key Drivers to Green Construction

Executives were most likely to cite financial factors as being extremely or very important to their companies' decisions on whether to incorporate Green features in a construction project: energy efficiency (84%) and ongoing operations and maintenance costs (84%).



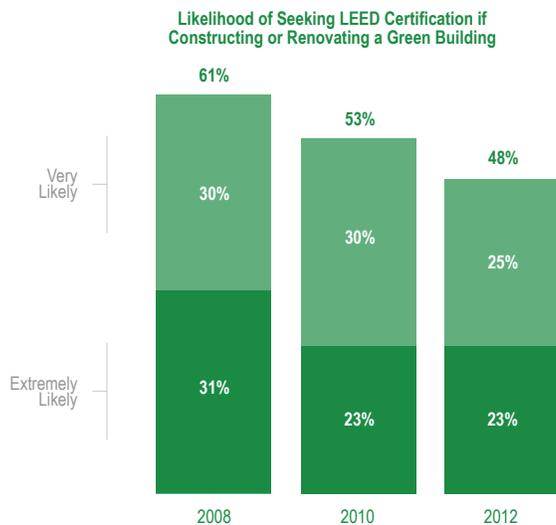
In addition, executives cited that building value (75%) and occupancy rates (74%) were important considerations when evaluating the benefits of incorporating Green features into their building. However, two-thirds or more of executives also said that non-financial factors were extremely or very important such as indoor air quality (74%), health and well-being of occupants (74%), satisfaction of employees/occupants (69%), impact on brand/reputation (67%), and employee productivity (67%). However, only 37% of executives said it was extremely or very important to their companies to minimize the carbon footprint of their buildings. This suggests that the decision to incorporate Green features is driven by a desire to reduce cost followed by an interest to improve the indoor environment for building occupants, rather than broader concerns about the impact of buildings on the global environment.



A large majority of executives said their companies would be extremely or very likely to incorporate Green features if they were undertaking a construction project. Consistent with their focus on reducing costs, 81% of executives said their companies would be extremely or very likely to invest in energy efficiency improvements. Fewer executives, but still more than half, said their companies were extremely or very likely to invest in improved indoor environmental quality (63%), improved water efficiency (57%), or Green materials (53%).

Fewer Companies Plan to Seek LEED Certification

Although the vast majority of companies remain committed to Green buildings, the percentage of executives who thought it was extremely or very likely that their company would seek LEED (Leadership in Energy and Environmental Design) certification if they constructed a Green building was 48%, down from 53% in the 2010 survey and 61% in the 2008 survey. Among executives who said their companies were not likely to seek LEED certification, the most important reasons cited were the cost of the certification process (82%), staff time required (79%), time required for the process (75%), and the overall perceived difficulty of the process (74%).



In addition, many companies seem to have become more knowledgeable about the means and methods of designing and constructing Green buildings and are less reliant on LEED as a checklist or a scorecard. This is indicated by the fact that 52% of executives who are not likely to seek LEED certification would prefer to use their own company's green building standards. However, of those who would seek LEED certification, 47% would seek Gold or Platinum.



Forty-one percent of all the executives surveyed thought it was at least somewhat likely that their companies would consider seeking certification under a rating system other than LEED if they constructed a Green building. Among these executives, 63% said they would be extremely or very likely to consider seeking certification under ENERGY STAR, which addresses energy efficiency. Roughly 20% of these executives said they were extremely or very likely to consider seeking certification under Green Globes, Living Building Challenge, or BREEAM (Building Research Establishment Environmental Assessment Method).

Concerns Persist about Construction Costs and the Length of the Payback Period

When asked what length of payback period would be acceptable when considering Green features, 44% of executives said they would accept five years and almost 80% of executives said they would accept a payback period of five years or longer. Despite the acceptance by most executives of an extended payback period, 61% of executives still felt that the length of the payback period was an extremely or very significant obstacle to the construction of Green buildings while 62% cited higher construction costs.





