

# The Business Case for Green Building

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## Overall Trends

- The top two reasons for building green: client demand (35%) and market demand (33%).
- The global green building market grew in 2013 to \$260 billion, including an estimated 20 percent of all new U.S. commercial real estate construction. This trend is expected to intensify in the coming years, both in the US and internationally.<sup>2</sup>
- Commercial building owners and managers will invest an estimated \$960 billion globally between now and 2023 on greening their existing built infrastructure. Major priority areas include more energy-efficient heating, ventilation and air conditioning, windows, lighting, plumbing fixtures, and other key technologies.<sup>3</sup> As the industry standard, and the recognized leader in innovative design, LEED for Existing Buildings and Maintenance is poised to expand exponentially as a result of this near trillion-dollar investment in sustainable design.
- A recently published global survey of construction firms found that 63% of construction firms had new green commercial projects planned between 2013 and 2015. 45% have plans for new green institutional projects, and 50% have plans for green renovation work.<sup>4</sup>

## Competitive Differentiator

- LEED-certified buildings with lower operating costs and better indoor environmental quality are more attractive to a growing group of corporate, public and individual buyers. High performing building features will increasingly enter into tenants' decisions about leasing space and into buyers' decisions about purchasing properties and homes.
- In a recent Nielsen global survey on corporate social responsibility, more than half (55%) said they are willing to pay extra for products and services produced or offered from companies that are committed to positive social and environmental impact—an increase from 50 percent in 2012 and 45 percent in 2011. Regionally, respondents in Asia-Pacific (64%), Latin America (63%) and Middle East/Africa (63%) exceed the global average and have increased 9, 13 and 10 percentage points, respectively, since 2011. While a willingness to pay extra for sustainable products is comparatively lower in North America (42%) and Europe (40%), both regions show an increase in purchasing sentiment from 2011, rising 7 and 8 percentage points, respectively.<sup>5</sup>
- A recently published, peer-reviewed study has demonstrated that LEED has a consistent and strong signaling affect that helps shape the competitive price scale for the real estate market. The study "illustrates the...importance of the marketing based benefits that accrue to Leadership in Energy and Environmental Design (LEED) buildings due to green signaling mechanisms, specifically related to the certification itself."<sup>6</sup>
- 61% of corporate leaders believe that sustainability leads to market differentiation and improved financial performance.<sup>7</sup>

## Attract Tenants

- Today's tenants understand and are looking for the benefits that LEED-certified spaces have to offer. The new Class A office space is green; lease-up rates for green buildings typically range from average to 20 percent above average.<sup>8</sup>

## Cost Effective

Owners of green buildings reported that their ROI improved by 19.2% on average for existing building green projects and 9.9% on average for new projects.<sup>9</sup>

Examples include:

- One major hotel project spent an estimated \$184,000 for building energy efficiency improvements and has realized a yearly savings of \$58,035, yielding a 3.17 year break-even point.<sup>10</sup>

A new CoStar report indicated that while traditional (non-LEED or non-ENERGY STAR certified) Los Angeles buildings command an average of \$2.16/ft<sup>2</sup>, tenants were willing to pay \$2.69/ft<sup>2</sup> for ENERGY STAR certified buildings and \$2.91/ft<sup>2</sup> for LEED certified spaces. The increased cost of rent appeared to have little effect on vacancy rates, which remained relatively constant with the general market over the 5-year evaluation period.<sup>11</sup>

- Additionally, Los Angeles ENERGY STAR and LEED certified buildings showed a distinct advantage in terms of sell-price and asking price. In the past year, the asking price for non-green buildings in the Los Angeles area was \$220/ft<sup>2</sup> relative to an average market sales price \$244/ft<sup>2</sup>. LEED certified buildings in LA averaged \$140/ft<sup>2</sup> in asking price, but sold for an average cost of \$329/ft<sup>2</sup>.<sup>12</sup>
- Operating costs decreased by 13.6% for new construction and 8.5% for existing building projects.<sup>13</sup>
- Building value increased by 10.9% for new construction and 6.8% for existing building projects.<sup>14</sup>
- Increased asset valuation: New green building projects 5%; Green building retrofits 4%.<sup>15</sup>

