

NATIONAL GREEN BUILDING ADOPTION INDEX 2014



CBRE



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Executive Summary

It is now common knowledge that commercial real estate is at the nexus of many environmental and sustainability issues. Specific awareness of the importance of building level energy efficiency programs is widespread and further importance is placed on the fact that the commercial real estate sector is a major consumer of water and other natural resources, while also producing significant landfill waste and greenhouse gas emissions. These facts have captured the attention of regulators, the public, corporate occupiers, and investors, who are increasingly demanding more efficient, “green” buildings. There are two main programs that currently assess commercial building energy efficiency and sustainability characteristics: EPA’s Energy Star and the United States Green Building Council’s LEED Certification program. Recognition by at least one of these two programs qualified buildings for inclusion in our study.

While both programs are traditionally based on voluntary adoption and disclosure, green building certification over the past years has become an important indicator of quality in the major U.S. commercial property markets. Currently 8,405 office buildings, representing more than 1.9 billion square feet of office space, have been awarded an Energy Star label, denoting the top energy performers among their peer set.¹ Additionally, a total of, 5,470 office buildings, representing almost 900 million square feet of office space have received some type of full building LEED certification.² There is a growing body of academic evidence that Energy Star and LEED certification may have positive implications for the financial performance of commercial assets. Given the growing requirement of energy performance disclosure as part of city and statewide legislation, and the growing importance placed by corporate users on occupying sustainable space, it is becoming necessary for the real estate sector to better understand the supply of “green” building space in the market.

To quantify and understand the dynamics of this growing marketplace for “green” buildings, we engaged an academic research team experienced in commercial real estate research to conduct this study. Their work, the first published results of the CBRE Real Green Research Challenge, is the initial broad effort to map the adoption of “green” space in the 30 largest U.S. commercial office markets (representing more than two-thirds of the total U.S. office market). Based on rigorous methodology, the work was executed in close collaboration with the USGBC and CBRE Research. This publication provides the inaugural results of the Green Building Adoption Index. Following this initial publication, the Green Building Adoption Index for commercial office space will be published on an annual basis.

Some key findings:

- At the fourth quarter of 2013, some 13.2% of the commercial building stock had an Energy Star label, LEED certification, or both, compared to 1.5% at the end of 2005;
- Measured by size, the amount of certified commercial space has grown from 5.6% in 2005 to 39.3% at the end of 2013;
- Growing from 1.3% in 2005, at the end of 2013 Energy Star certifications represented 10.2% of the total number of commercial office buildings across the 30 largest markets in the U.S.;
- Certified buildings are generally larger than non-certified buildings. The percentage of Energy Star certified space measured by square footage was almost 30.3% in 2013;
- The growth in LEED certifications has been even more dramatic. At the end of 2005, just 0.1% of the total number of commercial office buildings across the 30 largest markets in the U.S. had been certified, while at the end of 2013, commercial buildings certified by LEED represented 5.1% of the total market. This includes newly constructed buildings (certified as “LEED NC” or “LEED C&S”), as well as buildings certified under the “Existing Buildings (LEED EB)” program;
- Measured by floor area, green, LEED-certified space is now about one-fifth of the total commercial office market (19.4%), with LEED for Existing Buildings representing 15.4%, LEED C&S representing 2.8%, and LEED for New Construction representing 1.3%;

¹ Retrieved from: http://www.energystar.gov/index.cfm?fuseaction=labeled_buildings_locator, based on a selection of facility types which include, Bank Branch, Financial Office, Medical Office and Office.

² Retrieved from: <http://www.gbqi.org/search/collections?search%5Btext%5D=Space+Type>, based on a selection of space types including, Bank Branch and Office.

- There is large geographic variation in adoption of LEED and Energy Star certification. For LEED certification, the leading markets in terms of adoption by percentage of square footage are, Minneapolis and San Francisco, with 39.4% and 39.2% respectively, whereas Detroit and Kansas City have totals of only 2.6% and 5.5% of the commercial office market.

Overall, the results show that green-certified buildings now represent a major share of the U.S. commercial office market, with the adoption of green space in some markets perhaps even approaching a saturation point. As attention to green building from regulators and tenants continues to grow, the widespread diffusion of certified space may start to have more tangible implications for investors in commercial real estate.



Green Building Adoption Index							
Rank	Market	% of Buildings Total Green	% of sq. ft. of Buildings Total Green	% of Buildings Energy Star	% of sq. ft. of Buildings Energy Star	% of Buildings LEED	% of sq. ft. of Buildings LEED
1	Minneapolis/St. Paul	29.7	77.0	22.9	62.8	12.1	39.4
2	San Francisco	18.0	67.2	14.9	52.3	7.6	39.2
3	Chicago	20.0	62.1	16.9	50.9	7.5	31.8
4	Houston	22.2	54.8	18.3	45.0	8.9	32.1
5	Atlanta	26.6	54.1	22.1	42.5	9.0	25.0
6	Los Angeles	20.8	49.7	17.3	40.0	6.7	23.3
7	Denver	16.3	49.3	13.5	40.6	6.7	27.5
8	Seattle	10.8	46.6	6.7	28.0	6.0	31.8
9	Miami	19.4	46.0	14.5	29.7	7.1	23.6
10	Washington, D.C.	15.5	42.1	11.9	32.5	6.7	20.5
11	Philadelphia	16.9	36.7	12.9	30.0	5.0	12.0
12	Walnut Creek	9.9	34.8	7.1	21.0	4.5	20.1
13	San Diego	9.2	34.6	7.0	27.2	2.9	12.6
14	Manhattan	24.4	34.6	19.8	24.3	9.7	18.9
15	Orange County	9.8	33.8	9.0	31.4	2.3	10.1
16	Boston	10.4	33.3	7.6	24.5	3.6	14.9
17	Dallas/Ft. Worth	13.0	32.7	10.3	25.4	4.3	13.7
18	San Jose	10.8	31.6	7.6	16.9	4.1	17.5
19	Sacramento	12.0	31.4	8.9	24.3	4.4	15.4
20	Portland	10.8	30.8	6.5	22.3	5.3	17.1
21	Phoenix	8.7	28.0	6.9	23.2	3.1	12.1
22	Tampa	6.8	27.0	5.3	24.1	2.3	8.9
23	St. Louis	7.4	24.2	4.8	17.7	3.7	9.2
24	Milwaukee	5.8	20.0	3.3	15.8	3.0	7.6
25	New Jersey	13.0	17.2	11.0	13.4	3.4	6.3
26	Baltimore	8.1	16.9	3.0	7.6	5.7	10.6
27	Detroit	5.7	16.3	4.7	14.5	1.4	2.6
28	Stamford	6.7	13.9	4.6	9.3	2.4	5.8
29	Kansas City	3.3	13.5	1.8	9.6	1.8	5.4
30	Pittsburgh	1.8	10.0	0.6	6.3	1.3	6.3

National Summary

In an effort to measure the growth of green buildings in the top 30 largest US office markets over the past 9 years, CBRE engaged a research team from Maastricht University, led by Dr. Nils Kok. Coordinating historical EPA and USGBC data with CBRE's proprietary market data demonstrated widespread green building adoption. For the purpose of this study, a "green building" is defined as one that either qualified for an EPA Energy Star label or earned a USGBC LEED certification.

At the end of 2013, 13.2% of all buildings in the 30 largest markets carried one or both of those distinctions, up from only 1.5% at the end of 2005. More dramatic is the finding that those buildings represented 39.3% of all space in those 30 markets. The top 10 performing markets all exceed those numbers, led by Minneapolis, where 29.7% of all buildings and 77% of square footage qualified as green. Minneapolis is followed by San Francisco at 67.2% and Chicago at 62.1%. More than half of the total space in the top five cities is green. In many markets, it is now the norm rather than the exception to construct or manage sustainable office buildings.

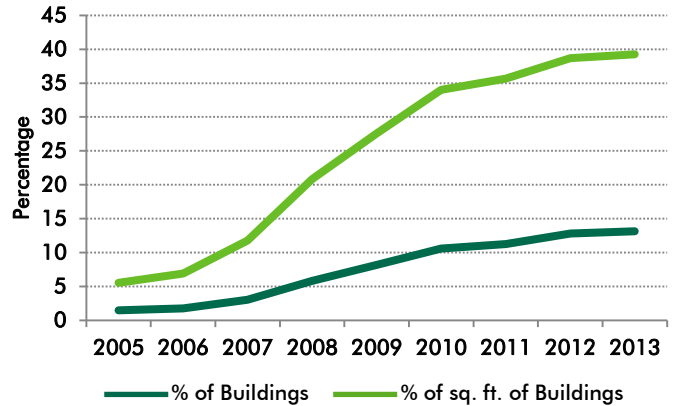
The rapid growth in adoption is likely the result of many factors. The first is the active implementation of energy efficiency programs by most large institutional owners across very large portfolios. This has been the result of a desire to reduce operating costs, a genuine interest in demonstrating environmental stewardship to investors, and recognition that many Fortune 500 firms, the most desired tenants, are now demanding sustainable buildings to meet their own environmental policies. This requirement to seek and occupy sustainable buildings has especially coincided with the emergence of LEED certification. The number of buildings certified at the end of 2005 represented less than 1% of the total office stock but by the end of 2013, 5.1% of all buildings were LEED certified. This also represents an outsized 19.4% of all space, as most often the buildings certified are the largest buildings in each market. An additional sign of growth is the fact that even those markets that have lower green building numbers overall, have significant and meaningful adoption of LEED certification for New Construction.

Participation and recognition by Energy Star has also greatly expanded. In 2005 only 5.2% of buildings earned an Energy Star label. By 2013 the number of labeled buildings had more than doubled – to 10.2% – and those buildings represented 30.3% of all space. Some measure of that growth may be due to governmental policy, as over the period a number of cities, as well as the state of California, have enacted legislation requiring various degrees of energy benchmarking and transparency. We will be particularly interested in future studies to examine the impact this may have in those regulated cities.

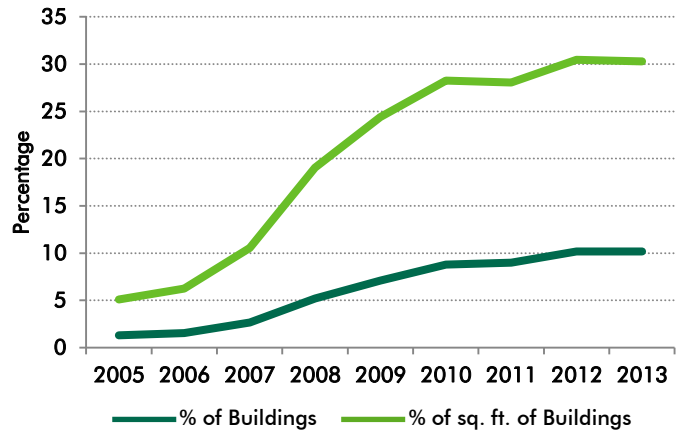
National Q4 2013	% of Buildings	% sq. ft of Buildings
Total	13.16	39.27
Energy Star	10.18	30.29
LEED	5.08	19.44
Existing Buildings	3.11	15.36
New Construction	0.85	1.34
Core and Shell	1.11	2.74

Note: Green building adoption in percent until December 31, 2013

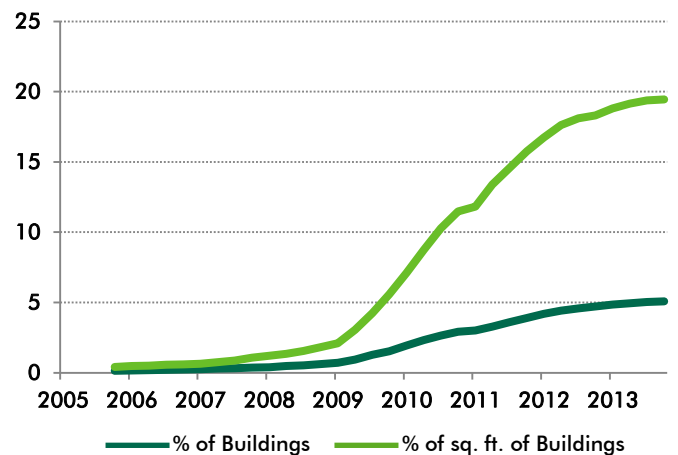
Total Adoption



Energy Star Adoption



LEED Adoption



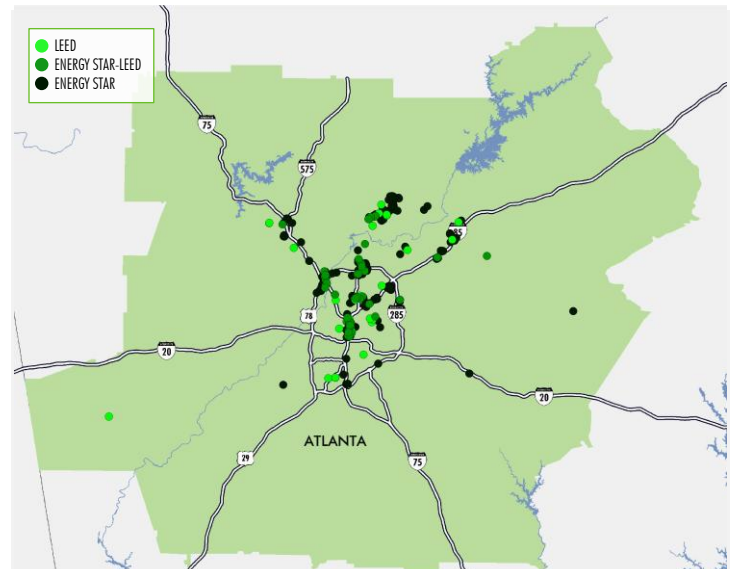
Atlanta

GREEN BUILDING TRENDS

Atlanta's office developers, owners and managers have embraced sustainability and energy efficiency – more than half, 54.1%, of all office space within the central business district qualifies as green. This translates into 244 certified buildings, representing more than 71 million sq. ft. of office space, placing Atlanta 5th nationally among the top 30 cities surveyed. Additionally, with 26.6% of all office buildings qualifying as green, Atlanta trails only Minneapolis, 29.7%, in this distinction. As would be expected, Atlanta also scores high in specific categories, placing 5th in percentage of space that is Energy Star labeled with 42.5%, and at 9% trails only Houston, Manhattan and Minneapolis in the percentage of buildings with a LEED certification.

GREEN MARKET FACTS

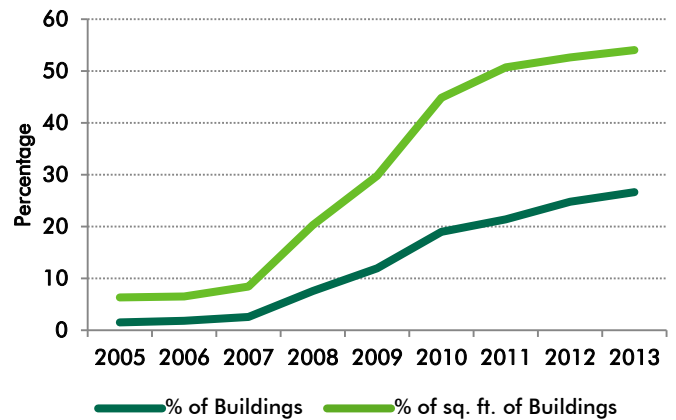
- Regulation:** Atlanta requires all city-funded projects over 5,000 sq. ft. or costing more than \$2 million to meet a LEED Silver certified level, while projects exempt from this policy are required to complete a LEED Checklist.
- Tenant demand:** Atlanta's performance in environmental stewardship should not be surprising as in 2013 Atlanta again claimed the 3rd place nationally in the number of Fortune 500 firms headquartered there, including Home Depot, Coca-Cola, RockTenn, UPS and Newell Rubbermaid, all global leaders in sustainable and environmental practices. During 2013, leasing activity was actually dominated by the Insurance industry as those firms completed 27% of the square footage of the top 100 deals in the market.
- Other facts:**
 - The EPA ranks Atlanta as 3rd in their 2014 ["Top 25 cities with the most ENERGY STAR certified buildings"](#).
 - The first LEED certified building was the [Arthur M. Blank Family Office](#), certified at LEED Gold in October 2004.
 - Interesting building: [Northcreek Office Park Buildings](#) earned Energy Star 20 times and is LEED for Existing Buildings Certified.



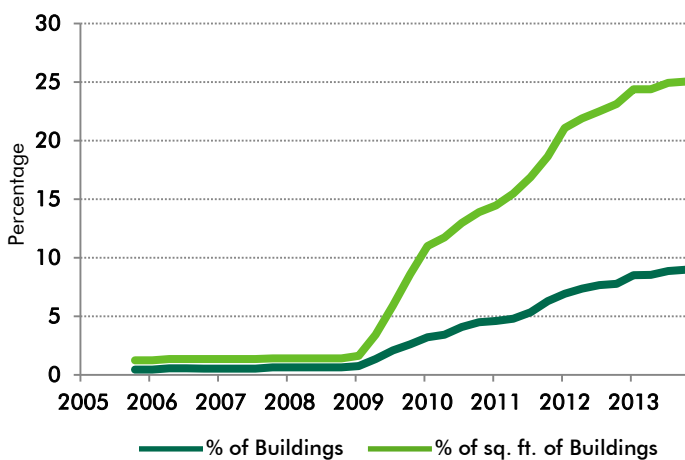
Atlanta Q4 2013	% of Buildings	% sq. ft. of Buildings
Total	26.64	54.06
Energy Star	22.05	42.54
LEED	8.95	25.02
Existing Buildings	6.33	20.11
New Construction	1.20	1.28
Core and Shell	1.42	3.64

Note: Green building adoption in percent until December 31, 2013

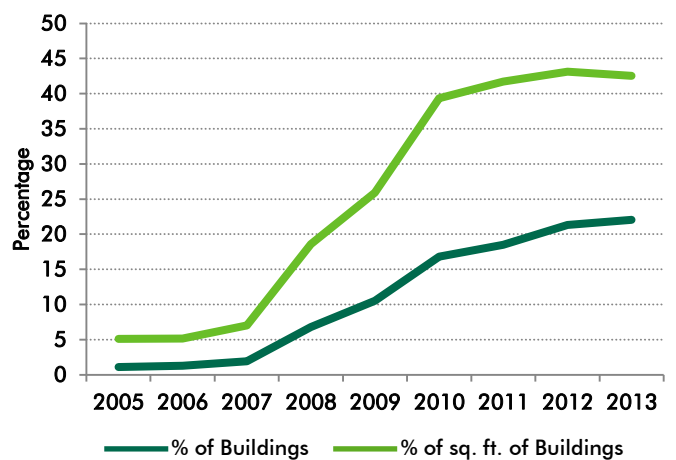
Total Adoption



LEED Adoption



Energy Star Adoption



Baltimore

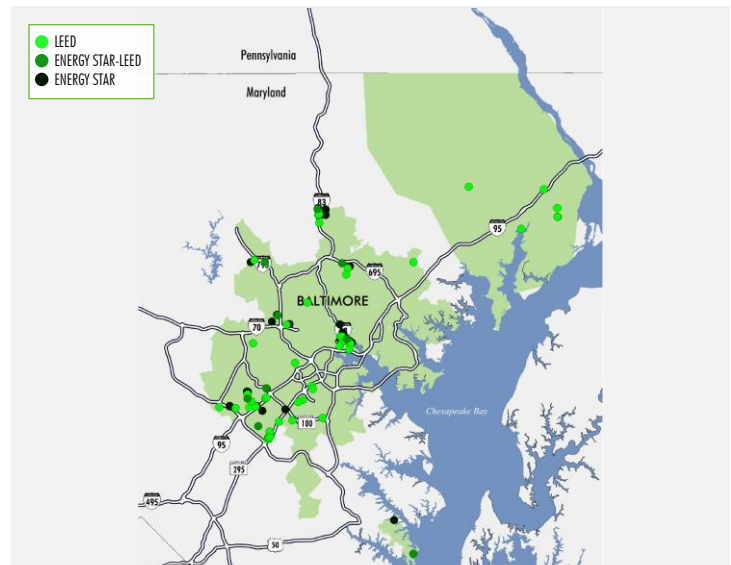
GREEN BUILDING TRENDS

The Baltimore market has not fully embraced green buildings yet and sits in the bottom third in most statistics among the top 30 national markets studied. Baltimore ranks 23rd in the percentage of green buildings relative to the total office stock, 8.1%, and 26th in percentage of green space measured as a percentage of total square footage, at 16.9%. 69 buildings in Baltimore are certified, which represents almost 11 million sq. ft. of office space. However, one bright spot is the total number of LEED certified buildings. At 5.7%, Baltimore is in the top half of the markets nationally and outperforms sustainability champions such as Boston and Philadelphia.

Interestingly, in most markets the percentage of sustainable space is three and sometimes four times the percentage of total buildings, meaning the vast majority of buildings in each category is the largest buildings in the market. In case of Baltimore the ratio is barely 2 to 1, the third lowest in the study.

GREEN MARKET FACTS

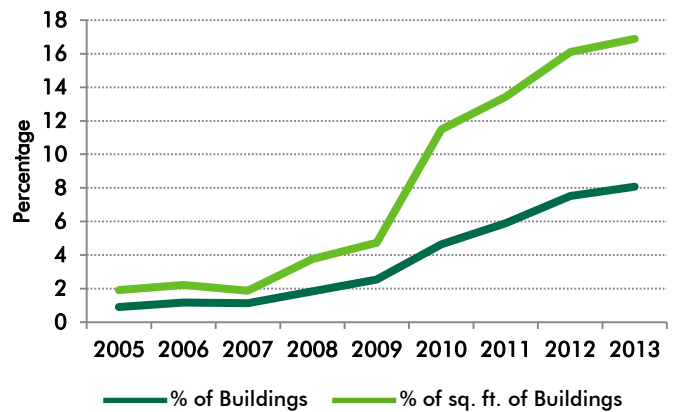
- Regulation:** Baltimore requires all city and city-funded projects greater than 10,000 sq. ft., and commercial buildings or multi-family residential buildings greater than 10,000 sq. ft., budgeted or permitted after July 1, 2009 to achieve LEED Silver.
- Tenant demand:** The Baltimore market is made up of many smaller suburban markets, which tend to have both smaller buildings and smaller firms as typical tenants, both of which are less likely to emphasize sustainability. Baltimore is home to some of the best hospitals in the world, including Hopkins, UMMS, Mercy Hospital, St. Agnes, but medical facilities are not considered in our study. Healthcare, Cyber Security (and other defense related users), and the Financial Services industries are the dominate industries in the state.
- Other facts:**
 - The EPA did not include Baltimore in their 2014 ["Top 25 cities with the most ENERGY STAR certified buildings"](#)
 - The first LEED certification in Baltimore was for the [CBF Phillip Merrill Environmental Center](#), certified at LEED Platinum for New Construction in March 2000.
 - Interesting building: [100 West Road](#) earned Energy Star 1 time and LEED for Existing Buildings Gold.



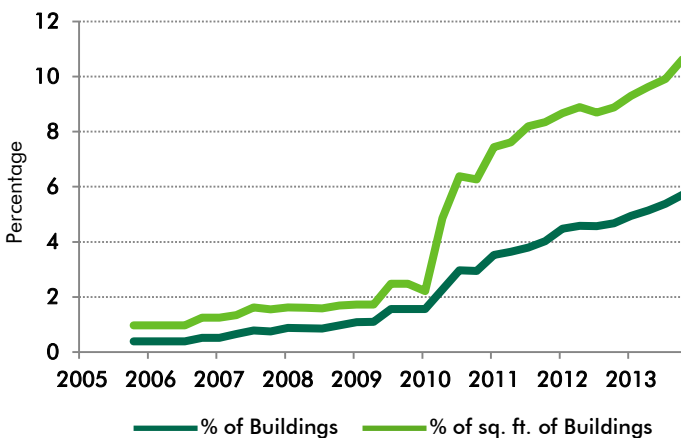
Baltimore Q4 2013	% of Buildings	% sq. ft. of Buildings
Total	8.07	16.88
Energy Star	3.04	7.62
LEED	5.70	10.62
Existing Buildings	1.40	2.97
New Construction	0.70	0.50
Core and Shell	3.61	7.16

Note: Green building adoption in percent until December 31, 2013

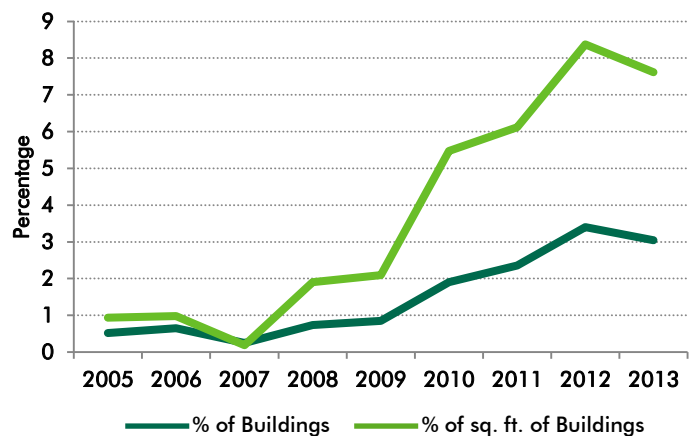
Total Adoption



LEED Adoption



Energy Star Adoption



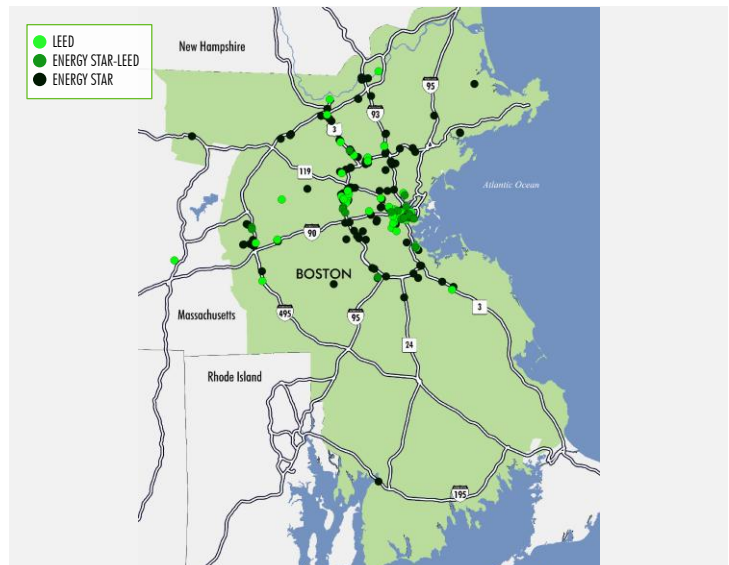
Boston

GREEN BUILDING TRENDS

In most categories Boston trails the national average among the top 30 US markets for sustainable buildings. The sustainable building story in Boston is one of large building adoption. While only 10.4% of the total office stock qualifies as green, a number in the bottom half of the cities studied, more than a third of the market, a significant 33.3% as measured by square footage, is deemed green. 195 buildings in Boston are certified, representing almost 66 million sq. ft. of office space. While this is the story in many of the top 30 US markets in our study, few have a ratio of certified space to certified buildings that is this large. This phenomenon is demonstrated again among those buildings receiving an Energy Star label, where only 7.7% of all buildings have qualified, again a number in the bottom half of national statistics, but those buildings represent 24.5% of all square footage in the market.

