Local Leaders in Sustainability

A Study of
Green Building Programs
in Our Nation's Communities

The American Institute of Architects

AIA

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Green Building Programs
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Local Leaders in Sustainability: *A Study of Green Building Programs in Our Nation's Communities* is the first in a series of reports focusing on green building at the local level.

The next report in the series will be an analysis of county green building programs.

Cover photo
Heifer International Headquarters, AIA/COTE 2007 Top Ten Green Projects award recipient. Polk Stanley Rowland Curzon Porter Architects Ltd., Little Rock. Photo by Timothy Hursley.

Content

Executive Summary

American cities are going green and local leaders are charging ahead with innovative sustainability policies. Buildings currently account for close to one-half of all greenhouse gas emissions, and the design and construction of green buildings offers the opportunity to create a more sustainable future. *Local Leaders in Sustainability: A Study of Green Building Programs in Our Nation's Communities* is a resource that examines the current state of green building laws in American cities as of 2007.

The American Institute of Architects (AIA) is focusing its energy on the promotion of sustainable design in our nation's communities, and this report demonstrates the valuable work of America's local leaders in sustainability. Green building measures have moved forward more rapidly at the grass-roots level, as local officials lead the way on sustainability policy.

Green building policy is necessary, as such factors as climate change, energy costs, and healthy living are all seen as priority issues for our nation. The primary goal of this analysis is to provide a tool for communities as well as other levels of government that seek to design green building programs in the future.

Local Leaders in Sustainability examines the growth and effectiveness of green building policies in cities with populations greater than 50,000. This represents a total of 661 communities, or 107,918,963 Americans. In conducting this study the AIA spoke to planners, building, and sustainability officials in 606 cities, for a response rate of 92 percent, during the summer of 2007. Using this data, we discovered

- Ninety-two cities have green building programs, or at least 14 percent of all cities with a population greater than 50,000
- At least 41,845,467 million Americans live in cities with green building programs
- An additional 36 cities indicated they are in a more advanced stage of developing green building programs, forecasting a future of increased green activity

No less than 14 percent of all Americans live in cities with green building programs. The true number is greater, however, because the study purposefully limited the data set to cities with populations greater than 50,000. Therefore many smaller communities that have equally impressive programs are not represented in this analysis.

The regional distribution of green building programs helps to illustrate the growth of sustainable development throughout the country.

- The western region leads the way in green building programs, with 43 cities in just six states, or a total of 48 percent of all green building programs
- The mountain region is well represented and is second in percentage of cities that have green building programs

- The East is growing quickly but comes in third in the percentage of programs compared to the number of cities surveyed and second regionally in overall programs

- Although the central states have the lowest percentage of overall programs, there are several innovative, well-established policies to be found here as well

The results of the study point to no single guideline or policy that will be best for all cities. Just as certain design features are more effective depending on the regional climate, certain policies are more effective depending on the political climate. However, the data revealed common threads in successful policies.

The best practices of municipal green building programs are illustrated through a series of case studies in this report. Six cities were chosen: Portland, Ore.; San Francisco; Scottsdale, Ariz.; Chicago; Austin; and Atlanta. Although this list could certainly be expanded, these cities represent a cross-section of American green building programs.

The case study communities reflect a diversity of long-standing policy. Many have been established for several years, therefore offering an opportunity to see what has worked well and which adjustments were needed. These cities provide an overview of the best practices of green building at the local level.

There is a further grouping of cities continuing to push ahead on green building, with inventive and far-reaching programs, largely concentrated in California and the D.C.-to-Boston corridor. These cities are going beyond standard concepts of green design by incorporating green requirements into all or nearly all buildings. Many of these policies are either just now getting off the ground or are being phased in over the next few years. In the Northwest there is even a group that is currently striving toward designing buildings that are zero net energy and zero net water users, creating truly sustainable buildings.

In addition to informing municipal policy, this report strives to advance the dialogue on the many green building rating systems that have been created. The cities in this report have experience with multiple rating systems, which will help inform communities contemplating green programs.

Communities are also grappling with increasing energy and water demands. Green buildings are a fundamental part of an overall strategy to address these problems because they create standards for sustainable design within a community. And, while the current state of green building laws is not consistent, it is an excellent representation of the American federal system of government.

It is heartening to see all the hard work that politicians, officials, architects, and citizens across the country have contributed toward greening America's cities. The breadth of green building experience displayed by these communities should be useful for all levels of government as they move forward on green building initiatives.

Green building is flourishing now and the future looks bright for sustainable design. The ultimate goal for green building is eliminate the concept of "building green" and, instead, have green design integrated into all buildings. This day is soon approaching, and the AIA is advocating for policies, such as the 2030 Challenge, to make this green future a reality.

Introduction

Local political leaders across the country have pushed ahead on sustainability and green building issues in recent years, passing several laws and initiatives to green their communities. *Local Leaders in Sustainability: A Study of Green Building Programs in Our Nation's Communities* is an AIA effort which examines the current state of green building laws in American communities as of 2007.

Buildings account for the largest source of energy consumption in America, an estimated 43 percent of all greenhouse emissions compared to 32 percent for transportation and 25 percent for industry.[1] In light of these numbers, the design and construction of green buildings presents an opportunity to rectify this imbalance.

Green buildings are currently revolutionizing the design and construction industry. Sustainable design has the potential to transform the built environment from its energy intensive past toward an energy-efficient, green future. Ultimately policies that promote this kind of development are good for architects. Buildings are lasting features of the physical environment and they should be designed to meet human needs. The technology now exists to make green buildings that are modern and attractive as well as financially viable. The confluence of factors, from high energy costs to global warming to a strong business case for green buildings, has created an environment in which political leaders have an opportunity to lead America toward a sustainable future.

And this is what is happening in communities across America, as local elected officials have picked up the mantle of leadership on this issue. Elected officials have been working with planning departments and other dedicated civil servants to craft green building and sustainability legislation in response to the groundswell of support from citizens who are pushing for laws that begin to tackle climate change. As the federal government continues to sit on the sidelines rather than take action on the important issues of the day, mayors, city councils, and other local government officials are taking the lead for a greener future.

Although no municipal program is perfect, the leadership exhibited by local officials over the years has been impressive. The local level is where change is currently taking place on a wide array of issues, from green buildings to other sustainability initiatives. All levels of government should examine these policies to better understand the current and future state of green building in America.

The AIA is focusing its energy as an organization on promoting sustainable design in our nation's communities by advocating for positive change at the state, local, and federal levels. The Institute is currently undertaking multiple green building and sustainability initiatives, examples of which include the following:

[1] Pew Center on Global Climate Change (2005 June). *Towards a Climate Friendly Built Environment.* Arlington, Va.: Pew Center on Global Climate Change.

- *AIA 2030 goals* advance the goal of carbon-neutral buildings by 2030. This goal will be reached by immediately cutting carbon output of buildings by 50 percent, then subsequently raising this number by 10 percent from 2010 onward every five years, reaching carbon neutrality in 2030.

- *Green Cities Toolkit* provides a resource for local governments on how they can make their communities green. This toolkit was originally distributed in conjunction with the U.S. Conference of Mayors in 2006 and is currently being revised and updated with a planned winter 2007 release. It provides resources that address such questions as Why architects and green buildings? What are other mayors currently doing? What makes a building green? What can my city do to get started?

- *50to50* provides 50 technical recommendations on what architects can do to reduce energy use in buildings by 50 percent.

- *Sustainable Design Assistance Teams* (SDATs), a community assistance program, focuses on the principles of sustainability. SDATs bring teams of volunteer professionals (such as architects, urban designers, planners, hydrologists, economists, attorneys, and others) to work with community decision-makers and stakeholders to help them develop a vision and framework for a sustainable future.

- *Sustainability Discussion Group* (SDiG) is an AIA Board-level sustainability discussion group.

- *AIA Committee on the Environment* (COTE), as part of its effort to celebrate current best practices, runs its flagship program, the Top Ten Green Projects awards on an annual basis. Started in 1997 by Gail Lindsey, this is now recognized as one of the most holistic design awards programs in the United States, and many of these projects have been featured in this report. COTE also runs programs to green the AIA Honors and Awards, the AIA convention, and other aspects of AIA operations. The COTE Network consists of 60 local and state chapters and their members.

The AIA is also continuously working with the U.S. Conference of Mayors and the National Association of Counties to spread the sustainability message. Both organizations have adopted resolutions supporting the 2030 Challenge, with the mayors passing a resolution in summer of 2006 and the counties in summer of 2007.

These organizations represent the local elected officials across the country who have been making a difference, and the AIA spoke with these officials and the valuable staff who work for them in order to complete this report. The purpose of the green building study and this report is to be a resource for local officials, architects, and others who want to understand the current landscape of green building laws throughout the country. This includes what is out there, the best practices, and where communities are going next. Green building is the future of building, and architects are helping to make this possible by creating exceptionally designed, energy-efficient, water-conserving, green buildings.

Methodology

Local Leaders in Sustainability: A Study of Green Building Programs in Our Nation's Communities is an examination of green building laws in the United States. The study identifies cities with green building programs, provides an overview of current laws and ordinances, and shares pertinent information on these programs in order to give the reader a clear idea of the current state of green building in our nation's municipalities.

The AIA noticed a lack of comprehensive data on green building programs. We thought the availability of this information would be invaluable, not only for our own sustainability advocacy efforts, but for the numerous communities across the country that are currently thinking about or in the planning stages of their own green building programs.

To feasibly execute this study we identified the survey group as all American cities with populations greater than 50,000, or 661 cities and towns.[2] This represents a total population of 107,918,963 Americans, or a little

[2] U.S. Census Population Estimates for All Places—2005. Retrieved from www.census.gov/popest/cities/SUB-EST2005-4.html.

more than one-third of the country. We then formulated multiple survey instruments in order to measure the current number of green building programs and ascertain the current level of green building in cities that have instituted green building laws. Out of the sample of 661, the AIA spoke to representatives from 606 communities, for a response rate of 92 percent. The non-responding communities tended to be smaller cities and towns, leading to a total responding population of 102,178,010.

The AIA research team contacted all the communities first with a short survey to get basic information on whether the city has a green building program; how long the green building program has existed; whether it applies to government, commercial, or residential buildings; whether it employs a rating system; and whether the program provides incentives to build green.

After the initial survey was answered and cities with green building programs were identified, the AIA sent a more in-depth survey. The more extensive survey asked detailed follow-up questions of the municipalities, including

- Has an analysis been performed to demonstrate the effectiveness and/or cost impact of the program?
- What incentives and mandates exist in the green building program?
- Are all of a particular kind of building, e.g., government buildings, required to conform to a green building standard or are there size and other threshold requirements?
- Was the development community engaged in the process of creating the incentives in their community?
- What is an estimate of how many green buildings are in the city/town?
- Have they noticed any trends toward an increase or decrease in the number of green buildings being proposed or under construction?
- How many buildings are certified by a third-party certification program?
- How many buildings are awaiting certification and under which standard?
- Does the community incorporate green building standards into its local building code?
- What challenges or barriers to green building programs exist within current codes and what has the city done to overcome or address them?
- Are there countywide or state-codified green building programs that exist?
- Is the program adopted from a county or state program?
- Did an architect help develop the green building program?
- Are they familiar with the AIA/U.S. Conference of Mayors 2030 Challenge and did it influence the program?

The amalgamation of this information created a clearer picture of the current state of green building throughout the country. Regional strengths and weaknesses became apparent, and the number of years that green building programs have existed, the extent of the program, whether it applies to just public buildings or all buildings, types of incentives offered by communities, and many other exciting data points informed the analysis.

One of the ultimate purposes in collecting this information is to create quantifiable best practices that other communities can use as they begin or strengthen their own green building programs. These best practices are represented through the case study component of the report.

We recognize there are clear leaders in municipal green building in America that can positively inform the overall study. These leaders help establish achievable benchmarks for other communities that have either just recently started their own green building

program, are just now starting down the path toward creating a green building program, or that may have heard about green building programs happening in other parts of the country and would like to find out more information.

The programs that were chosen for the case studies provide an excellent cross-section of American green building programs. The current state of green building laws is not consistent but instead is a good representation of the American federal system of government. Local communities have the authority to choose their own laws and, although they have taken many ideas from others, on the whole they have been quite inventive at creating unique aspects in many of their green building programs. The following communities reflect this diversity and, because many of these programs have also been established for several years, these communities have had the opportunity to see what works well and make adjustments as needed. These cities are also regionally diverse, providing examples of programs in different parts of the country. Although this list of case studies is by no means exhaustive, these communities provide a good overview of the best practices of green building on the local level:

Portland, Ore.
Scottsdale, Ariz.
Austin
San Francisco
Chicago
Atlanta

Definitions

The following definitions are used throughout the report and have therefore been defined below to further the reader's understanding:

Green Building Program
A green building program is a law or regulation that mandates or offers incentives for the construction of green buildings within a community. It can focus on public, residential, and/or commercial buildings.

Sustainability
The concept of meeting present needs without compromising the ability of future generations to meet their own needs.

Sustainable design
Design that seeks to avoid depletion of energy, water, and raw material resources; prevent environmental degradation caused by facility and infrastructure development over their life cycle; and create environments that are livable, comfortable, and safe and that promote productivity.

Green
A subset of sustainability, the focus of which is lifecycle environmental impacts of materials, i.e., "reduce, recycle, reuse."

Lifecycle Analysis
Examines total environmental impact and business cost/benefit assessment through each stage of a product's existence, from raw materials acquisition through manufacturing, packaging, shipping, installation, IAQ, and performance, as well as end-of-use resource recovery.

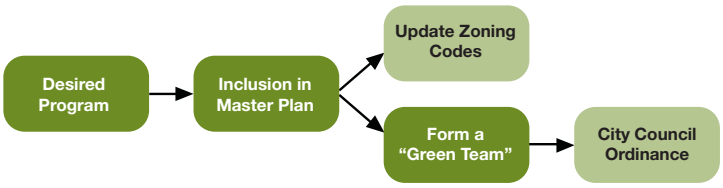
Study Findings

Typical Path to a Green Building Policy

Communities, both large and small, typically follow a similar path in designing their green building programs. The initial idea oftentimes grows out of concepts formulated in the planning department of the city. In the past 5 to 10 years many planning departments throughout the nation have included vague language on sustainable development into master plans, especially into downtown-specific plans. These serve as guiding principles for the city's growth and development. After the master plan is updated, the green building issue generally moves in one of two directions, both of which usually take 12 to 18 months to be completed.

The first option is the most common. This involves a city council member or possibly a forward-thinking mayor who believes that a green, sustainability policy is either the right thing to do or is heavily influenced by his or her constituents to pursue this course. As a result of this, a "Green Team" is formed to look into the current status of the city's sustainability policies in each department and make recommendations for additional policies. The recommendations almost always result in the formation of a municipal green building policy as a first step but may sometimes go further. More dedicated communities may expand the program to provide incentives or assistance to developers. Communities that have the financial resources available will generally create a position for a sustainability official to coordinate the green building policy with other initiatives in the local government.

The second option is that the planning department, after including language in the general plan, will begin rewriting the zoning code to include specific provisions for green design without the assistance of an outside "Green Team." This method is generally dependent on the timing of the updates because few cities regularly do comprehensive overhauls of the codes. Sometimes this path can lead to a cohesive green building program that takes into account the whole building and establishes checklists and guidelines that are built in. In other instances it leads to distinct codes on stormwater management, energy efficiency, insulation, minimum window quality, and other such issues. This certainly improves building quality but falls short of a comprehensive green building program.



