



*Barbara Wagner, VP of Clark Construction indicated that, "We are not only building many LEED certified projects, but we have ourselves organized friendly competitions between our various project teams. For example, some teams are even riding their bikes to work, using biodegradable cups, and upgrading their construction trailers to conserve energy and water."*

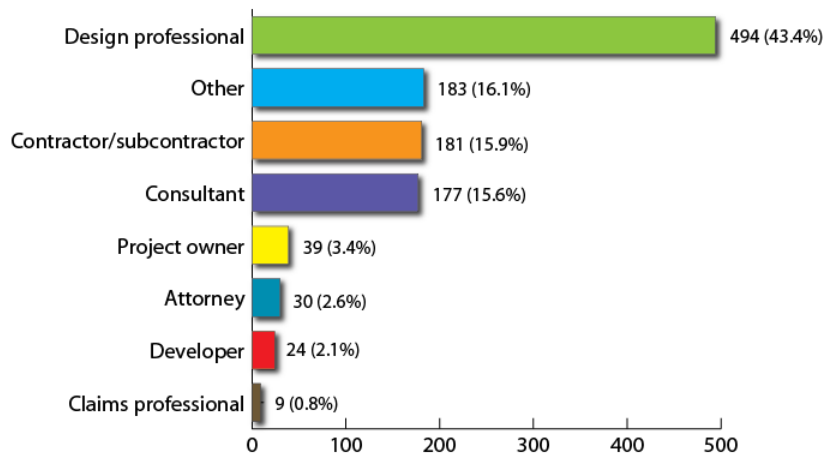
## Overview

In November and December, 2007, over 1,200 construction and design professionals, including members of the US Green Building Council and attendees of the 2007 Construction SuperConference were surveyed by Allen Matkins and CTG. The results of our Second Annual Green Building Survey and the follow-up interviews support the ever-increasing trend towards LEED, green and sustainable building efforts.

During the survey and interview process, a number of design and construction organizations that told us that they were striving to be "greener" internally and externally. Internally by improving their own work environments and reducing their own carbon footprints and externally by increasing the number of LEED, green and sustainable projects that they are designing or constructing.

## Demographics

Our survey respondents included a large number of design professionals followed by nearly equal numbers of contractors and owners.

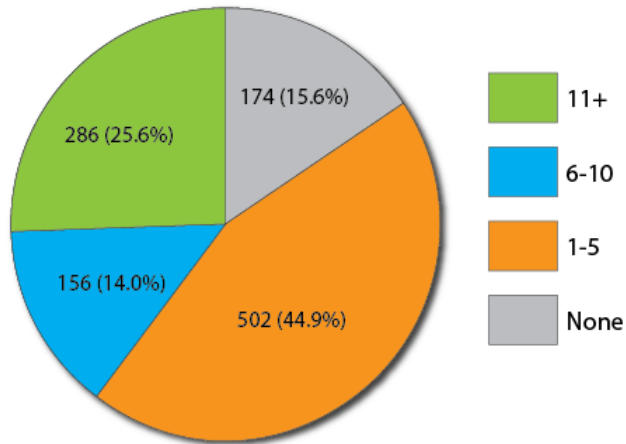


*The Leadership in Energy and Environmental Design (LEED) Green Building Rating System™ is the nationally accepted benchmark for the design, construction, and operation of high performance green buildings.*

*LEED promotes five key areas of human and environmental health: sustainable site development, water savings, energy efficiency, materials selection, and indoor environmental quality.*

### How many green projects have you completed?

Our first question focused on the number of LEED, green or sustainable projects completed by each respondent. The largest response group completed between 1 and 5 LEED, green or sustainable projects. Nearly a quarter of the respondents indicated that they finished 11 or more green projects. Accordingly, the respondents represent a broad base of LEED, green and sustainable project experience.