Introduction

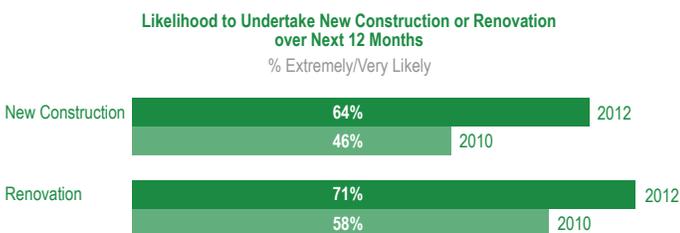
Over the past several years, the Green building market has exploded. In 2005, Green building construction projects had a total value of \$10 billion.¹ A September 2012 McGraw-Hill analysis predicted the total market would reach \$85 billion in 2012.² Turner Construction Company, the top Green contractor in the U.S. according to Engineering News Record, generated 53% of its sales revenue from Green projects in 2012, up from just 24% in 2006

The vast majority of the executives surveyed said they would incorporate Green features if they were undertaking a construction or renovation project. This growth in the Green building market reflects a broader commitment to environmentally-sustainable practices by corporate America. Customers, investors, employees, and the general public increasingly expect companies to following sustainable practices.

The 2012 Market Barometer assesses these continuing trends and examines the factors driving the decision to build Green buildings, the acceptable payback period for investing in Green features, the remaining obstacles to Green construction, and the role of LEED and other Green building rating systems.

Brightening Outlook for Construction Projects

The 2012 Market Barometer found increasing optimism among real estate executives since the prior survey in 2010. Sixty-four percent of the real estate owners, developers, and corporate owner-occupants surveyed said they expect to undertake new construction projects over the next 12 months (up from 46% in the 2010 survey), and 71% expect to undertake renovation projects over the same period (up from 58% in 2010).



This outlook reflects the improving financial position for both corporations and institutions, allowing many to move ahead with projects they had postponed. These results are also consistent with economic data released during the fall of 2012. In September 2012, the U.S. unemployment rate dipped below 8% for the first time in four years, and the economy grew at an annual rate of 2% in the third quarter, beating expectations. Stock values more than doubled from March 2009 to November 2012.³ And the U.S. Census Bureau reported that in October total nonresidential construction spending was up more than 5% compared to one year earlier.

Widespread Commitment to Sustainable Practices

Companies continue to report their commitment to environmentally-sustainable practices, not only in real estate, but across their operations. Ninety percent of executives said their companies are committed to following environmentally-sustainable practices in their operations, with 56% percent extremely or very committed, and 33% somewhat committed.

The reasons driving this commitment go far beyond a simple question of cost savings. Although many executives did cite cost savings (66%), the other top reasons were belief that it's the 'right thing to do,' (68%), impact on brand/reputation (67%), and customer requirements (61%). These are broader considerations involving social responsibility and the growing realization that sustainability can provide an important competitive advantage. This is also reflected in the biggest changes from the 2010 survey: a growing number of executives said their companies are committed to environmentally-sustainable practices because of the expectations of current employees (45%, up from 36% in 2010) and the ability to hire qualified new employees (40%, up from 33% in 2010).

The move toward sustainability is becoming central to the way a company views itself and wants to be seen by its employees, customers, investors, and the general public. One recent study by Harvard Business School researchers found companies that are leaders in sustainability "significantly outperform their counterparts over the long-term, both in terms of stock market and accounting performance."⁴



Increasingly, the importance of sustainability extends beyond a company's operations to include the vendors and service providers it chooses to engage. Seventy-five percent of executives said their companies consider the level of sustainable practices when choosing a supplier of goods or materials, with 48% calling it an extremely or very important consideration. The level of sustainable practices is nearly as important when selecting service providers. Seventy-four percent of executives said their companies take it into account, with 42% saying it is an extremely or very important consideration in the selection process.

Among executives at companies where sustainable practices are at least somewhat important when selecting vendors and service providers, the use of Green materials was the factor cited most often as a consideration (87%), followed by amount of waste in operations (78%). Roughly 70% of executives said their companies also consider energy efficiency of operations, Green packaging, water efficiency of operations, and carbon footprint.



Reducing Energy Costs and Operating Expenses are the Key Drivers to Green Construction

While executives cited broad considerations in their companies' commitment to sustainable practices, they focused more on the bottom line when asked about their decisions to incorporate Green features in a construction or renovation project. Executives said the top two considerations when deciding whether to incorporate Green features are energy efficiency and ongoing operations and maintenance costs. Eighty-four percent of executives said both are extremely or very important factors in evaluating the costs and benefits of Green features. Other financial factors that rank high are: building value (75%), total 10-year costs (74%), and asking rents (73%).