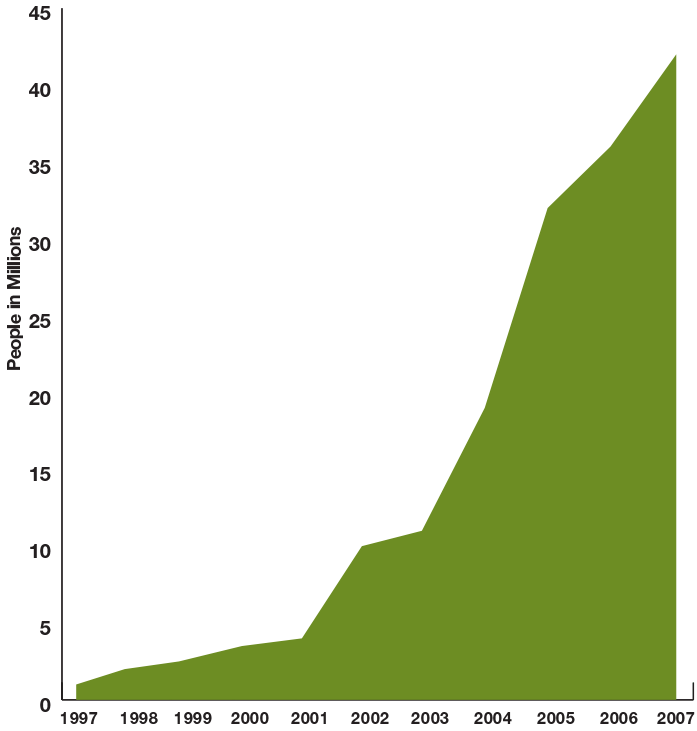
Genzyme Center, Cambridge, Mass., AIA/COTE 2004 Top Ten Green Projects award recipient. Behnisch, Behnisch and Partner Architect, Venice, Calif. Photo by Anton Grassl.

The most desirable end result with either option is a coherent, successful green building program. Political leadership is a necessary precondition with both options. The citizens of a community are extremely important in the process because politicians listen to their constituents. Whichever method leads to a green building program, there is a clear trend toward green development as Americans continue to demand a change in environmental policy. In recent years the number of green building programs has increased exponentially and all trendlines point toward continued growth in this sector.

Green Building Nationwide

Green building is the future of design and construction, and cities across the country share this sentiment. After contacting 661 cities, we concluded that green building programs are booming. The enthusiasm for sustainability and green building on the local level is

U.S. Population Living in Green Cities

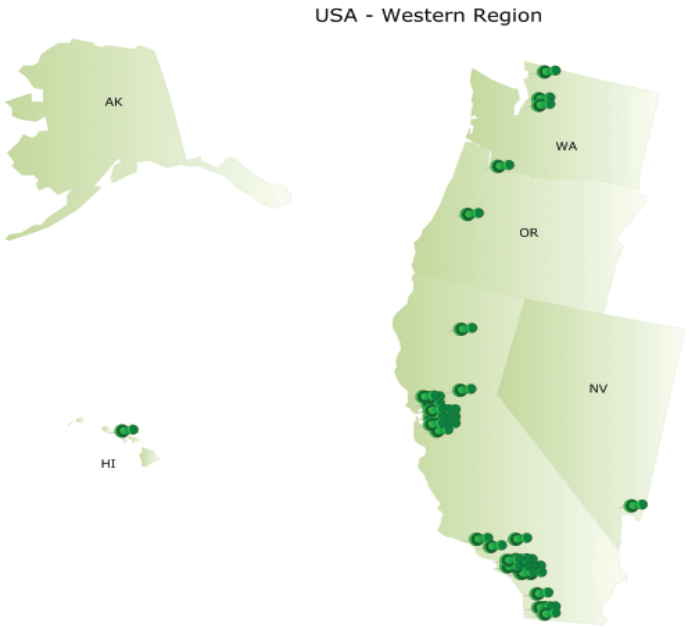


Green Building Programs in Cities with a Population Over 50,000

heartening and although all regions have yet to adopt programs at quite the same rate, the overall pattern is one of continued implementation of green building ordinances.

The AIA has spoken to and recorded data from planning, building, and/or sustainability officials in 606 cities, for a response rate of 92 percent. Officials in these cities have answered the short survey, which provides basic information on their programs.

Ninety-two cities have green building ordinances, or at least 14 percent of all communities, representing a population of approximately 41,845,467 Americans. This is an extraordinary number, as the total contacted population for all 661 cities with a population of more than 50,000 is 107,918,963. Therefore, 39 percent of these citizens live in communities with green building programs.



Regional Distribution of Programs

The regional distribution of programs helps illustrate the growth of green building throughout the country. Many of the older programs are chiefly located in the West, where the largest number of programs are also found. The mountain region is well represented in relation to the population of these states. The central part of the country, while having fewer total green building programs, has some innovative and well-established policies in places like Chicago, Austin, and Madison. The East Coast is catching up to its West Coast counterpart in total number of programs, with many existing, impressive policies. Many far-reaching programs in the larger cities are just now getting off the ground, with excellent preliminary results. On the whole, the regional breakdown is as might be expected but the breadth and dedication of these programs throughout the entire country is something that should make our local leaders proud.

Pacific (Western) Region

The Pacific region is moving forward on green building and sustainability at a faster rate than any other region of the country. This is probably due to several issues, ranging from public support for climate change initiatives to a culture of conservation to rising energy costs. The six states that are identified as the Pacific region in this study are California, Oregon, Washington, Nevada, Hawaii, and Alaska. These states consist of 51,005,185 citizens or 17 percent of the population.[3] They have 43 active green building programs, or 48

Region	Population Under Green Program (cities)	Population Surveyed (cities)	Total Sample Population (cities)
Western	13,807,274 (42)	26,317,728 (163)	28,985,380 (191)
Mountain	3,539,179 (8)	8,498,745 (50)	8,662,820 (52)
Middle	10,378,629 (14)	26,973,827 (163)	28,031,288 (173)
Eastern	14,346,398 (28)	40,869,430 (230)	42,239,475 (245)
Total	41,845,467 (92)	102,659,730 (606)	107,918,963 (661)

[3] U.S. Census Bureau, 2006 Population Estimates. Retrieved from http://factfinder.census.gov/servlet/SAFFPopulation?_sse=on&_submenuId=population_0&_ci_nbr=&qr_name=&ds_name=&reg=&_industry=

Green Building Programs in California

Anaheim	Petaluma
Berkeley	Pleasanton
Burbank	Redding
Carlsbad	Richmond
Chula Vista	Riverside
Fremont	Sacramento
Glendale	San Buenaventura (Ventura)
Irvine	San Francisco
La Mesa	San Jose
Livermore	San Leandro
Long Beach	San Rafael
Los Angeles	Santa Barbara
Mission Viejo	Santa Clarita
Novato	Santa Cruz
Oakland	Santa Monica
Palo Alto	Santa Rosa
Pasadena	Sunnyvale

percent of all green building programs. At least 27 percent of the western population, or 13,807,274 Americans live in cities with active green building programs.

Among the states, California is clearly a leader in number and breadth of green building programs. Thirty-five cities in California have programs, or 38 percent of all green building programs in America. For a state that represents approximately 12 percent of America's population, this is an extraordinary accomplishment and, as in many policy areas, a good leading indicator for where the rest of the country is headed.

The Pacific region has also developed new and creative green building guidelines. Alameda County's (California) Build It Green drew on the momentum created by LEED ® to propose a local program that provides a similar guide for residential construction, which until recently, did not exist within LEED. It is used primarily by cities within the county and the Bay area but it has become a standard used elsewhere as well.

These programs are mostly found near large population centers along the coast of the state, including the San Diego, Los Angeles, and San Francisco Bay areas. Several programs exist between these metro areas. Programs are not as widely found in the interior of the state or in the far north.

Oregon currently has two active green building programs, in Portland and Eugene. Portland is widely known as one of the leaders in sustainability, with a green building program that has served as a model for many throughout the country (see Case Studies).

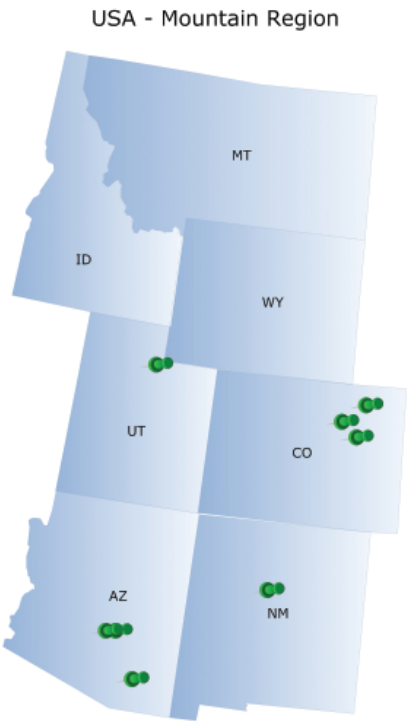
Washington has three programs, in Seattle, Bellingham, and Shoreline. Seattle's program is the most developed, with Shoreline, a suburb of Seattle, and Bellingham, almost 100 miles north of Seattle, near the Canadian border.

Seattle has been one of the most influential leaders of the green building movement in the region. The city provides incentives for virtually every type of development, ranging from certification rebates and density bonuses to best practice forums and free trees for neighborhoods.

Nevada and Hawaii each have one green building program, in Las Vegas and Honolulu, respectively.

Mountain Region

At first glance the mountain region may not appear as impressive as other regions but looks can be deceiving. Although there are only eight programs, this represents 16.3 percent of the cities contacted and is slightly above the national average, especially when the population of this region is taken into account. These states make up 6.1 percent of the total US population, with 18,350,458 residents. But 3,539,179, or 19 percent of citizens, live in cities with green building programs here.



Like many of California's policies, a vast majority of these programs were driven by concerns over future energy

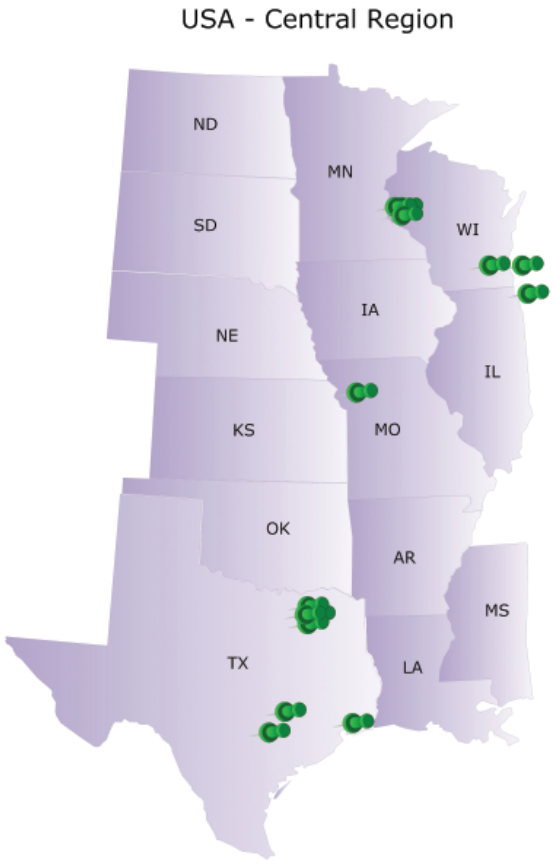
and water supply. Many cities in the dry states to the south of this region may not have specific policies but the water management and energy efficiency standards that they have enacted over the years are undoubtedly leading to the construction of better buildings.

Arizona has three green building programs, in Phoenix, Scottsdale, and Tucson. In addition to LEED, both Tucson and Phoenix have a particular focus on energy and water efficiency.

Colorado's policies can be found in Denver, Boulder, and Fort Collins. New Mexico and Utah each have one program, in Albuquerque and Salt Lake City, respectively.

Central Region

The central region represents 25.2 percent of the American population, or 75,426,742 citizens but, on the whole, these states have not adopted green building policies at the same rate as other regions of the country. Just 14, or 8.6 percent, of the cities contacted have such programs. This, however, represents a significant portion of the urban centers, and 10,378,629 citizens of the central region live in cities with green building programs. Although they have the fewest total



Green Building Programs in Texas

Austin
Dallas
Flower Mound
Frisco
Houston
Plano
San Antonio

number of programs for their region in relation to the number of communities, the population of some of the larger cities such as Chicago, with nearly three million people, inflates the total number of citizens living under green building programs to 14 percent, the national average. The larger urban cities have begun the move toward green buildings, but the suburbs around cities like Chicago and St. Louis have not quite seen the same level of reciprocal activity as California's suburban areas.

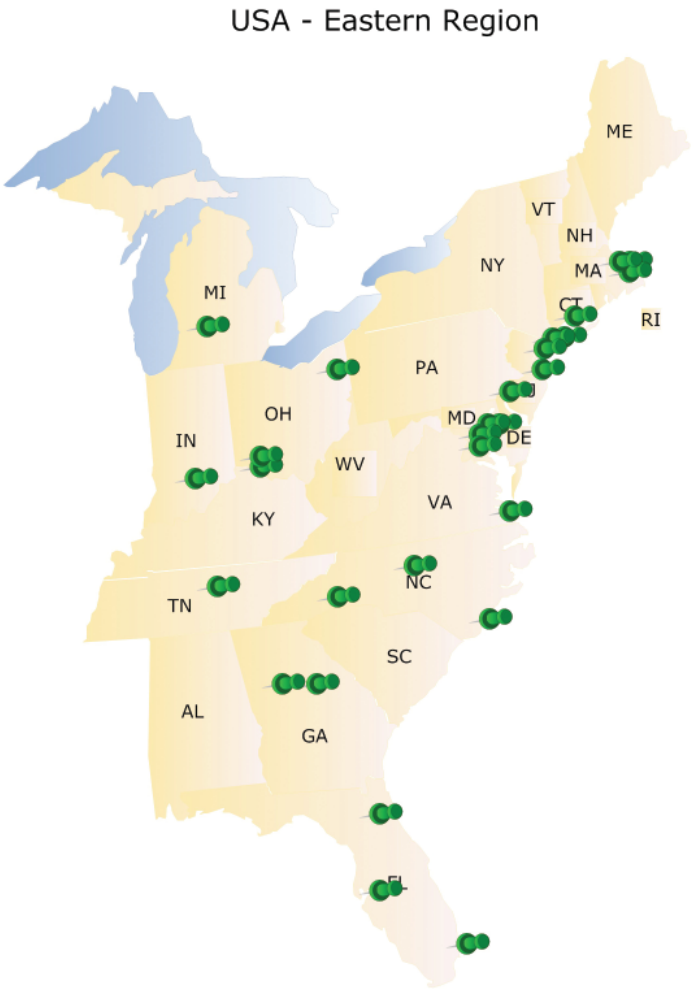
While not having a great number of programs, those that do exist in this region are some of the best in the country. Chicago and Austin are deservedly considered to be leaders but there is much more to the programs in this portion of the country.

Frisco, Tex., has the only program with mandatory green building standards for all types of construction outside of California. Many other cities, such as Minneapolis, St. Paul, Madison, and Houston, have impressive programs that extend beyond municipal buildings to affect the private sector.

Missouri has a program in Kansas City. Illinois's only program is in Chicago. Wisconsin has two programs, one in Madison, begun in 1999, and the other in Milwaukee. Minnesota has programs in Bloomington, Minneapolis, and St. Paul.

Eastern Region

The eastern region is peppered with programs, many in places like Grand Rapids, Mich., Chesapeake, Va., and Wilmington, N.C., as well as the larger cities of the region. Of the cities that responded 28, or 12.2 percent,



had green policies. In this region 14,346,398, or 9.3 percent, of the regional population live in cities with green building programs and, although this total seems small comparatively, it is growing fast. The region has the second largest number of programs in the country after the Pacific region. Nevertheless the population of the eastern region is much larger than the West, with 154,616,099 citizens, or 51.6 percent of America's total population.

Although these programs are not as old as those found in the Pacific region, the number of programs is impressive and this region had the greatest number of cities that reported being in the process of developing legislation at the time of the survey. Expect to see Boston, New York, Washington, D.C., and other large metro areas start to develop satellite policies over the next couple of years similar to the pattern of the West. In fact this is already visible throughout the D.C.-to-Boston corridor, just not at the same level as its western counterpart. At the same time, Florida could see its policies flourish as many of the cities contacted indicated they were in some stage of the policy formation process.

New York City has an innovative plan to expand their green building program, with PlaNYC, which became effective this year. Massachusetts has programs in Boston, Medford, and Quincy. The policy in Boston marked the first time a large city passed a zoning ordinance requiring all large commercial buildings to be LEED certifiable. Washington, D.C., passed its law, in late 2006, becoming the first major city to call for privately owned real estate to be green.