## Increased Productivity and Worker Satisfaction

Recent scholarly research into the effects of LEED certification on 562 financial institutions (93 LEED certified, 469 non-certified) found that:

- Annual utilities cost per employee in green facilities was \$675.26 lower than in non-green facilities.<sup>16</sup>
- Employees working in the LEED-certified branches of the same financial institution were found to be "more productive and engaged in their work."<sup>17</sup>
- Using LEED-certified buildings increases revenue generated by bank branches even when they offer the same products and services.<sup>18</sup>

These productivity gains are not limited to financial institutions. For example:

- recently conducted scholarly research in the field of behavioral psychology has also found that companies that adopt more rigorous environmental standards are associated with higher labor productivity—an average of 16% higher—than non-green firms.<sup>19</sup>
- Other research has found that office workers with the best possible view, as opposed to no view, performed 10% to 25% better on tests of mental function and memory recall.<sup>20</sup>
- LEED-certified buildings are also demonstrating increased recruitment and retention rates and increased productivity benefits for employers. 2.5 million employees are currently experiencing better indoor environmental quality in LEED buildings. This group of employees is expected to exceed 21 million by 2030, resulting in an economic value of \$90 billion from increased productivity.<sup>21</sup>

## Better Health Standards for Commercial Building Tenants

- Other industry research has noted that improved health and productivity benefits are playing a larger role in driving companies to invest in green building today than they have in the past. 55% of firms rate greater health and well-being as their top social reasons for building green (tied with encouraging sustainable business practices), up from only 29% in 2008. This is true domestically as well as internationally, as increased employee health and worker productivity were cited as the two most important social reasons to build green in every international market to participate in a recent McGraw-Hill survey.<sup>22</sup>
- People in the U.S. spend about 90% of their time indoors.<sup>23</sup> EPA studies indicate indoor levels of pollutants may be up to ten times higher than outdoor levels.<sup>24</sup> LEED-certified buildings are designed to have healthier, cleaner indoor environmental quality, which means health benefits for occupants.<sup>25</sup>
- Additional scholarly research into the health affects of ergonomic design have established a definitive link between improved lighting design and a 27% reduction in the incidence of headaches, which accounts for 0.7% of the overall cost of employee health insurance.<sup>26</sup> This equals approximately \$70 per employee annually.<sup>27</sup> Extrapolating this relationship out further, it is clear that even minor improvements in the corporate built environment can have major and unexpected cost savings potential that extends far beyond the actual operational costs associated with a corporation's building stock. LEED's holistic approach to creating a healthy built environment is designed to help companies maximize these savings through substantially improving the quality of life for their labor forces.
- Significant associations exist between low ventilation levels and higher carbon dioxide concentrations—a common symptom in facilities with sick building syndrome.<sup>28</sup>
- In terms of health care costs, building retrofits which improved the indoor environment of a building resulted in reductions of: communicable respiratory diseases of 9-20%; allergies and asthma of 18-25%; and non-specific health and discomfort effects of 20-50%.<sup>29</sup>

## Increased Rental Rates

- A business case study examining the San Diego real estate market showed that the overall vacancy rate for green buildings was 4 percent lower than for non-green properties—11.7 percent, compared to 15.7 percent—and that LEED-certified buildings routinely commanded the highest rents.<sup>30</sup>
- Lux Research's found that buildings with LEED Gold certification significantly outperformed their peers. In one prominent California example, LEED Gold certification resulted in \$4.1 million in higher rental income to a model 80,000 square foot commercial building in Los Angeles.<sup>31</sup>

## For the Residential Market

- Recent studies confirm that that, as of January 2015, the market for houses with green certifications is 10 to 14 percent more than for comparable homes without them.<sup>32</sup>
- 62% of those building new single family homes report that they are doing more than 15% of their projects green. By 2018, that percentage increases to 84%.<sup>33</sup>
- 73% of single-family builders and 68% of multifamily builders say consumers will pay more for green homes.<sup>34</sup> Harris Interactive poll of over 2,000 Americans found that nearly half (49%) consider eco-friendly features more important than luxury items in a home (31%).<sup>34</sup>
- It is estimated that by 2016 the green single-family housing market will represent 26%-33% of the market. This represents an opportunity ranging from \$80 billion to \$101 billion based on current forecasts.<sup>36</sup>