The impact of Green features on a building's occupants also heavily influences decision-making. More than two-thirds of executives said the following factors are extremely or very important: indoor air quality (74%), health and well-being of occupants (74%), satisfaction of employees/occupants (69%), and employee productivity (67%). Researchers are now calculating the bottom line impact of Green buildings on productivity. A study of PNC bank branches by University of Notre Dame management professors Edward Conlon and Ante Glavas found that the LEED-certified branches outperformed their non-certified counterparts by \$461,300 per employee.⁵ Employee hiring and retention was an extremely or very important consideration in building Green for almost half of the companies. Another key driver for Green construction is impact on brand/reputation, rated as extremely or very important by 67% of executives. It may be assumed that companies recognize that these factors—health, productivity, and satisfaction of workers, as well as brand identity—have economic benefits as well, although they may be harder to quantify.

Sixty-seven percent of respondents cited water efficiency as a key factor in their decisions. The large gap in the percentage of executives who consider energy efficiency highly important (84%) compared to water efficiency (67%) may be due to the fact that water usage accounts for a smaller percentage of building operating expenses than energy usage. Yet, water efficiency is likely to become a larger consideration as costs rise. Single-family residential water prices in 30 major U.S. cities went up an average of nearly 18% from 2010 to 2012⁶ and monthly costs doubled in 29 communities from 2000 to 2012.⁷ By 2035, the country's water systems are expected to require as much as



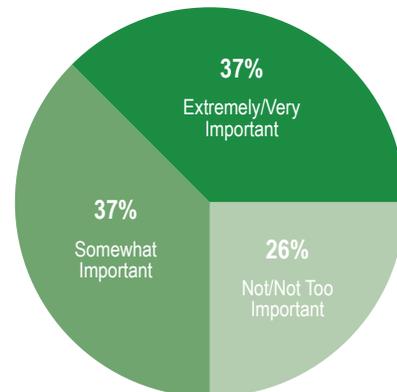
\$1 trillion in infrastructure improvements, which will likely lead to higher rates.⁸ There is also growing awareness that water is a finite resource. One study predicts that by 2030 the world's water requirements will exceed current sustainable supplies by 40 percent.⁹

The vast majority of executives said their companies would be extremely or very likely to incorporate Green features if they were constructing a new building or undertaking a renovation. Executives were most likely to say their companies would invest in energy efficiency (81%), consistent with its large economic impact and the importance placed on reducing ongoing costs. Buildings account for 41% of total energy consumption and 73% of electric consumption in the United States.¹⁰ The opportunity to reduce costs through energy efficiency can be significant. For instance, LEED Gold buildings in the General Services Administration's (GSA) portfolio typically consume 25% less energy than the average commercial building.¹¹ Those GSA LEED Gold buildings also consume 11% less water than the average commercial building.¹² However, once again, saving water was seen as less important than saving energy, with 57% of executives saying that improved water efficiency would be an extremely or very likely investment. Indoor environmental quality (63%) ranked slightly higher, and 53% of executives said they were extremely or very likely to invest in Green materials. Among the executives who said their companies would be extremely or very likely to use Green materials, the top choices were materials with low or no volatile organic compounds (VOCs) (90%) and those that contain recycled content (89%).