Trends

Green building has expanded at a quickened clip over the last four years. The 92 cities with programs provide a captivating data set to explore. The majority of laws have been passed post-2003, with only 17 passed before this year. These pioneering programs include

Additional Green Building Programs

FLORIDA
Gainesville
Lauderhill,
St. Petersburg

GEORGIA
Atlanta
Athens

NORTH CAROLINA
Asheville
Wilmington
Winston-Salem

TENNESSEE
Nashville

VIRGINIA
Arlington
Chesapeake

MARYLAND
Bowie
Gaithersburg

NEW JERSEY
Elizabeth
New Brunswick
Trenton

INDIANA
Bloomington

MICHIGAN
Grand Rapids

PENNSYLVANIA
Philadelphia

OHIO
Cincinnati
Cuyahoga Falls
Hamilton

- Arlington, Va.
- Austin
- Boulder
- Elizabeth, N.J.
- Fort Collins, Colo.
- Frisco, Tex.
- Gainesville, Fla.
- Los Angeles
- Madison
- Pleasanton, Calif.
- Portland, Ore.
- San Diego
- San Francisco
- San Jose, Calif.
- Santa Monica, Calif.
- Scottsdale, Ariz.
- Seattle

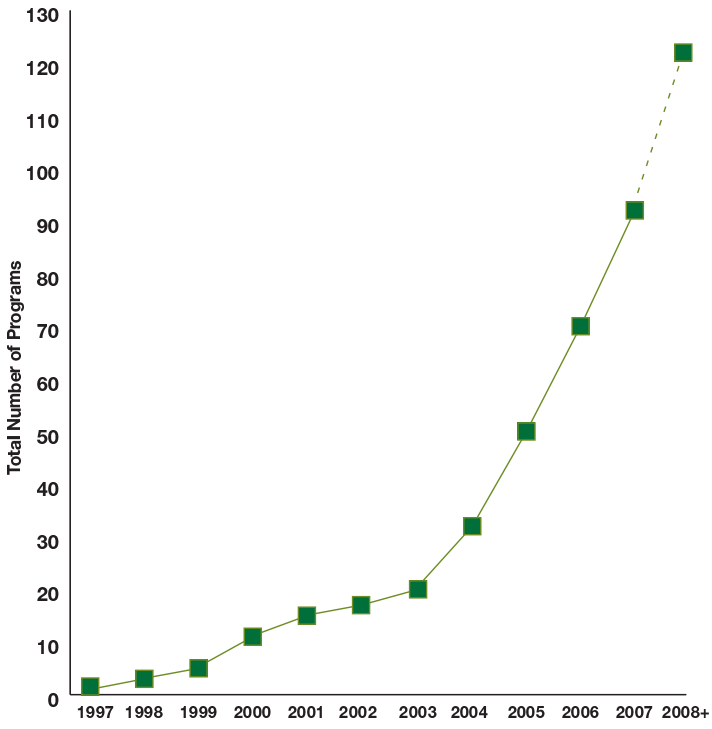
It is apparent that the distribution of these programs also leans toward the West Coast, with 8 of the 17 pre-2003 programs in this region. Many of these have been viewed as models for other communities to emulate, with varied approaches and focuses arising in different cities. Austin, Portland, Ore., San Francisco, and Scottsdale have all been chosen as case studies, and the details of these programs will be explored further in the case study section of the report.

With such a dramatic increase in the number of programs over the past four years and the fact that there are only 661 cities in the country that fit the sample of this study, some might conclude that the momentum will soon reach a plateau—that only the most progressively minded cities will use policy in this manner. While we can hardly expect to keep up with the almost exponential growth rate, it is clear from the survey responses that we are nowhere near the peak. In addition to the 92 existing green building programs, 36 cities indicated they are in the more advanced stages of developing a program. We have used these data to project the 2008 numbers in the graph above.

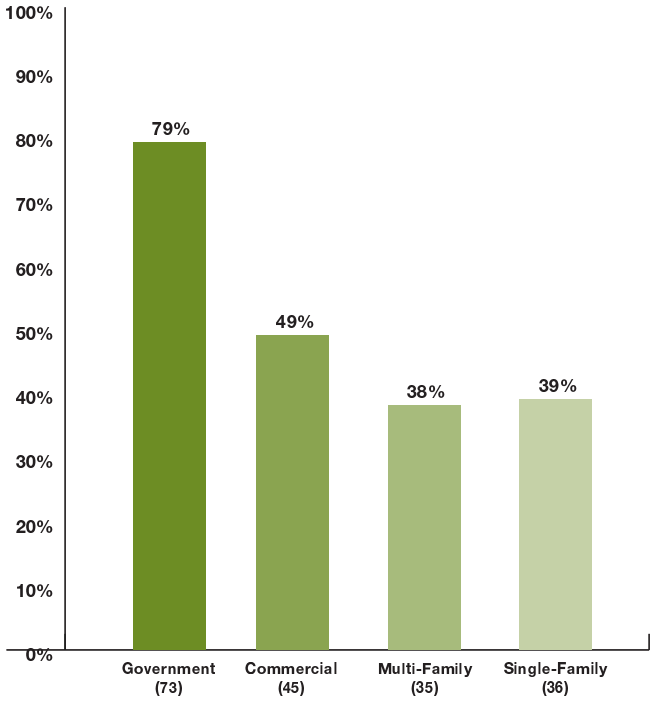
It is difficult to establish benchmarks that clearly define how close a city may actually be to passing an ordinance. However, at the time they were contacted, these 36 communities had, at the very least, begun drafting either a new law or code change for their city council or mayor to consider. These cities had already done all of the preliminary work, i.e. sustainability taskforce, reports, etc., and they are well on their way to establishing a program within the next year. Furthermore, there are many more cities that have formed task forces or green teams and drafted sustainability plans or master plans that encourage green design.

Even more revealing, however, were responses from the cities that had not taken action. In speaking with planners, permit inspectors, and building code enforcers across the nation the most common response by far was, “We don’t have anything like that but it would be great if we did.” Several respondents even expressed apprehension that by not already having a policy they were “behind,” or even “backward.” Even the skeptics we spoke with were less inclined to question the value of green buildings and more inclined to question the role of government in promoting them. Clearly the momentum behind these green building policies has not subsided and the remarkable trend toward green building policy is likely to continue for several more years.

U.S. Cities with Green Building Programs



Does your program apply to government, commercial, multi-family, and/or single family residential buildings (check all that apply)? ***92 responses***



Additional Survey Responses

Green building programs have traditionally focused on government buildings first because this is by far the path of least resistance. Governments can lead by example and demonstrate the efficacy of green design to the community. As time has passed and programs have multiplied, many cities have expanded their original programs or designed new programs that incorporate commercial and residential green building into their overall plans. This expansion into the private sector is generally accompanied by incentives that can range from assistance by city officials to fast-track permitting to cash rebates offered by the municipality. Although not all private green building requirements include incentives, the majority offer inducements to "go green." Many private-sector parts of green building programs remain voluntary; however, several cities have begun to mandate green for all buildings.

All 92 cities with existing programs responded to the question, Does your program apply to government, commercial, multifamily, and single-family residential buildings? As most programs start at the government level, the 79 percent of communities that indicated that their program applies to government buildings was expected. The truly interesting finding is that 49 percent of respondents indicated that their programs apply to commercial, 39 percent single-family, and 38 percent indicated that their green building program applied to multifamily construction.

Incentive Options

Communities can offer several incentives to encourage the private development of green buildings. These green incentives run the gamut from those that are virtually cost free to options that involve a direct investment by the city. Communities can choose a range of inducements based on the fiscal outlook, the current level of development activity, and the scope of the green building program. The following options represent the most common incentives offered by cities across the country:

Expedited Permitting: Streamline the permitting process for building, plan, and site permits. This may sometimes require the reorganization of staff or initially cost the city in other indirect ways but, on the whole, it is of great cost-savings to the city and the architects and developers involved in projects.

Green Building Awards: Offer a Green Award, such as a plaque for use in marketing purposes. Communities can also assist with marketing by highlighting these awards on their green building Web site and providing links to participating firms.

Green Loan Fund: Establish a loan fund specifically for green improvements. There is an initial investment and start-up cost but generally these incentives have actually proven profitable in the long run. Localities can use performance contracting to provide loans at reduced interest rates to developers that agree to build to green standards and then pay back this cost through future energy savings.

Training: Train building inspectors and other local officials in the green building standards of the com-

munity. For example, if a community decides not to go through the full LEED certification process, a LEED-accredited building inspector can still approve buildings as LEED certifiable. Well-trained local officials can also educate the community and assist developers throughout the building process. Cities can even use these officials to earn revenue by offering discounted consulting for green building projects.

Density Bonuses: Implement height bonuses, floor/area ratio bonuses, reductions in landscaping requirements, and counting green roof space as landscaping/open space in return for achieving levels of green building ratings.

Permit Fee Waivers: Waive or give a partial or total reimbursement of the application, building, or permit fees in return for reaching specific levels of green rating systems.

Subsidized LEED Fees: Subsidize this USGBC cost through a direct grant.

Property Tax Abatement: Temporarily reduce taxes for specific levels of green certification.

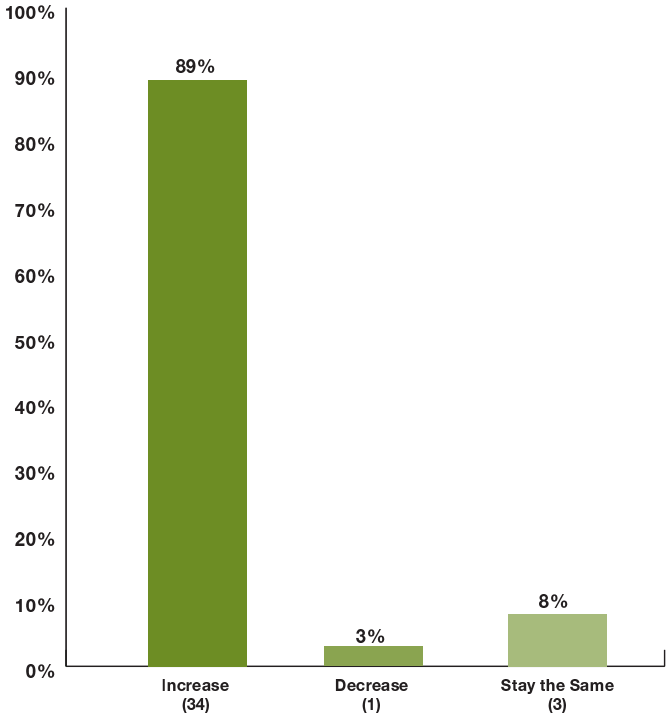
Discounted Energy Star Appliances: Buy these energy-efficient appliances in bulk and offer citizens discounted prices. This is especially useful for green residential programs.

Subsidized Green Premium: Offer incentives for additional costs on energy-efficient and other green systems the community would like to encourage. This incentive offers cities the opportunity to focus on particular areas, such as HVAC systems, windows, solar energy, and water systems.

Green Building Construction Trends

A further 39 cities out of the 92 with established green building programs have answered the more detailed survey, providing additional information about their green building programs. These cities have helped to inform the overall study and illustrate trends within sustainable communities. The geographical diversity of those cities that responded reinforces the reliability of the data.

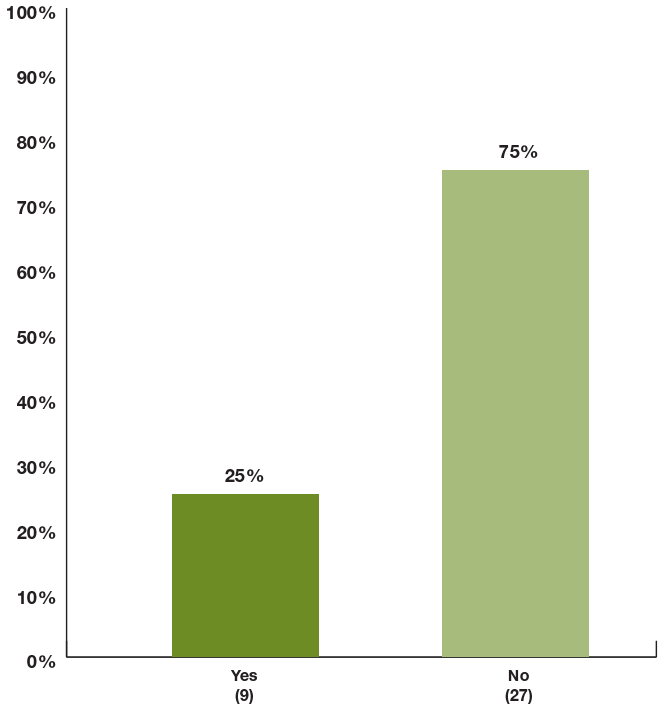
Green Building Construction Trends
38 responses



One of the first questions that is interesting to examine is whether the excitement over green building translates into an increased level of green building activity in these communities. In other words, have the green building programs established by these cities positively spurred green building construction? To find out the AIA posed the following question: *Have you noticed any trends toward an increase or decrease in the number of green buildings being proposed or under construction?*

The AIA was able to collect data on 38 of the cities with green building programs, for a response rate of 41 percent. The responses clearly point in one direction, toward an increase in green building construction in these communities. Thirty-four cities, or 89 percent of respondents, reported an increase in green building construction, while one city reported a decrease and three indicated that green construction trends were staying the same.

Does the city/town currently incorporate green building standards into the local building code?
36 responses



Green Building Standards and Building Codes

The AIA's ultimate goal is to incorporate green standards into the building code, thus creating the conditions for all buildings to be more green. Although this goal will take time and great effort, we are working with other national associations in the design and construction industry to make this a reality. Recently, the AIA held a Green Building Codes Summit, in which we brought together green leaders from cities and states across the country, as well as leading codes experts, in order to discuss the various processes currently in place and the potential of truly nationwide green standards. While there are several amazing programs across the country, the lack of standardization sometimes acts as a barrier to increased green design, and the movement toward clearer standards is good for communities and the country.

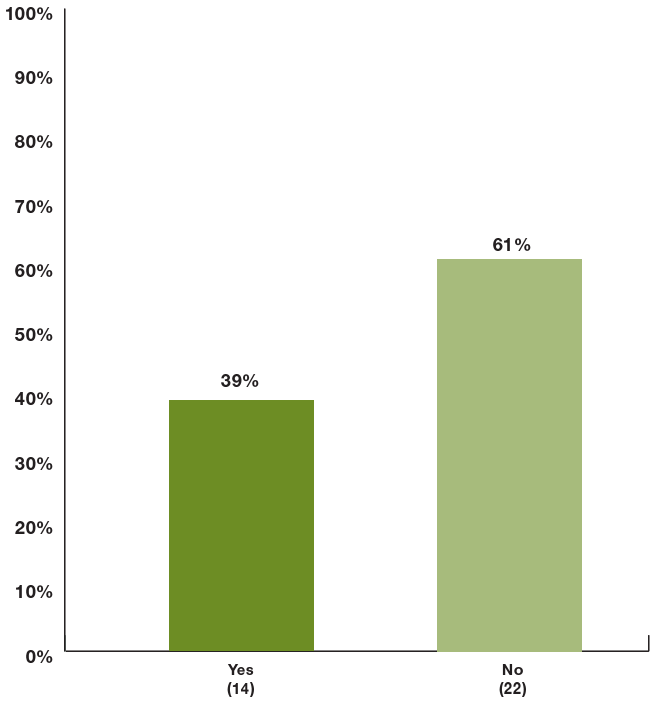
Out of a total rate of 36 responses, nine cities, or 25 percent of respondents, indicated they have incorporated green building standards into their local building code, while 27 cities, or 75 percent of the respondents, indicated they had not yet begun to do this. Many cities that do not incorporate any green standards into their code indicated this is something they are currently looking into and would be interested in pursuing in the future.

Architect Involvement in Green Building Programs

Architects are leaders in green building and sustainability because the architecture profession designs the buildings in which we live, work, and play. As a result, architects are uniquely qualified to assist municipalities in the design of their green building programs. The AIA and its members realize the scope of the environmental problems facing the world and are choosing to be a part of the solution. Architects from across the country are assisting municipalities in the creation of their green building programs but they can and will continue to do more to help city governments.

With 36 total responses on the question: *Did an architect help develop your green building program?*

Did an architect help develop your green building program?
36 responses



architects were involved in creating 14 programs, or 39 percent of responses, while they were not involved in 22 of the green building programs. The AIA will continue to increase this number as local AIA components and COTE continue their advocacy at the community level, while AIA National and state components will continue to offer their assistance at the local and state levels. Many communities indicated their local AIA component and/or COTE committee was involved in the process, and others indicated that architects were involved on green teams or other committees that helped establish programs in these cities.