GREEN MARKET FACTS

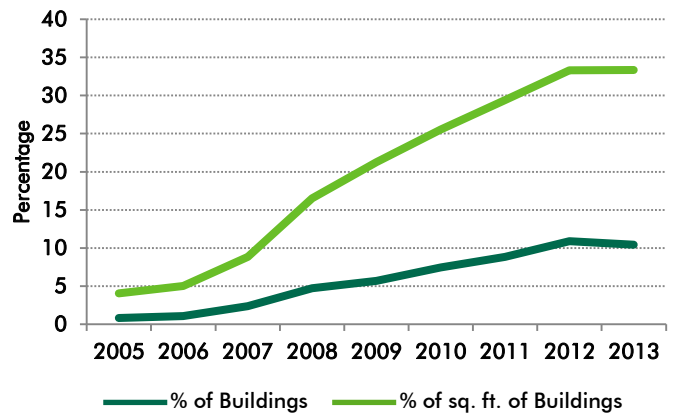
- Regulation:** Boston requires all public and private development projects over 50,000 sq. ft. to earn either the LEED Certified designation, or approval through Boston Interagency Council Review, and for all projects regardless of size, the Boston Redevelopment Authority requires a LEED Checklist. More recently, the passing of the Boston Energy Reporting and Disclosure Ordinance requires Energy Star and water use tracking for all commercial buildings over 35,000 sq. ft. This information is disclosed to the government and through a public website. In addition, periodic energy assessments and/or actions are required.
- Tenant demand:** Although the Boston market is somewhat below average in sustainable space it is near the top with respect to the influence the Technology and Life Sciences industries have in the leasing market. During 2013, tenants from these two industries were involved in more than a third of the square footage of the top 100 leasing deals, a figure bested only by San Francisco, San Jose and Seattle. In general, tech companies more frequently seek sustainable space. Therefore, over time this tenant demand may influence the growth of green space in this market.
- Other facts:**
 - The EPA ranks Boston as 13th in their 2014 "Top 25 cities with the most ENERGY STAR certified buildings"
 - The first LEED certified building was the [Conservation Law Foundation Building](#), certified at LEED Certified for New Construction in November 2003.
 - Interesting building: [33 Arch Street](#) earned Energy Star 6 times and is LEED for Existing Buildings Gold certified.



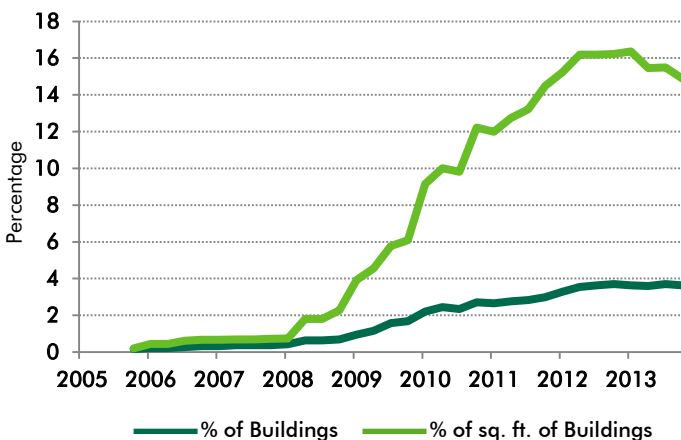
Boston Q4 2013	% of Buildings	% sq. ft. of Buildings
Total	10.43	33.34
Energy Star	7.65	24.52
LEED	3.62	14.88
Existing Buildings	2.19	12.49
New Construction	0.48	0.26
Core and Shell	0.96	2.13

Note: Green building adoption in percent until December 31, 2013

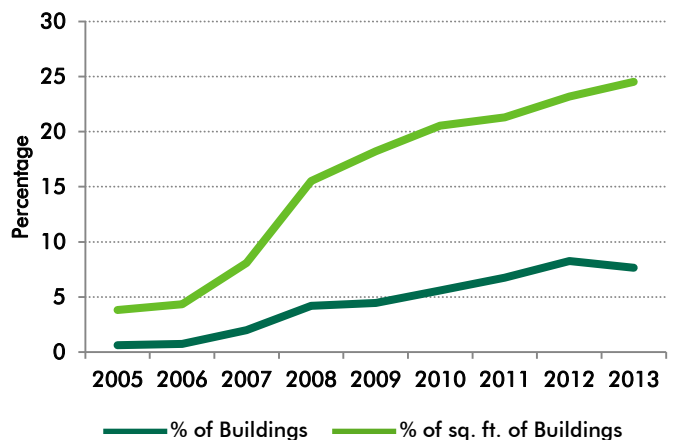
Total Adoption



LEED Adoption



Energy Star Adoption



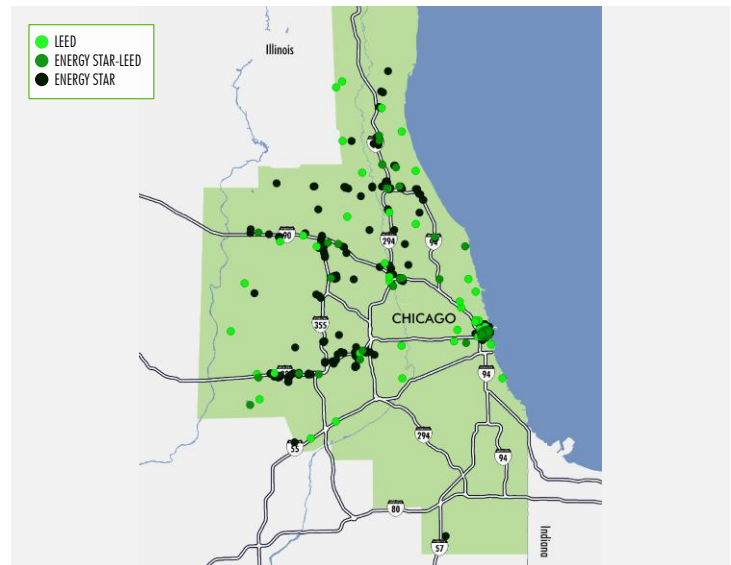
Chicago

GREEN BUILDING TRENDS

Perhaps they should dye the Chicago River green as recognition of this city's position of leadership in green building adoption among the top 30 largest commercial property markets in America. Given its superior size, institutional importance, and regulatory commitments, Chicago can certainly claim to be considered one of America's greenest cities. 294 buildings in Chicago are certified, representing more than 148 million sq. ft. of office space. In nearly every major category, Chicago is consistently in the top five, including most importantly, the percentage of total square footage, where 62.1% of existing space is deemed green. This trails only Minneapolis (78%) and San Francisco (67.2%), both of which markets are significantly smaller in size. The same ranking holds for total square footage of Energy Star labeled buildings, where Chicago with 50.9% market adoption trails only Minneapolis (62.8%) and San Francisco (52.3%), while ranking 6th in total percentage of buildings at 16.9%. Other key measures include the fact that 31.8% of all square footage in Chicago is LEED certified, ranking 5th in our study behind the leading cities again of Minneapolis at 39.4% and San Francisco at 39.2% and a 3rd place in the total square footage of LEED EB in the total market at 28.1%.

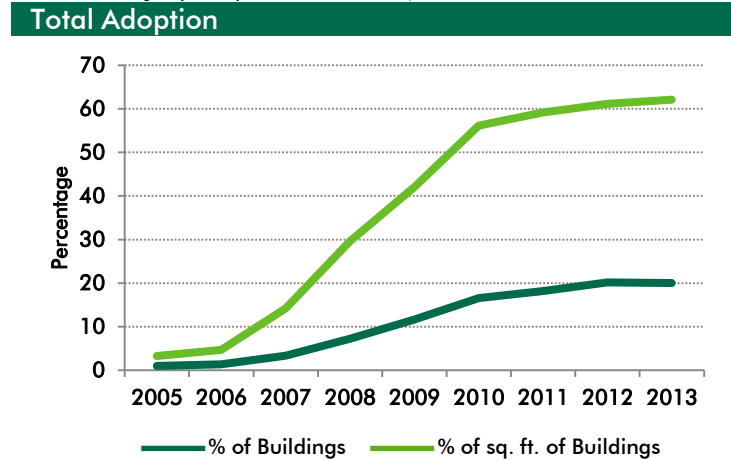
GREEN MARKET FACTS

- Regulation:** Under the Chicago Green Permit Program (2010), commercial projects striving for LEED certification will receive their permits within 30 days, while those striving for higher levels of LEED certification will receive an expedited permit and are eligible to receive a partial permit waiver up to \$25,000. The Green Permit Requirements oblige buildings to achieve additional sustainability goals in order to qualify for benefits – including "menu items" to be met on top of LEED certification. The recent Building Energy Use Benchmarking Ordinance requires commercial buildings over 50,000 sq. ft. to report to EPA Energy Star. The information is disclosed to the government and reported on a public website. A licensed professional executes verification of benchmarking data in the first year, then every 3 years thereafter.
- Tenant demand:** A review of 2013 leasing activity gives no clear indication that specific tenant demand is driving this green revolution. Unlike a number of other "green" cities there is no predominance of traditionally "green" industries such as Technology or Creative. Business Services was the most common among square footage of the top 100 deals. Chicago did place third last year in the number of corporate headquarters and as a significant tier one city it commands high profile, global investors who increasingly are seeking to own sustainable real estate.
- Other facts:**
 - The EPA ranks Chicago as 6th in their 2014 "Top 25 cities with the most ENERGY STAR certified buildings."
 - The first LEED certified building was 111 South Wacker Drive, certified at LEED Gold for Core & Shell in October 2005.
 - Interesting building: Union Tower, Energy Star 5 times and LEED for Existing Buildings Silver certified.

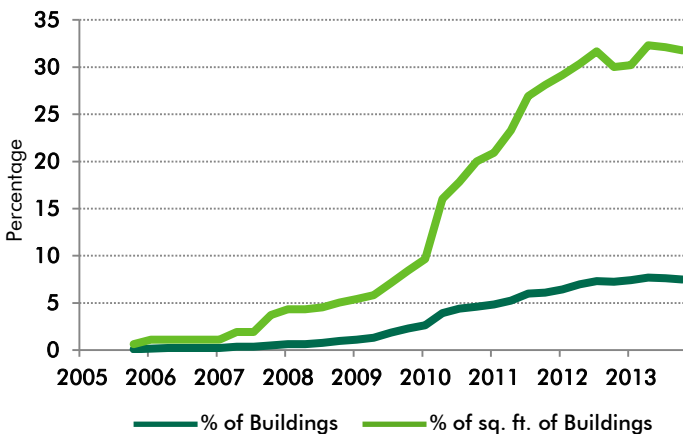


Chicago Q4 2013	% of Buildings	% sq. ft. of Buildings
Total	19.98	62.11
Energy Star	16.85	50.88
LEED	7.47	31.78
Existing Buildings	5.57	28.05
New Construction	1.02	1.08
Core and Shell	0.88	2.64

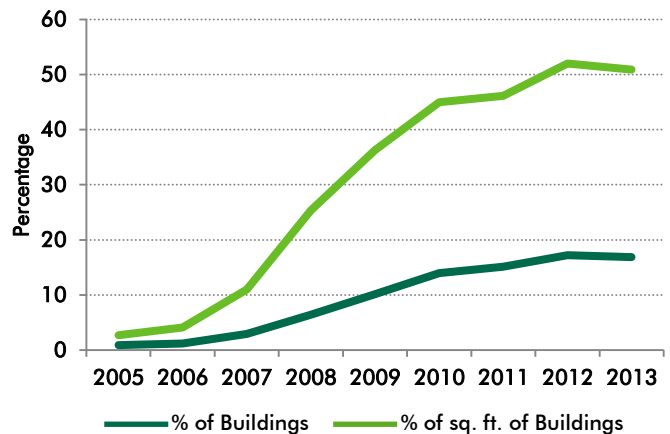
Note: Green building adoption in percent until December 31, 2013



LEED Adoption



Energy Star Adoption



Dallas/Fort Worth

GREEN BUILDING TRENDS

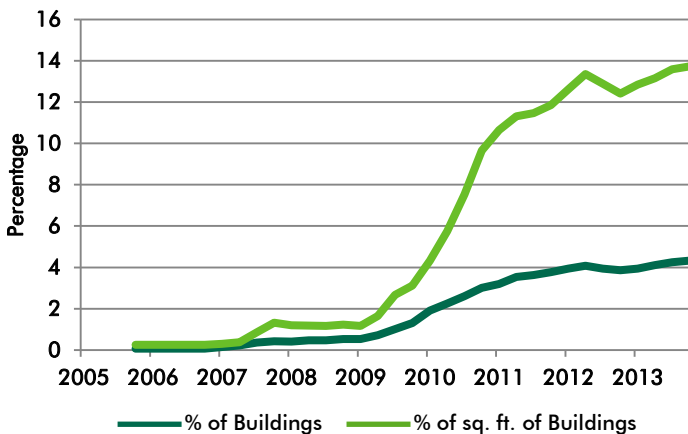
The Dallas market performs slightly below national averages in most green building metrics. 218 buildings in Dallas are certified, representing more than 74 million sq. ft. of office space. The overall adoption rate, 13% of total buildings, is comparable to the national average of 13.2%, however the total percentage of square footage at 32.7% trails the national average of 39.3%. These numbers rank Dallas 12th and 17th respectively against the other top 30 markets reviewed. Dallas also ranks 17th in terms of both the percentage of LEED certified buildings and LEED certified space with 4.3% of the buildings holding some level of certification and 13.7% of the total square footage of office space certified.

An interesting comparison in performance can be made between Dallas and Houston, the other big Texas market in this study. Whereas Dallas is at best an average performer, Houston consistently landed in the top 5 of most categories, including 4th in percentage of total green buildings, 22.2%, 4th in percentage of total square footage of green space, 54.8%, and 4th in percentage of total Energy Star square footage, 45%. In each of these categories the Houston performance was 50-75% higher than Dallas and in each case out performed the national averages.

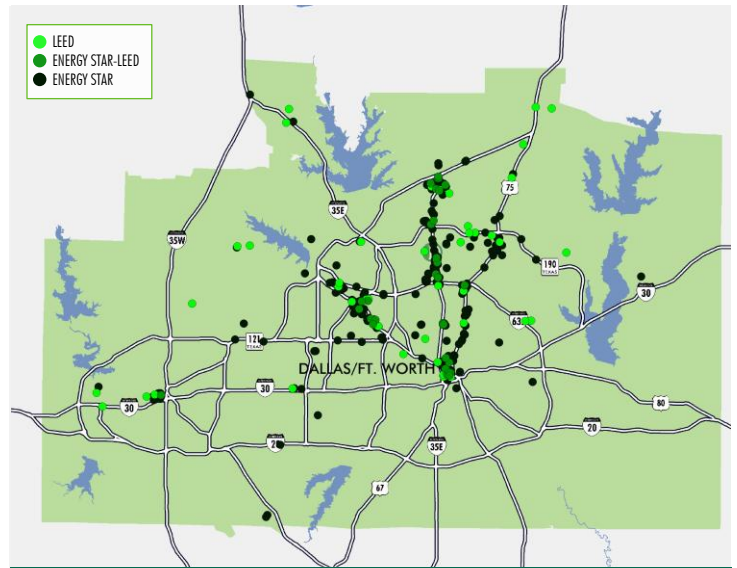
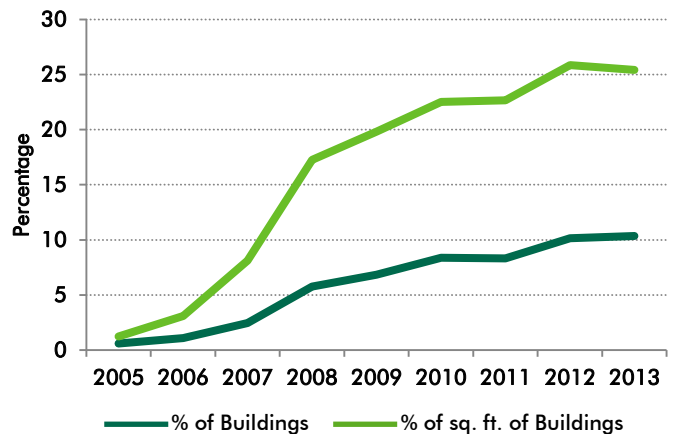
GREEN MARKET FACTS

- Regulation:** The City of Dallas Green Building Ordinance, passed in 2008, requires that new commercial construction greater than 50,000 sq. ft. must attempt to achieve a number of priority LEED credits. Expedited permitting is available for all covered projects, and after 2011, all new residential and commercial construction must submit a completed scorecard for one of the approved rating systems.
- Tenant demand:** We believe that the key reason for the below average market green building adoption in Dallas, and the specific disparity between Dallas and Houston is the overwhelming presence of multi-national oil and gas related firms in Houston who have consistently made it a practice to seek and occupy only sustainable buildings to demonstrate their commitment to environmental stewardship. Only 2% of the square footage of the top 100 leasing deals in Dallas during 2013 are energy related while in Houston the total is 62%. The Dallas market has a much more diverse tenant mix, led by the Financial Services and Insurance industries, which together account for 40% of the top 100. Unlike energy related firms these types of tenants have not so publically embraced green-certified office space.
- Other facts:**
 - The EPA ranks Dallas/Fort Worth as 7th in their 2014 "Top 25 cities with the most ENERGY STAR certified buildings".
 - The first LEED certified building was the [Sabre Corporate Campus](#), certified at LEED Silver for New Construction in February 2003.
 - Interesting building: [Granite Park II](#) earned Energy Star 10 times and LEED for Existing Buildings Gold.

LEED Adoption



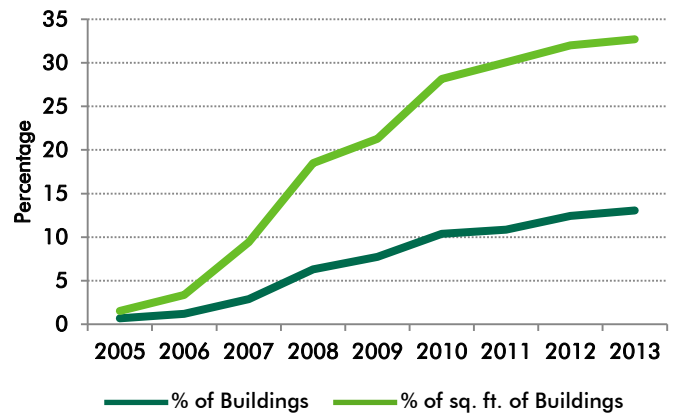
Energy Star Adoption



Dallas/Fort Worth Q4 2013	% of Buildings	% sq. ft. of Buildings
Total	13.04	32.69
Energy Star	10.35	25.41
LEED	4.32	13.73
Existing Buildings	2.34	10.34
New Construction	1.14	1.93
Core and Shell	0.84	1.46

Note: Green building adoption in percent until December 31, 2013

Total Adoption



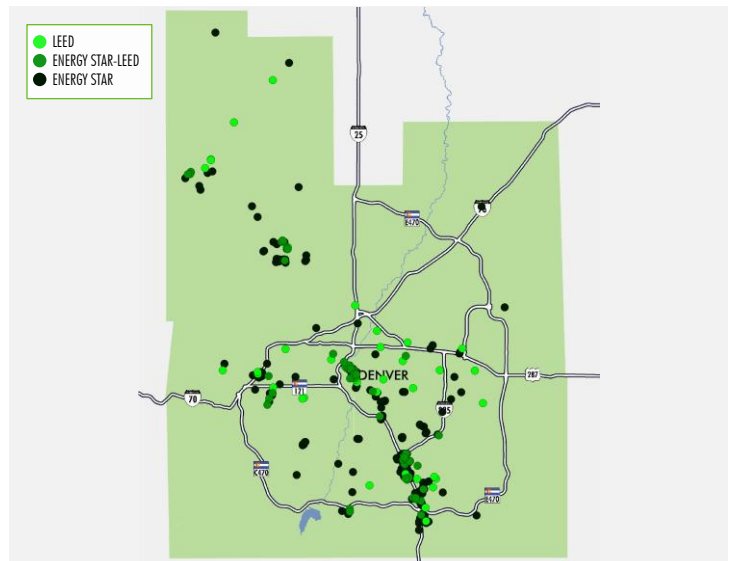
Denver

GREEN BUILDING TRENDS

Denver continues to qualify as one of America's greenest cities as measured by the quantity and percentage of green buildings. Denver has 215 certified buildings, representing almost 53 million sq. ft. of office space. Denver finished in the top 10 in a number of green building metrics, including 10th in total green buildings with a total of 16.3% of the building stock, compared to a national average of 13.2%. Denver ranks 6th in the number of Energy Star labeled buildings with a total of 40.6%, well above the national average of 30.3%. With 49.3% of all square footage green certified Denver ranks 7th in this category, again well above the national average of 39.27%. Most impressively, Denver ranks 6th of all cities with 27.5% of all square footage holding some level of LEED certification, well above the national average of 19.4% and trailing only Minneapolis, San Francisco, Houston, Seattle, and Chicago.

GREEN MARKET FACTS

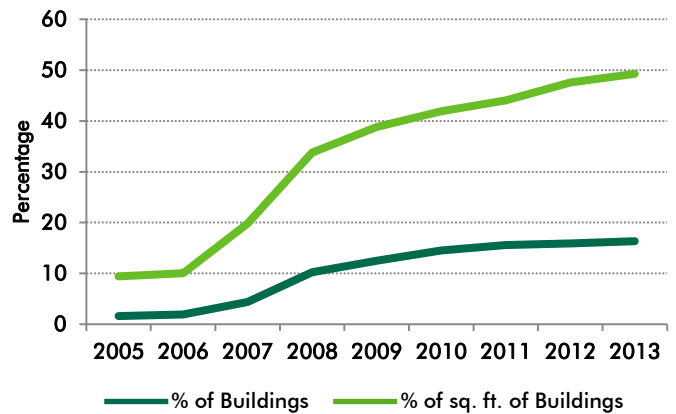
- Regulation:** Denver passed Executive Order 123 in 2007, requiring new municipal building construction over 5,000 sq. ft. and major renovations to earn LEED for New Construction Silver certification. Denver also requires all existing and future municipal facilities to be maintained and operated using all appropriate LEED for Existing Buildings principles.
- Tenant demand:** Financial Services accounted for the largest share of leasing activity at 17.6%, followed by Telecommunications at 15.8% and Energy at 11.5%. Technology has embraced sustainability for a variety of reasons, including employee recruitment and retention, and more frequently seeks and occupies sustainable buildings. Energy related firms have broadly embraced sustainable spaces as a way to demonstrate their corporate commitments to environmental stewardship.
- Other facts:**
 - The EPA ranks Denver as 8th in their 2014 "Top 25 cities with the most ENERGY STAR certified buildings".
 - The first LEED certified building was [Denver Place](#), certified at LEED Gold for Existing Buildings in November 2004.
 - Interesting building: [Independence Plaza](#) earned Energy Star 12 times and LEED for Existing Buildings Gold.



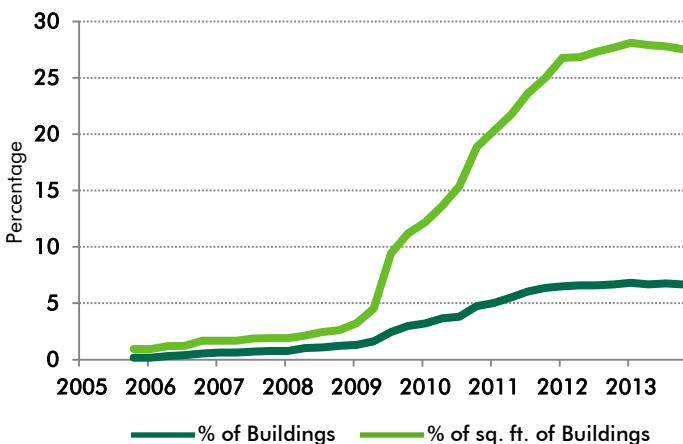
Denver Q4 2013	% of Buildings	% sq. ft. of Buildings
Total	16.31	49.26
Energy Star	13.50	40.60
LEED	6.67	27.53
Existing Buildings	4.78	23.30
New Construction	1.06	0.92
Core and Shell	0.83	3.31

Note: Green building adoption in percent until December 31, 2013

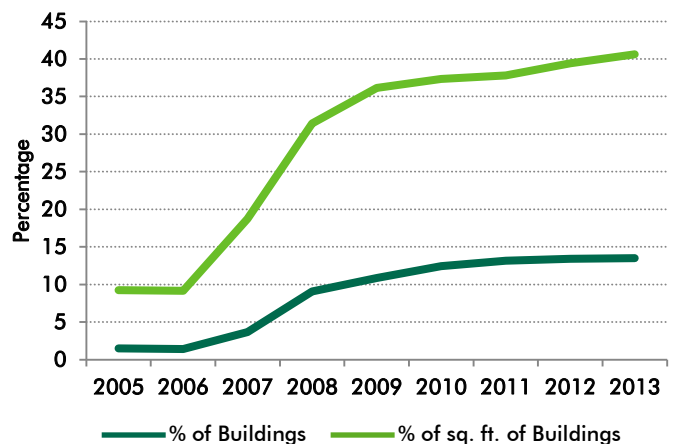
Total Adoption



LEED Adoption



Energy Star Adoption



Detroit

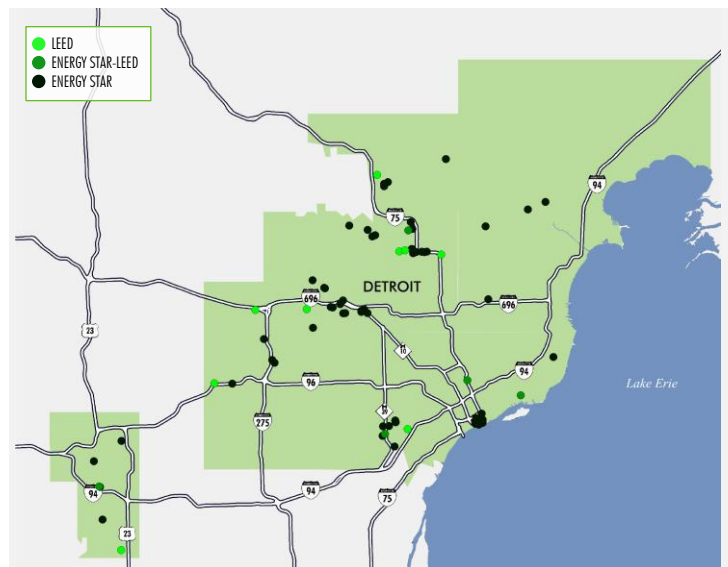
GREEN BUILDING TRENDS

The green building movement has not yet reached many of the cities in the central US and Detroit is no exception. Detroit with 42 certified buildings, representing 12 million sq. ft. of office space, consistently lands in the bottom five of nearly all green building metrics in this study. Only 5.9% of buildings in Detroit meet that definition, well below the national average of 13.16% and ahead of only Pittsburgh and Kansas City among the top 30 largest US office markets. Similar results are found in the percentage of green space in the market, where just 16.3% of Detroit real estate qualifies, again significantly below the national average of 39.3%

As expected, the same results are found consistently in the specific categories of Energy Star Labels and various LEED certifications.

