

# Industry Insight

## The Green Building Impact Report 2008

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*This is the executive summary of the first annual Green Building Impact Report, an in-depth look at how LEED-certified and built-to-LEED buildings are affecting land, water, energy, materials, and employee productivity. The full report is available for free download from <http://www.GreenerBuildings.com/BuildingsImpact08>.*

Green buildings, as represented by the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) Green Building Rating System, are an undisputed market success. In the eight years since the launch of LEED, green has firmly established itself among mainstream leaders in the building sector, representing tens of billions of dollars in value put in place and material sales.

LEED was created to reduce the environmental impacts of the built environment, but so far no comprehensive evaluation of the overall impact of LEED has been conducted until now.

This Green Building Impact Report is the first-ever integrated assessment of the land, water, energy, material, and indoor environmental impacts of the LEED for New Construction (LEED NC), Core & Shell (LEED CS), and Existing Building Operations and Maintenance (LEED EBOM) standards. (We did not include Commercial Interiors due to concerns about double counting, which we hope to have resolved before the release of the 2009 report.)

In this report, we attempt to answer whether commercial green buildings live up to their name—that is, that they are engendering demonstrable environmental improvement.

Our findings are both encouraging and cautionary. Overall, we believe that LEED buildings are making a major impact in reducing the overall environmental footprint of individual structures. However, significant additional progress is possible and indeed necessary on both the individual building level and in terms of market penetration if LEED is to contribute in a meaningful way to reducing the environmental footprint of buildings in the U.S. and worldwide.

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## Market Summary

To date, our calculations indicate that LEED Certified projects represent more than 6% of new commercial construction, but there has been an astronomical ramp-up in the past year of new project registrations, with new construction sector penetrations approaching 40%. On average, it takes approximately two years from Registration to Certification, with an attrition rate of 25% to 30%.

LEED NC continues to lead the way, with Certified projects representing almost 6% of new construction starts and new registrations representing approximately 30% of the market.

Registrations of Core & Shell projects have ramped up considerably in the past two years, now approaching 12% of new commercial starts, though they lag significantly behind LEED NC in submarket share and absolute terms. Certified LEED CS projects represent only about 0.5% of new construction starts.

Although introduced three years later, the floor area of new registrations in LEED EBOM has nearly caught up to that of LEED NC, though as a percentage of the annual addressable market, certifications remain insignificant.

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## Environmental Impacts

Non-residential construction, the focus of our report, represents about 40% of the environmental burden of buildings. The environmental benefits of LEED are multifaceted and hard to generalize, so we present the topline findings here and in more detail in the body of the report.

- **Land Use.** We estimate that between efficient location and the myriad alternative transportation options supported by LEED, nearly 400 million vehicle miles traveled have been avoided by the occupants of LEED buildings. This will grow to more than 4 billion vehicle miles by 2020.
- **Water.** We expect water savings from LEED commercial buildings to grow to more than 7% of all non-residential water use by 2020. The equivalent of 2008 LEED water savings would fill enough 32-ounce bottles to circle the Earth 300 times.
- **Energy.** LEED saves energy on many different levels, including energy related to operations, commuting, water treatment, and the lower energy embodied within materials. In operational energy terms, LEED buildings consume approximately 25% less on average than comparable commercial buildings. By 2020, these energy savings amount to more than 1.3 million tons of coal equivalent each year, representing approximately 78 million tons of carbon dioxide (CO<sub>2</sub>) avoided emissions.
- **Materials and Resources.** LEED has helped spur an entire industry in green building materials. Certified projects to date have specified a total

of more than \$10 billion of green materials, which could grow to a cumulative amount exceeding \$100 billion by 2020.

- **Indoor Environmental Quality.** We believe that indoor environmental quality is the most important contributor to the productivity attributes of LEED. We conservatively calculated that companies with employees working in LEED buildings realized annual productivity gains exceeding \$170 million resulting from improved indoor environmental quality, a number that will grow to nearly \$2 billion of annual productivity improvements by 2020.

Details on the methodological approach behind this study can be found in the Appendix of the full report, starting on page 18.

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### What's Next?

Our 2009 Green Building Impact Report will include the impact of LEED buildings overseas as the growth of LEED's new construction standards shifts beyond the U.S. market, with fast-growing development in emerging economies.

Several new non-residential LEED standards have recently been released, such as those for schools and retail establishments, and the 2009 report will evaluate these impacts as well. It will also include the eco-footprint of residential construction, the built environment's largest source of environmental impacts.