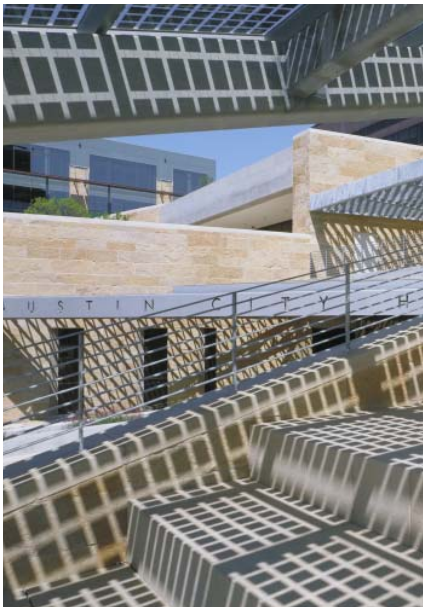
Other Survey Responses

Communities provided further information, ranging from the number of green buildings to the types of rating systems used to whether specific barriers had to be overcome in order to implement their green building program, which further informed this overall report. Specific responses of interest include information on the development community's involvement in the creation of green building programs, with the overwhelming response being that they were heavily involved. Some cities had done a post-implementation analysis of their programs but most still had not undertaken such a study.

Questions surrounding third-party certification programs tend to center on the cost rather than the efficacy of such programs, particularly in conjunction with taxpayer money. As a result, some cities have several buildings that are awaiting certification by a green building certification organization, such as LEED. Many cities simply get around these costs by requiring a project to be "certifiable." These buildings will never appear in any LEED project lists and are therefore more difficult to report on. In the 39 cities that responded to the additional survey, 31 provided estimates of the number of buildings that had been constructed to the standards of their program. In these 31 cities the surveys indicated there were at least 88 public, 85 commercial, 39 multifamily, and more than 1,500 single-family residential green buildings. This data combined with further public information from municipal green building Web sites and the U.S. Green Building Council (USGBC), indicates that thousands more green homes and other buildings have been constructed to date. These programs are more than "feel good" policies; they have shown significant results.

Finally, cities were asked whether they adopted their green building programs from existing state or county programs. Thirty-six cities responded to this question, with eight, or 22 percent, indicating they had developed their green building program based on another program, while 78 percent, or 28 cities, indicated they established the program on their own.

These results demonstrate a willingness by cities to work with their communities to develop the best green building programs possible. The political leaders and officials in these municipalities have been enthusiastically pushing the green envelope in their communities, and the following section highlights some of the best practices of this group.



Case Studies

Portland

Portland, Ore., has earned a deserved reputation as one of the leading communities in sustainability and green building practices. The city's green building program developed due to a concerted municipal effort, as well as considerable buy-in from citizens and the design and construction industry.

Gerding Theater at the Armory, AIA/COTE 2007 Top Ten Green Projects honorable mention. GBD Architects Inc., Portland, Ore. Photo courtesy of GBD Architects Inc.

Portland's green building efforts began in 1994 with the creation of a citizen group, the Sustainable Portland Commission. This commission eventually created an *Action Plan for Portland*. The city adopted their plan in 2000 and used it as a guiding document to form the Green Building Division in the Office of Sustainable Development and the Green Investment Fund.

G-Rated

The Office of Sustainable Development created the "G-Rated" or green-rated program. The primary purpose of this program is to encourage owners and developers to use green building practices and to provide support to this community. One of the outgrowths of this successful program was the requirement that all city buildings be rated LEED Certified.

The G-Rated program works especially well because of the collaborative nature of its organizing structure. Six development-related Portland bureaus work together with several local organizations to focus on policy development, technical assistance, financial incentives, educational outreach, and other related efforts. The G-Rated program also serves as a resource for residents that are interested in integrating green building practices into residential and commercial development in the city. The program is funded through solid waste fees, grants, and contracts. Sponsorships and tuition charges are also assessed for programs and events, such as Build It Green! and ReTHINK, that take place during the year.

Green Investment Fund

The Green Investment Fund is a competitive grant program established to support particularly innovative design. This program buttresses the efforts of architects and other design professionals with grant money for green building projects. The total grant money given so far in 2007 has been $425,000, which has been distributed to recipients for six projects. The maximum grant that can be given for a single project is $225,000.

State Collaboration

Portland has also worked with the state of Oregon to provide the Business Energy Tax Credit as an income tax credit for green building and other sustainable projects in energy conservation, recycling, renewable energy, and cleaner fuels. These types of incentive programs were the first of their kind and, by creating these incentives, the city believes it led directly to the expansion of green building in the community.

The Oregon Department of Energy offers a tax credit of 35 percent of eligible project costs, which includes the cost of the system or equipment beyond standard products. The credit is then taken over five years, with 10 percent given in the first and second years, and 5 percent a year given over the final three years. The tax credit can also be carried forward for up to eight years if the user is unable to take the full credit in one year. Those with eligible projects under $20,000 are able to take the full tax credit in a single year. More than 13,000 tax credits have been awarded with this program.

Urban Development

Portland's Pearl District is oftentimes seen as a model of green urban development. This neighborhood is said to have the most green buildings per square mile in the United States, with numerous LEED Certified, Silver, and Gold condominium and commercial projects throughout the neighborhood. The renovated Armory Building, pictured at left, is rated LEED Platinum and serves as the home for the Portland Center Stage.

The seamless integration of green design is epitomized in this walkable, transit-oriented neighborhood. The Pearl District provides not only a great example of sustainable, urban living; it also demonstrates the fundamental nature of green building as the harbinger of a future, healthy built environment. In addition, the Pearl District also serves as an illustration of profitable development, with condominiums and loft projects often selling out quickly at premium prices of more than $500 per square foot.

Future Goals

As a leader in sustainability practices, Portland continues to push ahead. In 2005 the city amended its green building program to require city buildings to meet LEED Gold standards. Currently the city is also working with the local USGBC chapter to move beyond LEED Platinum, as even buildings certified at this level are seeing little cost differential. As a result they are working toward zero carbon and zero water usage buildings through the Living Building Challenge. A project that will meet the challenge is currently under way and, if the past is any indicator of the future, it will not be long before Portland is once again leading the pack on no-impact green buildings as well.

AIA/COTE Involvement

When asked about AIA/COTE's involvement, Portland COTE cochairs Stefee Knudsen, AIA, LEED AP, and Tara Hanby, AIA, LEED AP, noted

> *We were one of the first COTE committees, and so many of our leaders have moved on to have prominent roles in other green organizations, such as USGBC, Cascadia GBC, and the Clinton Climate Initiative. Portland COTE is now focused on the next generation, and we had a fantastic retreat that produced a new mission statement and recruited new members and energy to our committee. In 2006 and 2007 the committee has provided more lunch-time sessions, more green building tours, and provided more resources for our community.*

> *COTE is supporting our mission to "expand, promote, and connect" all things green in Portland. To this end we are working with several organizations in our region, including Better Bricks, the City of Portland's Office of Sustainable Development, the City Club of Portland, USGBC Cascadia, and others to bring the groups together so that we avoid duplication of work, and can collaborate on valuable initiatives. We are excited about the energy we see in our city.*

Additional Resources

City of Portland's Office of Sustainable Development, www.portlandonline.com/osd/

City of Portland's Green Building Resource, www.portlandonline.com/osd/index.cfm?c=41481

City of Portland's Green Investment Fund, www.portlandonline.com/osd/index.cfm?c=ecbde

Oregon's Business Energy Tax Credit, http://egov.oregon.gov/ENERGY/CONS/BUS/BETC.shtml

USGBC Cascadia Living Building Challenge, www.cascadiagbc.org/lbc/Lb-challenge-v1-2

San Francisco

San Francisco is an innovative leader on sustainability and green building issues. The city is a good reflection of the state of California; it is aware of the stakes resulting from climate change and is working assiduously to make a difference. San Francisco has been doing this by instituting several green policies and placing an emphasis on establishing a strategic plan for sustainability.

The public support from residents for green initiatives in the city plays an integral role in San Francisco's sustainability leadership. The city adopted its first sustainability plan in 1997 and, while their green building ordinance has only been in place for three years, their overall planning effort has created a climate in which these measures have been highly successful. Collaboration between government departments is a crucial aspect of the San Francisco plan and is also seen in many flourishing programs throughout the country. Many large bureaucracies often tend to form a silo mentality, with turf wars between agencies and departments common and cooperation rare. Only by breaking through this inertia can organizations truly thrive.

Green Task Force

The city's Green Task Force provides communication between city departments, with the member departments including the Department of Environment, Bureau of Architecture, Public Utilities Commission, Department of Recreation/Parks, Municipal Transportation Authority, Building Inspection, Port of San Francisco, San Francisco International Airport, and San Francisco Public Library.

San Francisco has undertaken several initiatives on the recommendation of this Task Force. In 2002 the city passed its Climate Action Plan, which commits to carbon reductions equivalent to 25 percent of 1990 levels by 2012, thereby exceeding the requirements of the Kyoto Protocol.

Green Building Requirements

The first specific green buildings ordinance passed was Chapter 7 of the Environmental Code in 2004. This law follows up on the earlier 1999 green building pilot program and requires municipal buildings of more than 5,000 square feet to obtain LEED Silver certification. The design team must also have a LEED accredited professional as a member.

In 2005 the city passed a resolution endorsing the California Model Green Home Building Guidelines. As of yet, there are no incentives offered on single-family residential green building. In 2006 San Francisco did, however, adopt a fast-track permitting process for commercial and multifamily developers who design LEED Gold or higher projects.

San Francisco currently has approximately 50 green buildings already constructed with 7 public buildings, 20 commercial buildings, 2 multifamily projects (with 100 units each), and 20 single-family homes.

Additional Sustainability Initiatives

San Francisco's environmental leadership is visible in many different areas. The city's Green Business Program is focused on outreach and assistance for a network of businesses that meet certain guidelines. The program promotes energy and waste conservation as well as other green practices and recognizes local green businesses. Furthermore businesses in the field of clean energy technology that meet the Green Business standards are eligible for a payroll tax exclusion. Since its implementation in 2005, this has had a great effect on making San Francisco a hub for clean technology businesses.

In addition, the city implemented Generation Solar to amend the code and streamline the process for solar permitting in residential applications. The reduction in time and money needed to install a solar system has resulted in a booming trend in solar production. The program also provides assistance with design and installation to ensure quality and price competitiveness among solar providers. As a result, the city currently has nearly 600 solar installations producing more than 3,500 Mwh.

Finally, in 2005, the city leadership celebrated the opening of the Plaza Apartments. This nine-story apartment building for low-income residents, most of whom are on various public assistance programs,

Plaza Apartments, San Francisco. Leddy Maytum Stacy Architects and Paulett Taggart Architects. Photo by Tim Griffith.

was the first of its kind in the city to be built to green standards. Mayor Gavin Newsom took this opportunity to announce that San Francisco would be the first city in the country to adopt green housing standards for all low-income projects. Recently another low-income complex was completed with the help of more than $8 million from the city.

San Francisco is also blazing a trail on several other environmental fronts, from banning plastic grocery bags to encouraging city workers to use reusable water bottles. This is a progressive city that has often been at the forefront on issues that the rest of the country is just discovering.

Future Goals

The city is not content to sit back and congratulate itself. San Francisco views several emerging issues as particularly important to its future success. These include moving beyond just building design to neighborhood and district design. Transportation issues continue to be a problem plaguing San Francisco as in most other cities, so the city has plans to focus on development that eases congestion.

San Francisco's Task Force on Green Building recently completed a report which recommended the continued integration of green building practices into policy. The report endorses a new set of green building guidelines

and suggests working up to a high, required standard by 2012. The plan is to incrementally build up to requiring LEED Gold for large commercial projects, LEED Silver for small projects, and 75 GreenPoints on the Alameda County Build It Green guidelines for multifamily and single family structures. In submitting the recommendations to the mayor's office, the members of the panel endorsed the measures as the most progressive of any city in the United States.

Lynn Olechnowicz, AIA, LEED AP, San Francisco COTE cochair, added that,

> *These recommendations have been proposed to our city council. If codified into our local ordinances, they will be very beneficial toward a more sustainable community—reductions in power consumption, carbon emissions, potable water consumption, and storm/waste water treatment. The staged implementation of the requirements and the incentives will ease the transition to the higher standards. That they are required by law will expedite and elevate the conversation about how buildings should perform. Instead of arguing the case for sustainability, design teams can shift their focus to finding the most effective strategies for their projects.*

Additional Resources

2004 Climate Action Plan, www.sfenvironment.org/downloads/library/climateactionplan.pdf

Green Business Program Ordinance, www.sfenvironment.org/downloads/library/1_greenbusinessprogram.pdf

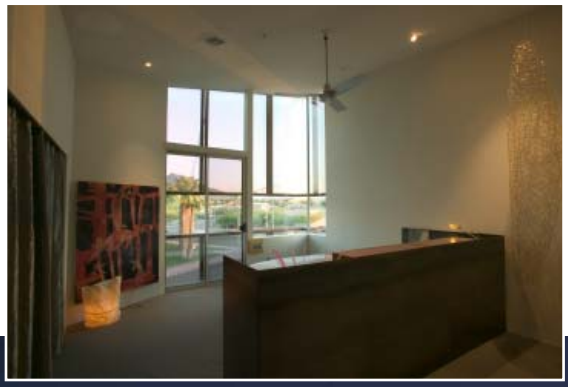
2006 Priority Plan Review, www.sfenvironment.org/downloads/library/prioritypermitting.pdf

San Francisco Solar Map, http://sf.solarmap.org/

July 2007 Green Building Task Force Report, www.sfenvironment.org/downloads/library/gbtfrrreleasev1.3.pdf

Scottsdale

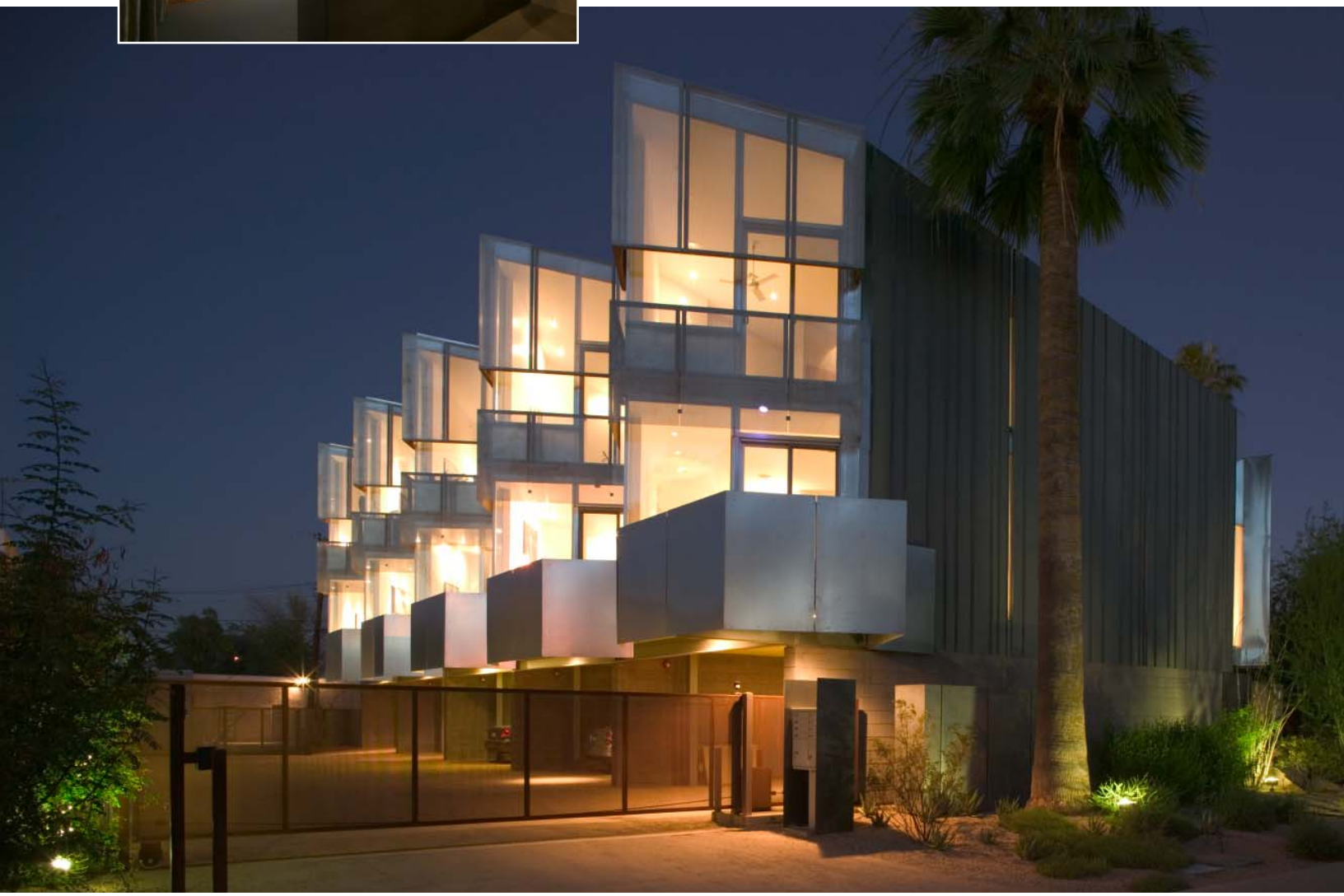
The city of Scottsdale, Ariz., traces its green building roots back to at least 1996 with the development of its first sustainable building initiative. Green measures are quite attractive in this region as western water issues are a fact of life and energy costs truly matter when the buildings must cool the air from highs that easily reach into the 100s.