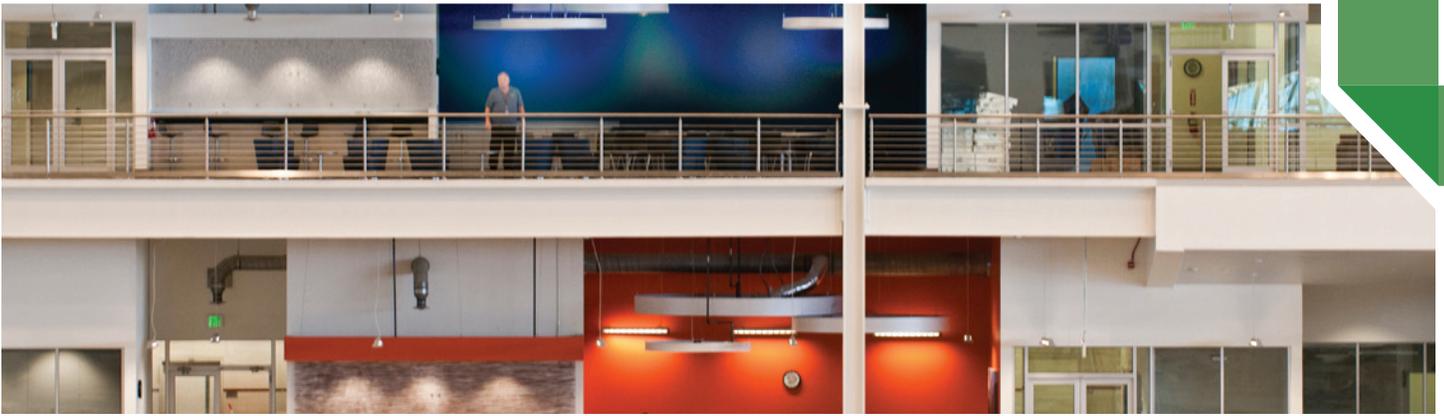
Although the majority of executives said they plan to incorporate a number of Green features in their projects, just 37% of executives said minimizing the carbon footprint of their buildings is extremely or very important to their companies. This suggests that the decision to incorporate Green features is more about reducing costs and pleasing occupants through better indoor environmental quality, rather than broader concerns about the impact of buildings on the environment. Evaluating the performance of Green buildings in operation is becoming the norm, with 81% saying they conduct post-occupancy evaluations. More than half of executives said their companies review performance at least once a year, including 26% who said they do so on an ongoing basis.

Importance of Minimizing Carbon Footprint of Buildings



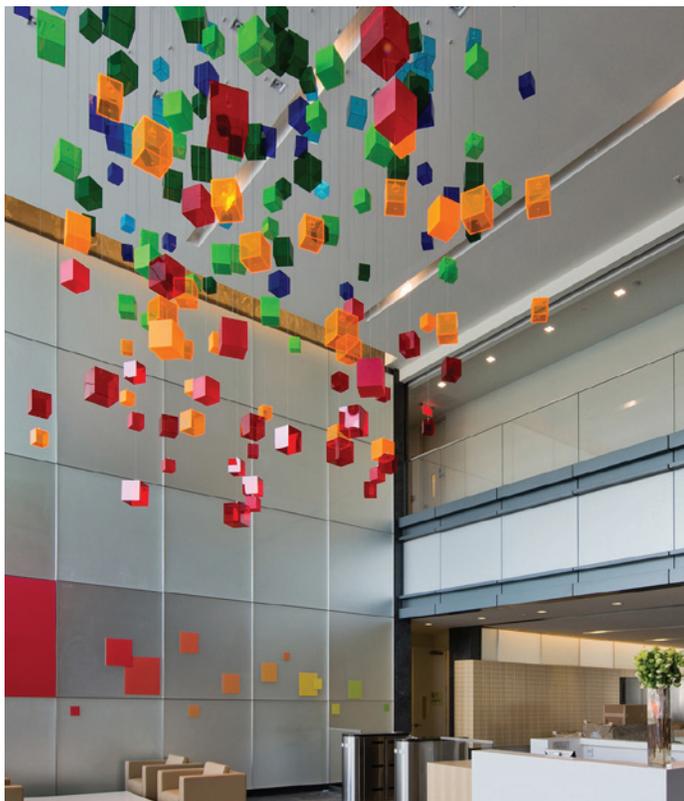
Companies use building evaluations as a way to reduce operating costs and improve performance. The most important reasons reported for conducting evaluations are to monitor operating costs and financial performance (80%) and to improve building performance (75%). Fifty-three percent said evaluations are important to assess the impacts on tenants or employees. Just 40% said the evaluations are important to provide information for company sustainability reports.

Some early critics of LEED cited the fact that it focused on the design and construction of Green buildings but did not address their ongoing operation and maintenance. More recent versions of LEED have addressed this concern by including requirements for post-occupancy evaluation. The next version of LEED will require sub-metering of building systems as a prerequisite for certification.