GREEN MARKET FACTS

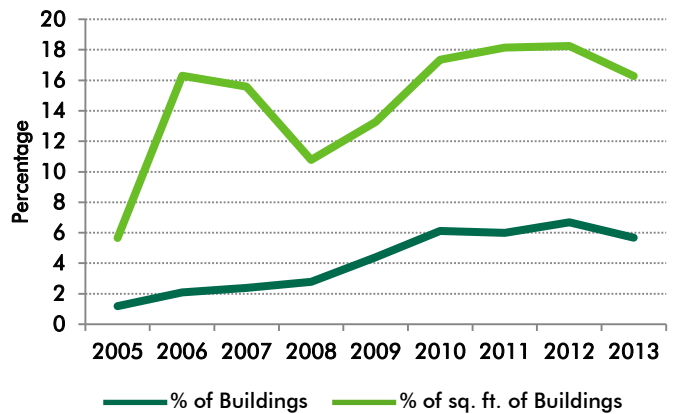
- **Regulation:** There is no evidence of existing local energy or sustainability ordinances applicable to commercial buildings.
- **Tenant demand:** The Detroit market is a very diverse market with the leading industry, as would be expected, Manufacturing/Transportation with 17% of the square footage of the top 100 leasing deals in 2013. There are few deals in other industries such as Technology, Creative Arts or Life Science, which have more typically sought sustainable space. Faced with this type of tenant demand and minimal interest by institutional investors in the market, we see no current event or trend that will likely increase the green certification adoption in Detroit for the foreseeable future.
- **Other facts:**
 - The EPA ranks Detroit as 23rd in their 2014 [“Top 25 cities with the most ENERGY STAR certified buildings”](#).
 - The first LEED certified building was [LaSalle Bank Financial Center](#), certified at LEED Gold for Existing Buildings in April 2007.
 - Interesting building: [777 Eisenhower Plaza](#) earned Energy Star 7 times and is Gold certified under the LEED for Existing Buildings program.



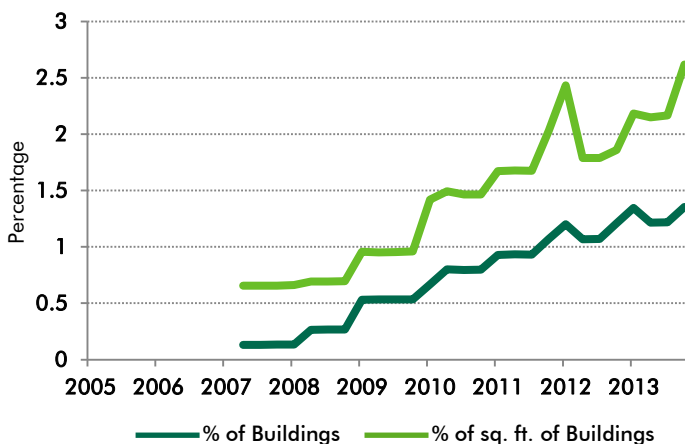
Detroit Q4 2013	% of Buildings	% sq. ft. of Buildings
Total	5.68	16.27
Energy Star	4.73	14.50
LEED	1.36	2.62
Existing Buildings	0.68	1.76
New Construction	0.54	0.65
Core and Shell	0.14	0.21

Note: Green building adoption in percent until December 31, 2013

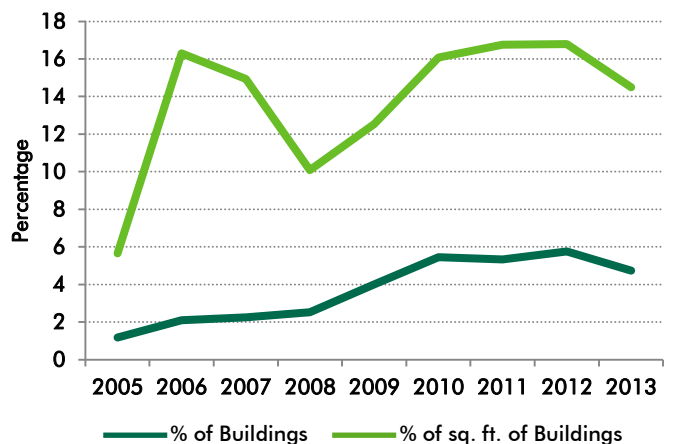
Total Adoption



LEED Adoption



Energy Star Adoption



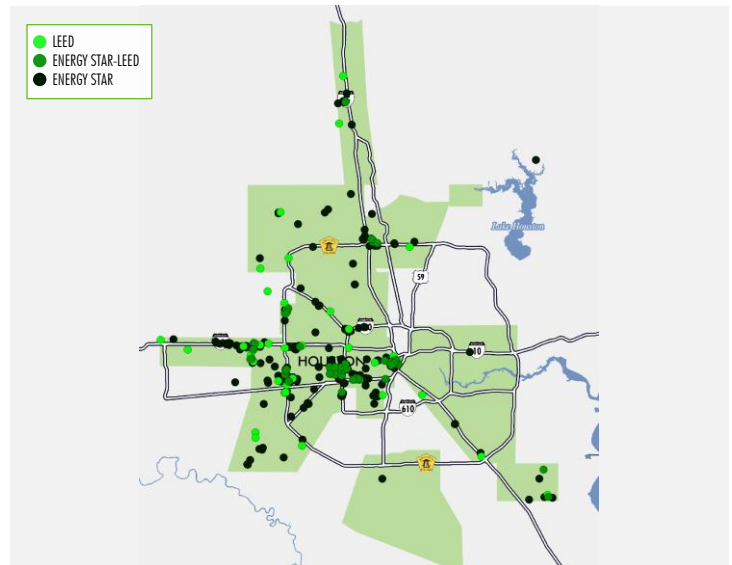
Houston

GREEN BUILDING TRENDS

The Houston commercial real estate market continues to perform as one of the nation's greenest as measured by the number and percentage of green buildings. With an impressive 54.8% of all square footage holding one or both of those distinctions, Houston trails only Minneapolis (77%), San Francisco (67.2%), and Chicago (62.1%) in this category. This translates into 269 certified buildings, which represent 105 million sq. ft. of office space. Houston is 4th again in percentage of green buildings (22.2%) and square footage Energy Star labeled (45%). And with 32.1% of all space LEED certified, Houston trails only Minneapolis (39.4%) and San Francisco (39.2%) in this category.

GREEN MARKET FACTS

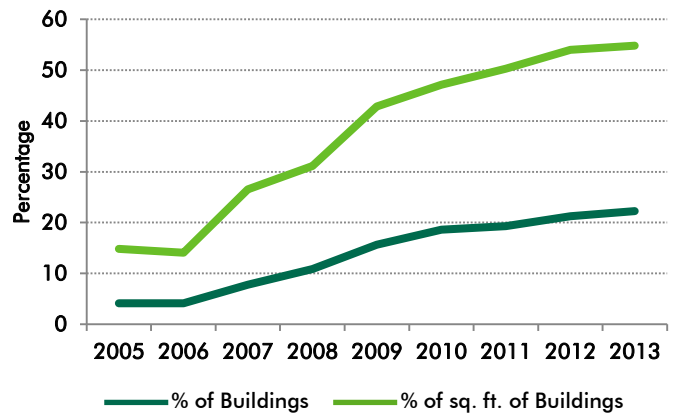
- Regulation:** Houston passed Resolution 2004-15 in 2004, requiring that all city-owned buildings and facilities over 10,000 sq. ft. shall use LEED to the greatest extent practical and reasonable, with a target of LEED Silver certification.
- Tenant demand:** An obvious answer for the extraordinarily high adoption of green building certification is the preponderance of oil and gas and other extraction-related firms located or headquartered in the market. These firms have publically embraced sustainable occupancy as a way to demonstrate their commitments to sustainability and environmental stewardship and the real estate community has responded to meet that demand. During 2013 62% of the square footage of the top 100 leasing deals by square footage were done with Energy related firms. Additionally Houston is the second most popular location for corporate headquarters, second only to New York City.
- Other facts:**
 - The EPA ranks Houston as 10th in their 2014 ["Top 25 cities with the most ENERGY STAR certified buildings"](#).
 - The first LEED certified building was the [Kirksey Corporate Office Building](#), LEED Certified for Existing Buildings in December 2006.
 - Interesting building: [Three Allen Center](#) earned Energy Star 5 times and is Gold certified under the LEED for Existing Buildings program.



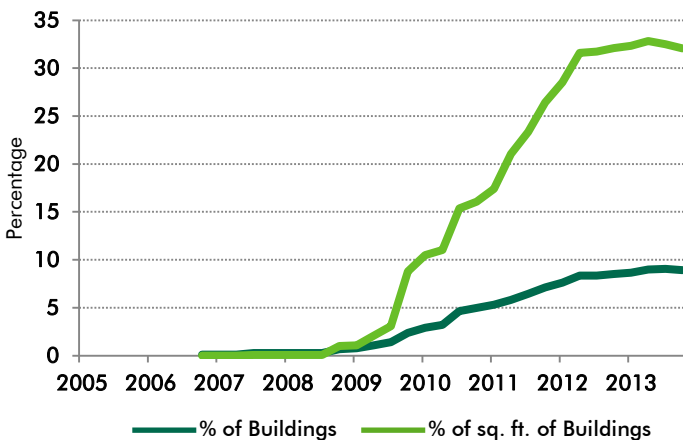
Houston Q4 2013	% of Buildings	% sq. ft. of Buildings
Total	22.23	54.82
Energy Star	18.26	45.01
LEED	8.93	32.06
Existing Buildings	5.73	27.26
New Construction	0.90	0.88
Core and Shell	2.29	3.92

Note: Green building adoption in percent until December 31, 2013

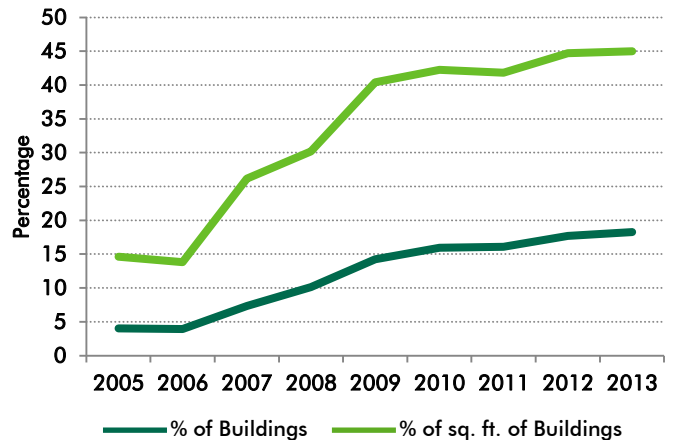
Total Adoption



LEED Adoption



Energy Star Adoption



Kansas City

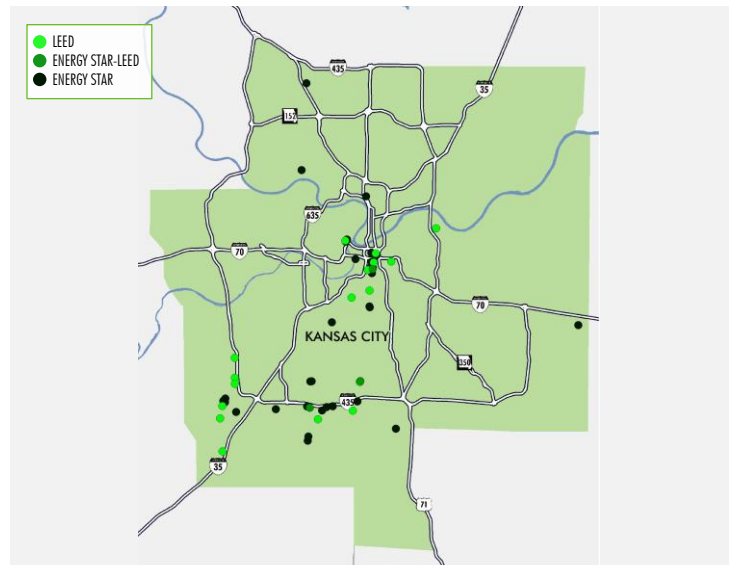
GREEN BUILDING TRENDS

Kansas City consistently lands at or near the bottom of nearly all green building categories. With 30 certified buildings, only 3.3% of the total office stock in Kansas City meets that definition, well below the national average of 13.2% and ahead of only Pittsburgh among the top 30 US cities. Similar results are found in the percentage of green space in the market, where more than 7 million sq. ft. of certified space translates to certification of 13.5% of the total Kansas City real estate market, again significantly below national averages and ahead of only Pittsburgh.

As expected, the same results are found consistently in the specific categories of Energy Star labels and various LEED certifications. A bright spot is the number of buildings certified for LEED for New Construction. For both total buildings and percentage of square footage in the market, Kansas City finishes in the top half of the markets and exceeds the national average. It is apparent that even though existing buildings are not widely pursuing sustainability certification, new buildings are being built to those standards.

GREEN MARKET FACTS

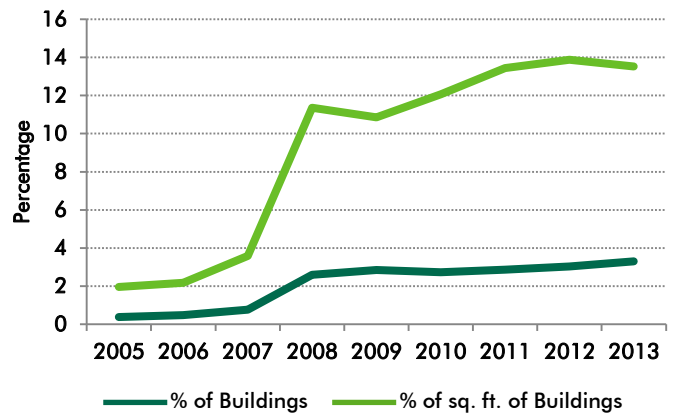
- **Regulation:** City passed Ordinance 110235 in 2011 as an update to the city's existing requirement for all new municipal buildings over 5,000 sq. ft. to earn LEED Silver certification – LEED Gold is the new requirement.
- **Tenant demand:** The Kansas City market, as reflected in 2013 leasing activity, includes a broad mix of industries, however with limited evidence of several key segments such as Technology, Life Sciences, Creative and Government - industries that tend to prioritize sustainable space.
- **Other facts:**
 - The EPA did not include Kansas City in their 2014 ["Top 25 cities with the most ENERGY STAR certified buildings"](#).
 - The first LEED certified building was [EcoWorks](#) at Southlake Phase One, LEED Certified for New Construction in July 2002.
 - Interesting building: [Lighton Plaza and Tower](#) earned Energy Star five times and LEED for Existing Buildings Silver twice.



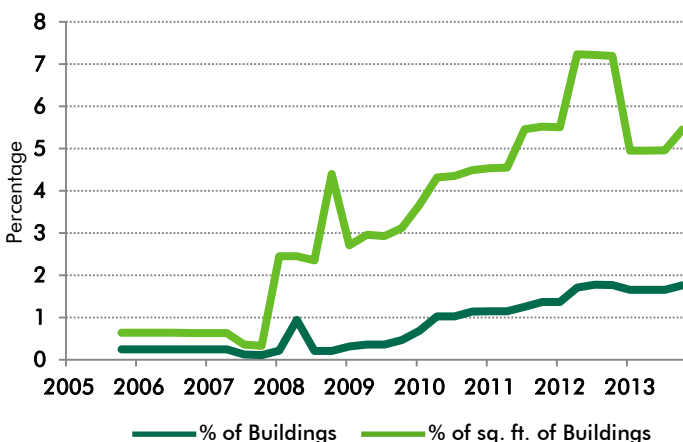
Kansas City Q4 2013	% of Buildings	% sq. ft. of Buildings
Total	3.30	13.53
Energy Star	1.76	9.61
LEED	1.76	5.45
Existing Buildings	0.55	3.10
New Construction	0.99	2.01
Core and Shell	0.22	0.34

Note: Green building adoption in percent until December 31, 2013

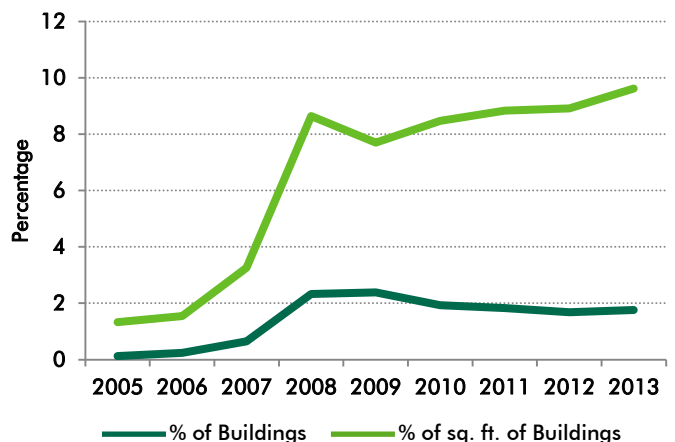
Total Adoption



LEED Adoption



Energy Star Adoption



Los Angeles

GREEN BUILDING TRENDS

The city of Los Angeles consistently ranks high in the top 10 among the 30 largest US cities in a number of green building metrics. Los Angeles has 320 certified buildings, representing almost 98 million sq. ft. of space. With 20.8% of the total office stock qualifying, Los Angeles comes in 5th nationally, trailing only Minneapolis (29.7%), Atlanta (29.6%), Manhattan (24.4%) and Houston (22.2%) while besting such notable green cities as Chicago, San Francisco, Denver and Seattle in this category. Mirroring a consistent national finding, more of the larger buildings qualified, allowing Los Angeles to claim 49.7% of all surveyed office space as green. This number places Los Angeles 6th overall nationally, trailing the leaders Minneapolis, San Francisco, Chicago, Houston and Atlanta, who all boast more than 50% green space. Los Angeles also scored a top five ranking in the number of Energy Star labeled buildings, while finishing in the top 10 for the number of LEED certified buildings and the percentage of LEED certified buildings.

GREEN MARKET FACTS

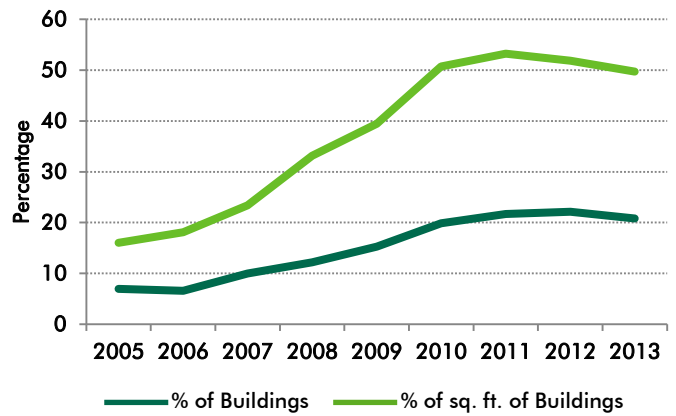
- Regulation:** All non-residential buildings offered for sale, lease, or financing larger than 10,000 sq. ft. (5,000 sq. ft. as of July 1, 2014) have to benchmark and disclose their energy use through Energy Star's Portfolio Manager as mandated through Assembly Bill 1103. Los Angeles recently repealed several green building ordinances (December 2010), previously requiring all municipal buildings larger than 7,500 sq. ft. or built before 1978 to be retrofitted with the goal of achieving LEED for Existing Buildings Silver certification, and requiring all private development of 50,000 sq. ft. or greater to earn LEED Certified and offer expedited plan review and permitting for all projects seeking LEED Silver.
- Tenant demand:** The Creative industry is involved in more than a third (36.6%) of the square footage of the largest 100 leasing. This industry has widely embraced sustainable occupancies and as the single largest industry in the market certainly influences the product offered.
- Other facts:**
 - The EPA ranks Los Angeles as 1st in their 2014 ["Top 25 cities with the most ENERGY STAR certified buildings"](#).
 - The first LEED certified building was the [South Campus Office Development](#), which earned LEED Gold for New Construction in April 2003.
 - Interesting building: [330 North Brand Boulevard](#) earned Energy Star 10 times and LEED for Existing Buildings twice, Silver and Gold respectively.



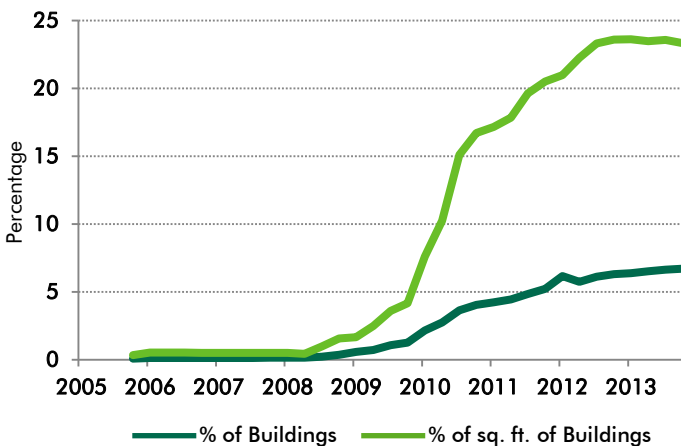
Los Angeles Q4 2013	% of Buildings	% sq. ft. of Buildings
Total	20.81	49.70
Energy Star	17.30	39.99
LEED	6.70	23.32
Existing Buildings	4.68	20.15
New Construction	1.04	1.10
Core and Shell	0.98	2.07

Note: Green building adoption in percent until December 31, 2013

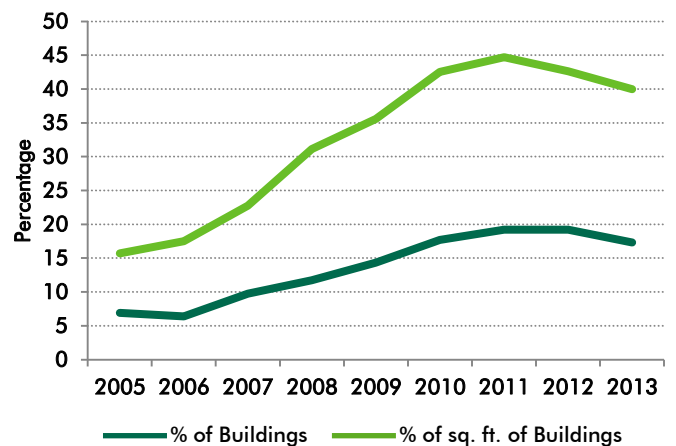
Total Adoption



LEED Adoption



Energy Star Adoption



Manhattan

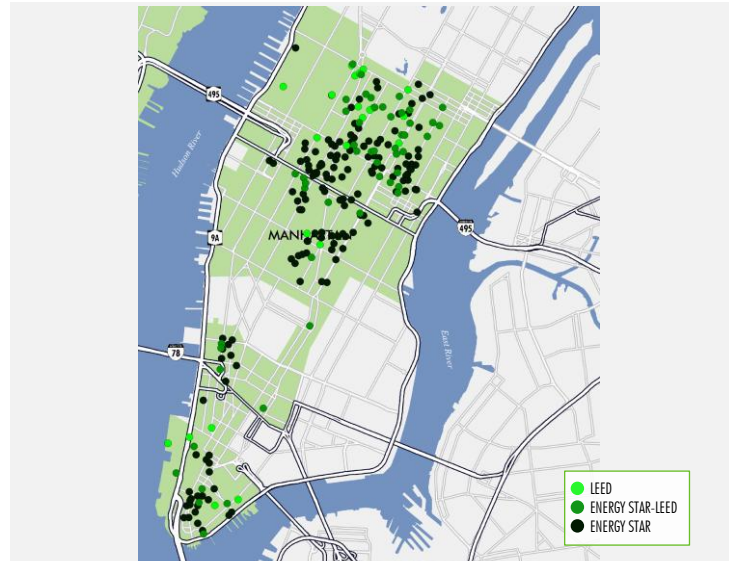
GREEN BUILDING TRENDS

Manhattan places high in the top 10 among the 30 largest US cities in a number of green building metrics. 184 buildings in Manhattan are certified, which represents some 135 million sq. ft. of space. This means that 24.4% of the total office stock qualifies as green, placing Manhattan 3rd in the nation behind only Minneapolis (29.7%) and Atlanta (26.6%). 34.6% of all square footage is in those buildings, meaning that more than one third of all Manhattan space is green-certified placing Manhattan 14th nationally in this category. In most cities the difference between the total square footage and the number of certified buildings shows a significantly higher ratio than here, often 3 to 1 or greater, primarily due to the fact that in most cities it is often only the largest buildings that are pursuing sustainability recognition. Manhattan buildings are for the most part, all large, so size of buildings plays less of a factor.

Manhattan also boasts the 3rd highest percentage of Energy Star labeled buildings with 19.8%, trailing only Minneapolis and Atlanta in this category but nearly double the national average. What is striking here is the fact that in 2007, Manhattan was a poor performer in this category, outside the top 10 nationally and trailing national averages. It is perhaps too simplistic to credit this increased interest to the passage of Local Law 84 in 2007, but the coincidence is interesting to note.

GREEN MARKET FACTS

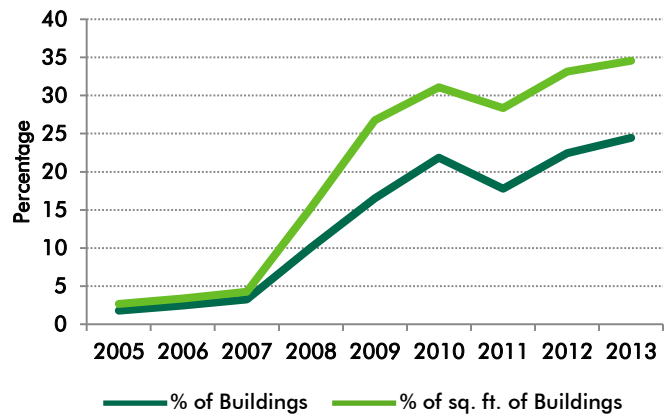
- Regulation:** Local Law 84 requires commercial buildings over 50,000 sq. ft. to: benchmark energy and water use through Energy Star, apply ASHRAE level II audits & RCx (LL 87), and apply lighting upgrades and submetering (LL 88). Local Law 86 requires all municipal construction over \$2 million to earn LEED Silver certification and non-residential capital projects costing over \$2 million and partially funded by the city must earn LEED Silver certification, while schools and hospitals must earn LEED Certified.
- Tenant demand:** The Manhattan market has a wide range of tenant types but none is more prevalent than Financial Services. In 2013, 34% of the top 100 lease deals by square footage were in that industry with the Legal and Creative industries taking the second and third in importance. All three of these industries, particularly for headquarter locations, tend to be at the top of those industries seeking sustainable occupancies.
- Other facts:**
 - The EPA ranks New York as 4th in their 2014 "Top 25 cities with the most ENERGY STAR certified buildings".
 - The first LEED certified building was [30 Hudson Street](#), which earned LEED Certified for New Construction in April 2005.
 - Interesting building: [320 Park Avenue](#) earned Energy Star 11 times, LEED for Existing Buildings twice, Silver and Gold, and reported twice to the NYC Building Energy and Water Benchmark.