Scottsdale is a prime example of what a city can accomplish without using requirements or excessive incentives. The formation of the green program began with city building official Anthony Floyd's development of a sustainable building initiative in 1996. Floyd's building official duties gradually transitioned into a full time role on green building tasks over the next two years, during which time the green building guidelines for the city were developed.

At the same time as the city's efforts were taking place, in spring of 1997, two developers also wanted to push for green buildings. They were unaware of what steps Scottsdale was taking on green building and approached

Loloma 5, Scottsdale, Ariz. Will Bruder + Partners. Photo by Bill Timmerman.



the city with ideas of their own. As a result of this interest from the construction community, an ad-hoc committee on green building was formed. Since there was such a high volume of residential construction taking place at the time, the city decided residential would be the best place to start the process. This led to the first version of the Scottsdale Green Home Rating Checklist.

Residential Program

Due to the volume of home construction in the late 1990s, the city began with a voluntary residential program that has transitioned to include more rigorous standards with innovative incentives and assistance. Scottsdale offers priority plan checks with specific green inspection and certification as well as sponsoring green educational programs. Although the program is still voluntary, in 2005 the city reached a milestone as one-third of all new single-family permits adhered to the green building standards. As of 2007 the city reported that 1,123 green single-family and 20 multi-family homes have been completed.

The residential checklist was created in 1998 and updated in both 2001 and 2006 in order to remain a state of the art guide. The checklist consists of two levels: entry level is achieved by accumulating 50 – 99 points and advanced is reached by scoring more than 100 points. Points are awarded in the areas of site; structural elements; energy rating/performance; thermal envelope; heating, ventilation, and air conditioning; electrical power, lighting, and appliances; plumbing system; roofing; exterior finishes; interior finishes; interior doors, cabinetry, and trim; flooring; solid waste; and innovative design.

In the program's latest iteration many changes have been made to reflect the numerous national green building programs and checklists, material and product changes, energy code adoption, and energy performance and indoor environmental quality. The new streamlined green inspection process was also introduced in this version. Updates have also allowed for a home renovation checklist. As a result the program has been strengthened from its earlier version while maintaining the ease of use of a checklist for designers/builders in the community.

Commercial Program

The commercial standard followed the development of the residential standard and was introduced in 2001 and updated in 2003. This program is largely an extension of the residential program. It is voluntary, offers a streamlined green inspection process and priority plan checks, and presents a checklist for commercial buildings. This checklist was developed by studying LEED, Austin's green building program, BREEAM (BRE Environmental Assessment Method), and other standards. As a result of this program, there have been 10 green commercial buildings completed through 2007.

Municipal

The city requires all municipal buildings to be green. In 2005, when Scottsdale instituted this program, it became the first city to adopt LEED Gold as a minimum standard. Previously, beginning in 2003, the Capital Project management staff identified several potential green projects and unofficially required buildings to meet LEED certification. In 2003 all green building programs were also fully integrated into the building regulatory process and relocated to the Building Plan review division of the Planning and Development Services Department. The first green municipal building to be completed was the city's senior center in 2006 and, as of 2007, there are five public green buildings in Scottsdale.

State Collaboration

Scottsdale's municipal requirements are bolstered by state and utility incentives. Due to the climate in Arizona, these incentives heavily favor the use of solar electricity. The primary incentives consist of a state income tax break for solar energy, a sales tax exemption for solar products, solar property tax exemption, and utility rebates of $3 per DC watt of solar energy produced in a grid-tied system and $2 for an off-grid application. The state's graywater conservation tax credit is also a forward-looking resource for homeowners and corporations. This incentive provides 25 percent of the installation cost for a water conservation system, not to surpass $1,000. The corporate side of this credit focuses on residences constructed by the corporation and is not to exceed $200 per residence.

Future Sustainability Goals

Scottsdale is a pioneering community that has helped lead the way on green building. The city also has several other environmentally conscious programs in land use planning, solid waste, pollution prevention, and other such areas. Scottsdale is a leader that views sustainability not just as an environmental concern but also as an opportunity.

Additional Information

Scottsdale Green Building Program, www.scottsdaleaz.gov/greenbuilding

Residential Checklist, www.scottsdaleaz.gov/Assets/documents/greenbuilding/GBChecklistSummary2006.pdf

Commercial Checklist, www.scottsdaleaz.gov/Assets/documents/greenbuilding/CommGBChecklist.pdf

Solar Incentives, www.scottsdaleaz.gov/Assets/documents/greenbuilding/SolarEnergyIncentives.pdf

Arizona Gray-Water Tax Credit, www.scottsdaleaz.gov/Assets/documents/greenbuilding/GrayWaterTaxCredit.pdf

Chicago Center for Green Technology, AIA/COTE 2003 Top Ten Green Projects award recipient. Farr Associates Architecture and Urban Design. Photo by Chris Kelly.

Chicago

Chicago has woven green living into the fabric of its urban cloth with several forward-thinking imperatives in recent years. The city has more LEED registered projects than any other municipality and is widely seen as one of the top cities for green building. As is true in many leading green cities, political leadership has been key. Thanks to local leaders like Mayor Daley and those around him, sustainability has flourished.

Unique Green Building Policy

Chicago is unique when it comes to green building and sustainability measures because of the way city leaders have enacted their program. The city has passed many complementary policies on green buildings over the years. Unlike many cities, there is no specific green building policy or sustainability plan. Instead, the city has created several different initiatives that are overseen by a sustainability director, who is able to work with the political leadership and get things done.

This type of management would not work in many large cities due to turf battles and difficulties arising over authority and accountability. In Chicago, however, they are able to do without a large, comprehensive policy, and instead empower the sustainability director to green the city. Eric Olsen, the Green Projects Administrator for the city, explains that the political culture of the city enables them to find a good idea, pass a resolution, and give the director the authority to pursue it.

Chicago Standard

The Chicago Standard is the only mandatory piece to Chicago's collection of green building policies. This program applies to municipal buildings, which must be LEED Silver, and any commercial or multifamily project receiving tax increment financing from the city must achieve LEED Certification. The Chicago Standard also requires that certain items from the LEED guidelines, such as erosion control, minimum energy performance, and collection of recyclables, be followed on all projects.

Green Permit Program

The Green Permit Program is a voluntary, expedited permitting program run by the Department of Construction and Permits. This program offers a three-tiered reward incentive depending on the project type; and the number of green building elements correlates to the time it takes and incentives offered. Commercial and

institutional projects must meet a range of LEED, green roof, and Chicago "menu" requirements, while smaller multifamily residential projects must earn a minimum two-star rating from the Chicago Green Homes Program and meet Chicago menu requirements.

The Green Permit Program rates projects on their greenness, with the top tier receiving expedited permitting in 15 days and all consultant fees paid. For commercial projects, a design team must achieve a LEED Gold rating for the building, plus one Chicago-specific "menu" item and a 50 percent green roof. To meet the middle level, a project must be LEED Silver, include one menu item, and have a 25 percent green roof. At this level, designers/builders receive expedited permitting within 30 days, plus the city pays consultant fees up to $25,000. The third level in this program offers expedited permitting within 30 days; to reach this level, the building must be LEED Certified with an Energy Star roof and include one menu item.

According to Steven Kismohr, AIA, LEED AP, Chicago COTE cochair, "Having gone through the process, it does actually work! Working with Erik Olsen, the green projects administrator (You even get an administrator to assist you through the process.) He confirms the submittal requirements, fosters the project through the many city/departmental reviews, and even returns phone calls promptly."

Green Roof Grant

The Green Roof Grant program was launched in 2005. This program offers $5,000 grants to help with the planning and installation of a green roof. The Green Roof Grant program has been highly successful, with Chicago being head and shoulders above all other American cities at this point on green roofs. As of October 2006 the city reported there were more than 250 public and private green roof projects in place, being designed, or under construction, totaling more than one million square feet. At the Greenbuild conference in November 2007, Mayor Daley proclaimed that there are now approximately 3 million square feet of green roofs in Chicago.

Green Homes/Bungalows

This program focuses on the residential side of the equation and is a voluntary pilot program started in April 2007. Chicago leaders see the preservation of the housing stock and traditional Chicago bungalows as a priority. As such, the city first developed a few green homes and bungalows to demonstrate feasibility starting back in 2000. Even at this time the renovators estimated that the green premium for necessary changes was just over 2 percent. The green permit program also applies in this pilot program but for now the program is voluntary and has few incentives other than the ability to certify the home as green for marketing purposes. As it is so new, the chances are that the program may expand further over time.

Chicago Center for Green Technology

The Center for Green Technology is another exceptional feature of Chicago's green program. The building is a

wonderful example of green building technology, reducing carbon emissions by greater than 50 percent and serving as a resource and clearinghouse for green information for the public. Guests are able to visit and explore the building to understand how green buildings work and to see and learn about the positive benefits they contribute to society. The center also provides work space to several organizations and businesses that are committed to environmentally friendly development, thereby furthering Chicago's future green technology goals.

AIA/COTE Involvement

Steven Kismohr, Chicago COTE cochair, discussed the memo of understanding between Chicago COTE and the City of Chicago's Department of Environment,

> *In resigning the memorandum of understanding (MOU) every two years, we are renewing the shared vision of urban development, environmental education, and the promotion of green buildings with the City of Chicago and it's Department of Environment (DoE). Although we have lengthened the resigning dates to every two years, the MOU continues to foster our relationship and remind us of how similar our goals are. With the MOU we continue to host a variety of programs with DoE and the Chicago Center for Green Technology to educate Chicagoans on green architecture and sustainable construction. We have also expanded our connection to other nonprofit sustainable groups in the City with monthly programming coordination meetings and joint events.*
>
> *DoE and AIA Chicago COTE are working together on many city initiatives. The biggest and most challenging has been the investigation of implementation strategies to meet the goals of the 2030 Challenge. The goal of our quest is to find methods in which all new and existing public buildings in Chicago will be carbon neutral by 2030, enabling them to operate without any energy systems requiring fossil fuels or emitting the creation of greenhouse gases during their operation. With a variety of local nonprofit groups and governmental agencies, we have worked together to find steps relevant and cost effective to the City of Chicago's goal. We took this idea a step further and created several carbon/energy reducing strategies which related to citizens of the area on many different levels. We have compiled these strategies, which are specific to the Chicago region, into the AIA Chicago COTE Carbon Reduction Strategy Matrix or "Cool Tool." The goal of the tool is to give homeowners, business proprietors, and design professionals simple steps they can follow to reduce energy, greenhouse gas emissions, and carbon creation.*

Additional Resources

Chicago Department of Environment, www.cityofchicago.org/city/webportal/portalEntityHomeAction.do?BV_SessionID=@@@@0358046369.1191528527@@@@&BV_EngineID=ccccaddmehgijeecefecelldffhdffn.0&entityName=Environment&entityNameEnumValue=13

Chicago Green Roofs, http://egov.cityofchicago.org/city/webportal/portalContentItemAction.do?BV_SessionID=@@@@0557273309.1191528463@@@@&BV_EngineID=ccfaddmehgijgmcefecelldffhdfgn.0&contentOID=536912065&contenTypeName=COC_EDITORIAL&topChannelName=HomePage

Chicago Green Homes, http://egov.cityofchicago.org/city/webportal/portalContentItemAction.do?BV_SessionID=@@@@0358046369.1191528527@@@@&BV_EngineID=ccccaddmehgijeecefecelldffhdffn.0&contentOID=536910849&contenTypeName=COC_EDITORIAL&topChannelName=Dept&blockName=Environment%2FGreen+Building%2FI+Want+To&context=dept&channelId=0&programId=0&entityName=Environment&deptMainCategoryOID=-536887205

Green Permit Program, http://egov.cityofchicago.org/webportal/COCWebPortal/COC_EDITORIAL/GreenPermitBrochure_1.pdf

Chicago Center for Green Technology, http://egov.cityofchicago.org/city/webportal/portalEntityHomeAction.do?entityName=Chicago+Center+for+Green+Technology&entityNameEnumValue=161

AIA Chicago COTE Carbon Reduction Strategy Matrix or Cool Tool, www.aiachicago.org/documents/CarbonStrategies.pdf

Austin

Austin's green building program is the oldest ongoing green building program in America, with a successful track record of accomplishment. The city is a pioneering emissary of green living in a state with some of the highest energy use per capita in the country.

Austin's program grew out of an energy conservation program started by the city in 1985, with the roots of the green building program traced to 1991. Austin Energy, the publicly owned municipal utility, has been instrumental to the program and works side by side with the community on greening efforts. The combination of a municipally owned utility, concerned citizens, and political leadership, as well as the warm weather climate of Texas, created a confluence of events that reinforced the necessity for building green and conserving energy.

The city offers a voluntary program that has adapted well over time. The green building program, as well as the city government, has been amenable to the vagaries of the construction process. Rather than developing a rigid structure, whereby the checklist must always be followed 100 percent, the program seeks to work with design and building professionals to seek the best possible outcome for everyone involved, always with a focus on sustainability.

Formation and Timeline of the Program

Austin began an Energy Star program to conserve electricity and delay the construction of a new power plant back in 1985. This effort led to the establishment of the green building program in 1991, when the Energy Star program evolved into this new policy and the city created the first residential rating tool as a guide for home developers.

In 1993 the city began incorporating green building features into municipal construction. By 1998 Austin's green building program became part of Austin Energy and the city was already on its third generation of residential guidelines. At this time, Austin Energy expanded its consulting and rating services to commercial development, and in 2000 the city passed another resolution concerning municipal buildings which required them to be LEED Silver.

Austin City Hall. Antoine Predock Architect PC. Photo by Timothy Hursley.

Structure of the Green Building Program

Austin's green building program, in partnership with Austin Energy, is focused on the creation of green residential, commercial, and multifamily development. Municipal green building is handled directly by the city and, as mentioned above, requires all city-owned buildings to be LEED Silver or greater. The rating system, created by the city, is unique, because it includes not only the typical point system but it also includes a mechanism that subtracts points for unsustainable features. Although the program is voluntary for private development, Austin Energy provides several services for owners, designers, and building professionals to assist them with building green, and developers' increased usage over the years has been fantastic.