Fewer Companies Plan to Seek LEED Certification

LEED has become the leading global standard for measuring building sustainability since its launch in 2000. The U.S. Green Building Council (USGBC) developed the voluntary certification program. LEED-registered building projects are independently verified by the Green Building Certification Institute (GBCI). As of October 2012, more than 13,000 commercial buildings in the U.S. had been certified under LEED, and another 30,000 were pursuing certification.¹³ Government agencies have been strong proponents of LEED—from 2000 to 2010, 400 cities, counties, states, and federal agencies across 45 states approved policies requiring LEED standards for their new or renovated buildings.¹⁴ LEED certification is the most widely used third-party verification of Green construction standards. LEED has been widely adopted in all sectors of the real estate market, in every region of the U.S. and increasingly around the world. Today, 50% of the total LEED square footage is outside the U.S.¹⁵



However, while the commitment to incorporating Green features in building projects is widespread, the 2012 Barometer found a continuing decline in the assumption that companies would seek LEED certification for their Green buildings. Only 48% of executives said it is extremely or very likely that their company would seek LEED certification for a Green construction or renovation project. That's down from 54% in the 2010 survey and 61% in the 2008 survey. Cost, time, and the difficulty of the certification process are the leading reasons cited for the declining commitment to LEED. Among executives who said their companies are not likely to seek LEED certification, 82% said the cost of the certification process is an extremely or very important reason. Other highly important reasons are: staff time required (79%), time required for the process (75%), and the perceived difficulty of the process (74%).

“Cost, time, and the difficulty of the certification process are the leading reasons cited for declining commitment to LEED.”

LEED certification also appears to be less of a priority for companies that have developed their own building standards. Fifty-two percent of executives at companies not likely to certify under LEED said they would prefer to rely on their company's standards. This indicates that, in the decade since LEED was first introduced, companies have become more knowledgeable about the means and methods of designing and constructing Green buildings. This makes them less reliant on seeking formal LEED certification, although many are still using LEED as a standard to assess the design and performance of their buildings. Today, many projects that forgo formal certification are still requested to be built “to the LEED standard” or that they be “LEED equivalent.”

In addition, building codes today are more likely to include more rigorous environmental standards. For example, California adopted the first mandatory Green building code in the country.¹⁶ Taking effect in January 2011, CalGreen requires all new buildings in the state to conserve water, use interior materials that are less prone to emitting pollutants, and recycle construction waste. It also steps up enforcement of energy efficiency for large non-residential buildings. Other states, including Massachusetts, Florida, and Oregon, have adopted the International Energy Conservation Code (IECC) as part of their state-wide building codes, and Boston has incorporated LEED standards into its building code.



More Companies Consider Other Ratings Systems

Forty-one percent of the executives surveyed said it is at least somewhat likely that their companies would consider seeking certification under a rating system other than LEED if they constructed a Green building. Among the executives who said they would consider another type of certification, ENERGY STAR was mentioned most often, with 63% saying they would be extremely or very likely to consider seeking certification. ENERGY STAR, a joint program of the U.S. Environmental Protection Agency and the Department of Energy, addresses only energy efficiency and is consistent with LEED. In fact, a minimum ENERGY STAR score of 69 is a prerequisite for any existing building seeking LEED 2009 certification. More than 16,000 U.S. buildings have been certified as ENERGY STAR as of April 2012.¹⁷

Other types of certifications executives said they would be extremely or very likely to consider include Green Globes (25%), which advertises itself as a “business-friendly and affordable alternative to LEED,” and Living Building Challenge (21%), a highly rigorous system that is not intended to compete with LEED certification. Nineteen percent of executives said they would be likely to consider BREEAM (Building Research Establishment Environmental Assessment Method), which has certified 200,000 buildings globally, most of them in the UK.¹⁸

If companies were to pursue LEED certification, 41% of executives said their preferred designation is Gold, while 38% chose Silver. Only 15% chose the lowest ranking of Certified and just 6% chose the highest ranking of Platinum. One indicator of the generally higher aspirations for Green building projects is that of those who would seek LEED certification almost half (47%) would seek Gold or Platinum, the highest levels.

The USGBC plans to revise LEED substantially in 2013, which will make LEED certification even more challenging. The new standards aim to ensure certified buildings use more environmentally-friendly materials and achieve greater energy and water use efficiency. This means builders will have to do more to obtain certification.¹⁹ Revisions were originally scheduled for release in 2012, but many in the industry objected that there were too many significant changes since the standards were last issued in 2009.