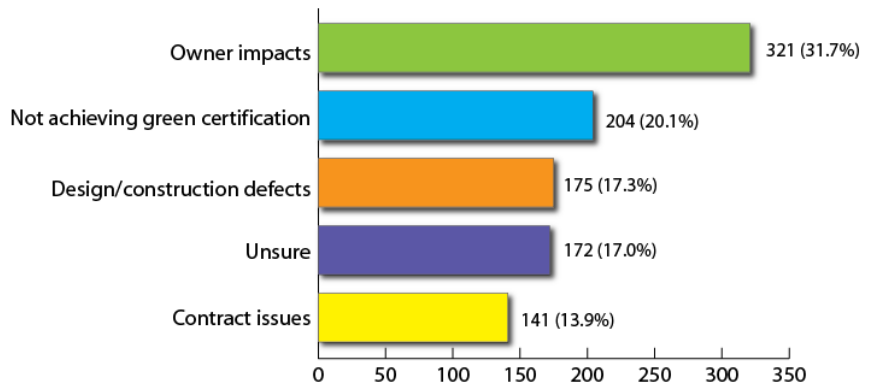


*According to Phillip Croessmann Managing Principal from Matrix IMA, "To minimize possible risks we engage in design lead/design build projects where we have direct input and communication with our subcontractors."*

*"We look at cost in terms of value. Some levels of green can be achieved with good design and at little over or no cost. Other components need go be evaluated over the entire life cycle of the project."*

### What are the biggest risks?

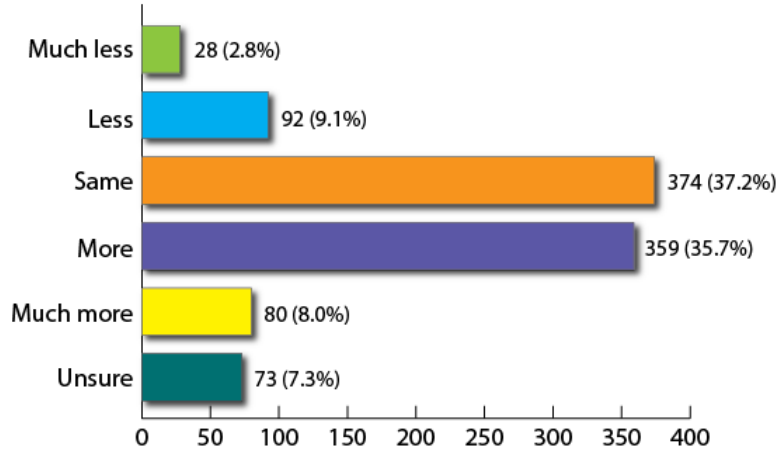
Our second question focused on the biggest risks associated with LEED and green building certification. Owner impacts including cost overruns, delays, post occupancy environmental issues, workers compensation claims, etc. garnered the largest number of responses. As detailed in the attached graph, other significant concerns were also noted suggesting cash flow associated with ownership and operation.



## Construction and Design Defect Risks of Green vs. Traditional Development

Another question compared the risks of LEED/green building development to the risks of traditional development in the context of design and construction defects. The majority of respondents viewed the defect risks of LEED/green building development to be generally equal to or slightly higher to the defect risks found in traditional development. However, almost 10% of the respondents considered LEED/green building projects to be much higher in defect risks than traditional development.

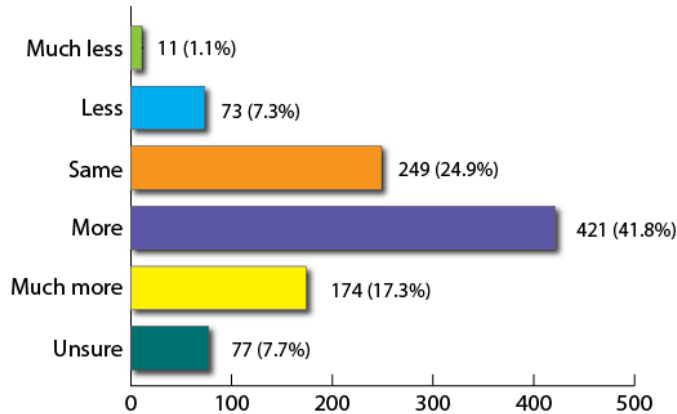
When applying the notion of green risks associated with design and construction defects the results were quite similar to the risks of contract issues.