Residential

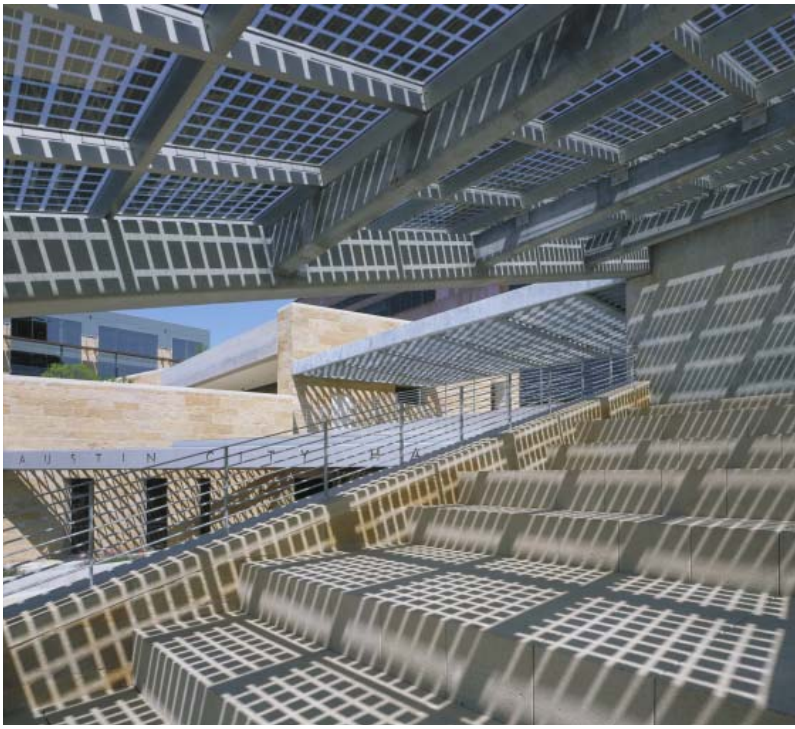
Austin's residential program seeks to create green single-family homes and has been successful in this endeavor over the last 16 years, with several thousand homes rated to date. Austin Energy created a checklist which rates homes on a five star system, with the highest star rating correlating to the highest level of green features in a home. The checklist is currently in its seventh edition because the city works hard to keep it up to date with the latest technological advancements. The program rates homes in six areas: energy efficiency, testing, water efficiency, materials efficiency, health and safety, and community. For a home to receive a rating, the architect, builder, or designer must become a member of the Green Building Program, which offers information to the design/building professional to make the appropriate green choices.

Multifamily

The multifamily green building program assists design and building professionals in creating high-performance, energy- and water-efficient apartment homes. The program involves Austin Energy's team early in the process to set sustainability goals and provide site, design, and plan review. They also assist designers/builders on how to incorporate green features that do not exceed the project's budget. If the project achieves a green rating using the Austin checklist, they will even help market the project. The city also assists developers in locating available incentives for the project.

Commercial

The commercial program provides guidelines for building/design professionals developing green buildings. It focuses on helping professionals set realistic goals for green aspects of buildings, like energy and water use, indoor air quality, and pollution control. The program also offers assistance in evaluating short- and long-term costs for projects, methods to reduce construction and operations waste, select appropriate sites, and consider impacts and benefits of going green. By incorporating the commercial green building program into the design and construction team, it is possible to have someone help review project documents from beginning to end to better incorporate green building principles; analyze the project for efficiency, health, and conservation; and market and promote the projects. The Commercial Green Building Program also provides assistance with the Austin-developed Green Building Rating Tool. Furthermore, the commercial green building program coordinates applicable rebates and incentives for the building/design professionals.



Green Incentives

Austin Energy offers various incentives as well as free consulting services to help encourage sustainability. For residential construction the focus is on high efficiency air conditioning, attic insulation, solar screens, weather-stripping, solar photovoltaics, and solar water heaters. Austin Energy also offers a $4.50 per watt rebate on residential solar energy, which can cover half of the total cost. The Green Choice program is available for customers to purchase clean, green energy and is the leading such program in the country.

Incentives on the commercial/business side are much more extensive with rebates of up to $100,000 for the commercial energy management program, small business incentives, an energy miser program for vending machines, free programmable thermostats, solar photovoltaics and water heaters, thermal energy storage, load co-op, building commissioning, and weatherization improvements for multifamily properties.

Climate Protection Program

Austin has developed a climate protection plan to push the city toward an even more sustainable future, with impressive targets established for this purpose. City buildings will run on 100 percent renewable energy by 2012 and be completely carbon neutral by 2020. New single family residential homes will be zero net energy capable by 2015, and the city plans by 2015 to increase the efficiency of all other construction by 75 percent.

AIA/COTE Involvement

Michele L. Van Hyfte, AIA, LEED AP, Austin COTE cochair commented on the involvement of COTE with the Austin Green Building Program

The AIA Austin Chapter COTE has a collaborative, mutually beneficial relationship with Austin Energy Green Building (AEGB). Many of the AEGB staff are active members of COTE and vice versa. We promote and volunteer for each other's events and share knowledge on a continual basis. Our chapter's Sustainable Practitioner's Designation, a designation that recognizes chapter architect members who practice green design, requires that firms rate projects with AEGB.

Austin architects rate their projects with AEGB much like they would with LEED. AEGB offers three types of ratings: Commercial, Multifamily, and Single-family Residential. Each rating provides compliance methods customized for our hot/humid climate and our local building codes. Because of AEGB's focus on the local needs and policy issues that affect building in Austin, their ratings include more restrictive requirements for energy efficiency, water quality, and water conservation. Although the City of Austin mandates that all new publicly-funded buildings achieve LEED Silver certification, AEGB's rating is required for new private projects in several city areas, includ-

ing the central business district/downtown mixed use, university neighborhood overlay, Mueller redevelopment, and several planned unit development (PUD) districts. Many design teams choose to use both LEED and AEGB ratings to gain both national and local recognition. AEGB accepts the LEED documentation as proof of compliance for many credits and the AEGB rating is less document-intensive because local staff are available for consultation and site reviews.

AEGB works closely with other organizations to push the envelope of green design in Austin. Representatives of AEGB and COTE have participated side by side in advocacy efforts and on city-appointed task forces. The most recent effort was on the Zero-Energy Capable Homes Task Force. AEGB staff, COTE representatives, and other interested parties and stakeholders formed a team that reviewed current and proposed code changes ultimately leading to the adoption of the Zero-Energy Capable Homes code requirements in 2015. The next opportunity lies in the implementation of our mayor's Climate Protection Plan, which sets new standards for energy-efficiency and carbon emissions for all city departments and the community as a whole.

Additional Resources

Green Building Program, www.austinenergy.com/Energy%20Efficiency/Programs/Green%20Building/index.htm

Residential Incentives Program, www.austinenergy.com/Energy%20Efficiency/Programs/Rebates/index.htm

Commercial/Business Rebates and Incentives, www.austinenergy.com/Energy%20Efficiency/Programs/Rebates/Commercial/Commercial%20Energy/index.htm

Austin Energy Green Choice Program, www.austinenergy.com/Energy%20Efficiency/Programs/Green%20Choice/index.htm

Atlanta

Atlanta is a good example of a city that has taken simple steps to make green buildings commonplace. Through innovation and a willingness to work with the community, the city has developed a leadership position without offering significant incentives. Atlanta had the most LEED buildings per capita in the country in 2006, the city's residential green building program has been emulated by others throughout the country, and Atlanta has established itself as a green building leader in the southeast.

The U.S. Centers for Disease Control (CDC) and Prevention, Arlen Specter Headquarters and Emergency Operations Center, Atlanta. Thompson, Ventulett, Stainback and Associates. Photo by Brian Gassel, TVS.

Residential Green Building Program

The city's residential green building program is voluntary but has been quite successful since its inception eight years ago. The Greater Atlanta Homebuilders Association and the Southface Energy Institute came together in 1999 to create the EarthCraft Housing Program. Although this program is not city policy, relies wholly on voluntary compliance, and offers only recognition as an EarthCraft home as an incentive, the results have been extraordinary, with 4,000 single-family homes and 1,500 multifamily units constructed to date in the Atlanta area. These homes must be certified Energy Star in order to be classified as an EarthCraft home.

In 2003 the Earthcraft program collaborated with the Urban Land Institute, Atlanta Regional Commission, and others to develop a pilot effort for EarthCraft Communities. The EarthCraft Communities program creates a broad, sustainable community guideline. This program looks at the entire neighborhood to emphasize walkability, environmental site plan development, and an overall integrated planning approach. The fact that this program began in 2003 put it ahead of many others in examining a whole neighborhood approach.

In 2004 the EarthCraft program expanded beyond the Atlanta area and currently covers much of the Southeast.

Alabama, South Carolina, Georgia, Tennessee, and Virginia all have local EarthCraft builders and inspectors. The EarthCraft program has also focused on low-income housing to show that green does not have to mean unaffordable. Green homes can be affordable, cost-effective, and save homeowners money in lower energy costs. EarthCraft has worked with Habitat for Humanity and others to create affordable, green housing.

Green Municipal Construction

Atlanta passed a green building ordinance requiring LEED Silver for municipal buildings in 2003. The city believed that it should lead by example and therefore enacted this ordinance for city construction. This law, combined with other innovative sustainable practices, is helping to transform Atlanta from its sprawling, unsustainable past toward a green, smartly designed, sustainable future.

Planning and Land Use

Atlanta's leaders realize that one cannot just build green buildings and rectify decades of unsustainable planning decisions. To overcome the development patterns of the 20th century, Atlanta is pushing forward with several positive plans to transform its urban core and create livable communities for its citizens.

Atlanta's BeltLine project is a long-range, 25-year project that will bring about monumental changes to the city's urban core by better managing future growth. The plan is to create sustainable communities in a belt line area one to three miles from downtown, within underused residential, commercial, and industrial land. Transit, greenspace, and development will be treated in an interrelated way to make this plan a reality. The city is also working on several other initiatives from its Livable Centers Initiative to its Brownfields program to a Quality of Life Bond program.

Atlanta has done well in making green features ubiquitous in the community's development culture. SustainLane ranks it at the top of its green cities for green buildings with the most LEED buildings per capita, having 45 registered and 12 certified projects in 2006.

Additional Resources

EarthCraft Housing Program, www.earthcrafthouse.com

EarthCraft Communities, www.earthcrafthouse.com/About/communities.htm

EarthCraft Affordable Housing Program, www.earthcrafthouse.com/About/affordable.htm

Atlanta Municipal Program, www.atlantaga.gov/client_resources/mayorsoffice/green%20initiative/green%20initiatives.pdf

Atlanta's BeltLine Program, www.atlantada.com/adaInitiatives/beltline.jsp

Cities Pushing Ahead

The case studies above represent the trailblazers of the green building movement. These communities have led the way on sustainable design reaching back into the 1990s, and the policies established by these cities are inventive and have stood the test of time. In addition many of these jurisdictions are leaders not only in green buildings but in all aspects of sustainable community development.

Local officials now exploring the establishment of their own green building policies should look to these identified leaders for best practices, but they should also examine many of the innovative ideas that are currently emerging in the rest of the country. Several communities continue to advance the standards of green policy. Current efforts of note that are pushing the envelope with municipal green building programs are taking place in California and the Washington, D.C.-to-Boston corridor.

D.C.-to-Boston Corridor

America's largest cities are working to match the immense scale of the problem. New York, Boston, and Washington, D.C., have each advanced the efforts that were previously being made to reshape their urban landscape. The policies they have enacted affect more than nine million citizens or about 22 percent of the total population currently living under green building policies.

Washington, D.C.

Washington, D.C., became the first major U.S. city to mandate sustainability guidelines for privately owned real estate when its law passed in 2006. The DC City Council passed the Green Building Act of 2006 on December 5, which calls for all new development in the city to conform to the USGBC's LEED standard. The law takes

Sidwell Friends Middle School, AIA/COTE 2007 Top Ten Green Projects award recipient. Kieran Timberlake Associates LLP. Photo by Barry Halkin.

force in 2008 for all publicly financed buildings and will be phased in by 2012 for private construction.

In 2008 publicly financed buildings of more than 10,000 square feet will be required to achieve 75 points on the Environmental Protection Agency (EPA) national energy performance rating system and be certified LEED Silver. The act also includes a green schools component which will require schools to meet the LEED for Schools standard.

New construction and renovation of private buildings of 50,000 square feet or more will have to switch over to the new standards by 2012. Nonresidential buildings will have to be LEED certified, while educational facilities (excluding postsecondary educational buildings) will be required to adhere to the LEED for Schools standard. The act also includes several incentives which will assist in the transition to a green standard throughout the city: a green building advisory council; Green Building Fund; incentives for developers; green development ambassador and one green building construction permit application reviewer; fast-track permits; revision of the construction codes to include green building practices; and priority leasing for buildings meeting green building standards.

AIA DC's Committee on the Environment collaborated with the city council to draft the initial green legislation. They worked closely with a council member who advocated the measure among her colleagues. With the legislation on the table, the architects joined a coalition of about 30 interests to work with the council and D.C. officials to determine language, testify in support of the bill, and overcome challenges to its fundamental goals.

Tove Anderson, AIA, LEED AP, former DC COTE chair, remarked that

> *Washington, D.C., has made significant strides toward the integration of sustainable policy into both the private and public sectors. The key toward creating effective public policy has been the creation of unified holistic legislation. The opinions and advice of empowered and passionate representations from the government and industry were solicited throughout the drafting of legislation to ensure buy in, resulting in policies that were progressive, economically viable, and fair.*
>
> *Another goal of the Green Building Act was to create responsible civic policy. Green buildings save energy over the life cycle of a building, reducing the load for power and water from the city. EPA studies show employees in green buildings have greater productivity and fewer days lost to illness. These two advantages help attract tenants and enhance the quality of life of those working and living in Washington, D.C. The increased attractiveness of Green Buildings for potential tenants also means increased revenue. It is rare that governments have the opportunity to make short-term and long-term economic policy. This is what has been so encouraging about the DC Green Building Act.*

Boston

Boston was the first major U.S. city to implement a green building zoning code in January 2007. Article 37 requires all major new and rehabilitation construction projects exceeding 50,000 square feet to earn 26 LEED New Construction (NC) points. In addition a further four points reflecting city priorities, including transportation, energy, historic preservation, and groundwater recharge, were added to the checklist. The city does not require third-party certification; rather Boston officials review and confirm developers' certifications.

Mayor Thomas M. Menino established a Green Building Task Force in 2003 composed of public and private experts in the field, including Mike Davis, AIA, to recommend a comprehensive green building plan for the city. The change to the zoning code was one of the major recommendations offered by the task force. "Zoning is a tool of public policy. Climate change is a big issue and architects can play a big part in fixing the problem," Davis says. "When a governing body says that we need to do something about climate change, then you need to look for people with specialized expertise, and in this case it was people who knew about green building and policy."

In the end, the change to the zoning code was one of the major recommendations offered by the task force.

Artists for Humanity EpiCenter, AIA/COTE 2007 Top Ten Green Projects award recipient. Arrowstreet Inc. Photo by Richard Mandelkorn.

The zoning code was viewed as an effective tool for public policy in Boston. This new green building provision also bolsters other green efforts in the city, including LEED certification of government buildings and city-supported projects. Furthermore the city sees the business case for green buildings to be very compelling and views the ancillary green collar jobs created as a further strong incentive for the program.

"We are very excited to be at the forefront of green building practice. The business case for Boston, which has guided this initiative, is very compelling for the city, and especially for the architectural community," says John Dalzell, senior architect, Boston Redevelopment Authority.

This measure provides a concrete example of how a large American city can move its zoning code into the 21st century. The inclusion of green building standards directly into the code dramatically increases the number of green buildings constructed, as the number of permits issued by the city for green buildings in the first half of 2007 has far outstripped the number of all green buildings constructed last year. This increase in the number of green buildings also helps to further the momentum as the remaining cost differential between green and standard buildings diminishes.

New York City

New York City Mayor Michael R. Bloomberg announced PlaNYC, a sweeping climate change proposal, on Earth Day (April 22) of 2007. The announcement evoked images of the urban planning effort that led to the creation of Central Park and the construction of Rockefeller Center in the midst of the Great Depression. The focus of the plan includes five key areas of the city's environment: land, air, water, energy, and transportation.

The green building component of this wide reaching initiative

- Offers incentives for green building techniques
- Strengthens energy and building codes to support energy efficiency strategies and other environmental goals
- Supports the construction of the city's first carbon-neutral building, primarily powered by electricity
- Uses a series of mandates, challenges, and incentives to reduce demand among the city's largest energy consumers
- Encourages the installation of green roofs through a new incentive program
- Uses upcoming rezonings to direct growth toward areas with strong transit access
- Dedicates $15 million to a fund supporting brownfield redevelopment

20 River Terrace, The Solaire, AIA/COTE 2004 Top Ten Green Projects award recipient. Cesar Pelli and Associates. Photo by Jeff Goldberg/ESTO.