- In a recent survey, 54% of those building new multifamily projects report that they are doing more than 15% of their projects green. This number is expected to surge exponentially with that percentage rising to 70% by 2019. Firms that do not begin making preparations for a significant uptake in the green residential market risk being locked into an increasingly competitive

percentage rising to 79% by 2018. Firms that do not begin making preparations for a significant uptick in the green residential market risk being locked into an increasingly uncompetitive segment of the residential market.<sup>37</sup>

- Multifamily green residential projects were one of the earliest sectors to recover after the 2009 downturn, with 23% growth in 2010. A high level of growth has been sustained since, with the market rising steadily from \$18 billion in 2009 to \$48 billion in 2013. This represents high market resiliency even in the face of severe economic challenges, underscoring the high degree of consumer demand for green residential spaces.<sup>38</sup>

## Public Relations & Community Benefits

- Adobe Systems, Inc., a major software maker, announced in 2006 that it had received three LEED Platinum awards for its headquarters towers; not only did it reap great publicity, but the firm showed that it had garnered a net present value return of almost 20 to one on its initial investment.
- 75% of firms view sustainability as consistent with their profit missions.<sup>39</sup>
- 73% of corporate leaders expect to attract and retain customers as a direct result of their sustainability efforts.<sup>40</sup>

## Lower Operating Costs

- LEED-certified buildings have been proven to use 25% less energy and a 19% reduction in aggregate operational costs in comparison to non-certified buildings.<sup>41</sup> There are also a variety of tax benefits and incentives available for green buildings in different states and municipalities across the country. Typical examples of these incentives include: tax credits, grants, expedited building permits, and reductions/waivers in fees.
- A recent example can be found at the University of Hawaii, which has recently reported that it saved \$3.4 million in 2014 alone based on its efforts at reducing energy usage through its LEED certified buildings.<sup>42</sup>

## Immediate & Measurable Results

The LEED Dynamic Plaque provides real time data to building owners and operators regarding their LEED building's performance in key areas of sustainable design. Through benchmarking energy and water use, companies have the ability to save millions of dollars, year over year, and with new features such as the Dynamic Plaque, LEED is evolving to make more sophisticated approaches to benchmarking possible.

A recent study of the District of Columbia's 2012 Private Building Benchmarking Disclosure showed that LEED office buildings have a 13% lower average site EUI, 11% lower average electricity usage, and 16% lower average water usage when compared to non-LEED certified office buildings.<sup>43</sup> D.C. makes for a particularly strong case study as it leads the nation in the amount of LEED space certified per resident every year, and is one of only four cities in the world to certify over 100 million square feet of LEED space.

<sup>1</sup>McGraw Hill Construction (2012). World Green Buildings Study. Accessed Nov. 29, 2012 via <http://analyticsstore.construction.com/index.php/2012-world-green-building-trends-key-facts.html>

<sup>2</sup>Lux Research, "Driven by Higher Rents and Values, Green Buildings Market Grows to \$260 Billion," 2014. <http://www.luxresearchinc.com/news-and-events/press-releases/read/driven...>

<sup>3</sup>Heather Clancy, "In California, At Least, The Case For Energy Efficiency Is Building," Forbes, Dec. 30 2014.

<sup>4</sup>World Green Building Trends: Business Benefits Driving New and Retrofit Market Opportunities in over 60 Countries, McGraw-Hill. 2013

<sup>5</sup>It pays to be green: Corporate social responsibility meets the bottom line, Nielsen. June, 2014.

<sup>6</sup>Daniel C. Matisoff, Douglas S. Noonan, and Anna M. Mazzolini, "Performance or Marketing Benefits? The Case of LEED Certification," Environmental Science and Technology 48, no. 3 (2014): 2001-2007.

<sup>7</sup>McGraw Hill Construction (2010). Green Outlook 2011: Green Trends Driving Growth.