## Owner Impacts of Green vs. Traditional Development

*According to Allen Aardsma, Managing Director from Navigant Consulting, "Owners are obviously concerned about cost drivers. Design is a very significant piece of this puzzle. Updated and better equipment and support are increasingly becoming available. I suggest that owners design projects now to keep the cost drivers as low as possible."*

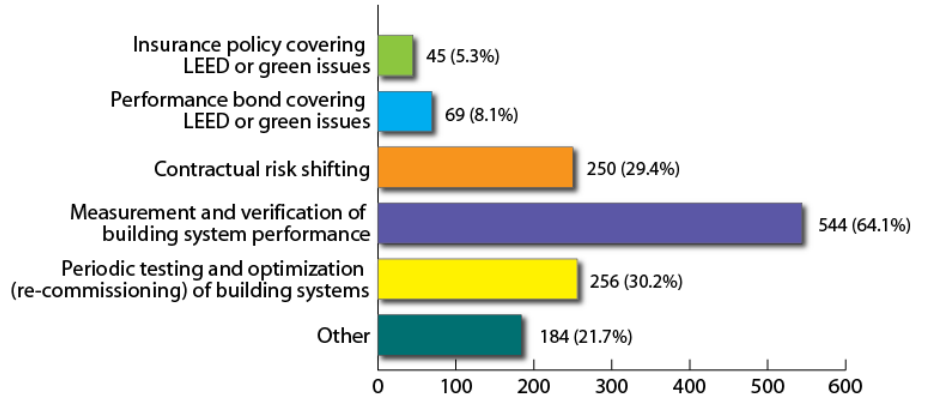
When we asked about LEED/green building risks compared to traditional development risks from the standpoint of impacts on owners, the responses skewed sharply towards more risk in LEED/green development than traditional development. This trend is consistent with the responses to our earlier question of what risks are perceived to be the highest, where owner impacts gathered the most responses.



### Risk Mitigation Measures

*According to Bill Bros, VP of CTG Forensics, "A strong building commissioning program can reduce potential construction claims by upward of 40%. It is some of the strongest preventative medicine against litigation."*

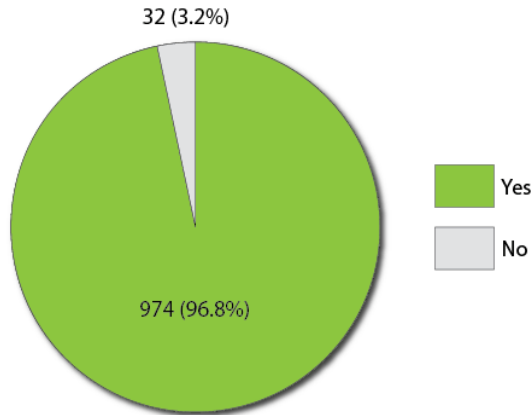
With respect to mitigating risks on LEED/green projects, it was surprising to see that "measurement and verification" was the favorite response. This response includes building commissioning, formal measurement and verification programs and installation of permanent instrumentation. Interviews indicated that these time-tested methods of mitigating risks help maintain positive building performance.



**With almost 97% in agreement, it's worth the time and effort to build green.**

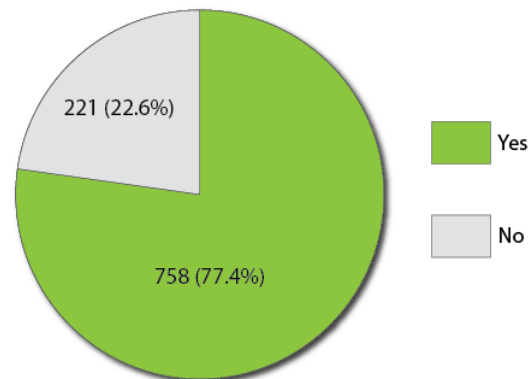
When asked if it is worth the time and effort to build green projects, 97% answered yes. It appears that the design and construction industry has reached the tipping point where LEED, sustainable and green building projects have become a part of a larger consciousness. During the interview process, many respondents indicated that building LEED/green projects were tantamount to "Preserving our planet."

Some respondents indicated that there is a learning curve that providers of green services face but that many in construction and design related businesses felt that they were already ahead of the learning curve.



### Is it worth obtaining official LEED certification?

When asked if it is worth the time and effort to obtain LEED certification for a project, 77% of respondents answered yes..