- Implements more efficient construction management practices, including accelerating the adoption of technologies to reduce construction-related emissions
- Amends the building code to address the impacts of climate change

The mayor's plan calls for a 30 percent reduction in carbon emissions within the city by 2030. The strategy to tackle climate change encompasses a wide-ranging approach, from focusing on traffic issues to power plants to green buildings. The initiative builds upon earlier goals of the city, such as LEED standards for municipal buildings passed in 2005.

The residents of the city were involved through public meetings, and AIA New York City and COTE have been involved throughout the process and plan to continue to offer assistance, serving as facilitators for dialogue in this important plan.

According to Chris Garvin, AIA, LEED AP, COTE New York cochair

> *In September 2006, Mayor Bloomberg created the Sustainability Advisory Board, a diverse panel of environmental design and policy experts gathered to develop forward-thinking strategies for greening New York City as part of PlaNYC 2030. In addition to the formation of a Sustainability Advisory Board, key components of this ambitious initiative include the creation of the Office of Long-term Planning and Sustainability within the Mayor's Office of Operations and the undertaking of a major greenhouse gas inventory for city government and the city overall.*
>
> *Since the release of PlaNYC 2030 in April 2007, the Sustainability Advisory Board has refocused their efforts to ensure that the city's strategies for sustainability are implemented in full and remain publicly accountable to citizens' concerns. The COTE committee will play a continuing role in building stakeholder input throughout this ongoing process. Their understanding of the complex relationship between human and natural systems underlies their insight into innovative solutions aimed at solving New York City's most critical environmental problems.*

As a result of Bob Fox's (Bob Fox is a partner at Cook+Fox Architects) appointment to the board, Garvin worked extensively with the mayor's office to develop initiatives relevant to the built environment. Bob and Chris' first-hand experience with gathering stakeholder input through design-related processes makes them valuable advocates for public policy that relates to the health of New York's natural environment as inextricable from that of its citizens.

California

In California a new set of pioneers is setting a bold example by seeking to make green building the rule rather than the exception in all construction. The neighbor-

ing bay-area cities of Pleasanton and Livermore have each passed ordinances that mandate green building for residential and nonresidential construction. Santa Cruz and San Rafael push even further by requiring compliance on all construction and rewarding projects that go further than the standards that they impose.

No Incentives, Just Good Design: Pleasanton and Livermore

In 2002 the City of Pleasanton passed an ordinance requiring all municipal buildings and nonresidential buildings of more than 20,000 square feet to be LEED certifiable. Buildings were considered certifiable by completing the LEED checklist and achieving enough points to meet the "certified" level. Pleasanton expanded this program in 2006 to include residential construction as well. The new law ensures that all single-family housing of more than 2,000 square feet, and all multifamily housing projects are required to earn a green home rating of 50 points using the Alameda County Waste Management Authority's GreenPoint Guidelines.

Pleasanton's closest neighbor, Livermore, took mandatory requirements even further by approving legislation in 2006 that requires residential and nonresidential projects to meet minimum standards on the appropriate green building checklists. Like Pleasanton, Livermore chose LEED for nonresidential and GreenPoint for residential projects. Unlike Pleasanton, however, there were no size thresholds, thereby creating green building standards for all buildings in the city. To receive a plan permit for any project in Livermore, it is necessary to have the appropriate documentation from the green building checklist.

Livermore also created slightly different standards by mandating that all nonresidential projects achieve 20 points on the LEED checklist rather than meet the certifiable level. The purpose of this deviation is to reduce the initial burden while still leaving open the possibility of increasing the standard, as the city plans to review the requirements annually to keep the standards stringent.

Both cities worked closely with the development community and, to reduce the burden on builders, they allowed for a one-year grace period before the requirements are enforced. On all projects for the first year, the developers were required to complete all the paperwork that would be necessary for a green building in order to familiarize themselves with the system. During this grace period they did not have to meet the minimum requirements for approval. Once the requirements are fully implemented the cities will stop short of actually requiring LEED registration and certification. Rather they are training staff in planning, plan review, and building inspection to be accredited by the LEED and GreenPoints guidelines in order to inspect and review buildings according to these guidelines.

Stanford University's Leslie Shao-Ming Sun Field Station, AIA/COTE 2004 Top Ten Green Projects award recipient. Rob Wellington Quigley. Photo by Rob Wellington Quigley, FAIA.

In addition to ensuring professional verification of a project's compliance, the training allows the two cities to provide technical advice to developers and address potential problems early in the design process. In discussions with developers before the policy was enacted, David Rashé, Livermore's Permit Center manager in the Department of Community Development, found that access to such qualified assistance was a much greater concern than the regulations themselves. It was this engagement and cooperation that earned the endorsement of the development community and allowed Livermore to make their policy mandatory with remarkably little opposition.

Although both of these programs are too new to warrant a full case study, they are not without success. Livermore is not yet through its one-year grace period but can already claim 25 single-family and one multi-family building that meet the green standards. Meanwhile, in Pleasanton, there are more than 20 nonresidential buildings that have made the grade. Officials from Pleasanton, when asked how many single-family houses had met the GreenPoints mark, simply replied: "a lot."

Demanding Quality, Rewarding Excellence: Santa Cruz and San Rafael

Bob Brown, director of Community Development in San Rafael, insists that when the city passed its green ordinance in July of 2007 he had never heard of the program in Santa Cruz, so it is somewhat serendipitous that the two policies should be so similar. Both programs have mandatory requirements for almost all residential and nonresidential structures and both have a system of rewards, including expedited plan checks and official plaques of recognition for buildings that exceed the performance requirements. Still, the policies are clearly unique from one another.

Santa Cruz may prove to be particularly instructive for cities looking for ambitious programs in the future due to the unique context in which the city's policy was established. The city offers proof that it doesn't take a large population with numerous staff and abundant resources to implement an effective green building program. Originally the city council formed a Green Building Working Group to develop a proposal as early as September of 2002. The work group was instructed to specifically consider the city's "beleaguered" fiscal situation and come up with a program at minimal cost.[4] It took nearly four years and a considerable amount of debate but, in the end, the program eventually adopted required the compliance of all future construction.

Santa Cruz developed a straight-forward set of requirements for nonresidential projects within the city. To receive a building permit a project must first earn seven LEED points. This number was deliberately set low with the understanding that it can always be increased in the future. In addition to the seven LEED points, the program offers expedited plan check for any building that achieves 33 points, or the equivalent of LEED Gold. Finally the city created a Green Building Award which it bestows on projects that earn 40 points or more. This award is an excellent marketing tool for companies to attract both conscientious consumers as well as talented employees.

The noncommercial side of the program is structured somewhat differently. The requirements are based on the size of the structure:

Action	Minimum number of points required for 350 sq. ft.	Each additional points need per 100 sq. ft.
Receipt of building permit	10	1.5
Accelerated building permit processing	35	2.5
Green Building Award	60	3.5

As a result, an average home of 2,500 square feet requires slightly more than 40 GreenPoints to receive a building permit. The same 2,500-square-foot home needs around 87 GreenPoints to speed up the permitting process and approximately 133 GreenPoints for

[4] Stubendorff, Richard (2005, August 18). "Planning Commission General Report." City of Santa Cruz. Retrieved from www.ci.santa-cruz.ca.us/pl/gbwg/GreenBldgReport.pdf.

the Green Building Award. This is no small task. This year the city processed 135 applications that met the minimum requirements but just two earned enough points to be awarded. Five projects are striving for the same mark but are still awaiting certification. In addition to these requirements for private development, the city leads by example and requires municipal buildings to meet LEED Silver specifications.

San Rafael follows the same general principal of setting mandates and rewarding projects with exceptional scores but the standards the city set certainly raise the bar for achievement. Covered nonresidential projects in the city fall into two categories:

- Those between 5,000 and 29,999 square feet must retain the services of a LEED accredited professional and achieve at least a LEED Certified rating, although actual USGBC certification is not necessary

- All nonresidential projects exceeding 29,999 square feet are required to go through the certification process, at their own expense, and achieve a LEED Silver rating.

The residential requirements are equally challenging. Like the cities mentioned above, San Rafael chose to follow the Alameda County Waste Management Authority GreenPoint system and simply requires that all single-family and multifamily units earn 60 points.

In addition to these requirements the city offers a fairly generous set of incentives for projects that meet even higher standards. Residential construction that earns 100 GreenPoints and nonresidential construction that earns the LEED Gold rating are eligible for expedited permitting, reimbursement of the cost for the Certified Green Building Rater, and a plaque for meeting the city's Emerald standards.

The San Rafael policy is undoubtedly one of the most challenging in the nation. It is also a testament to the effect that education can have on the development community in a city. Brown was pleased to report that this was the first initiative he had ever worked on that had no opposition by the time it was approved by the city council.

Beyond Platinum: The Living Building Challenge™

The Cascadia region of the USGBC has issued a challenge to the most advanced developers in the Northwest. The Living Building Challenge pushes the limits of green buildings far beyond LEED Platinum to achieve zero net energy and zero net water status. Although this is a dramatic goal by any stretch of the imagination, it is not an unachievable one, and forward-thinking architects and developers are moving toward this point.

Recently the Cascadia region has seen the development of buildings that are earning Gold and even Platinum ratings with relative ease and insignificant green premiums. As a result they are creating the Living Building Challenge. The purpose is not to replace, or even compete with the LEED standards, but to continue to drive the market toward true sustainability.

The Living Building Challenge is not a policy of any particular city, and the final version has yet to even be released but it represents an exciting leap forward in sustainable design. Many architects and developers in the Northwest dove headfirst into experimenting and improving upon green design features long before cities in the rest of the nation had even begun to test the waters or, for that matter, before many elsewhere were even aware the pool existed.

The new challenge is to go beyond Platinum. A living building is not rated with a scorecard but rather consists of 16 prerequisites that consider the entire lifecycle of the building. The challenge reconceptualizes buildings as "flowers," wholly sustained by their local surroundings to produce 100 percent of the net energy and treat 100 percent of the net water use. This results in a 100 percent reduction in the building's carbon production for a "triple net 0" performance. The 16 requirements cover energy, water, indoor quality, building materials, site selection (grayfields and brownfields only), and beauty and inspirational quality. To verify the building performs as well in reality as it does on the drawing board, it cannot be certified until one year after occupancy.

Fisher Pavilion at Seattle Center, AIA/COTE 2003 Top Ten Green Projects award recipient. The Miller/Hull Partnership LLP. Photo by Steven Keating.

As difficult as this may seem, it is not impossible. There are already projects currently striving to become the first living buildings. The most likely candidate seems to be the Kenton Living Building, a multifamily housing project with an in-house daycare center in North Portland, Ore. The building will sell excess energy back into the grid during the summer months, thereby allowing it to buy the energy it may need in the winter and still result in a net surplus. Net-zero water will be the more challenging task but developers believe a 9,000-gallon cistern in the basement will collect enough water to make it through dryer months. This and a few similar projects still constitute Living Building experiments. There will certainly be more efforts to learn from their experience as technology and design practices continue to evolve.

Additional Information

New York PlaNYC, www.nyc.gov/html/planyc2030/html/home/home.shtml

Boston Program, www.bostongreenbuilding.org/

Alameda County Build It Green Program, www.builditgreen.org/

Santa Cruz Program,www.ci.santa-cruz.ca.us/pl/building/green.html

Living Building Challenge, www.cascadiagbc.org/lbc/Lb-challenge-v1-2

Article on the Kenton Living Building, http://findarticles.com/p/articles/mi_qn4184/is_20070430/ai_n19066623

Conclusion

Green building programs are flourishing throughout the country, and this is only possible due to the leadership of local officials on sustainability issues. The purpose of Local Leaders in Sustainability is to offer an analysis on the current state of green building laws in America. The AIA hopes this report will provide local officials with some of the tools necessary to create their own green building program. We also have several further resources, expertise, and tools available to assist local, state, and the federal government as they develop their own green building programs. Architects will influence the future built environment and, by pushing for green buildings, there is an opportunity to design healthy, environmentally sound buildings which will better serve citizens of America and the world.

Recommendations for Continued Greening

The following recommendations can help local communities as they begin or enhance their green building programs.

Be inclusive: When designing the green building program, be inclusive. Architects, builders, and others in the design and construction community must be involved in the process in order to create a truly effective program. Education sessions are important and can be offered by another city's sustainability director, a LEED-accredited professional, or professionals associated with other ratings systems being considered in communities. The goal is to make the features that comprise green buildings standard on all buildings, and that will only happen by working in a collaborative manner.

Use architects as a resource: Architects would like to help communities develop green building programs and are available as a resource. Contact your state or local AIA component, COTE chapters, and AIA National; we will provide you with information and contacts for architects that can assist you in turning your community green.

Hire a director of sustainability: If your community has the funds available and the ability to hire an additional staff person, a director of sustainability is a wise choice. This official will be able to coordinate the multiple departments that are generally involved in developing a well-rounded green building program. If your community would like to go further and develop a climate action plan and pursue additional sustainability efforts, the expertise of this individual should help move this process along. This official is usually placed within the mayor's office or the permitting department.

Train and accredit municipal employees: Municipal employees should be trained in the rating systems your community plans to use. By having expertise at every point of contact between the city and architects, contractors, and developers, a more congenial atmosphere is created and green projects achieve greater success. From the initial plan review process to the occupancy permit, the best programs work with developers to keep delays to a minimum.

Keep it simple: Consistency is the best policy. Planners and other city officials from across the country mentioned that one of the main concerns they had was that sometimes it is difficult to navigate through different requirements throughout a community. Although downtown specific plans or other uneven ways of implementing sustainability initiatives may be desirable from a political standpoint, it sometimes creates difficulties for those who must implement programs.

Implement additional sustainability initiatives: Many communities have passed far-reaching sustainability initiatives. Green building programs are generally very popular, and communities should take the opportunity to pass other environmentally friendly policies alongside the green building ordinance. Examples include green purchasing programs, hybrid fleets, and streamlining the solar permitting process. For the most innovative cities, the next frontier will be green zoning and the placement of green buildings in a more sustainable cityscape.

Final Analysis

City leaders view green building as an investment in a healthier, environmentally friendly future. They also see green design as an opportunity to create green collar jobs in their communities, reduce energy and water costs, and create all-around superior buildings. As the cost of green building continues to move toward parity with traditional building practices, the old excuse of high cost begins to fall by the wayside.

This is a welcome development because the transformative nature of green building and sustainability programs is that they make people imagine a different way to live. In large urban areas they force city planners and other officials to no longer see nature as something that must be overcome or banished to parks and suburbs; instead, nature is integrated directly into the building.

Green buildings are healthy, energy-efficient buildings that increase natural light, incorporate high performance systems, and improve air flow for occupants. Green living roofs and many other features may be added to integrate the building directly into the environment. In suburban areas, green buildings are often included in overall transit-oriented or smart-growth plans, thereby creating healthy, energy-efficient buildings in areas that reinforce these features by being walkable, mixed use neighborhoods.

Communities should continue to move forward with green building programs, and the 92 cities that have already passed green building programs are testament to the importance of green design. The six case studies and the discussion on cities currently pushing ahead provide concrete examples of diverse successful green building programs. Although there are multiple ways to create a green building program, the ultimate goal is to create the best possible program for your community.

The report also demonstrates that size and fiscal outlook are no longer barriers to developing a successful green building program. From the East Coast to the West Coast, cities face many different political, financial, and climate concerns. Every city leader, however, clearly has in common the best interest of the citizens living in their communities and the future of America.

Americans are ready to take on this global issue, and have the knowledge, resources, and ability to truly change the world leading by example. The building sector is the greatest single contributor to carbon emissions in the United States but this only means that it has the greatest potential for carbon reductions. Our local communities are leaders in sustainability and now it is time for others throughout the country to lead, because we all have a part to play in greening America.