<sup>8</sup>Miller, N. (2010). Does Green Still Pay Off? <http://tateinc.com/pdf/DoesGreenStillPayOff.pdf>

<sup>9</sup>McGraw Hill Construction (2010). Green Outlook 2011: Green Trends Driving Growth.

<sup>10</sup>LEED Compliance Methods, DNV-GL. [http://www.dnvba.com/us/DNV%20%20Downloads/DNV\\_LEED\\_Compliance\\_Methods\\_Cost\\_ROI\\_tcm153-427596.pdf](http://www.dnvba.com/us/DNV%20%20Downloads/DNV_LEED_Compliance_Methods_Cost_ROI_tcm153-427596.pdf)

<sup>11</sup>U.S. Department of Energy, Better Buildings Challenge, "'Green' Buildings Thriving in LA Real Estate Market, According to CoStar Report" Aug. 6, 2014. <http://la-bbc.com/news/green-buildings-thriving-in-la-real-estate-market-according-to-costar-report/>

<sup>12</sup>U.S. Department of Energy, Better Buildings Challenge, "'Green' Buildings Thriving in LA Real Estate Market, According to CoStar Report" Aug. 6, 2014. <http://la-bbc.com/news/green-buildings-thriving-in-la-real-estate-market-according-to-costar-report/>

<sup>13</sup>McGraw Hill Construction (2012). World Green Buildings Study. Accessed Nov. 29, 2012 via <http://naturalleader.com/research/2012-world-green-building-trends/influences-on-the-green-building-markets/triggers-to-increased-levels-of-green-building/>

<sup>14</sup>McGraw Hill Construction (2012). World Green Buildings Study. Accessed Nov. 29, 2012 via <http://naturalleader.com/research/2012-world-green-building-trends/influences-on-the-green-building-markets/triggers-to-increased-levels-of-green-building/>

<sup>15</sup>McGraw Hill Construction (2012). World Green Buildings Study. Accessed Nov. 29, 2012 via <http://naturalleader.com/research/2012-world-green-building-trends/influences-on-the-green-building-markets/triggers-to-increased-levels-of-green-building/>

<sup>16</sup>Conlon, E. and Glavas, A. (2012). The Relationship Between Corporate Sustainability and Firm Financial Performance. Accessed March 27, 2012 via [business.nd.edu/uploadedFiles/Conlon%20and%20Glavas%202012.pdf](http://business.nd.edu/uploadedFiles/Conlon%20and%20Glavas%202012.pdf)

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<sup>23</sup>Environmental Protection Agency (1987). The Total Exposure Assessment Methodology (TEAM) Study.

<sup>24</sup>Environmental Protection Agency (2008). An Introduction to Indoor Air Quality. Accessed via: <http://www.epa.gov/iaq/voc.html>.

<sup>25</sup>U.S. Green Building Council (2013). Health is a Human Right. Green Building Can Help. Accessed Jan. 27 2015 via [http://www.usgbc.orghttp://www.usgbc.org/sites/default/files/GBHH\\_Final\\_1.pdf](http://www.usgbc.orghttp://www.usgbc.org/sites/default/files/GBHH_Final_1.pdf)

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<sup>30</sup>CBRE Global Research and Consulting (2012). Global Market View - Q2 2012. Accessed Sept. 25, 2012 via

<sup>31</sup>Phil Hall, "Green Building Accounts for Nearly 1/4 of U.S. CRE Construction," National Mortgage Professional Magazine, Oct. 30, 2014.

<sup>32</sup>Alan J. Heavens, "'Green' home certifications are bringing more greenbacks," The Philadelphia Inquirer, Jan. 19, 2015.

<sup>33</sup>McGraw Hill Construction Company. Green Multifamily and Single Family Homes: Growth in a Recovering Market

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<sup>40</sup>McGraw Hill Construction (2010). Green Outlook 2011: Green Trends Driving Growth.

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<sup>42</sup>Lorin Eleni Gill, "University of Hawaii at Manoa saved \$3.4M on energy costs last year," Pacific Business News, Jan. 21, 2015.

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