*The United States Green Building Council (USGBC) statistics tell the story about the growing number of LEED certified projects registered in the past three years:*

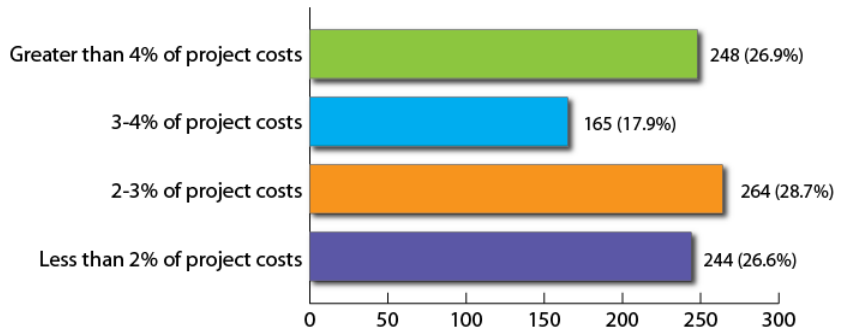
2005: 1,177  
 2006: 1,546  
 2007: 5,490

*Contrast those numbers to the declining number of annual housing starts reported by the National Association of Home Builders (NAHB):*

2005: 2,068,300  
 2006: 1,800,900  
 2007: 1,355,200

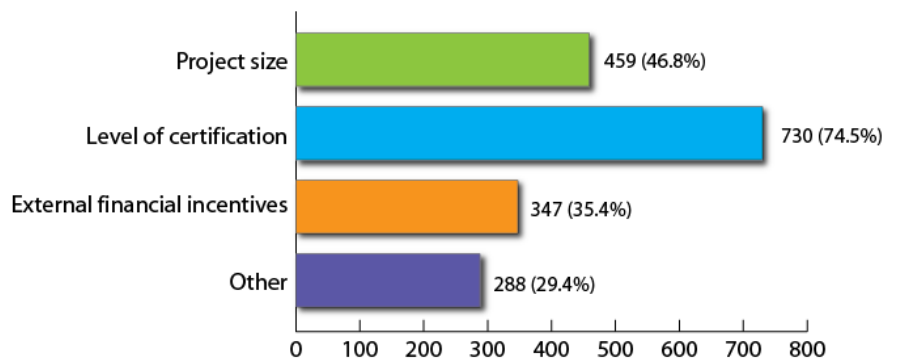
### The Cost of LEED Certified Projects Relative to Total Costs

Fifty-five percent of those surveyed indicated that LEED or green building certification added up to 3% of the total project costs. However, 28% said certification added “greater than 4% of the total project costs. Our interviews and our project experience explained that if projects are very small or have a very aggressive goal such as LEED Platinum certification, then these 4% or higher project costs can occur. Of course, LEED certification costs are dependent on the sustainable and green building measures implemented in a particular project.



### The Biggest Cost Drivers

What were the biggest cost drivers? Our respondents chose level of certification, followed by project size. These responses are consistent with our interviews and project experience. Essentially, relative green building costs decreases as the project size increases.



### CONCLUSIONS

We believe LEED certification, sustainable construction and green building strategies are entering a stage where some players understand the risk factors are employing better mitigation methods. However, as the broader markets embrace LEED, green and sustainable projects, claims in construction defects, design defects and owner impacts will increase. Certainly, the explosion of local legislative mandates, climate control issues and rising environmental consciousness are driving a dramatic increase in the number of LEED, sustainable and green building projects.

Additional benefits highlighted in our 2006 survey and interviews indicated that “Feel Good” motives such as improved health and quality of life, goodwill throughout the local community, and reduction of waste add additional significant factors in the ever increasing number of green construction projects.

Finally, financial benefits such as short and long-term energy savings, tax breaks and increased positive marketing results were cited as additional reasons for increases in LEED,

sustainable and green building projects. In short, green is no longer a trend but a reality in the construction and design marketplace.

**Acknowledgements:**

We would like to thank the Green Building Insider for its assistance in the distribution of this survey. Visit this publication at [www.greenbuildinginsider.com](http://www.greenbuildinginsider.com).