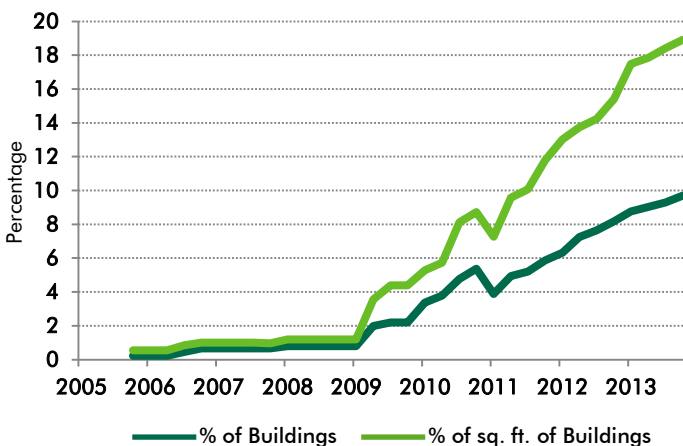
Manhattan Q4 2013	% of Buildings	% sq. ft. of Buildings
Total	24.44	34.55
Energy Star	19.79	24.29
LEED	9.69	18.91
Existing Buildings	8.23	16.48
New Construction	0.27	0.91
Core and Shell	1.20	1.51

Note: Green building adoption in percent until December 31, 2013

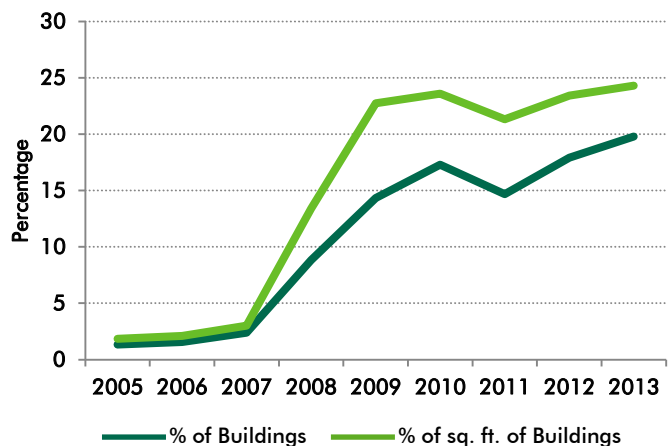
Total Adoption



LEED Adoption



Energy Star Adoption



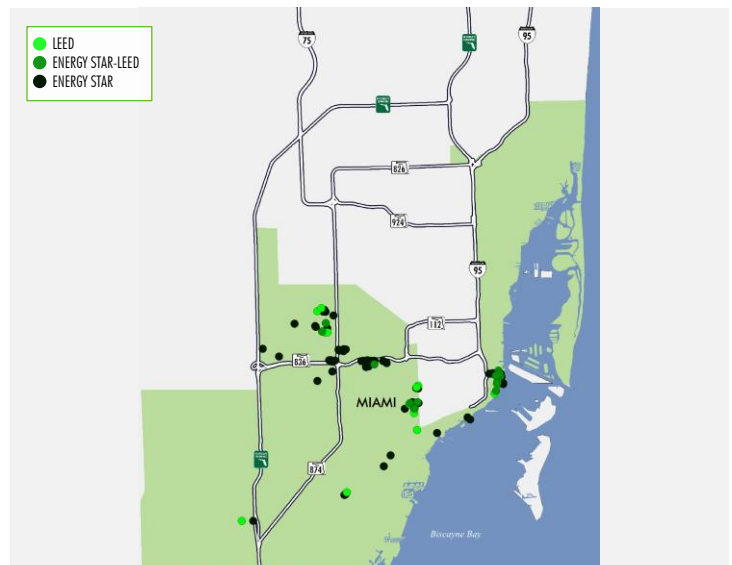
Miami

GREEN BUILDING TRENDS

In our study of green building adoption in the top 30 US markets, one of the surprises was Miami, which consistently placed in the top 10 in most metrics. 79 buildings in Miami are certified, which constitutes some 21 million sq. ft. of office space. Miami stands 9th in the US with 19.4% of the office stock qualifying as green. More importantly, 46% percent of all space, or nearly half of all space in the Miami market, is in those buildings. This was 9th overall and well ahead of the national average of 39.3%. Other top 10 finishes came in the number of Energy Star labeled buildings (14.5%), the number of LEED certified buildings (7.1%), the percentage of LEED space in the market (23.6%) and the number of LEED EB buildings in the market (4.4%). Taken together it is fair to state that the Miami commercial real estate market has embraced sustainability.

GREEN MARKET FACTS

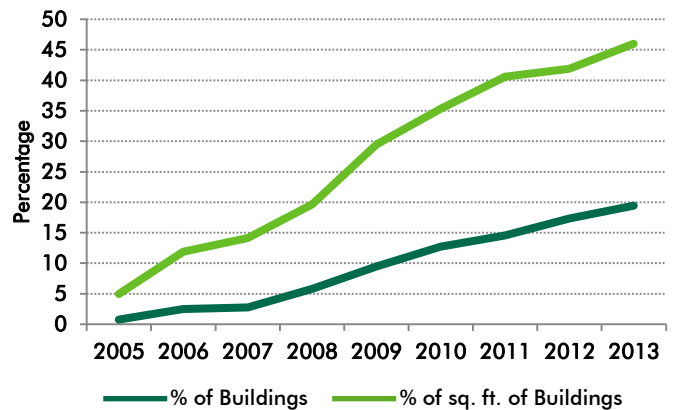
- Regulation:** Miami's Municipal Code Ordinance Article III (2009) requires all new private development over 50,000 sq. ft. to achieve LEED Silver and requires the owner to post a performance bond to guarantee LEED Silver certification, but also provides density bonuses for projects that achieve LEED Gold or Platinum.
- Tenant demand:** Typically cities highly placed in this study reflect one or two significant industries that more frequently embrace sustainability, such as Houston with the Energy industry or San Francisco with the Technology sector. The Miami market is quite diverse and in fact many of those industries most identified with sustainability, also including Life Sciences, Creative and Government played a relatively smaller role in the 2013 leasing market.
- Other facts:**
 - The EPA ranks Miami as 18th in their 2014 ["Top 25 cities with the most ENERGY STAR certified buildings"](#).
 - The first LEED certified building came on the market relatively late in Miami: [1000 Waterford](#) earned LEED Gold for Core and Shell in April 2009.
 - Interesting building: [Southeast Financial Center](#) earned Energy Star certification 10 times and is LEED for Existing Buildings Gold certified.



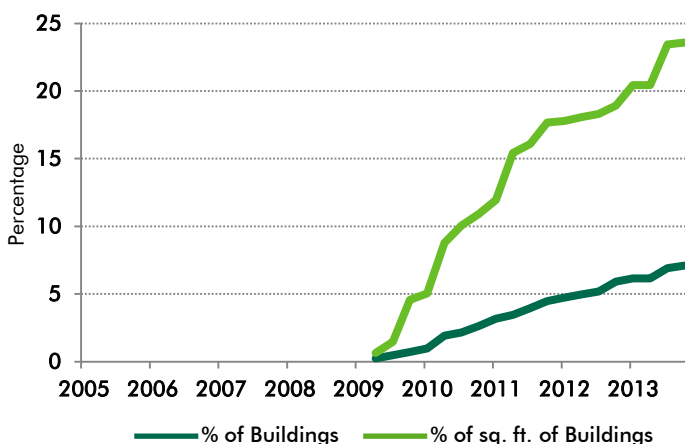
Miami Q4 2013	% of Buildings	% sq. ft. of Buildings
Total	19.42	46.00
Energy Star	14.51	29.73
LEED	7.09	23.59
Existing Buildings	4.40	14.98
New Construction	0.49	0.24
Core and Shell	2.20	8.37

Note: Green building adoption in percent until December 31, 2013

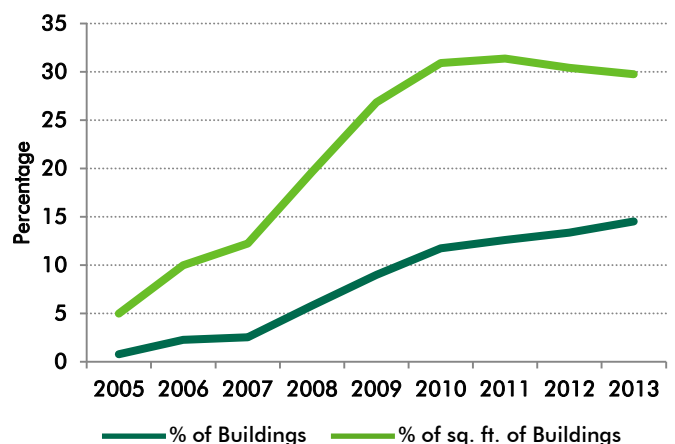
Total Adoption



LEED Adoption



Energy Star Adoption



Milwaukee

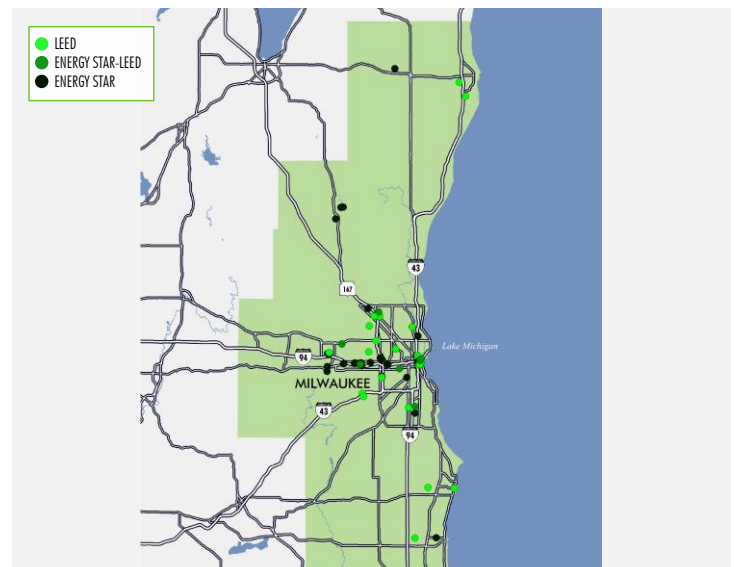
GREEN BUILDING TRENDS

The green building movement has not reached Milwaukee yet, and this market consistently lands at the bottom of nearly all green building categories. Milwaukee has 56 certified buildings, which represent a little less than 9 million sq. ft. of office space. Only 5.8% of buildings in Milwaukee meet the definition of green building, well below the national average of 13.2% and ahead of only Pittsburgh, Kansas City and Detroit among the top 30 largest US cities. Similar results are found in the percentage of green space in the market, where 20% of Milwaukee real estate qualifies, again significantly below the national average of 39.3%

As expected, the same results are found consistently in the specific categories of Energy Star labels and various LEED certifications. There is, however, one bright spot and that is the number for LEED for New Construction. For both total buildings (1.7%) and percentage of square footage in the market (2.8%) Milwaukee finishes near the top of the list and exceeds the national average. It is apparent that even though existing buildings are not widely pursuing sustainability certification, new buildings are being built to those standards.

GREEN MARKET FACTS

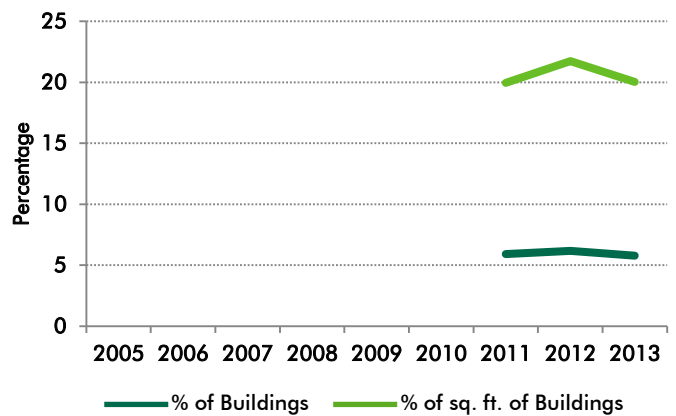
- **Regulation:** There is no evidence of existing local energy or sustainability ordinances applicable to commercial buildings.
- **Tenant demand:** The Milwaukee market is a very diverse market with no real dominant industry, according to the square footage of the top 100 leasing deals in 2013, except for Financial Services at 22%. By contrast, Technology, Life Sciences, Creative and Government, which tend to more regularly seek sustainable space, represented less than 20% of the market during the same time.
- **Other facts:**
 - The EPA did not include Milwaukee in their 2014 [“Top 25 cities with the most ENERGY STAR certified buildings”](#).
 - The first LEED certified building was the [Willie G. Davidson Product Development building](#), which earned LEED Certified for New Construction in November 2003.
 - Interesting building: [11200 West Parkland Avenue](#) earned an Energy Star certification 5 times and is LEED for Existing Buildings Gold certified.



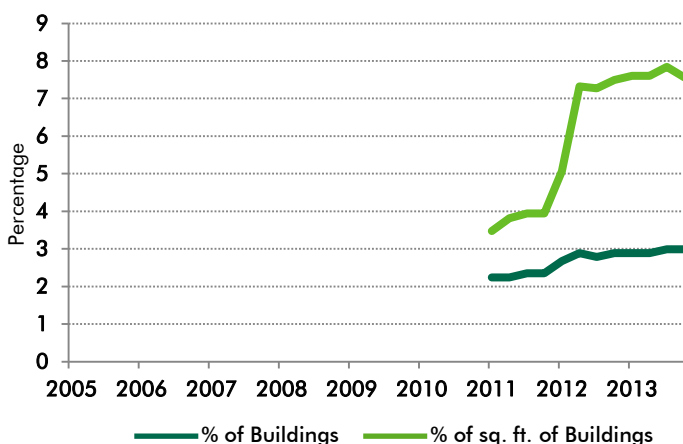
Milwaukee Q4 2013	% of Buildings	% sq. ft. of Buildings
Total	5.77	20.04
Energy Star	3.30	15.80
LEED	2.99	7.56
Existing Buildings	0.82	4.09
New Construction	1.65	2.78
Core and Shell	0.52	0.70

Note: Green building adoption in percent until December 31, 2013

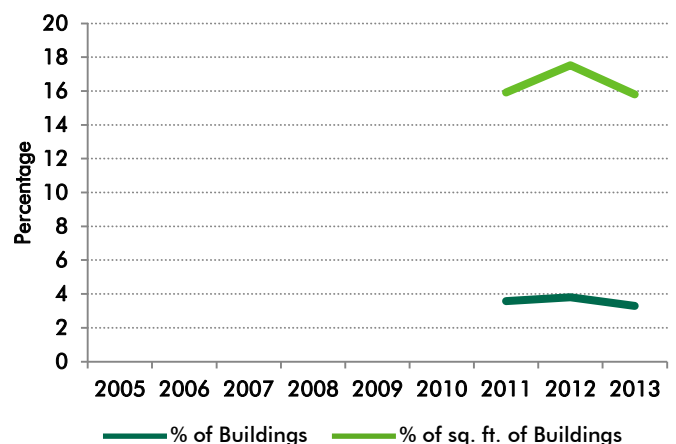
Total Adoption



LEED Adoption



Energy Star Adoption



Minneapolis/St. Paul

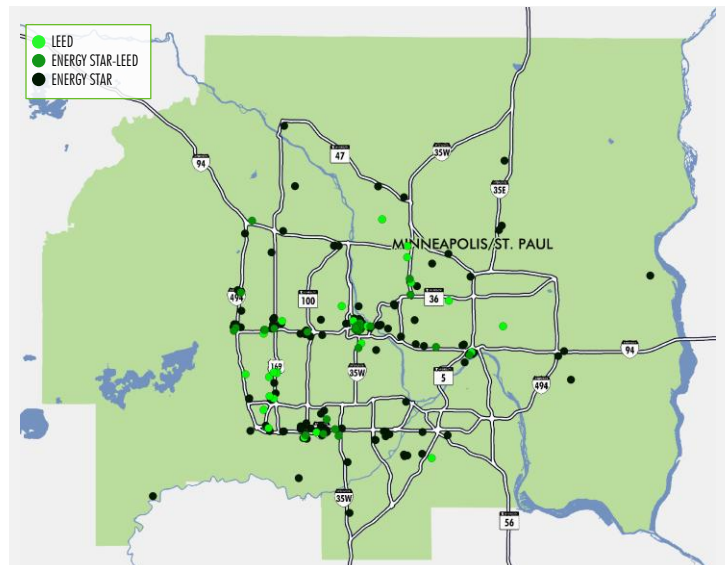
GREEN BUILDING TRENDS

And the winner is...Minneapolis. In our study of green building adoption among the top 30 US cities, the clear-cut leader is Minneapolis, with the number one position in most of the individual and overall categories. 135 buildings in Minneapolis are certified, representing more than 152 million sq. ft. of office space. This means that 29.7% of all buildings are green, the highest percentage in our study, besting Atlanta (26.6%) and Manhattan (24.4%) for the top spot. Minneapolis also leads in the percentage of green square footage in the market with a remarkable 77%. More than three quarters of all office space in Minneapolis is green, as defined above, by far the highest percentage and nearly twice the national average of 39.3%.

Minneapolis also holds the leading position in Energy Star label categories, with 22.9% of buildings and 62.8% of square footage. Both of those percentages are about twice the national average. The market also leads in LEED certification categories, with 12.1% of buildings and 39.4% of space certified. Each of these again is at least double the national average among the top 30 cities.

GREEN MARKET FACTS

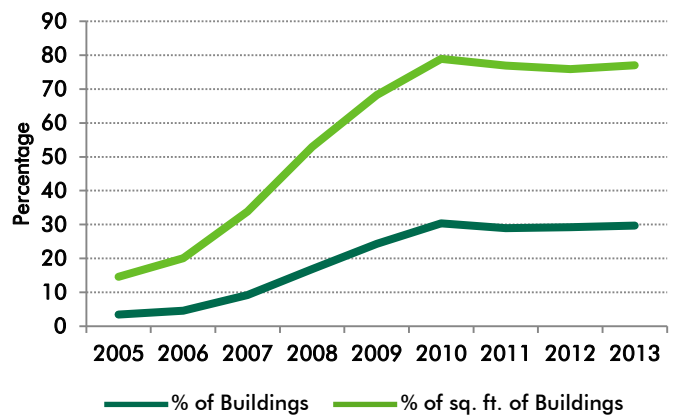
- Regulation:** Minneapolis' Chapter 47.190 includes a Commercial Building Rating and Disclosure Ordinance, requiring commercial buildings larger than 50,000 sq. ft. to use Energy Star to track energy and water use. This information is disclosed to the government and through a public website.
- Tenant demand:** A review of the historical data shows that the position of leadership is not new, as Minneapolis has led in most of green building certification metrics for at least the past three years and consistently produced numbers at least twice as high as the national averages. Sustainability is clearly integrated into the fabric and dynamics of the Minneapolis real estate market, driven, by solid demand from corporate tenants.
- Other facts:**
 - The EPA ranks Minneapolis/St. Paul as 16th in their 2014 "Top 25 cities with the most ENERGY STAR certified buildings".
 - The first LEED certified building was the [Karges-Faulconbridge Office Building](#), which earned LEED Gold for Existing Building in November 2004.
 - Interesting building: [7601 Penn Avenue South](#) earned an Energy Star certification 10 times and is LEED for Existing Buildings Gold certified.



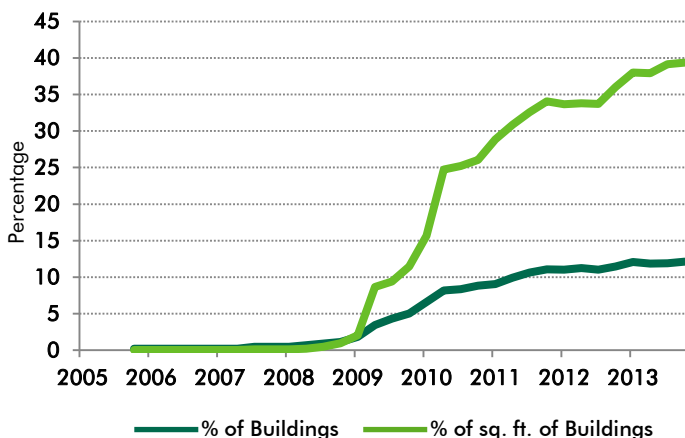
Minneapolis/St. Paul Q4 2013	% of Buildings	% sq. ft. of Buildings
Total	29.67	76.99
Energy Star	22.86	62.81
LEED	12.11	39.37
Existing Buildings	7.93	33.41
New Construction	2.86	4.00
Core and Shell	1.32	1.96

Note: Green building adoption in percent until December 31, 2013

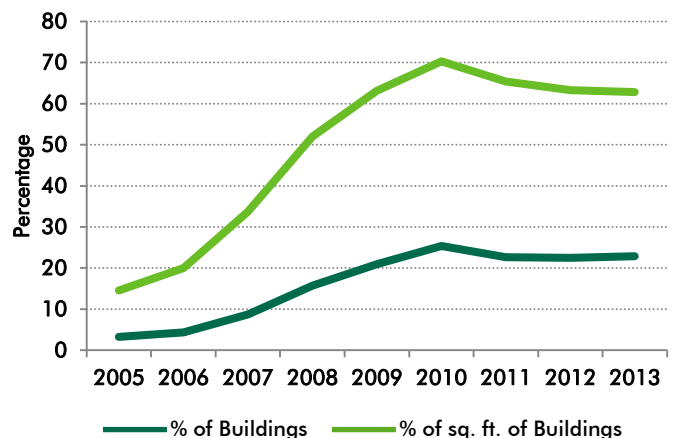
Total Adoption



LEED Adoption



Energy Star Adoption



New Jersey

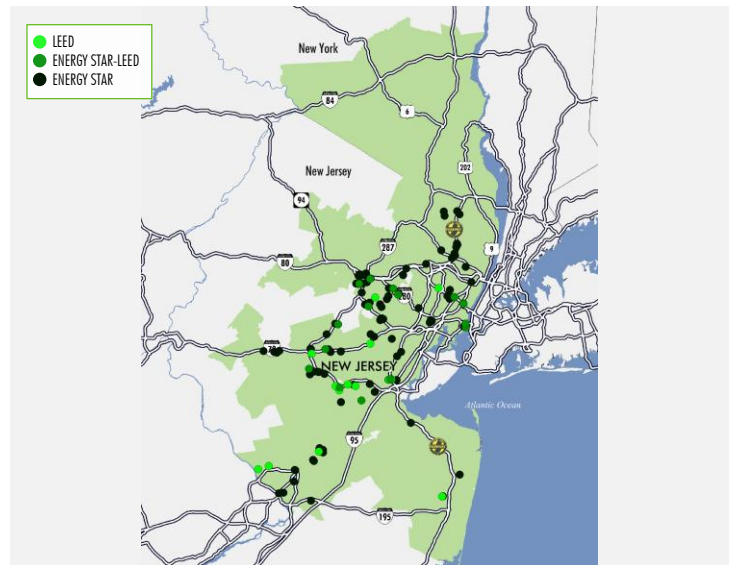
GREEN BUILDING TRENDS

The performance of the New Jersey market concerning green buildings, is mixed. 98 buildings in New Jersey are certified, representing a little less than 27 million sq. ft. of space. Although New Jersey ranks 13th measured by the fraction of the number of green buildings (13%), which is near the national average, it is only 25th in percentage of square footage that is certified (17.2%), less than half the national average. The same is true in terms of Energy Star certification, where the number of buildings, 11%, exceeds the average and places New Jersey in 12th place, but the total percentage of footage is only 13.5%, well below national averages and 26th place overall.

Unlike many markets where mostly larger buildings seek sustainability certification, New Jersey green buildings appear to be smaller, so the impact on the overall market numbers is reduced. Another area where this appears to hold true is in the LEED for Existing Buildings statistics. With 2.7% of buildings holding this designation, New Jersey ranks 14th.

GREEN MARKET FACTS

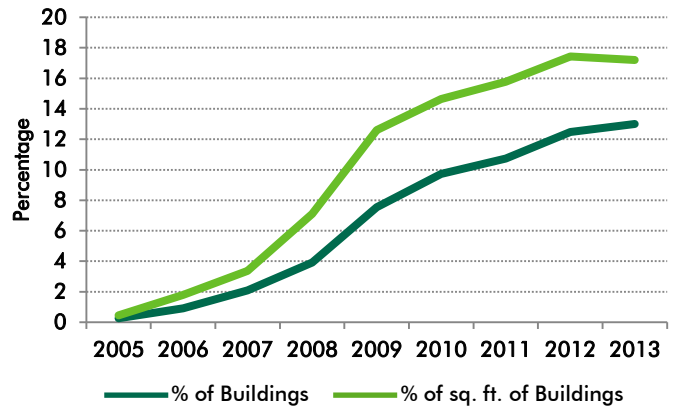
- Regulation:** New Jersey's Ordinance 09-001 was passed in 2009, and requires all new construction and renovations of municipal buildings to obtain LEED Silver certification. Ordinance 09-002, also passed in 2009, makes new construction and renovations of commercial projects pursuing LEED Platinum certification eligible to receive a 25% permit and land development application fee refund; whereas Gold, Silver, or Certified will receive a refund of 20%, 15%, or 10%, respectively.
- Tenant demand:** The number one industry represented in the New Jersey leasing market in 2013 was Life Sciences. At 24% of the market this was significantly higher than in any other top 30 market last year. Technology and Life Sciences related firms have typically sought more sustainable buildings. However, the higher energy usage of some Technology users has prevented them from gaining Energy Star certification.
- Other facts:**
 - The EPA ranks New York, which includes New Jersey, as 4th in their 2014 "Top 25 cities with the most ENERGY STAR certified buildings".
 - The first LEED certified building was the [Janssen Pharmaceutica Inc. Headquarters](#), which earned LEED Silver for Existing Buildings in August 2004.
 - Interesting building: The [MetLife](#) building earned an Energy Star certification 7 times and is LEED for Existing Buildings Gold certified.