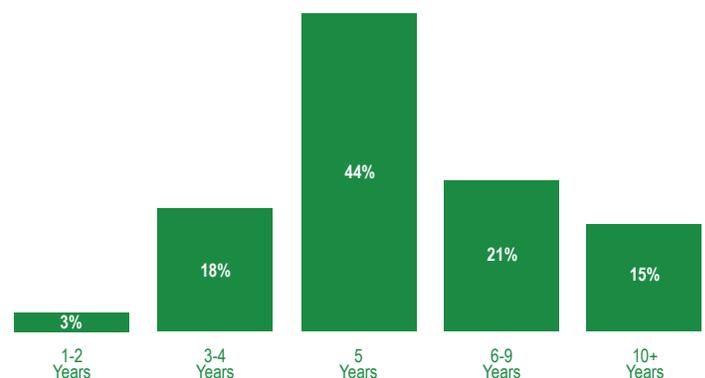
Of the executives who said their companies would be at least somewhat likely to seek LEED certification, 65% said strengthens our brand is an extremely or very important reason. More than half (57%) said provides an objective standard of performance is as important factor. This is another indication that LEED is increasingly viewed as a tool to burnish a company’s reputation rather than simply a “how to” guide for Green construction.

Concerns Persist about Construction Costs and the Length of the Payback Period

A major theme of the 2012 Green Building Market Barometer is the importance executives place on reducing costs. So it’s understandable that financial concerns top the list of obstacles to Green construction.

When asked the maximum length of payback period that would be acceptable when considering Green features, 44% of executives said they would accept five years, and 36% said they would accept six years or longer. While this reflects a shift from what executives expressed in the 2010 Barometer, where 33% said they would accept five years and 45% chose a longer time frame, it still indicates more executives are willing to look beyond the traditional period of one to three years to recover their investment, with fully 80% of executives willing to accept a payback period of five years or longer.

Maximum Acceptable Payback Period when Incorporating Green Features





Even though 80% of executives said they would accept a payback period of five years or longer, 61% of executives still said that the length of the payback period was an extremely or very significant obstacle to the construction of Green buildings. This ranked just behind the obstacle cited most, higher construction costs (62%). However, a 2007 study found there was no significant difference, on average, in the cost of constructing Green buildings compared to non-Green buildings.²⁰

Difficulty in quantifying benefits is seen as an extremely or very significant obstacle by 49% of executives. While the immediate cost savings from more efficient operations are easy to quantify, it is more difficult to measure the positive impacts on such items as building value, employee productivity, and satisfaction of occupants and employees.

Two obstacles showing the largest decline from the 2010 Barometer are higher operating and maintenance costs (41%, down from 50%) and more complex operations and maintenance requirements (36%, down from 40%). This appears to reflect the fact that companies are becoming more experienced and knowledgeable about operating Green buildings.

It is remarkable that after ten years of data showing the cost premium for Green buildings averages between zero to 2%, that so many decision makers still see the costs of construction to be an obstacle. It may be that the obstacle is the high cost of construction in general, whether the project is a Green building or not. That these misperceptions persist emphasizes the continuing need for education and information about the true costs and benefits of Green buildings.

Profile of Survey Respondents

Turner's 2012 Green Building Market Barometer surveyed 718 executives in October 2012. The executives participating in the survey were from the following principal types of companies: architecture (49%), construction (19%), real estate consulting (11%), corporate owner-occupants (9%), developers (9%), engineering (9%), real estate owners (7%), corporate tenants (3%), and broker/real estate service providers (2%).²¹

Respondents are active in a wide variety of different types of buildings including office (77%), retail (51%), healthcare (47%), higher education (46%), industrial (44%), multi-unit residential (43%), K-12 education (41%), data centers (32%), single-family homes (30%), hotel (29%), sports and entertainment (29%), R&D (27%), and aviation and transportation (22%).