Green Building Program Quick Reference Matrix

City, State	Year Program Began	Applies to: 1–Municipal 2–Commercial 3–Multifamily 4–Single-Family	Web Site	Notes
Phoenix, Arizona	2005	1		Buildings must only be certifiable. The city has LEED-accredited engineers.
Scottsdale, Arizona	1998	1, 2, 3, 4	www.scottsdaleaz.gov/greenbuilding/	The city requires LEED Gold for munipal buildings and periodically updates its checklists to stay current with technology.
Tucson, Arizona	2005	1	In development	There is another landscape ordinance that addresses commercial buildings as well. There are several water-specific regulations. They also have an office of conservation and sustainable development.
Anaheim, California	2007	1, 2, 3, 4	www.anaheim.net (dept. of public utilities/ green connection	
Berkeley, California	2004	1, 2, 3, 4	www.cityofberkeley.info/sustainable/	The city is also looking into pushing its energy requirements beyond Title 24.
Burbank, California	2003	2, 3, 4	www.burbankca.org/building/bgreen.htm	It started as a voluntary program. The ratings are 3-tiered and focus more on getting developers to participate rather than worry about the level that is actually attained.
Carlsbad, California	2007	1		New program with plans to continue developing.
Chula Vista, California		4		
Fremont, California	2006	1	www.freemont.gov/Environment/GreenBuilding/default.htm	Applies to Municipal Buildings over 10,000 square feet. Alameda County also offers free consulting to developers shooting for certification.
Glendale, California	2007	2	www.ci.glendale.ca.us	LEED Silver, Gold, and Platinum buildings can earn density bonuses.
Irvine, California	2006	1, 2, 3, 4		Irvine has its own 100 pt. rating system for commercial and residential recognition.
La Mesa, California	2007	1		
Livermore, California	2006	1, 2, 3, 4	In development	The mandatory program will require 20 LEED points for commercial and 50 Build It Green Points for residential.
Long Beach, California	2006	1	www.longbeach.gov/plan/pb/apd/green/default.asp	The city is also looking into options for a policy regarding private development.
Los Angeles, California	2002	1	eng.lacity.org/projects/sdip/about_us.htm	The city has a sustainability task force.
Mission Viejo, California	2006	2, 3, 4	cityofmissionviejo.org/depts/cd/green_building/	The program is still in its pilot phase until 2008.
Novato, California	2005	4	www.ci.novato.ca.us/cd/forms/CDP047.htm	The policy is mandatory for new construction and requires 50 GreenPoints.
Oakland, California	2005	1, 2	sustainableoakland.com	Voluntary for commercial projects. The city has had a Sustainable Community Development initiative since 1998.

City, State	Year Program Began	Applies to: 1–Municipal 2–Commercial 3–Multifamily 4–Single-Family	Web Site	Notes
Palo Alto, California	2007	1		The city plans on growing the program, and is exploring mandatory points as an option.
Pasadena, California	2006	1, 2, 3	www.ci.pasadena.ca.us/permitcenter/greencity/building/gbprogram.asp	Public buildings, 25,000+ square feet commercial, and 4+ story residential projects are required to be LEED Certified. It is optional for other development.
Petaluma, California	2006	2, 3, 4	www.cityofpetaluma.net/cdd/big.index.html	The program is optional for all and there is a $500 per unit rebate incentive.
Pleasanton, California	2002	1, 2, 3, 4	www.ci.pleasanton.ca.us/business/planning/	The mandatory portions of the program were passed in 2006, before this it only applied to municipal buildings.
Redding, California	2005	4	www.reupower.com/energysvc/earth-adv.asp	The Earth Advantage program used Portland as its model. The city owns the electric company so many initiatives concern energy.
Richmond, California	2007	1		LEED Silver is required of municipal buildings. Any project receiving $300,000+ from the city must also earn Silver or 50 Build It Green points.
Riverside, California	2007	4		The program is brand new as of summer.
Sacramento, California	2004	1	www.cityofsacramento.org/generalservices/sustain/greengoals.htm	The city is also working on reducing fees for private solar generation.
San Buenaventura (Ventura), California	2006	1	www.ci.ventura.ca.us/GreenVentura/	Municipal buildings must be certifiable. The rest is voluntary using LEED and the California Green Builder standards. Voluntary projects are eligible for expedited permitting.
San Diego, California	2002	1, 2, 3	www.sandiego.gov/environmental-services/sustainable/index.shtml	San Diego's program comprises several ordinances requiring municipal buildings be LEED Silver and providing expedited planning incentives to commercial and multifamily developments.
San Francisco, California	1999	1, 2, 3	www.sfenvironment.org/our_programs/overview.html?ssi=8	The city is continuing to advance. This summer the Green Task Force recommended several changes, including mandatory standards.
San Jose, California	2001	1	www.sanjoseca.gov/esd/natural-energey-resources/greenbuilding.htm	The planning department promotes private green design but the municipal policy is the only one that is official.
San Leandro, California	2006	1		San Leandro builders also receive incentives from Alameda county.
San Rafael, California	2007	1, 2, 3, 4	In development	New mandatory program.
Santa Barbara, California	2006	1, 2, 3, 4	www.builtgreensb.org	The policies are voluntary for private development and permits can be fast tracked. There is also a solar recognition program to promote the use of solar energy.
Santa Clarita, California	2005	1		The city has a sustainable purchasing guide that covers almost all of the supplies the city buys.
Santa Cruz, California	2006	1, 2, 3, 4	www.ci.santa-cruz.ca.us/pl/building/green.html	Mandatory minimums combined with incentives.
Santa Monica, California	2000	1	greenbuildings.santa-monica.org	

City, State	Year Program Began	Applies to: 1–Municipal 2–Commercial 3–Multifamily 4–Single-Family	Web Site	Notes
Santa Rosa, California	2004	1, 4		The city is considering updates to the program to strengthen it and expand its scope.
Sunnyvale, California	2004	1, 2	sunnyvale.ca.gov/Departments/Community+Development/Planning+Division/Planning-Green+Buildings.htm	City buildings over 10,000 square feet are covered. The city offers a 5 percent floor area bonus to commercial developers.
Boulder, Colorado	1993	1, 4		The residential Green Points system they use is currently being updated again and will likely include commercial and multifamily housing.
Denver, Colorado	2005	1	www.greenprintdenver.org	Currently the program is a resolution but that is being strengthened this fall.
Fort Collins, Colorado	1998	1, 2	www.fcgov.com/opserv/pdf/green-bldg.pdf	It is a very flexible program, with different departments having different incentives. The city is currently working to tie everything together.
Stamford, Connecticut	2006	1	In development	The Sustainable Stamford program encourages private sustainable development.
Washington, D.C.	2007	1, 2		Large commercial buildings will be required to achieve at least a LEED Certified rating.
Gainesville, Florida	2002	1, 2	www.usgbc.org/ShowFile.aspx?DocumentID=1979	Florida cities are not allowed to amend the state building code at all due to weather in the state. Therefore, the city is working with the state to further coordinate their policy.
Lauderhill, Florida	2006	1, 2, 3, 4		Compliance is voluntary, but all applicable buildings must submit a statement identifying any green design components.
St. Petersburg, Florida	2006	2, 3, 4	www.stpete.org/development/developmentreview.htm	Sarasota county is very active in promoting green building. The city program is very informal but there is a very good relationship between developers, planners, and normal citizens.
Athens-Clarke County (balance), Georgia	2005	1	www.accplanning.com	In addition to the municipal policy the city has conservation subdivisions to develop better planned neighborhoods.
Atlanta, Georgia	2003	1	www.atlantaga.gov/client_resources/mayorsoffice/green%20initiative/green%20initiatives.pdf	The EarthCraft Homes program has also been in existence since 1999. Currently, the city is working to shed its reputation for sprawl by developing sustainable communities in addition to single-family buildings.
Honolulu CDP, Hawaii	2004	1, 2		Commercial, industrial, and hotel development can get a one year exemption on real property taxes.
Chicago, Illinois	2004	1, 3, 4	www.cityofchicago.org City Departments, Department of Environment	The success of separate programs is unique to the political culture of the city and the mayor.
Bloomington, Indiana	2007	1, 2, 3, 4	www.bloomington.in.gov\planning	The city offers bonus density to qualified projects and also has a Green Acres neighborhood program.
Bowie, Maryland	2003	1	www.cityofbowie.org/green/green.htm	The program is intentionally vague and does not specify LEED or another guideline. The goal is to promote flexible implementation and avoid focusing solely on points in the rating system.

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Gaithersburg, Maryland	2003	1, 2	www.gaithersburgmd.gov/poi/default.asp?POI_ID=793&TOC=107;81;388;585;793;	The LEED checklist must be completed by all applicable development. Incentives to be certified include reduced permit fees and city rebates for LEED fees.
Boston, Massachusetts	2007	1, 2, 3	www.bostongreenbuilding.org	The program is written into the municipal code as Article 80. The city amended the LEED guidelines to include city specific points for features the community values.
Medford, Massachusetts	2005	1	www.medford.org/Pages/MedfordMA_Energy/FINAL_LAP.pdf	The city is also pursuing a wind power project.
Quincy, Massachusetts	2006	1		The city is working on updating older municipal buildings as well as greening new construction. There is a defacto commercial policy but the city didn't want to constrict it with a specific guideline. Developers present their project and itemize green features, then work with planners to improve.
Grand Rapids, Michigan	2005	1		The city is finding better economic arguments for green building and the planning department regularly promotes green design with commercial developers although a formal policy has not been developed.
Bloomington, Minnesota	2005	2, 3	www.ci.bloomington.mn.us/code/Code19_9.html#b19_29 see Section 19.29 (g) (4) (F)	Section G-4-F in the code offers a floor area bonus for a specific zoning district. The city tried to promote mixed use development for more walkability.
Minneapolis, Minnesota	2006	1, 2		In addition to LEED, green development must be 35 percent above minimum state energy standards. Due to heating costs in the winter they are primarily concerned with energy efficiency and offer bonus density as an incentive.
St. Paul, Minnesota	2005	1, 2, 3, 4		The city uses Energy Star guidelines for residential. Large commercial structures must go through the Excel Energy program.
Kansas City, Missouri	2004	1	www.kcmo.org/manager/OEQ/cpp-progress.pdf	The city recently hired a sustainability manager and is currently working on removing barriers to green features within existing code to streamline the process before they worry about expanding the program.
Las Vegas, Nevada	2006	1, 4	www.sustainlasvegas.com (coming soon)	Las Vegas has established a green building fund to raise money from utility fees and provide grants to cover LEED costs.
Elizabeth, New Jersey	2002	3, 4		The city has a great Urban Enterprise Zone complete with mass transit. There is also an excellent grant program for low income housing. Over the past 15 years or so the downtown area has been completely revitalized.
Jersey City, New Jersey	2007	1		This policy is conceived as the first of many. They are looking into greening everything from roofs to parks to piers. The planning department also has latitude to work with tax abatements to incentivize green buildings.
Trenton, New Jersey	2004	2		Mayor Doug Palmer is the head of the Council of Mayors. Recently he has become more interested in green buildings and the city plans to become more of an example for other eastern cities to follow.

City, State	Year Program Began	Applies to: 1–Municipal 2–Commercial 3–Multifamily 4–Single-Family	Web Site	Notes
Albuquerque, New Mexico	2005	1		The city has a strategic plan to meet the 2030 Challenge with goals for each department. Recently the city began working with a Vancouver consultant to update and expand the green building program.
New York, New York	2005	1	www.nyc.gov/planyc	PlaNYC is a comprehensive sustainability plan with 10 goals and 170 specific initiatives to help meet them. Much of the plan revolves around renovating existing buildings, since about 85 percent of the buildings that will exist in 2030 have already been built.
Asheville, North Carolina	2007	1		This new program was passed as a first step with serious plans to expand it in the next year.
Wilmington, North Carolina	2005	2, 3, 4	www.stewardshipdev.com	Currently the Lower Cape Fear Stewardship Development Award Program is voluntary and only provides a building award as an incentive.
Winston-Salem, North Carolina	2006	2, 3	www.city of ws.org/Home/Departments/Planning/Legacy/Articles/LegacyToolkit	Winston-Salem is a Sierra Club Cool City. It is currently focused on mixed-use planning and walkability.
Cincinnati, Ohio	2006	2, 3, 4	www.cincinnati-oh.gov/cdap/pages/-16936-/	Cincinnati provides a property tax abatement for private developers. The city is also working with a developer to construct a 68 acre neighborhood to help gather data on pervious pavement and green roofs in particular.
Cuyahoga Falls, Ohio	2005	2, 3, 4		The city provides a density bonus for green development.
Hamilton, Ohio	2007	2, 3		For LEED projects the city amended the code to allow a density bonus and reduced landscaping requirements.
Eugene, Oregon	2006	1		There has also been an ongoing pilot project to expedite plan checks and provide consulting to developers. The city now has a few accredited staff members and are considering extending the pilot to more projects.
Portland, Oregon	2000	1, 2, 3, 4	www.portlandonline.com/osd	One of the few cities in the country to require new municipal buildings to be Gold rated. Numerous green building initiatives.
Philadelphia, Pennsylvania	2007	1	www.phila.gov/green/index.html	The city has maintained a sustainability commission which has recently recommended more transit-oriented development. The planning department is in the process of updating the zoning code as well.
Nashville-Davidson (balance), Tennessee	2007	1, 2, 3		Municipal buildings over 2000 square feet and $2 million must be LEED Certified. Other projects are offered density bonuses to meet the same standard.
Austin, Texas	1991	1, 2, 3, 4	www.ci.austin.tx.us/citymgr/default.htm	The program has been around so long it is just an accepted part of the building process. Planning and permitting have a lot of flexibility with what to offer developers depending on the part of the city they will be in.
Dallas, Texas	2003	1		Dallas has a pilot program that has partnered with Habitat for Humanity to develop green low income housing.

City, State	Year Program Began	Applies to: 1–Municipal 2–Commercial 3–Multifamily 4–Single-Family	Web Site	Notes
Flower Mound, Texas	2004	2, 3, 4	www.flower-mound.com/env_resources/envresources_greenbuilding.php	The program is purely voluntary and offers recognition to applicable buildings.
Frisco, Texas	2001	1, 2, 3, 4	www.friscotexas.gov/Projects_Programs/Green_Buidling/?id=155	Residential construction must meet Energy Star standards. Municipal construction must be LEED Silver and Commercial or multifamily buildings have a Frisco specific standard based on LEED.
Houston, Texas	2004	1, 2, 4	www.houstonpowertopoeple.com	The city places an emphasis on cooperation between developers and planners. The Quick Start program is designed to provide consultation and the Houston Hope program targets low income housing.
Plano, Texas	2006	1		In addition to the municipal LEED requirements, the city has an interdepartmental group to provide education and consultation for private construction.
San Antonio, Texas	2004	4	www.buildsagreen.org/BuildSAGreen/	The city works with Build San Antonio Green, a program similar to the residential policies in Madison and Atlanta, to recognize and market green housing.
Salt Lake City, Utah	2005	1, 2	slcgreen.com/pages/hpb.htm	Municipal buildings must be LEED Silver and buildings over 10,000 square feet receiving city funds must also be LEED Certified.
Arlington CDP, Virginia	2000	1, 2, 3	www.arlingtonva.us/Departments/EnvironmentalServices/epo/EnvironmentalServicesEpoGreenBuildings.aspx#ACinc	All site plan projects must submit a LEED Scorecard and employ a LEED-accredited professional. Certain projects are required to earn 26 points, failure to do so results in a $.03 per square feet fee that is used for green building education.
Chesapeake, Virginia	2007	1		The program is brand new and the next step will be to train municipal employees and conduct an energy audit of existing buildings.
Bellingham, Washington	2005	1		The King County program has expanded to include Bellingham as well. The city is working on a waterfront project as part of the LEED ND pilot.
Seattle, Washington	2000	1, 2, 3, 4	www.seattle.gov/environment	In addition to the requirements for city development, Seattle has a dizzying array of incentives for all kinds of sustainable features.
Shoreline, Washington	2007	1	www.cityofshoreline.com/cityhall.departments/planning/sustainable/index.cfm	Progress within the city has been somewhat hampered by concerns that municipal government may not be the best place for such action. They like to take cues from the state but recently they have begun to consider incentives as an appropriate action.
Madison, Wisconsin	1999	1, 4	www.cityofmadison.com Environment/default.htm	The driving principle behind the sustainable development is to earn payback on the investments within 10 years. There is more focus on partnerships as opposed to policies. They view education as the best incentive.
Milwaukee, Wisconsin	2007	1		The city recently created an office of sustainability and there is a lot of momentum to keep the program expanding.