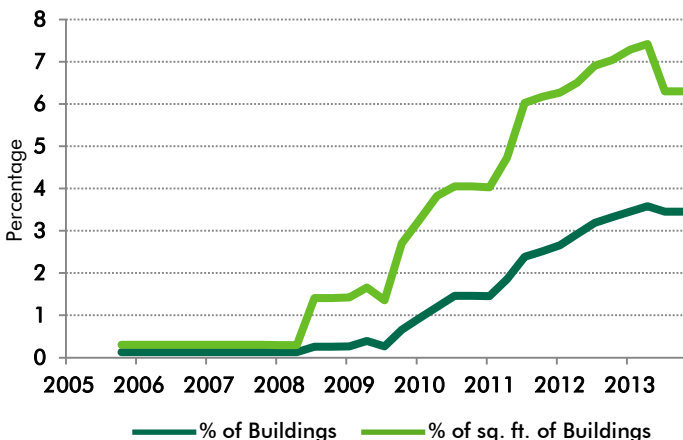
New Jersey Q4 2013	% of Buildings	% sq. ft. of Buildings
Total	13.00	17.19
Energy Star	11.01	13.45
LEED	3.45	6.29
Existing Buildings	2.65	5.25
New Construction	0.53	0.86
Core and Shell	0.27	0.19

Note: Green building adoption in percent until December 31, 2013

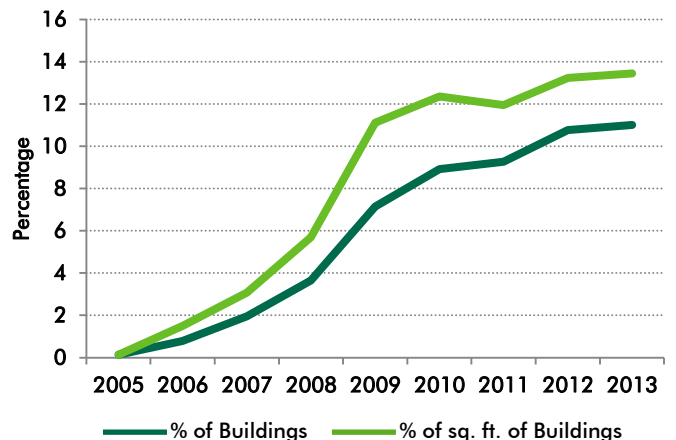
Total Adoption



LEED Adoption



Energy Star Adoption



Orange County

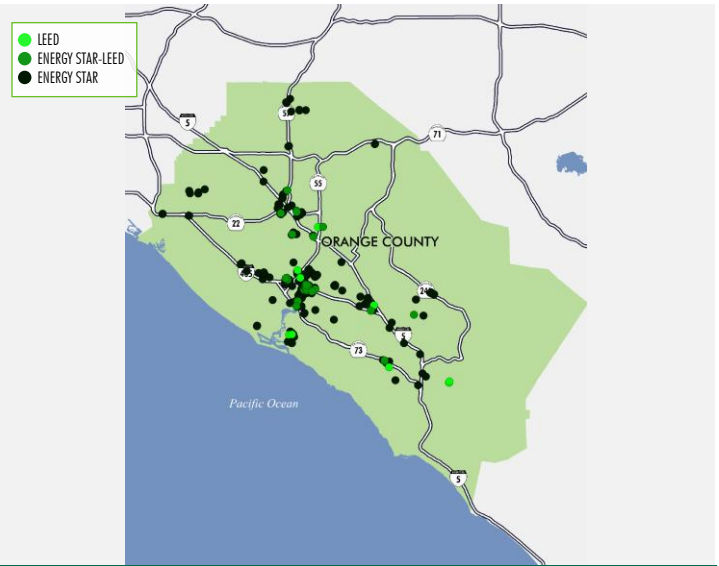
GREEN BUILDING TRENDS

The Orange County market performs below national averages in most green building categories. 180 buildings in Orange County are certified, representing some 34 million sq. ft. of office space. The overall adoption rate, 9.8% of the total office stock, compares unfavorably to the national average of 13.2%, as does the total percentage of square footage at 33.8%, which trails the national average of 39.3%. These numbers rank Orange County 20th and 15th, respectively, against the other top 30 markets reviewed.

However, an area where the Orange County market exceeds national standards is in Energy Star certification. With 31.4% of the total square footage in the market holding an Energy Star label, Orange County ranks 9th nationally and exceeds the national average of 30.3%. The market has not equally embraced LEED certification though, with only 2.3% of the office stock certified ranking Orange County 26th in the 30 top markets nationally. The total percentage of space certified by LEED, 10.1%, is barely half of the national average of 19.2%.

GREEN MARKET FACTS

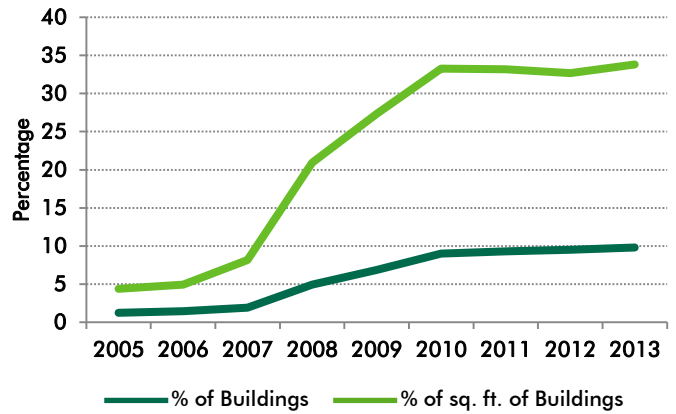
- Regulation:** All non-residential buildings offered for sale, lease, or financing larger than 10,000 sq. ft. (5,000 sq. ft. as of July 1, 2014) have to benchmark and disclose their energy use through Energy Star's Portfolio Manager as mandated through Assembly Bill 1103.
- Tenant demand:** The Orange County market is very diverse with no single dominant industry. Nevertheless, in 2013 the industry leading leasing activity was health care. Healthcare occupiers are typically heavier energy users due to the 24/7/365 demands of their critical care facilities. Some other sustainability matters, such as waste handling and treatment and water reduction, are also more difficult given the nature of the medical process. However, many Healthcare providers are moving rapidly toward energy efficiency and sustainability and this could bode well for future demands for more sustainable space.
- Other facts:**
 - The EPA ranks Los Angeles, which includes Orange County, as 1st in their 2014 ["Top 25 cities with the most ENERGY STAR certified buildings"](#).
 - The first LEED certified building was the [Premier Automotive Group North American Headquarters \(Ford Motor Company\)](#), which earned LEED Certified for New Construction as early as November 2001.
 - Interesting building: [2040 Main Street](#) earned an Energy Star certification nine times and is LEED for Existing Buildings Gold certified.



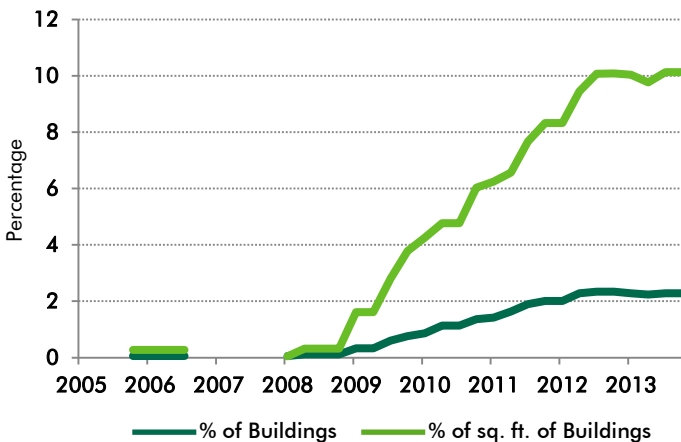
Orange County Q4 2013	% of Buildings	% sq. ft of Buildings
Total	9.79	33.82
Energy Star	9.03	31.44
LEED	2.29	10.13
Existing Buildings	2.01	9.31
New Construction	0.05	0.04
Core and Shell	0.22	0.77

Note: Green building adoption in percent until December 31, 2013

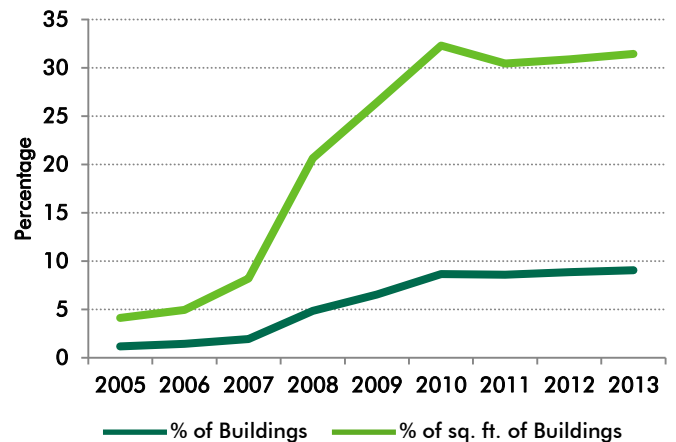
Total Adoption



LEED Adoption



Energy Star Adoption



Philadelphia

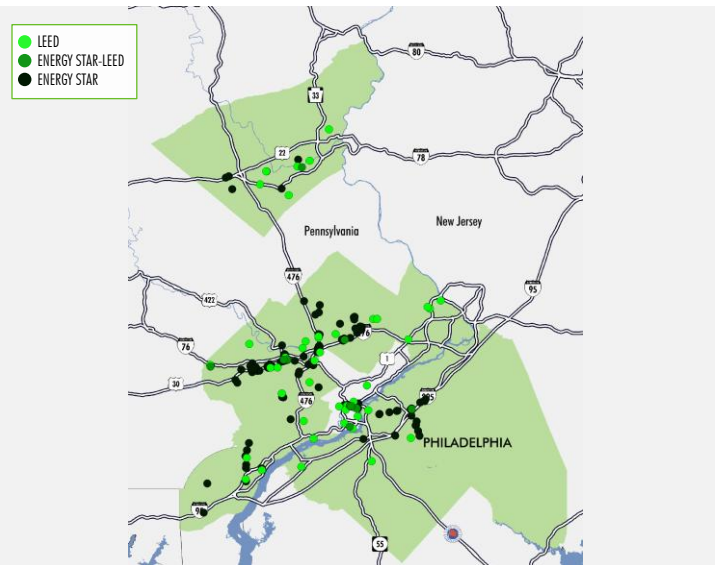
GREEN BUILDING TRENDS

The Philadelphia market performs near or above national averages in many green building categories and in some categories appears in the top 10 among the 30 largest US cities. Philadelphia has 184 certified buildings, which represent some 38 million sq. ft. of office space. The overall adoption rate in Philadelphia of 16.9% of total buildings compares favorably to the national average of 13.2%, and places this market in 9th position. The total percentage of square footage in the market of 36.7% minimally trails the national average of 39.3% and places Philadelphia in 11th position in this category.

Philadelphia also finishes in 10th place for both the number of Energy Star labeled buildings (12.9%) and the percentage of Energy Star labeled square footage in the market (30%). One other interesting fact to note is that while 5% of the Philadelphia market holds some level of LEED certification, slightly behind the national average of 5.1%, the total percentage of square footage, 12%, significantly trails the national average of 19.4% and places Philadelphia only 20th. In most markets, the LEED certified buildings have generally been the largest and the ratio of building square footage to building numbers they represent is typically much larger than in Philadelphia.

GREEN MARKET FACTS

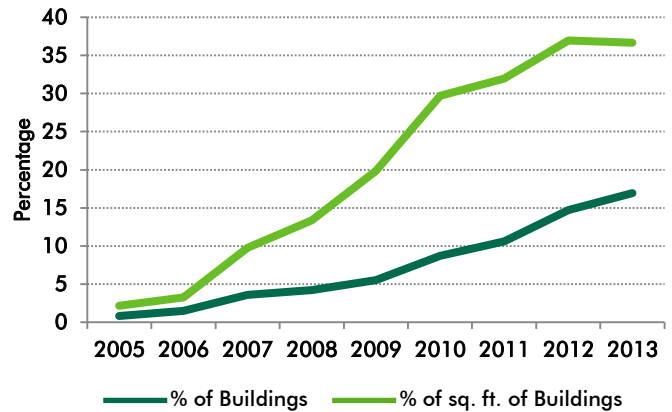
- Regulation:** The Philadelphia Zoning Commission Final Report (2011) provides a floor area density bonus to construction projects that attain LEED Platinum or Gold certification. Bill 080025, passed in 2009, requires all new municipal buildings over 10,000 sq. ft. to achieve LEED Silver certification and to use 20% less energy than basic, code-compliant structures. More recently, Bill 120428-A requires commercial buildings over 50,000 sq. ft. to report to Energy Star for energy and water use tracking. This information is disclosed to the government and made public through a website. It is also reported at the time of transaction.
- Tenant demand:** There is no dominant industry type driving demand in the Philadelphia market. The user mix was broadly distributed across 2013's leasing activity. However, there was reasonably high demand in both the Technology and Government sectors, which have generally been among the most active seekers of sustainable occupancies.
- Other facts:**
 - The EPA ranks Philadelphia as 9th in their 2014 ["Top 25 cities with the most ENERGY STAR certified buildings"](#).
 - The first LEED certified building was the [J. Richard Carnall Center](#) owned by PNC, which earned LEED Gold for New Construction in June 2003.
 - Interesting building: [11 Penn Center](#) earned an Energy Star certification nine times and is LEED for Existing Buildings Silver certified.



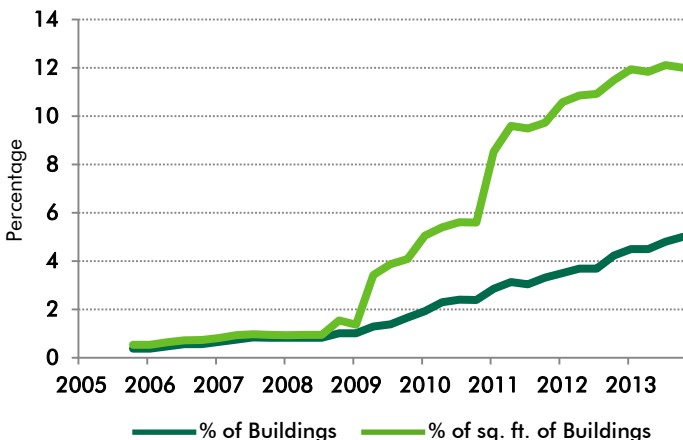
Philadelphia Q4 2013	% of Buildings	% sq. ft of Buildings
Total	16.93	36.66
Energy Star	12.88	29.96
LEED	4.99	12.00
Existing Buildings	1.39	5.64
New Construction	1.66	2.11
Core and Shell	1.94	4.24

Note: Green building adoption in percent until December 31, 2013

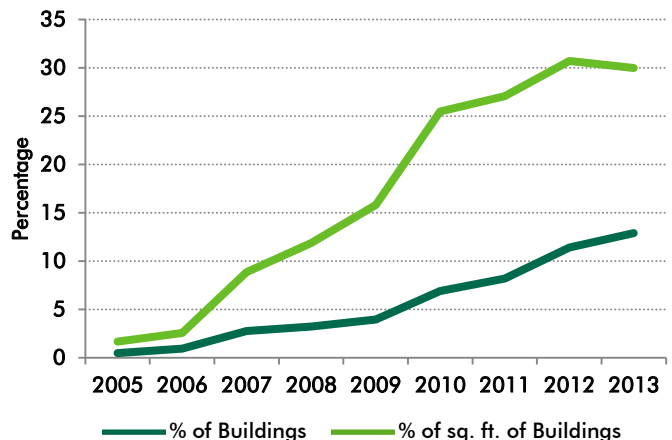
Total Adoption



LEED Adoption



Energy Star Adoption



Phoenix

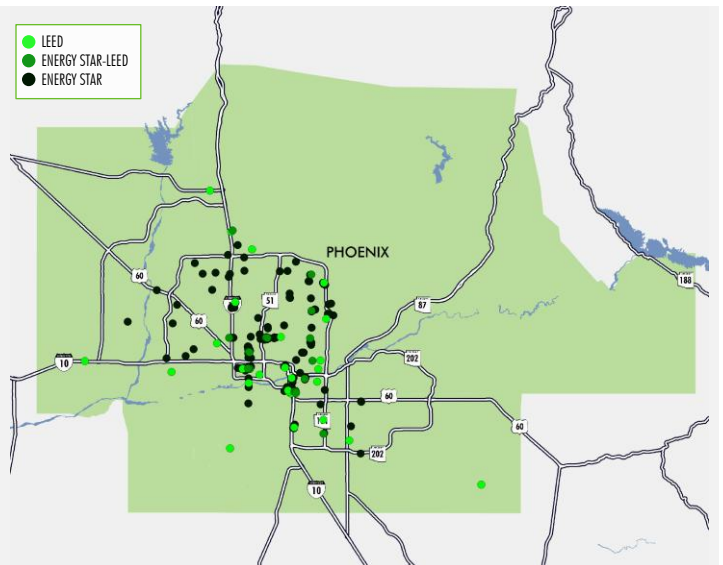
GREEN BUILDING TRENDS

The Phoenix market performs below national averages in every major green building metric and in most categories appears in the bottom ten among the 30 largest US cities. 107 buildings in Phoenix are certified, representing more than 22 million sq. ft. of office space. The overall adoption rate in Phoenix of 8.7% of total buildings compares unfavorably to the national average of 13.2%, and places this market in 22nd position. The total percentage of square footage in the market of 28% also trails the national average of 39.3% and places Phoenix in 21st position in this category.

Phoenix ranks 20th for the number of Energy Star labeled buildings (6.9%) and 19th in the percentage of Energy Star labeled square footage in the market (23.3%), both well below national averages.

GREEN MARKET FACTS

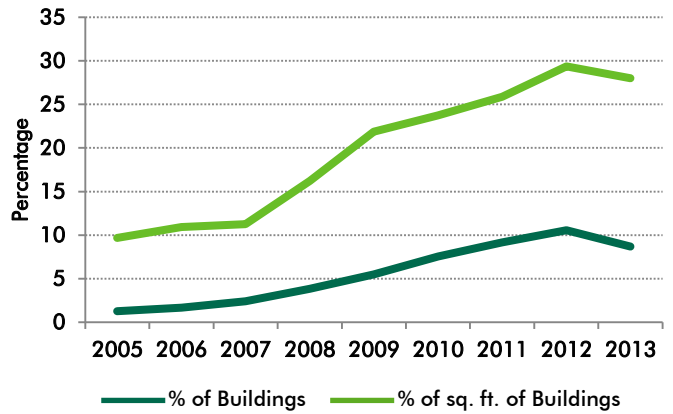
- Regulation:** The Phoenix City Building Standards Revision (2005) requires all new municipal buildings built with 2006 Bond Funds to be LEED Certified, and in 2006, the City Building Standards were revised to include additional efficiency measures.
- Tenant demand:** The Phoenix market is a very diverse market as evidenced by the type of leasing activity experienced in 2013. Business Services represented more than a third of the market, although Insurance lead the way at 20%. Most markets at or near the top of the green building adoption index tended to have one or two dominant industries that embraced sustainability, such as Technology, Life Sciences, Creative or Government, and none of these industries appear to play a key role in current leasing demand in Phoenix.
- Other facts:**
 - The EPA ranks Phoenix as 12th in their 2014 [“Top 25 cities with the most ENERGY STAR certified buildings”](#).
 - The first LEED certified building was the [Roosevelt Facility](#), which earned LEED Certified for Existing Buildings in April 2005.
 - Interesting building: The [US Airways Corporate HQ](#) earned an Energy Star certification 14 times and is LEED for Existing Buildings Gold certified.



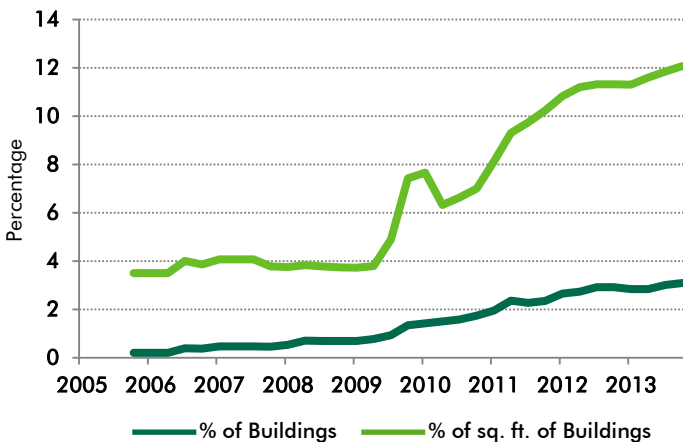
Phoenix Q4 2013	% of Buildings	% sq. ft. of Buildings
Total	8.68	28.00
Energy Star	6.89	23.23
LEED	3.09	12.07
Existing Buildings	1.71	8.51
New Construction	0.81	1.50
Core and Shell	0.57	2.06

Note: Green building adoption in percent until December 31, 2013

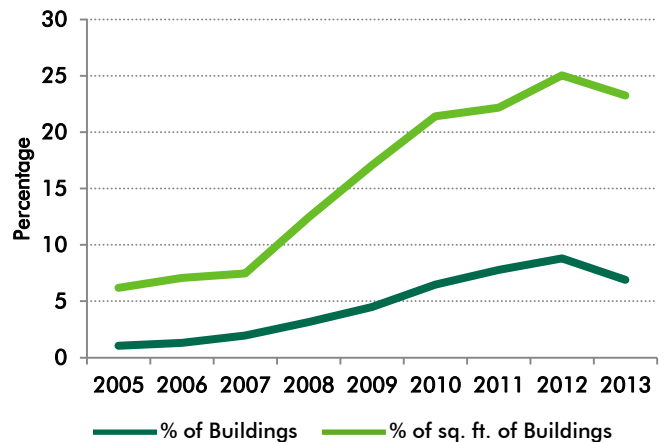
Total Adoption



LEED Adoption



Energy Star Adoption



Pittsburgh

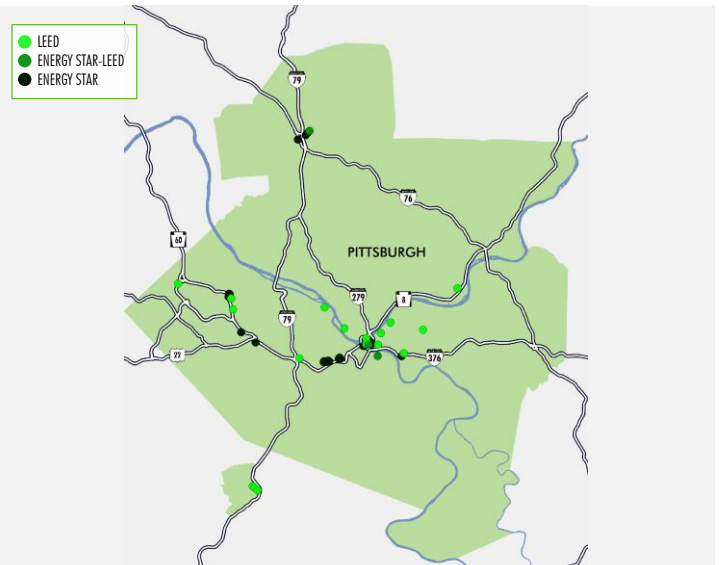
GREEN BUILDING TRENDS

The green building movement has not yet reached the commercial real estate market in Pittsburgh, as this market consistently lands at the bottom of nearly all green building categories. Although many municipal and corporate facilities are certified, Pittsburgh has only 22 certified commercial buildings, which represent 7.5 million sq. ft. of space. Just 1.8% of buildings in Pittsburgh meet that definition, well below the national average of 13.2% and literally number 30 among the top 30 markets in the US. Similar results are found in terms of the percentage of green space in the market (measured by square footage), where only 10% of Pittsburgh real estate qualifies, again significantly below the national average of 39.3%

As would be expected, similar results are found consistently in the specific categories of Energy Star labels and various LEED certifications. Less than 1 percent (0.56%) of buildings gained an Energy Star label, which represented only 6.3% of all space, both numbers significantly below national averages. Only 1.3% of Pittsburgh buildings hold LEED certification, representing just 2.6% of the market square footage. These contrast sharply with national averages for LEED certification of 5.1% and 19.4% respectively. There is, however, one bright spot and that is the number for LEED NC certification, especially as a percentage of the market square footage, where with 3.3% Pittsburgh ranked 3rd, more than double the national average. It is apparent that even though existing buildings in Pittsburgh are not widely pursuing sustainability certification, new buildings are being built to those standards.

GREEN MARKET FACTS

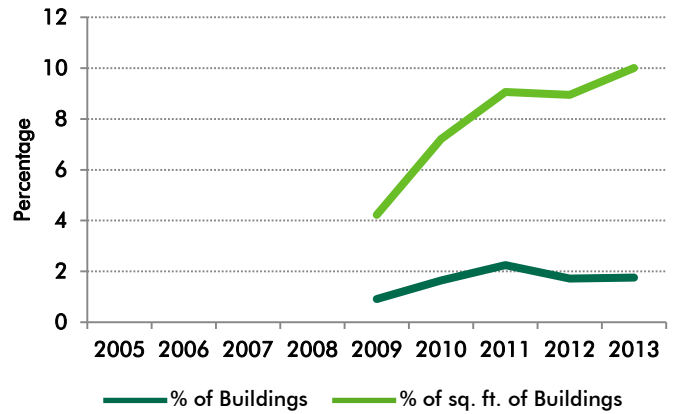
- Regulation:** Pittsburgh Ordinance 2008-0027, passed in 2009, requires all projects receiving Tax Increment Financing and all new construction on municipal property of 10,000 sq. ft. or costing in excess of \$2 million, to achieve LEED Silver certification. The Pittsburgh Sustainable Development Bonus, passed in 2007, grants a density bonus of an additional 20% FAR and an additional variance of 20% of the permitted height for projects that earn LEED NC or LEED CS certification in all nonresidential zoning districts.
- Tenant demand:** Technology tenants represent 12% of the leasing market in 2013, and another 8% are listed as Creative. These types of tenants tend to seek more sustainable space and other markets with a preponderance of these types of tenants tend to have higher levels of green buildings. Perhaps over time these industries will stimulate this market to higher sustainability levels.
- Other facts:**
 - The EPA does not include Pittsburgh in their 2014 ["Top 25 cities with the most ENERGY STAR certified buildings"](#).
 - The first LEED certified building was the [PNC Firstside Center](#) (the first green building in PNC's portfolio), which earned LEED Silver for New Construction as early as October 2000.
 - 11 Stanwix Street, earned a 2014 EBie award in the All-Rounder category from the Urban Green Council.



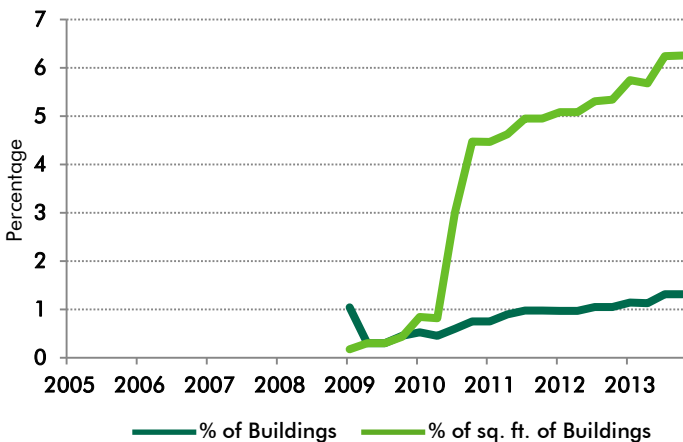
Pittsburgh Q4 2013	% of Buildings	% sq. ft. of Buildings
Total	1.76	10.01
Energy Star	0.56	6.34
LEED	1.31	6.25
Existing Buildings	0.33	2.28
New Construction	0.74	3.27
Core and Shell	0.25	0.70

Note: Green building adoption in percent until December 31, 2013

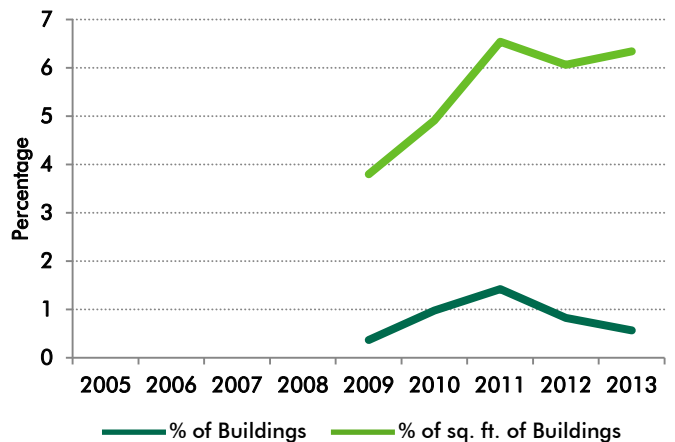
Total Adoption



LEED Adoption



Energy Star Adoption



Portland

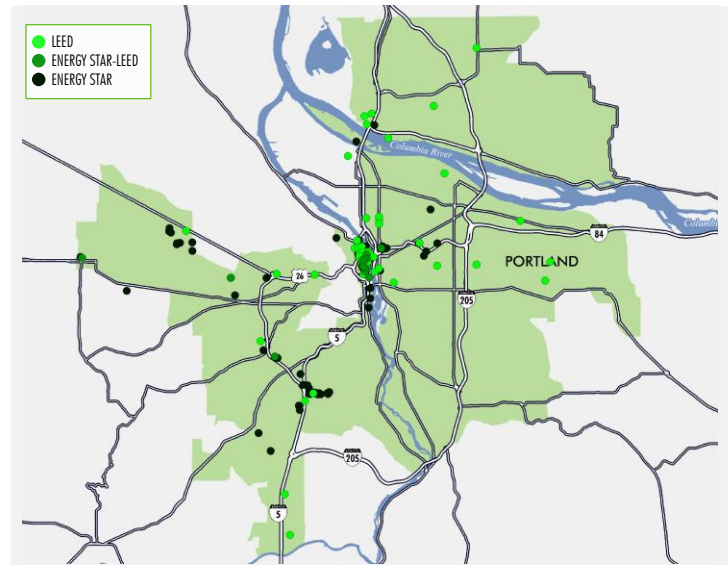
GREEN BUILDING TRENDS

The Portland office market performs near or below national averages in most green building categories, finishing in the bottom half in most categories among the 30 largest US office markets. 88 buildings in Portland are certified, representing more than 14 million sq. ft. of office space. The overall adoption rate in Portland of 10.8% of the total office stock compares unfavorably to the national average of 13.2%, and places this market in 15th position. The percentage of green square footage in the market, of 30.8%, also trails the national average of 39.3% and places Portland in 20th position in this category.