As in the 2010 survey, email invitations were sent to subscribers of several real estate publications. The percentage of respondents who came from email invitations sent to subscribers of Environmental Design & Construction was significantly greater in the 2012 survey (83%) than in the 2010 survey (34%). In general, subscribers to this publication were more positive about Green buildings than other respondents. To gain a more representative picture of industry perceptions and to ensure comparability with the prior survey, the 2012 data were weighted so that the responses of subscribers to Environmental Design & Construction had the same weight as they did in the 2010 survey.



Previous versions of Turner's Green Building Market Barometer can be found at: <http://www.turnerconstruction.com/about-us/sustainability/green-market-barometer>

1 Harvey M. Bernstein, Presentation: Green Outlook 2013 & ENR CICI, McGraw-Hill Construction, 2012
 2 Brett Walton, "The Price of Water 2012," Circle of Blue, May 10, 2012, <http://www.circleofblue.org/waternews/2012/world/the-price-of-water-2012-18-percent-rise-since-2010-7-percent-over-last-year-in-30-major-u-s-cities/>
 3 David Francis, "Is the Economic Recovery Real?" US News & World Report, November 6, 2012
 4 Robert G. Eccles, Ioannis Ioannou, and George Serafeim, "The Impact of a Corporate Culture of Sustainability on Corporate Behavior and Performance," Working Papers: Harvard Business School, November 14, 2011, <http://hbswk.hbs.edu/item/6865.html>
 5 Shannon Chapla, "Green companies earn more 'green,' new study shows," ND Newswire, Notre Dame News, March 26, 2012, <http://newsinfo.nd.edu/news/29832-more-than-tree-hugging-green-companies-earn-more-green-new-study-shows/>
 6 Kevin McCoy, "Water costs gush higher," USA TODAY, Sept. 29, 2012, <http://www.usatoday.com/story/money/business/2012/09/27/rising-water-rates/1595651/>
 7 "Buried No Longer: Confronting America's Water Infrastructure Challenge," American Water Works Association, 2012, <http://www.awwa.org/Government/Content.cfm?ItemNumber=1062&navItemNumber=58521>
 8 Charting Our Water Future: Economic frameworks to inform decision-making, The 2030 Water Resources Group, 2012, http://www.2030waterresourcesgroup.com/water_full/Charting_Our_Water_Future_Final.pdf
 9 Department of Energy (2011). Buildings Energy Data Book. Buildings Share of Electricity Consumption/Sales. Accessed October 26, 2011 via http://buildingsdatabook.eren.doe.gov/docs/xls_pdf/6.1.1.pdf
 10 U.S. Department of Energy (2011). Re-Assessing Green Building Performance: A Post Occupancy Evaluation of 22 Buildings.
 11 U.S. Department of Energy (2011). Re-Assessing Green Building Performance: A Post Occupancy Evaluation of 22 Buildings.
 12 Thomas Frank, "Green code under construction," USA TODAY, October 24, 2012, <http://www.usatoday.com/story/news/nation/2012/10/24/leed-update-green-building-revision/1650519/>
 13 Jeffrey Spivak, "Green Building Growing Pains," The Atlantic Cities, June 26, 2012, <http://www.theatlanticcities.com/politics/2012/06/green-buildings-growing-pains/2369/>
 14 U.S. Green Building Council website; <https://new.usgbc.org/leed>
 15 Margot Roosevelt, "First in the nation: California adopts mandatory green building code," Los Angeles Times, January 14, 2010, <http://latimesblogs.latimes.com/greenspace/2010/01/green-building-code-california-usgbc.html>
 16 "EPA Releases List of Cities with the Most Energy Star Buildings in the United States," News Release, Environmental Protection Agency, April 11, 2012, <http://yosemite.epa.gov/opaladmpress.nsf/bd4379a92c6ceec8525735900400c273f44410d94c8a098852579dd004a0183?OpenDocument>
 17 BREEAM Web site, www.breeam.org
 18 Thomas Frank, "Green code under construction," USA TODAY, October 24, 2012, <http://www.usatoday.com/story/news/nation/2012/10/24/leed-update-green-building-revision/1650519/>
 19 Lisa Fay Matthiessen, Peter Morris, "2007 Cost of Green Revisited," Davis Langdon: <http://www.davislangdon.com/USA/Research/ResearchFinder/2007-The-Cost-of-Green-Revisited/>
 20 In this and the following paragraph, the percentages total to more than 100% since executives could provide multiple responses about industry and building type.