Only 6.5% of all Portland buildings have earned an EPA Energy Star label, compared to a national average of 10.2% and the total percentage of space, at 22.3% also trails the national average of 30.3%. Only in the total number of LEED certified buildings, with 5.3%, does Portland exceed national averages, and in this category that performance places Portland in 13th place in the top 30 real estate markets.

GREEN MARKET FACTS

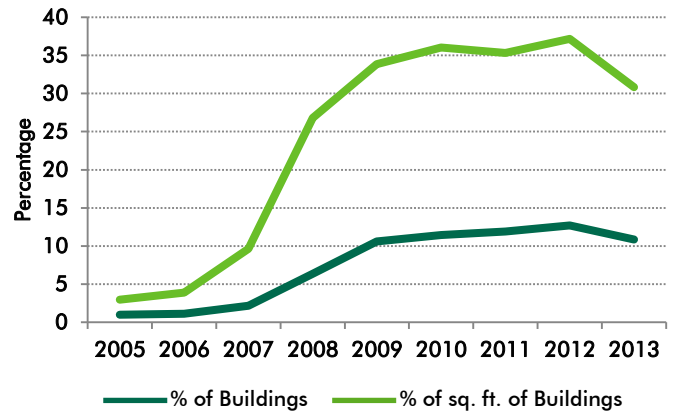
- Regulation:** Portland, Oregon, passed Resolution 243213 in 2009. This requires all new city construction to meet LEED Gold standards and all interior improvements to city buildings to use a city guide and/or achieve Silver for LEED for Commercial Interiors, while all existing city buildings are to pursue Silver certification under LEED for Existing Buildings and all bureaus must use LEED for Existing Buildings as a guide. Resolution 6262, passed in 2005, requires all private development over 10,000 sq. ft. and receiving financial assistance from the PDC and other public agencies, including fee or tax waivers, equal or greater to 10% of the total project cost, to earn LEED Silver certification.
- Tenant demand:** The city of Portland has a well-deserved reputation for progressive environmental practices. However, to date this initiative has not been demonstrated as strongly in the commercial real estate market. This is especially surprising given the fact that nearly 25% of the square footage of the top 100 transactions during the past year have been with high tech companies, who generally have higher demands for green space.
- Other facts:**
 - The EPA ranks Portland, Oregon, as 24th in their 2014 [“Top 25 cities with the most ENERGY STAR certified buildings”](#).
 - The first LEED certified building was [Viridian Place](#), which earned LEED Certified for New Construction as early as November 2001.
 - Interesting building: The [Congress Center](#) earned an Energy Star certification 7 times and is LEED for Existing Buildings Gold certified.



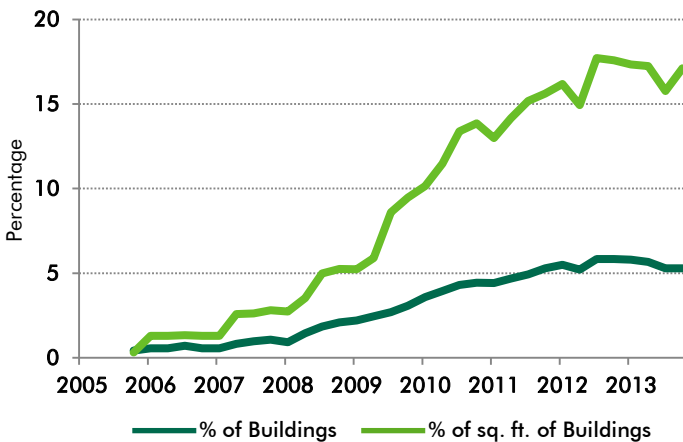
Portland Q4 2013	% of Buildings	% sq. ft of Buildings
Total	10.83	30.82
Energy Star	6.52	22.25
LEED	5.28	17.11
Existing Buildings	1.84	11.39
New Construction	2.09	2.99
Core and Shell	1.35	2.73

Note: Green building adoption in percent until December 31, 2013

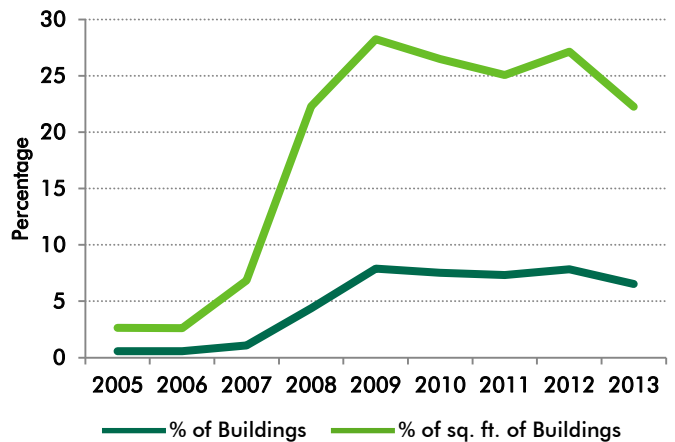
Total Adoption



LEED Adoption



Energy Star Adoption



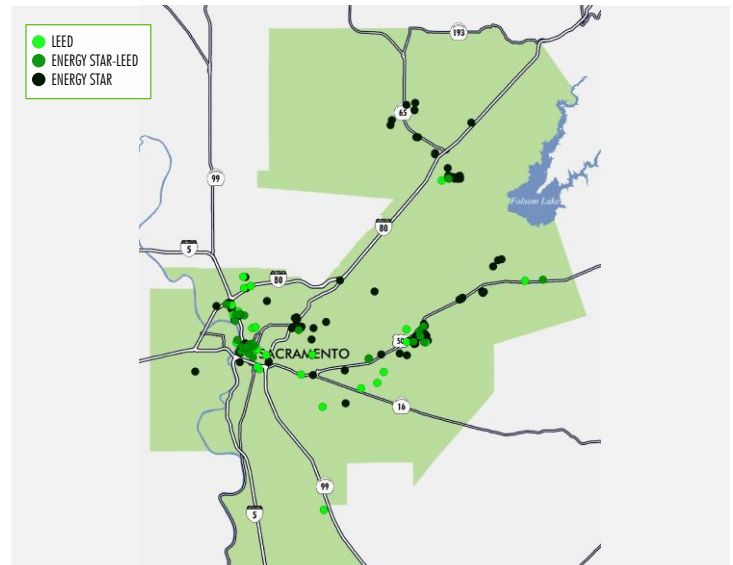
Sacramento

GREEN BUILDING TRENDS

The Sacramento market consistently scores in the middle of the pack and slightly below national averages in many green building categories among the 30 largest US cities. 136 buildings in Sacramento are certified, which constitutes almost 17 million sq. ft. of office space. The overall adoption rate in Sacramento, 12% of total buildings, trails the national average of 13.2%, and places this market in 14th position. The total percentage of square footage in the office market, 31.4%, also trails the national average of 39.3% and places Sacramento in 19th position in this category. Sacramento finishes in 15th place for the number of Energy Star labeled buildings (8.9%) and 16th in the percentage of Energy Star labeled footage in the market (24.3%). Sacramento trails the national averages for both of those categories as well.

GREEN MARKET FACTS

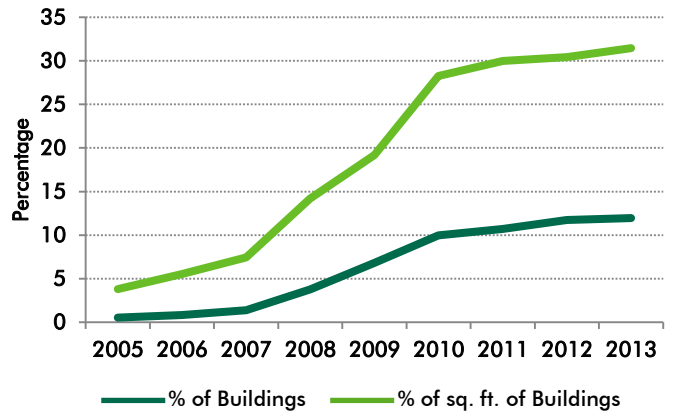
- Regulation:** All non-residential buildings offered for sale, lease, or financing larger than 10,000 sq. ft. (5,000 sq. ft. as of July 1, 2014) have to benchmark and disclose their energy use through Energy Star's Portfolio Manager as mandated through Assembly Bill 1103. Sacramento's Resolution 2004-751, passed in 2004, requires the highest level of LEED certification possible for all city projects, but LEED Silver should be the goal for projects over 5,000 sq. ft.
- Tenant demand:** As expected, Governmental Agencies represented the largest segment of the Sacramento market in 2013. Nearly 26% of the square footage of the top 100 leases were with Government, which typically seek and lease sustainable options. There was relatively thin demand among Technology or Legal firms, two other segments that typically seek this type of space.
- Other facts:**
 - The EPA ranks Sacramento as 17th in their 2014 "[Top 25 cities with the most ENERGY STAR certified buildings](#)".
 - The first LEED certified building was the [DPR-ABD Office Building](#), which earned LEED Silver for New Construction in January 2004.
 - Interesting building: [300 Capitol Mall](#) earned an Energy Star certification 11 times and is LEED for Existing Buildings Gold certified.



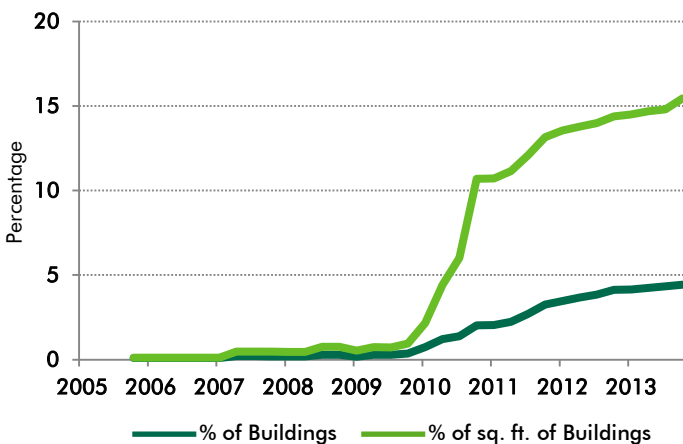
Sacramento Q4 2013	% of Buildings	% sq. ft. of Buildings
Total	11.96	31.44
Energy Star	8.85	24.29
LEED	4.42	15.44
Existing Buildings	3.01	11.66
New Construction	0.85	2.40
Core and Shell	0.56	1.38

Note: Green building adoption in percent until December 31, 2013

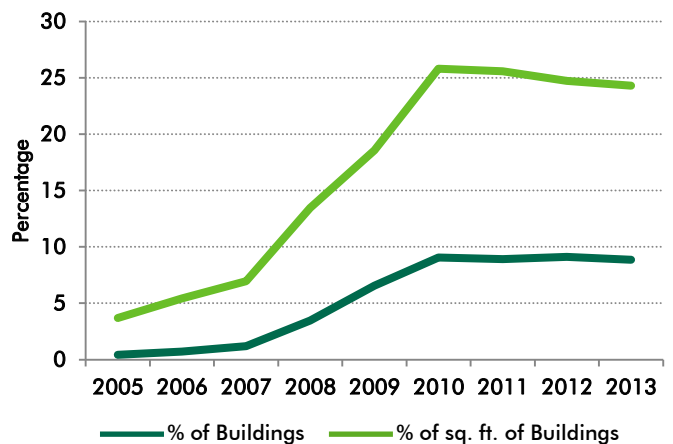
Total Adoption



LEED Adoption



Energy Star Adoption



San Diego

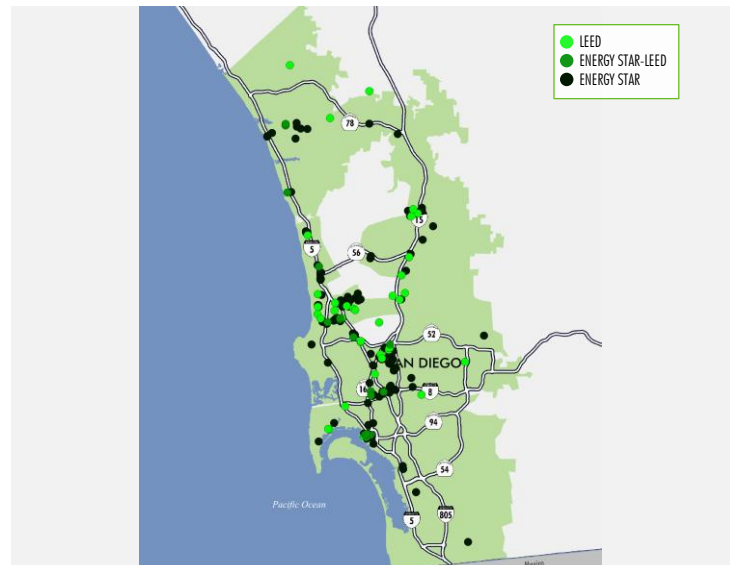
GREEN BUILDING TRENDS

The San Diego market generally scores in the bottom half and below national averages in many green building categories among the 30 largest US cities. San Diego has 145 certified buildings, which represent more than 23 million sq. ft. of office space. The overall adoption rate in San Diego, 9.2% of total buildings, trails the national average of 13.2%, and places this market in 21st position. The total percentage of square footage in the market of 34.6% also trails the national average of 39.3% and places San Diego in 13th position in this category. San Diego finishes in 19th place for the number of Energy Star labeled buildings, 7.1% compared to the national average of 10.2% but improves to 13th position in the percentage of Energy Star labeled square footage in the market, 27.2%.

Although San Diego performs below average in the total number and percentage of square footage for overall LEED adoption, San Diego is actually among the top 10 national markets for the percentage of buildings holding a LEED for New Construction certification. At 2.9% of the market, this is nearly double the national average of 1.3%. This may indicate that even though the existing market has not fully embraced sustainable standards, new buildings are actively seeking recognition and certification for sustainable construction and design.

GREEN MARKET FACTS

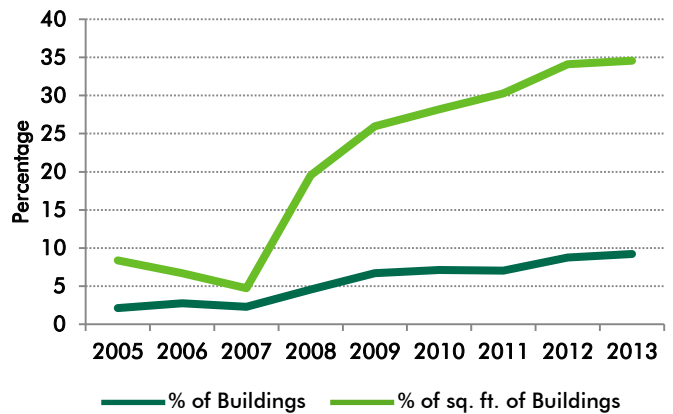
- Regulation:** All non-residential buildings offered for sale, lease, or financing larger than 10,000 sq. ft. (5,000 sq. ft. as of July 1, 2014) have to benchmark and disclose their energy use through Energy Star's Portfolio Manager as mandated through Assembly Bill 1103.
- Tenant demand:** San Diego is a fairly mixed market with multiple industries represented in last year's leasing activity. In 2013, the dominant industry was Telecommunications, representing 18% of the deals. San Diego is home to the largest federal military workforce in the United States. This workforce and its supporting defense contractors don't typically occupy sustainable space, perhaps lending understanding to this market's relatively low standing among green cities nationwide.
- Other facts:**
 - The EPA ranks San Diego as 15th in their 2014 "Top 25 cities with the most ENERGY STAR certified buildings".
 - The first LEED certified building was the [TKG Consulting Engineers building](#), which earned LEED Gold for New Construction in October 2004.
 - Interesting building: [7676 Hazard Center Drive](#) earned an Energy Star certification 11 times and is LEED for Existing Buildings Silver certified.



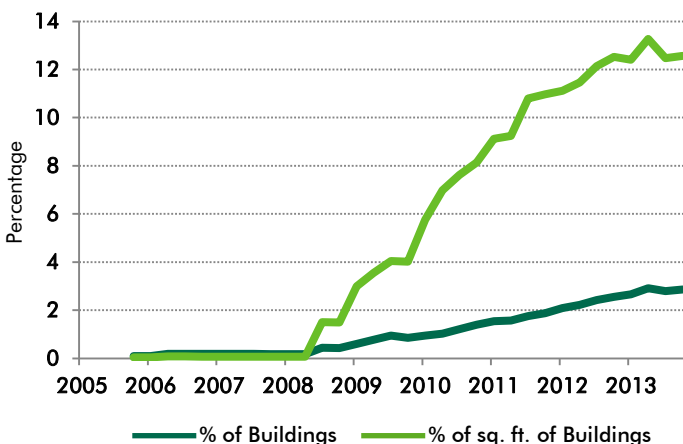
San Diego Q4 2013	% of Buildings	% sq. ft of Buildings
Total	9.21	34.57
Energy Star	7.05	27.23
LEED	2.86	12.56
Existing Buildings	1.15	7.54
New Construction	0.89	2.87
Core and Shell	0.83	2.16

Note: Green building adoption in percent until December 31, 2013

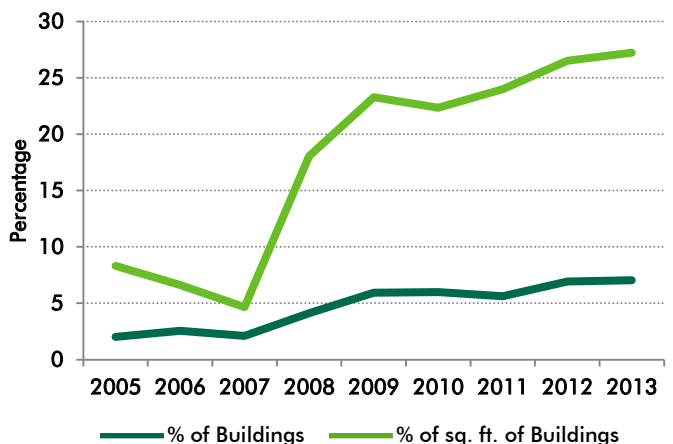
Total Adoption



LEED Adoption



Energy Star Adoption



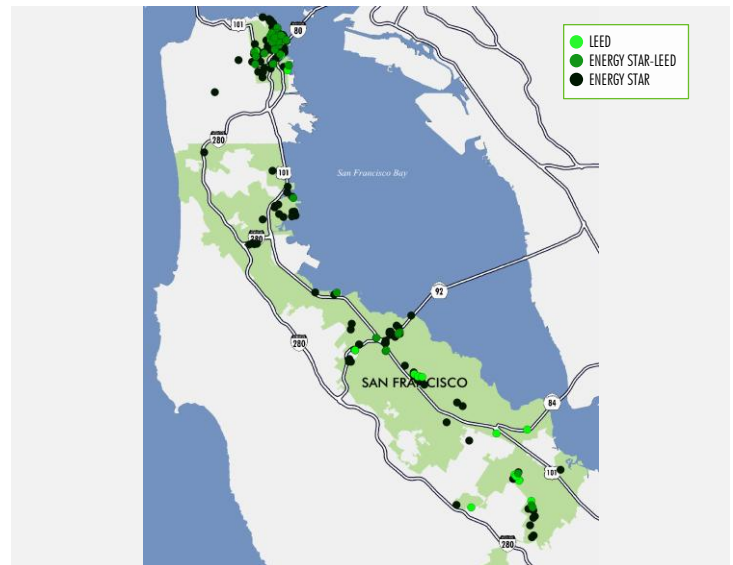
San Francisco

GREEN BUILDING TRENDS

Downtown San Francisco boasts some of the highest green building statistics in the nation with 244 certified buildings representing 77.5 million sq. ft. of office space. 18% percent of all office buildings in San Francisco hold some level of green certification or designation, significantly higher than the national average of 13.2%, ranking San Francisco 6th nationally. In terms of green office space San Francisco ranks 2nd with 67.2% of the total square footage certified, trailing only Minneapolis (77%). The Energy Star adoption metrics show a similar performance. 14.9% of the office buildings hold an Energy Star label ranking San Francisco 7th, and 52.3% of the total space is certified under Energy Star which ranks San Francisco 2nd nationally. Moreover, San Francisco has the highest percentage of square footage certified under the LEED for Existing Buildings program at 37.5%, ranking the city 1st and outperforming Minneapolis with 33.4%.

GREEN MARKET FACTS

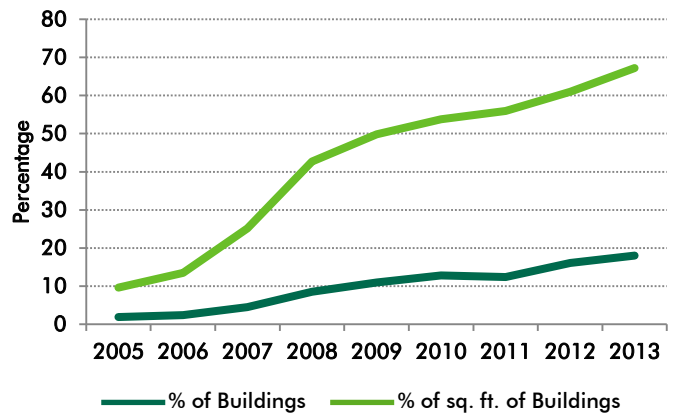
- Regulation:** A combination of legislation is present in San Francisco, including strong local building code requirements and California energy disclosure legislation. All non-residential buildings offered for sale, lease, or financing larger than 10,000 sq. ft. (5,000 sq. ft. as of July 1, 2014) have to benchmark and disclose their energy use through Energy Star's Portfolio Manager as mandated through Assembly Bill 1103. Similarly, the Existing Commercial Buildings Energy Performance Ordinance requires commercial buildings over 10,000 sq. ft. to report to Energy Star, apply ASHRAE level I or II audits or RCx every 5 years. The information is disclosed to the (local) government, through a public website, at the time of transaction, and to current tenants. The San Francisco Green Building Ordinance, passed in 2008, requires commercial buildings between 5,000 and 25,000 sq. ft. to complete a LEED Checklist. Newly constructed and renovated commercial buildings over 25,000 sq. ft. must be LEED Certified, increasing to LEED Silver in 2009 and LEED Gold in 2012. Ordinance N 88-04, passed in 2004, already required all municipal new construction, additions and major renovation projects over 5,000 sq. ft. to achieve LEED Silver certification. The Director's Bulletin 2006-02, passed in 2006, gives priority permit review to all new and renovated buildings that achieve LEED Gold certification.
- Tenant demand:** San Francisco boasts the presence of strong national and global real estate ownership interests, and a predominance of traditionally sustainability-oriented occupants, including Fortune 500 headquarters, Financial Services and Technology firms that typically promote their environmental stewardship and use sustainability and environmental leadership as strong recruitment and retention benefits. In 2013 48% of the square footage of the top 100 lease deals were negotiated by technology firms.
- Other facts:**
 - The EPA ranks San Francisco as 5th in their 2014 "Top 25 cities with the most ENERGY STAR certified buildings".
 - The first LEED certified building was at [260 Townsend, the Swinerton HQ](#), which earned LEED Gold for Existing Buildings in July 2004.
 - Interesting building: [101 California Street](#) earned an Energy Star certification 12 times and has been certified under the LEED for Existing Buildings program 2 times, respectively Certified and Platinum.



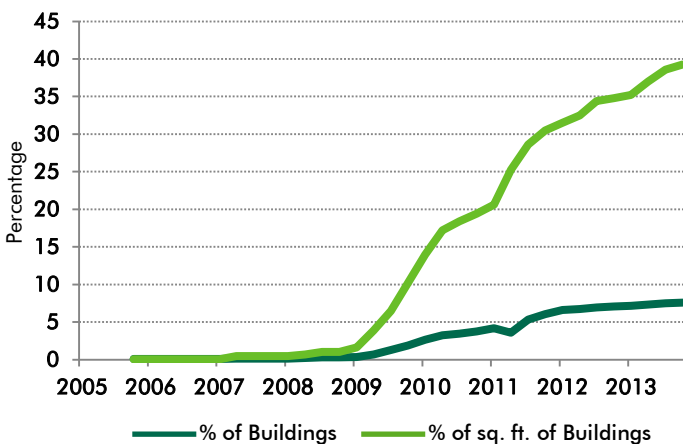
San Francisco Q4 2013	% of Buildings	% sq. ft. of Buildings
Total	17.98	67.24
Energy Star	14.88	52.33
LEED	7.57	39.24
Existing Buildings	6.54	37.51
New Construction	0.15	0.02
Core and Shell	0.88	1.71

Note: Green building adoption in percent until December 31, 2013

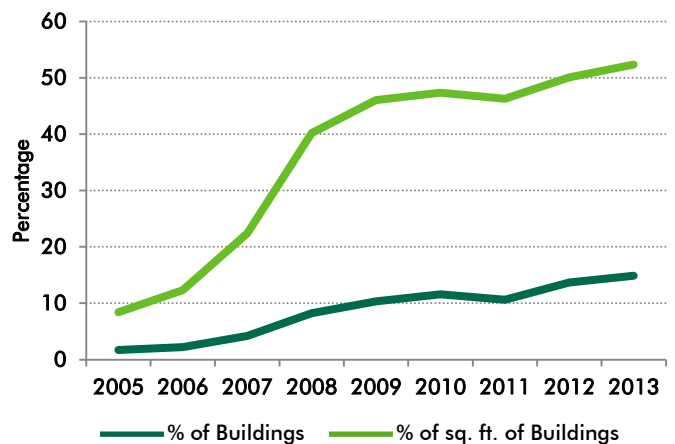
Total Adoption



LEED Adoption



Energy Star Adoption



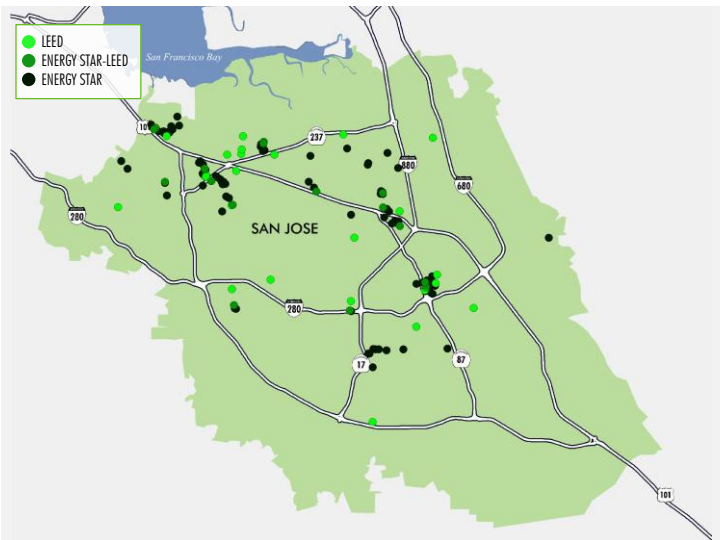
San Jose

GREEN BUILDING TRENDS

The heart of the Silicon Valley is not the heart of green building industry as the market currently ranks below average in nearly every green building category. In total, San Jose has 39 certified buildings, which represent some 10 million sq. ft. of office space. This ranks San Jose 23rd in Energy Star recognition at 17% of the total office market, 18th in overall green building adoption at 31.6% of market share and 13th in LEED certified buildings, at 17.5% of the entire market stock. Areas of strength, however, come in new construction, where both LEED for New Construction and Core and Shell exceed national averages. In fact San Jose's LEED for Core and Shell numbers, as a percentage of the market, are topped only by Miami, Seattle, and Baltimore. It does appear that the new stock is being built green but there has been less of an emphasis on existing buildings in Silicon Valley. Notably, the San Jose market is marked by a significant number of technology companies that own and occupy their own, often large, facilities. Most of those facilities have attained certification or observe other sustainability standards. These owner-occupied facilities, however, are not part of the comparative set considered for this study. While the average size of San Jose buildings in the study is roughly half the size of the national average, our analysis shows that typically larger facilities pursue green certifications and labels. Finally, in 2005, the starting point of our study, San Jose ranked next to last among all top 30 cities studied in green buildings, so significant progress has been made.

GREEN MARKET FACTS

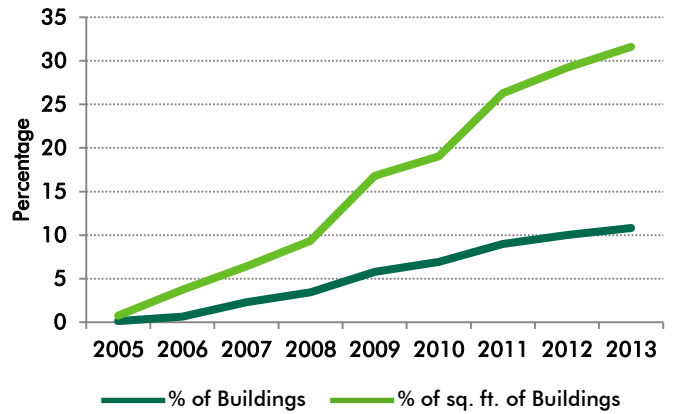
- Regulation:** All non-residential buildings offered for sale, lease, or financing larger than 10,000 sq. ft. (5,000 sq. ft. as of July 1, 2014) have to benchmark and disclose their energy use through Energy Star's Portfolio Manager as mandated through Assembly Bill 1103. Moreover, the city passed the San Jose Green Building Ordinance in 2009, requiring new commercial and industrial buildings under 25,000 sq. ft. to submit a LEED checklist. New commercial or industrial buildings of 25,000 sq. ft. or larger must achieve LEED Silver certification. Projects requiring LEED certification must pay a deposit to ensure that the building will achieve the requirements. This Ordinance replaced the Private Sector Green Building Policy (2008). The San Jose Green Building Policy (2007) already required all new municipal buildings over 10,000 sq. ft. to achieve LEED Silver, with a goal of reaching LEED Gold or Platinum, applying to all new projects budgeted for fiscal year 2007-2008 and thereafter, and further directed staff to target LEED certification for existing municipal buildings.
- Tenant demand:** 85% of all lease deals in Silicon Valley accomplished in 2013 by CBRE, were with Technology firms. Tech firms have broadly embraced sustainability however a number of the more notable transactions are for full building campuses or build-to-suit sites which are not all reflected in our market green building totals if owned by the user.
- Other facts:**
 - The EPA ranks San Jose as 20th in their 2014 "Top 25 cities with the most ENERGY STAR certified buildings".
 - The first LEED certified building was the [Adobe Tower](#), which earned LEED Platinum for Existing Buildings in June 2006.
 - Interesting building: [Century Plaza II](#) earned an Energy Star certification 5 times and has been Gold certified under the LEED for Existing Buildings program.



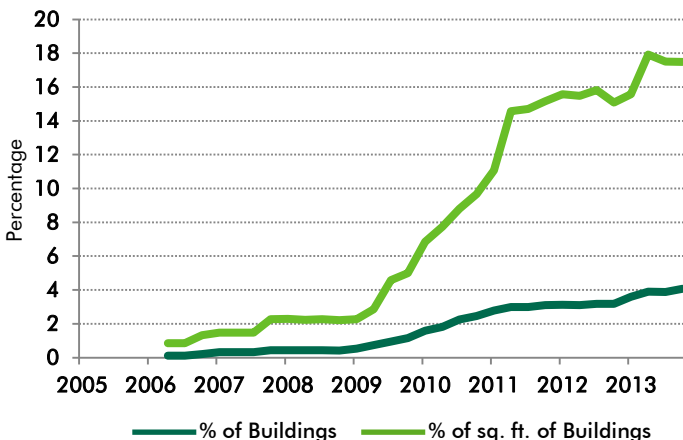
San Jose Q4 2013	% of Buildings	% sq. ft of Buildings
Total	10.82	31.60
Energy Star	7.57	16.95
LEED	4.07	17.48
Existing Buildings	1.77	7.94
New Construction	1.04	2.96
Core and Shell	1.25	6.59

Note: Green building adoption in percent until December 31, 2013

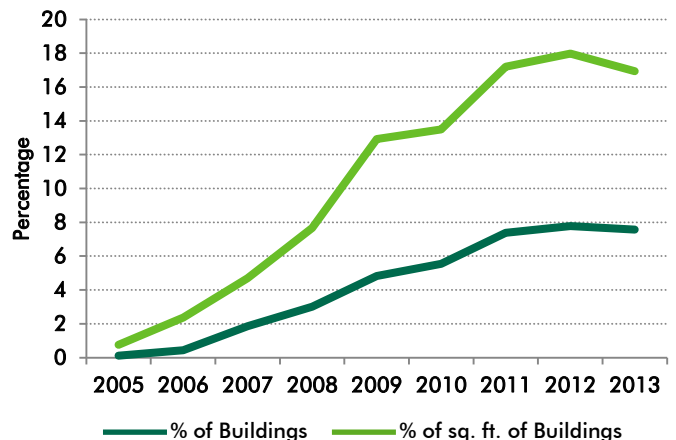
Total Adoption



LEED Adoption



Energy Star Adoption



Seattle

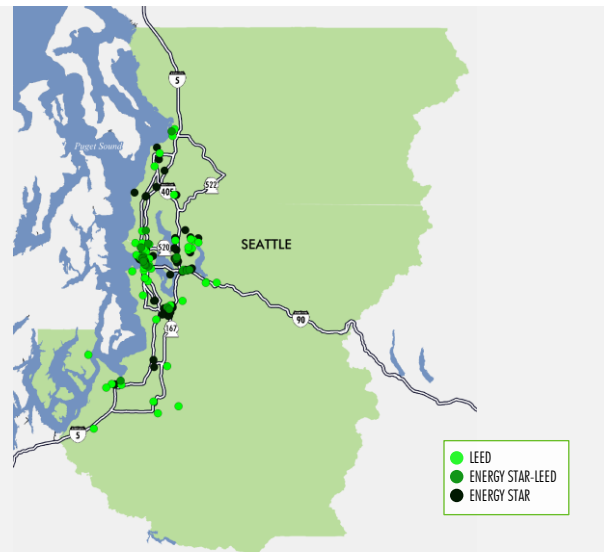
GREEN BUILDING TRENDS

An interesting phenomenon can be observed from the green building adoption characteristics in the Seattle office market. Seattle has 95 certified buildings, representing some 31 million sq. ft. of office space and in many key metrics the number of buildings from Seattle that are green-certified rank near the middle of the 30 top US markets and at or below national performance averages. However, the overall percentage of green building certification by square footage ranks much higher, exceeds the national average, and ranks in the top 10 of cities studied. It is quite apparent that in the Seattle market the largest buildings are more active participants in the green building movement.

The overall adoption rate in Seattle, 10.8% of total buildings, trails the national average of 13.2%, and places Seattle in 17th position. However, the total percentage of square footage in the market is 46.6%, above the national average of 39.3% and 8th place among all 30 cities. Similar findings are discovered in the number of Energy Star labeled buildings, where Seattle ranks 21st at 6.7%, but climbs to 12th place, with 28% in the percentage of total space labeled. An even more dramatic story is seen in LEED certification: 6% of all buildings in Seattle qualify, 11th overall and marginally above the national average of 5.1%. The total market percentage represented by those properties total 31.8%, 4th in the nation and significantly higher than the national average of 19.4%.

GREEN MARKET FACTS

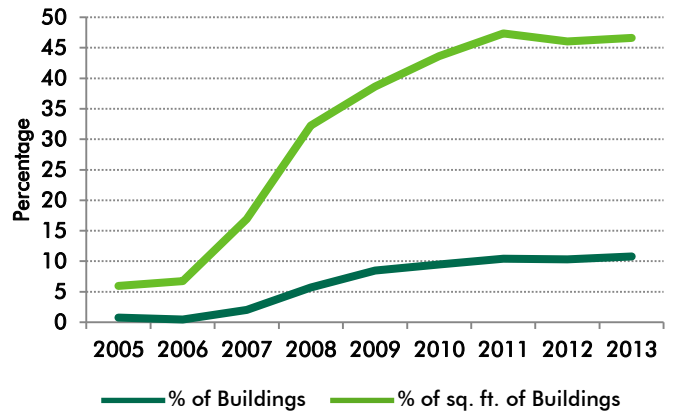
- Regulation:** Seattle passed Ordinance 122054 in 2006, providing a height or density bonus to commercial or residential projects that achieve at least LEED Silver certification and contribute to affordable housing. The Seattle Green Building Incentive Policy, passed in 2002, requires LEED Silver certification of all city-owned projects and renovations over 5,000 sq. ft., and encourages private construction to use LEED standards in new and existing buildings by providing economic incentives. Most recently, CB 116731 requires commercial buildings over 20,000 sq. ft. to report to Energy Star. This information is disclosed to the government, at time of transaction, and to current tenants.
- Tenant demand:** Technology firms, who typically demand green spaces, were involved in 50% of the square footage of the top 100 leasing deals in 2013. Nationally, this is the third highest percentage in this category following only San Jose at 85% and San Francisco at 60%.
- Other facts:**
 - The EPA ranks Seattle as 14th in their 2014 "Top 25 cities with the most ENERGY STAR certified buildings".
 - The first LEED certified building was the [Russell Family Foundation office](#), which earned LEED Certified for New Construction in February 2003.
 - Interesting building: [800 5th Avenue](#) earned an Energy Star certification 12 times and has been Gold certified under the LEED for Existing Buildings program.
 - The [Bullitt Center](#), touted as the greenest building in the world, opened in 2013.



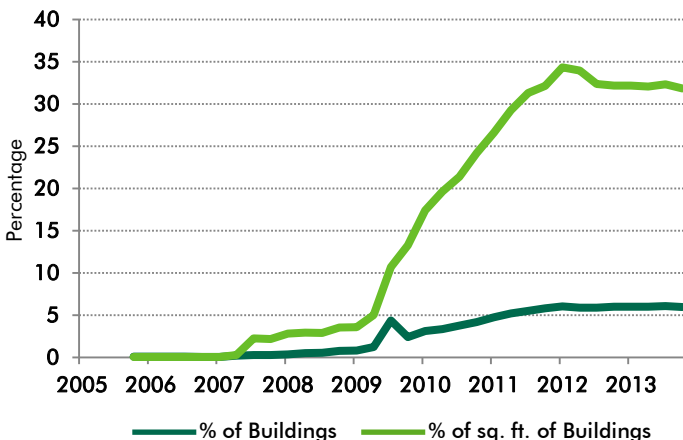
Seattle Q4 2013	% of Buildings	% sq. ft of Buildings
Total	10.80	46.64
Energy Star	6.66	28.02
LEED	5.96	31.81
Existing Buildings	3.07	21.40
New Construction	1.13	2.60
Core and Shell	1.76	7.81

Note: Green building adoption in percent until December 31, 2013

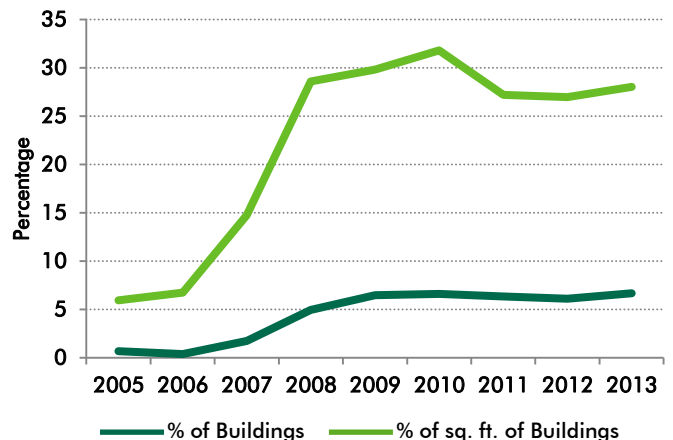
Total Adoption



LEED Adoption



Energy Star Adoption



Stamford

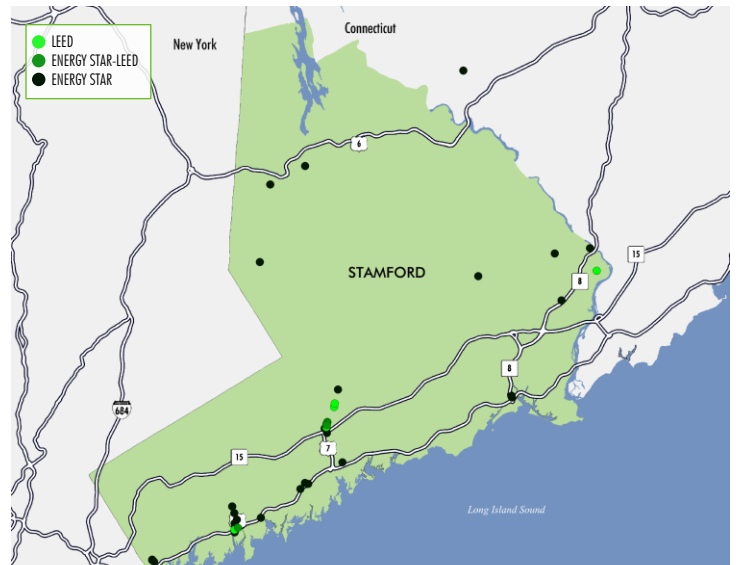
GREEN BUILDING TRENDS

The green building movement has not yet reached Stamford as this market consistently lands in the bottom five of nearly all green building metrics in our Green Building Adoption Index. 10 buildings in Stamford are certified, which represent 2.5 million sq. ft. of office space. Only 6.7% of buildings in Stamford meet that definition, well below the national average of 13.2% and 26th among the top 30 markets in the US. Similar results are found in the percentage of green space in the market, where only 13.9% of Stamford real estate qualifies, just one third of the national average of 39.3%

As would be expected, the same results are found consistently in the specific categories of Energy Star labels and LEED certification. 4.6% of buildings, representing 9.3% of all space, gained an Energy Star label, placing Stamford 26th and 28th and trailing the national averages of 10.2% and 30.3% respectively. And finally, only 2.4% of buildings are designated as LEED certified and 5.8% of all space. Again these numbers place Stamford 25th and 28th in these categories.

GREEN MARKET FACTS

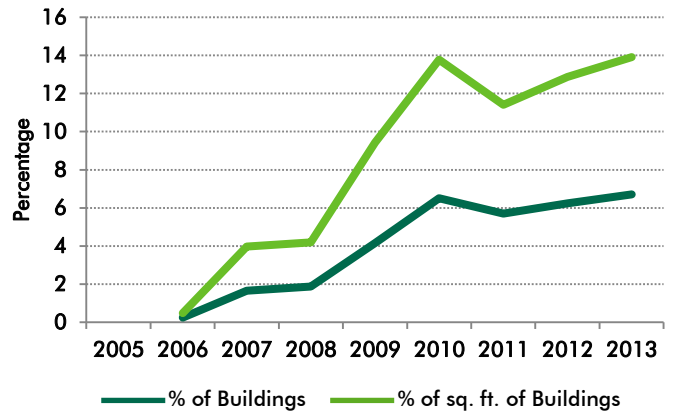
- Regulation:** Stamford Ordinance 1071, passed in 2007, requires all city-owned buildings over 5,000 sq. ft. and buildings where the city leases at least 50% of total space to earn LEED Silver or higher.
- Other facts:**
 - The EPA does not include Stamford in their 2014 [“Top 25 cities with the most ENERGY STAR certified buildings”](#).
 - The first LEED certified building was [401 Merrit 7 Corporate Park](#), which earned LEED Silver for Existing Buildings in April 2008.
 - Interesting building: [400 Atlantic Title](#) earned an Energy Star certification 2 times and has been Silver certified under the LEED for Existing Buildings program.



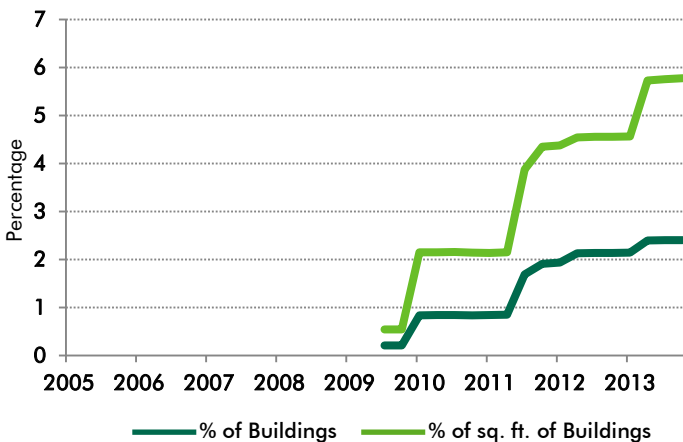
Stamford Q4 2013	% of Buildings	% sq. ft of Buildings
Total	6.71	13.92
Energy Star	4.55	9.32
LEED	2.40	5.77
Existing Buildings	1.44	3.82
New Construction	0.48	1.43
Core and Shell	0.48	0.53

Note: Green building adoption in percent until December 31, 2013

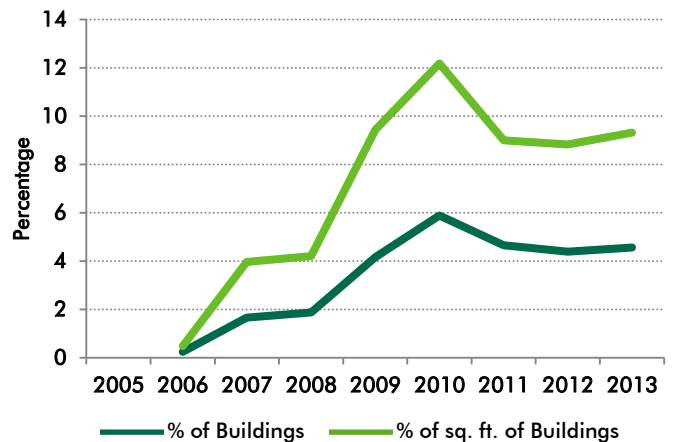
Total Adoption



LEED Adoption



Energy Star Adoption



St. Louis

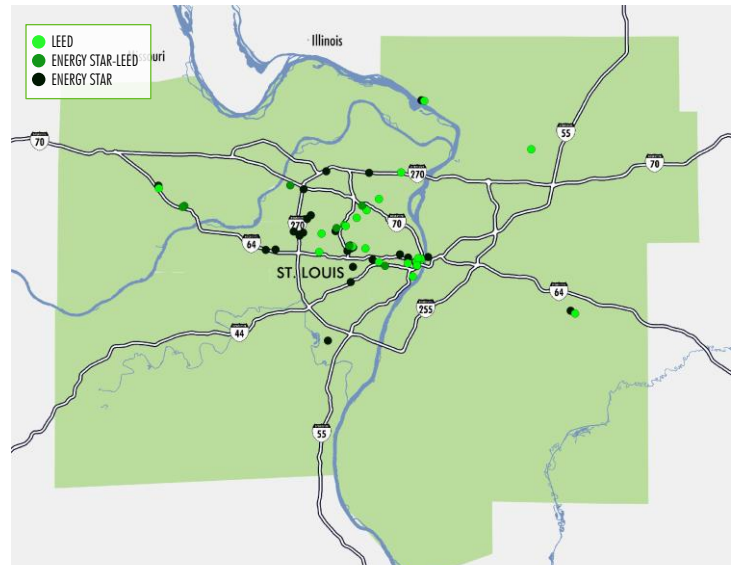
GREEN BUILDING TRENDS

The green building movement has not yet fully reached St. Louis. This market consistently lands at the bottom of most green building categories in our Green Building Adoption study. In total, 22 buildings in St. Louis are certified, which represents 4.5 million sq. ft. of office space. Only 7.4% of office buildings in St. Louis meet that definition, well below the national average of 13.2% and 24th among the top 30 markets in the US. Similar results are found in the percentage of green space in the market, where only 24.2% of St. Louis real estate qualifies, again significantly below the national average of 39.3%.

Similar results are also documented in the specific categories of Energy Star labels and overall LEED certifications. 4.8% of all St. Louis buildings have obtained an Energy Star label, which represents only 17.7% of all space, again both numbers are significantly below national averages, and St. Louis places 24th and 22nd nationally in those categories. There is, however, one bright spot and that is the number of LEED for New Construction, with 1.8% of the market holding that distinction. This number places St. Louis 3rd nationally and is more than double the national average. Additionally, this represents 3.4% of the total market square footage, 2nd among all US top 30 cities and nearly three times higher than the national average. It is apparent that even though existing buildings are not widely pursuing sustainability certification yet, new buildings in St. Louis are increasingly being built to those standards.

GREEN MARKET FACTS

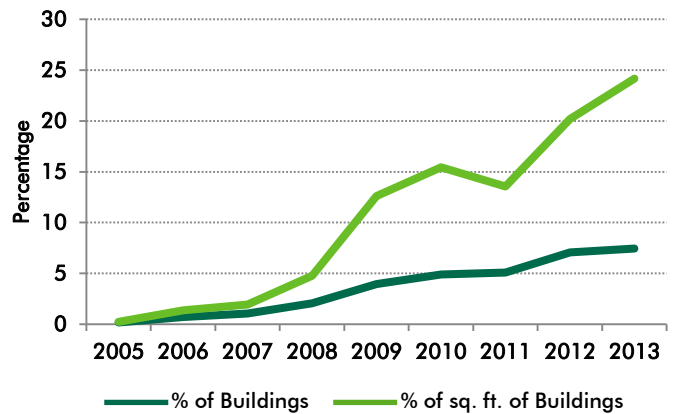
- Regulation:** St. Louis Ordinance 67414, passed in 2007, requires all newly constructed and renovated municipal facilities greater than 5,000 sq. ft. to earn LEED Silver certification, and directs the city to apply the principles included in LEED for New Construction, LEED for Commercial Interiors, and LEED for Existing Buildings during retrofit and renovation of existing municipal facilities.
- Tenant demand:** The Healthcare industry is the dominant player in the 2013 leasing market in St. Louis. Healthcare occupiers are usually heavier energy users due to the 24/7/365 demands of their critical care facilities. Some other sustainability matters, such as waste handling and treatment and water reduction, are also more difficult given the nature of the medical process. However, many Healthcare providers are moving rapidly towards incorporating energy efficiency and sustainability, and this could bode well for future demands for sustainable space.
- Other facts:**
 - The EPA did not include St. Louis in their 2014 ["Top 25 cities with the most ENERGY STAR certified buildings"](#).
 - The first LEED certified building was the [Alberici Office Headquarters](#), which earned LEED Platinum for New Construction in July 2005.
 - Interesting building: [1233 North Price Road](#) earned an Energy Star certification five times and is certified under the LEED for Existing Buildings program.



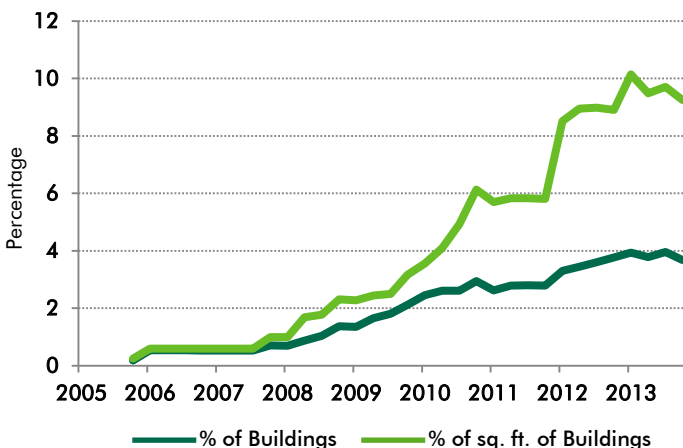
St. Louis Q4 2013	% of Buildings	% sq. ft. of Buildings
Total	7.43	24.16
Energy Star	4.79	17.68
LEED	3.68	9.25
Existing Buildings	0.84	2.89
New Construction	1.84	3.42
Core and Shell	1.00	2.94

Note: Green building adoption in percent until December 31, 2013

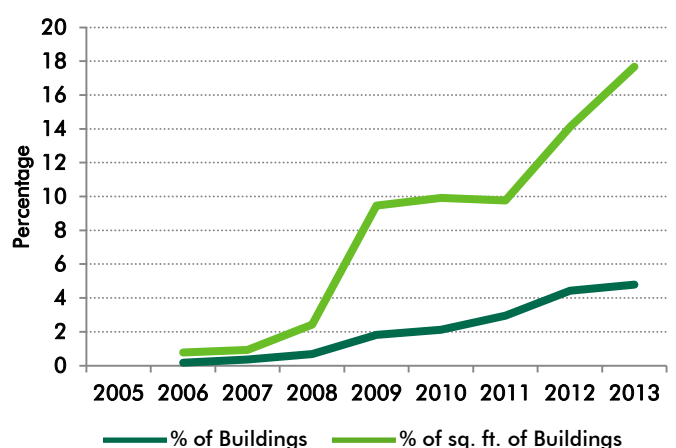
Total Adoption



LEED Adoption



Energy Star Adoption



Tampa

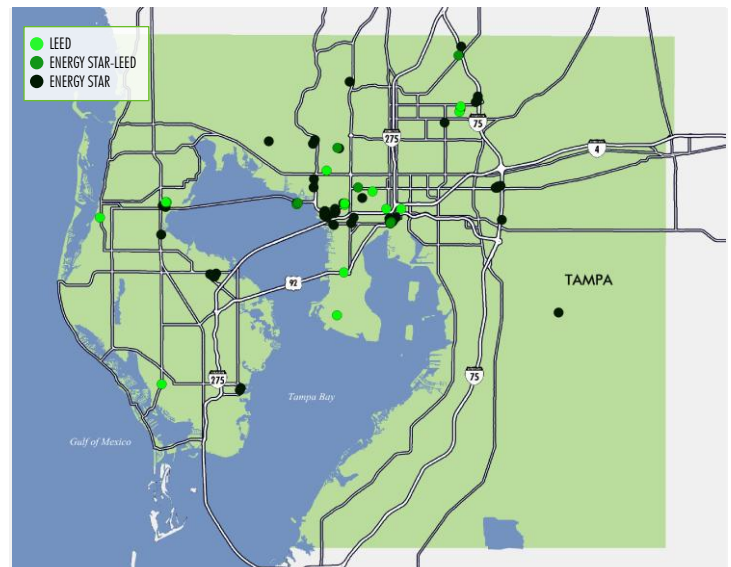
GREEN BUILDING TRENDS

The green building movement has not yet reached Tampa as this market consistently lands at the bottom of nearly all green building categories in our Green Building Adoption study. Tampa has 20 certified buildings, representing 4 million sq. ft. of office space. Only 6.8% of buildings in Tampa meet that definition, less than half the national average of 13.2% and 25th among the top 30 largest office markets in the US. Similar results are found in the percentage of green space in the market, where only 27% of Tampa real estate qualifies, again significantly below the national average of 39.3% and ranking Tampa 22nd.

As would be expected, similar results are found in the specific categories of Energy Star labels and various LEED certifications. 5.3% of buildings gain an Energy Star label, representing 24.1% of all space, again both numbers significantly below national averages and placing Tampa 23rd and 18th nationally. 2.3% of Tampa buildings hold LEED certifications, less than half the national average and these buildings represent only 8.9% of the square footage, well below the national average of 19.4%.

GREEN MARKET FACTS

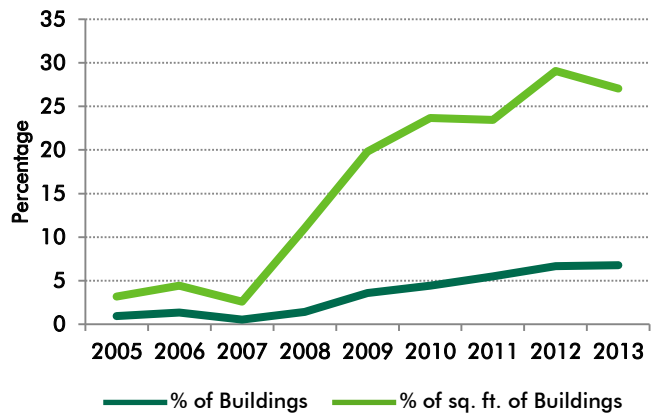
- Regulation:** Tampa passed Ordinance 2008-111 to requires all new municipal buildings over 5,000 sq. ft. of air-conditioned space to earn a minimum of LEED Silver certification and that the renovation of all municipal buildings follow LEED guidelines, while also offering developers of commercial and multi-family residential buildings a 20-80% rebate on building permit fees, depending on the level of LEED certification. The City of Tampa Strategic Action Plan (2006) offers a density bonus (1.5 FAR maximum) to developers in the Channel District who achieve LEED certification due to the development's elements of "community enhancement".
- Tenant demand:** The Tampa market is very diverse with no single dominant industry, with Financial comprising 15% leasing activity last year. Technology, Legal and Healthcare each comprised 13% and Business Services rounded out the top five with 12%. Many of the industries that traditionally seek and occupy sustainable office space (Energy, Creative and Government) were relatively underrepresented in the market.
- Other facts:**
 - The EPA did not include Tampa in their 2014 "Top 25 cities with the most ENERGY STAR certified buildings".
 - The first LEED certified building was the [USAA SE Regional Office](#), which earned LEED Gold for Existing Buildings in April 2008.
 - Interesting building: [100 South Ashley St](#) earned an Energy Star certification 7 times and has been certified Silver under the LEED for Existing Buildings program.



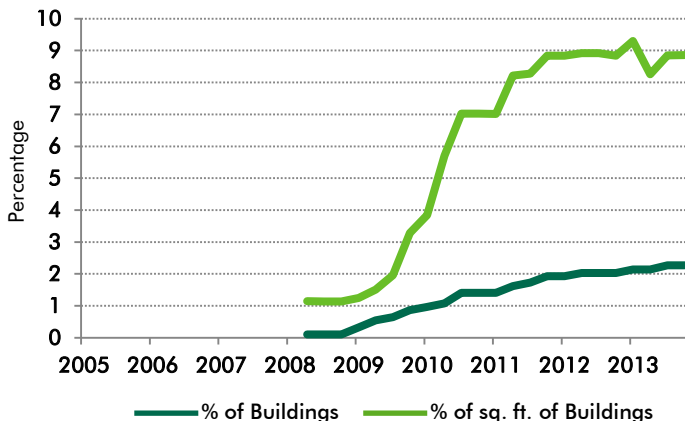
Tampa Q4 2013	% of Buildings	% sq. ft. of Buildings
Total	6.79	27.04
Energy Star	5.32	24.09
LEED	2.27	8.86
Existing Buildings	0.80	6.13
New Construction	0.68	0.56
Core and Shell	0.80	2.16

Note: Green building adoption in percent until December 31, 2013

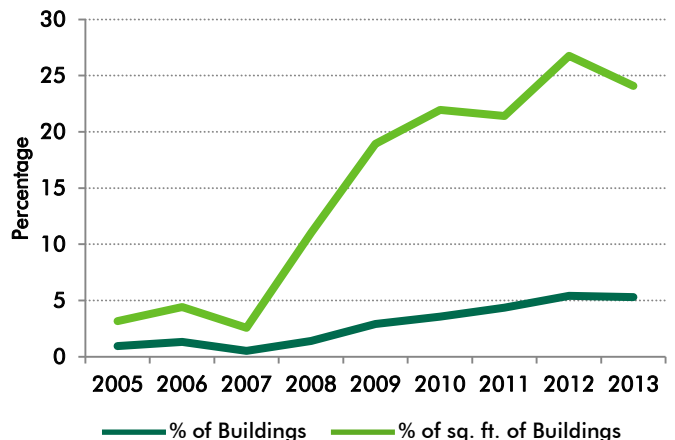
Total Adoption



LEED Adoption



Energy Star Adoption



Walnut Creek

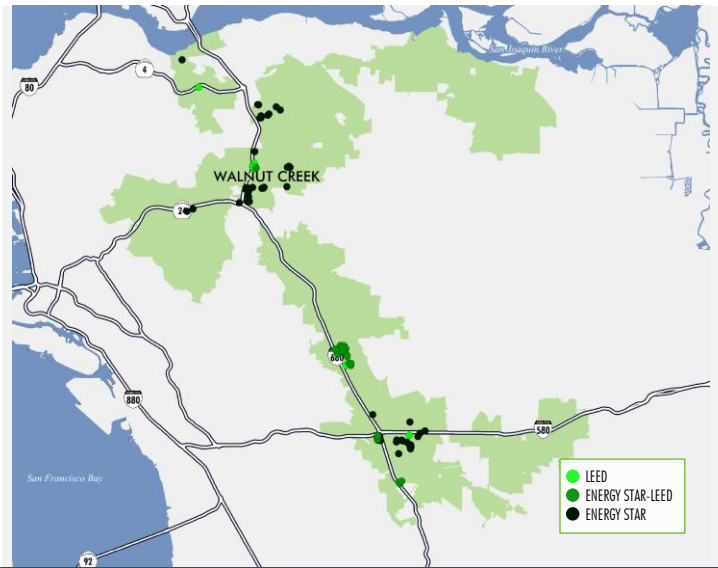
GREEN BUILDING TRENDS

The Walnut Creek market, which includes the I-680 Corridor, generally scores in the bottom half and below national averages in many green building metrics among the 30 largest US cities. Walnut Creek has 37 certified buildings, which represent more than 8 million sq. ft. of office space. The overall adoption rate in Walnut Creek, 9.9% of total buildings, trails the national average of 13.2%, and places this market in 19th position. The total percentage of square footage in the market of 34.9% also trails the national average of 39.3% and places Walnut Creek in 12th position in this category. Walnut Creek finishes in 18th place for the number of Energy Star labeled buildings, 7.1% compared to the national average of 10.2% but places only 21st in the percentage of Energy Star labeled square footage in the market, at 21.0%.

One area where Walnut Creek performs above average is in LEED adoption. Walnut Creek is actually among the top half national markets for the percentage of sq. ft. holding a LEED certification. At 20.1% of the market, this exceeds the national average of 19.4% and places Walnut Creek in the 11th spot.

GREEN MARKET FACTS

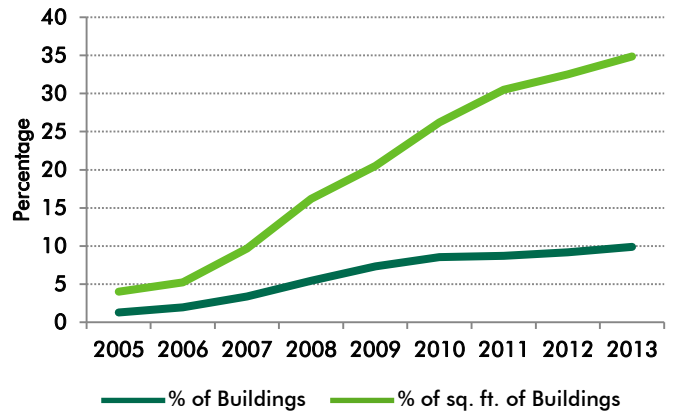
- Regulation:** All non-residential buildings offered for sale, lease, or financing larger than 10,000 sq. ft. (5,000 sq. ft. as of July 1, 2014) have to benchmark and disclose their energy use through Energy Star's Portfolio Manager as mandated through Assembly Bill 1103.
- Tenant demand:** It should be noted that in many of the adoption categories Walnut Creek performs much more like other smaller California areas, such as San Diego and Orange County. This is not unusual as our results show that larger cities, with more corporate tenants and generally larger buildings have greater adoption levels than smaller suburban markets. At number 30, Walnut Creek is the smallest market included in our study and still performed above larger markets in many cases.
- Other facts:**
 - As part of the broader market of San Francisco the EPA ranks Walnut Creek 5th in their 2014 "[Top 25 cities with the most ENERGY STAR certified buildings](#)".
 - The first LEED certified building was [Pleasanton Corporate Commons](#), which earned LEED for Existing Buildings Silver in October 2008 and was recently recertified Platinum in September 2013.
 - Interesting building: [Urban West Business Park](#) at 1350 Treat Boulevard earned an Energy Star certification 5 times and is certified Silver under the LEED for Existing Buildings program.



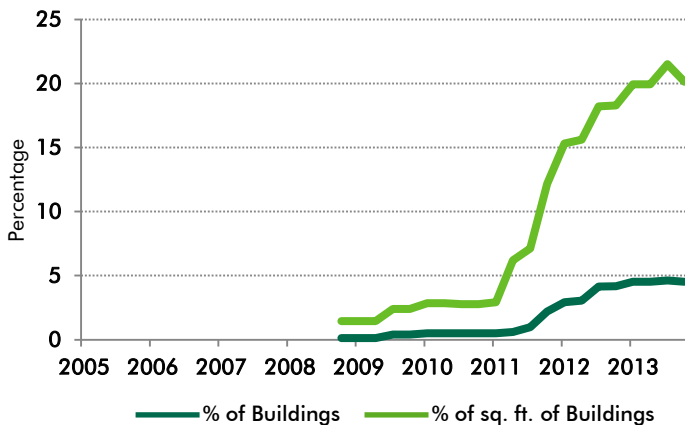
Walnut Creek Q4 2013	% of Buildings	% sq. ft. of Buildings
Total	9.88	34.85
Energy Star	7.08	20.97
LEED	4.51	20.14
Existing Buildings	4.27	19.13
New Construction	0.24	1.01
Core and Shell		

Note: Green building adoption in percent until December 31, 2013

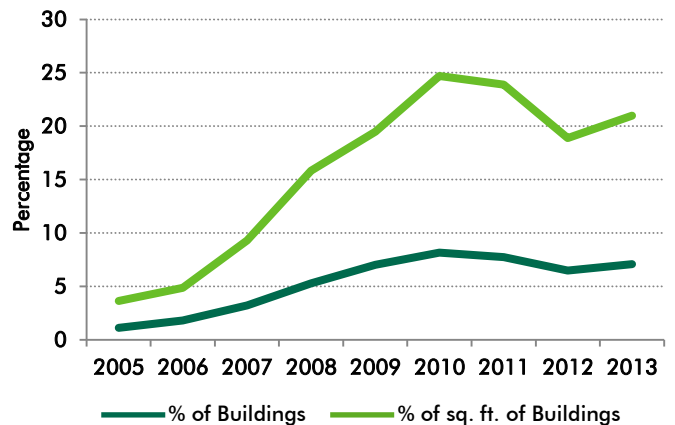
Total Adoption



LEED Adoption



Energy Star Adoption



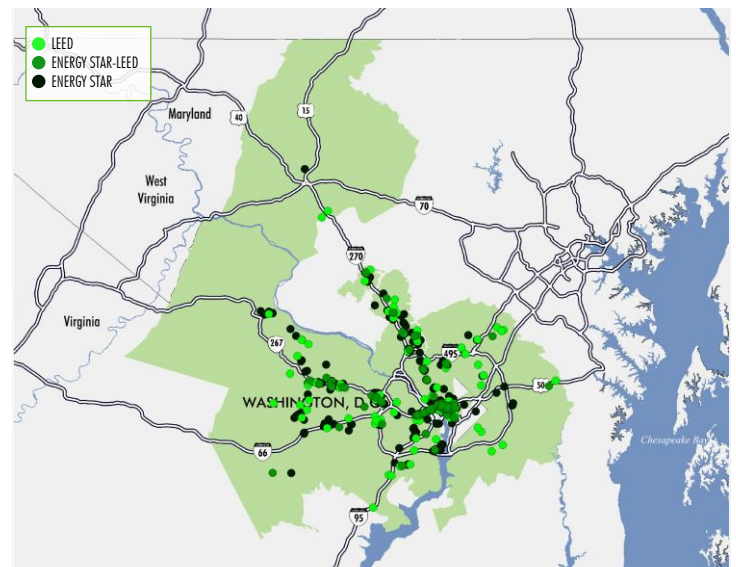
Washington, D.C.

GREEN BUILDING TRENDS

Washington, DC comprises the second largest commercial office market in the US in absolute terms, trailing only Manhattan in total square footage and significantly leading all other markets, with a total of 3,671 buildings, more than twice as many as the 3rd largest market, Los Angeles. 247 of these buildings are certified, representing 79 million sq. ft. of office space. Even at this scale, 42.2% of all square footage in the Washington, DC market is certified as green, placing this market above average and in 10th place among the top 30 markets. With nearly a third (32.5%) of all square footage Energy Star labeled DC is also 8th in this category and 11th in the percentage of the number of Energy Star labeled buildings. DC also ranks 8th in the number of LEED buildings, with 6.7% of all buildings, comprising 20.5% of all square footage, holding some type of LEED certification.

GREEN MARKET FACTS

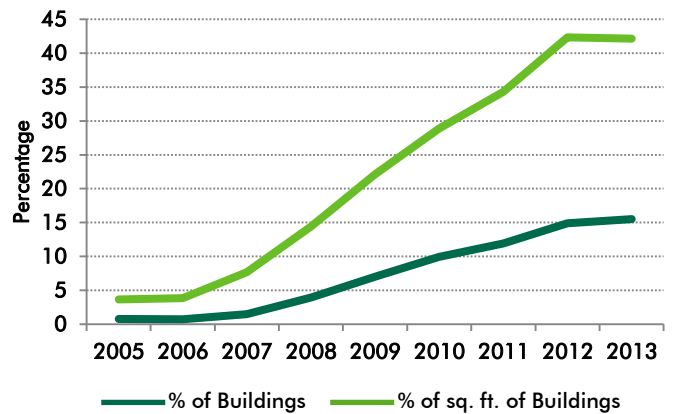
- Regulation:** The Green Building Act, revised in 2012, updates and amends the Green Building Act of 2006 by providing that public schools shall aspire to meet LEED for Schools at the Gold level or higher, and by imposing fines on private commercial buildings that do not provide proof that the project is LEED certifiable within 2 years of receipt of occupancy. In addition, Resolution 71-07, passed in 2007, recommends that all new local government facilities constructed in the metropolitan area earn LEED Silver certification and all new private commercial development earn LEED Certified. The Clean and Affordable Energy Act of 2008 requires commercial buildings over 50,000 sq. ft. to report to Energy Star, establish targets and track water use. This information is disclosed to the government and through a public website.
- Tenant demand:** The significant number and percentage of green office space in the Washington DC market should be expected as Government agencies, who are typically required to seek sustainable space, are a prominent factor in the market. However, in 2013 these users represented only 16.6% of the square footage of the top 100 deals. The Legal industry, with 36% of leasing deals last year, was actually the most active industry. As more and more law firms are also seeking to demonstrate their environmental stewardship this helps expand the market demand for green space.
- Other facts:**
 - The EPA ranks Washington DC as 2nd in their 2014 ["Top 25 cities with the most ENERGY STAR certified buildings"](#).
 - The first LEED certified building was the [National Association of Realtors DC HQ](#), which earned LEED Silver for New Construction in May 2005.
 - Interesting building: [1800 Massachusetts Avenue NW](#) earned an Energy Star certification six times, Silver and Gold under the LEED for Core and Shell program, Platinum under the LEED for Existing Buildings program, and Gold under the LEED for New Construction program.



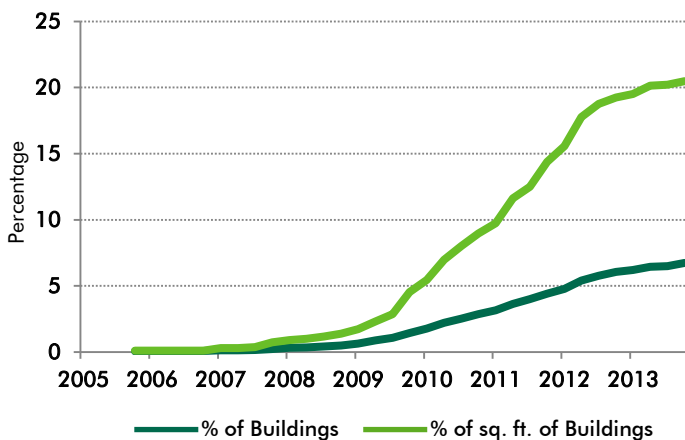
Washington, D.C. Q4 2013	% of Buildings	% sq. ft. of Buildings
Total	15.53	42.15
Energy Star	11.93	32.54
LEED	6.73	20.49
Existing Buildings	4.03	14.00
New Construction	0.52	1.36
Core and Shell	2.18	5.12

Note: Green building adoption in percent until December 31, 2013

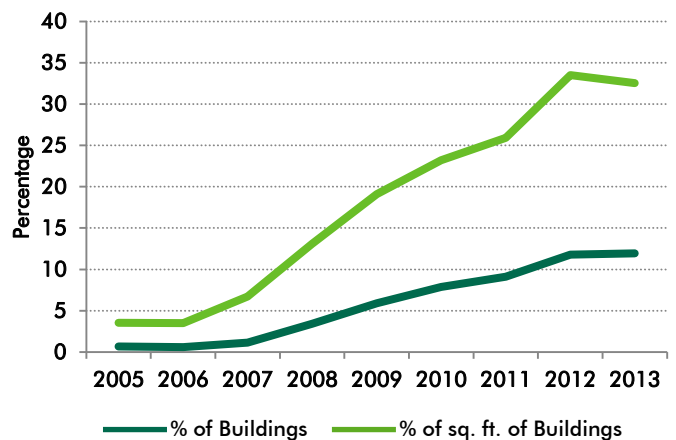
Total Adoption



LEED Adoption



Energy Star Adoption





Methodology

For purposes of this study, “green” buildings were limited by definition to those buildings currently designated as Energy Star labeled or holding a LEED certification. The Energy Star program, introduced by the U.S. Environmental Protection Agency (EPA), focuses specifically on energy efficiency. To qualify for an Energy Star label, a building’s energy efficiency must be in the top 25% of all buildings in the peer set. The LEED program, developed by the U.S. Green Building Council (USGBC), considers the broader concept of sustainability. Certifications are available in a number of classifications and categories, including for new construction (NC), core and shell (C&S) and for existing buildings (EB). The USGBC maintains an up-to-date and extensive archive on both Energy Star and LEED certified buildings through their Green Building Information Gateway (GBIG).³ This database includes address details and underlying characteristics of the certifications.⁴

The relative measure of green office space in the various commercial real estate markets was estimated using information on the 30 largest U.S. office metro markets from CBRE Research. This information includes quarterly time series measures of the stock of space, measured both by the number of buildings and the total square footage of the market. The inception date of the index is Q4 2005.

CBRE Research defines competitive properties as those buildings meeting or exceeding a minimum size requirement (determined per local market) and that offer a viable alternative to a business entity seeking to occupy space in the short term. Not included as “competitive” are buildings that are of such vintage or location as to be undesirable, or functionally obsolete. For example, only Class A, B or C properties are considered ‘competitive’. No Class D properties are included in the inventory. Additionally, for office properties, the following are not included:

- Single-tenant owner-occupied buildings (both criteria simultaneously);
- Government owned and occupied buildings;
- Medical buildings.

Matching procedure:

- CBRE Research employs specific geographic boundaries for each office metro market, defined by a set of longitudes and latitudes;
- Using GIS tools, these geographic boundaries are then utilized to identify the green office buildings located within the boundaries of the 30 largest markets;
- The office buildings included in CBRE’s measure on the overall stock of space are subject to a minimum-tracking threshold in terms of the square footage of a building. This threshold differs by market and is incorporated in the matching of the green office buildings (i.e., certified buildings smaller than the threshold are not incorporated in the adoption index);
- In order to account for the expiration of certification, a 2-year label window is applied to Energy Star and a 5-year window is applied to LEED certification. Hence, a green office building is only included in the adoption index if the moment of certification is not more than respectively 2 or 5 years ago;
- Regarding LEED certification, three different schemes are included: LEED for Existing Buildings, New Construction, and Core and Shell. The adoption index excludes LEED for Commercial Interiors, since this is generally a tenant and not a building owner initiative.

It is important to take notice of the following issues when evaluating the green building adoption index:

- The adoption figures in this index concentrate on office space and are not directly applicable to other building types;
- The stock of space for each of the 30 largest office metro markets does not include illiquid, owner-occupied office buildings, which might possibly cause an overestimation of the adoption figures;

³ The online portal can be accessed through: <http://www.qbig.org>

⁴ The dataset retrieved from GBIG contains, in addition to the certification characteristics, the longitudes and latitudes of each building, which is vital in linking the amount of “green” office space to the total supply of office space in each CBRE market.

- From the information provided by the EPA and USGBC it is not possible to deduce single-tenant and owner occupied buildings for both the Energy Star and LEED program, this might cause slight mismeasurement of “green” certified space;
- The EPA does not include an identification for government owned and occupied office buildings in their database, which possibly leads to overestimation of Energy Star certified office buildings;
- The USGBC provides certification of office space for LEED on a project level, which does not necessarily include the entire building. A thorough analysis of the data has been carried out to ensure the reliability of the presented figures, excluding buildings that have been partially certified.

About the Real Green Research Challenge

In today’s academic climate, researchers examining the specific outcomes of sustainability in the built environment are often faced with obstacles to financing their innovative research ideas, or lack broader corporate support where hypotheses can be tested. CBRE created the Real Green Research Challenge to meet this need, providing qualified applicants with the financial and resource support their project requires, from concept development to real-world implementation. In addition to providing \$1,000,000 in total funding, it was our goal to establish a collaborative partnership with researchers to explore new and exciting ways that empirical evidence can advance the green building movement. The entire commercial real estate industry stands to gain from results of this research and its potentially broader, global application. For more information, visit www.cbre.com/rgrc.

About CBRE Group, Inc.

CBRE Group, Inc. (NYSE:CBG), a Fortune 500 and S&P 500 company headquartered in Los Angeles, is the world’s largest real estate services and investment firm (in terms of 2013 revenue). The Company has approximately 44,000 employees (excluding affiliates) and serves real estate owners, investors, and occupiers through approximately 350 offices (excluding affiliates) worldwide. CBRE offers strategic advice and execution for property sales and leasing; corporate services, property, facilities and project management; mortgage banking; appraisal and valuation; development services; investment management; and research and consulting. Please visit our website at www.cbre.com.

About Maastricht University, Netherlands

Maastricht University is a public university in Maastricht, the Netherlands. Founded in 1976, the university is the second youngest of the 13 Dutch Universities. The Department of Finance at Maastricht University performs research in all fields of finance, with particular interest for: Financial Economics, Econometrical Finance, Real Estate, ESG, and Marketing-Finance. The real estate group of the Finance department is the catalyst for research efforts in three main areas: real estate investment performance, the economics of energy efficient and “green” building, and the effects of demography on real estate markets.

Maastricht University has built a strong reputation in real estate research and education, both for its academic rigor and for its practical relevance. The department brings together the real estate knowledge of Maastricht University and its academic and industry partners in Europe and beyond.

About the Authors

Dr. Nils Kok holds a position as an Associate Professor in Finance and Real Estate at Maastricht University, the Netherlands. He is the recipient of a prestigious five-year VIDI grant from the Dutch National Science Foundation for his work on the intersection of energy efficiency and finance in the real estate sector, and spent the past four years as a visiting scholar at UC Berkeley.

Nils is also the executive director and co-founder of the Global Real Estate Sustainability Benchmark (GRESB); a premier investor-driven initiative to assess the environmental and social performance of the global real estate investment industry. GRESB rates more than 550 REITs and funds on behalf of institutional investors that on aggregate represent some USD6 trillion.

He communicates his ideas and findings in the international arena as a frequent speaker on academic and industry conferences and actively shares his expertise through workshops with investment practitioners and policy makers. His research has appeared in leading academic journals such as the American Economic Review, the Review of Economics and Statistics and the Journal of Public Economics.

More information and blog at www.nilskok.com.



Rogier Holtermans, MSc is a PhD candidate in Real Estate Finance and Economics at Maastricht University. His work is primarily focused on the value of energy-efficiency and sustainability in the commercial and residential real estate market. Another research interest is the relationship between owner proximity and asset value in the commercial property market.

He is also actively involved in policy research for the European Union, providing an analysis of the valuation and uptake of energy efficiency in the European Union housing market. This four-year project with 28 EU-wide partners in construction, innovation and academia will result in a value analysis of "energy efficient" housing, including a scalable diffusion strategy for Europe, and a large number retrofitted homes.

Rogier teaches Master level courses in Real Estate Finance and Investments, and Corporate and Venture Finance. Moreover, he coordinates a Real Estate Investment skill course at the Bachelor level. He obtained an MSc degree in Finance from Maastricht University's School of Business and Economics.

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