USGBC
1800 MASSACHUSETTS AVE, NW
SUITE 300
WASHINGTON DC 20036
202 828-7422
WWW.USGBC.ORG

Municipal Green Building Programs:

A Survey of Implementation and Development Strategies

Draft Report - September 2007
U.S. Green Building Council (USGBC) Codes Committee

OVERVIEW

In the Summer of 2007, the U.S. Green Building Council Codes Committee undertook a research project to interview leaders from municipal green building programs around the U.S. After conversations with green building advocates in eight municipalities, it became evident that there are many viable methods of introducing green building programs. Municipalities are as diverse as the people involved. In the end it comes down to the dedication and inspiration of individuals, whether they are leaders, staff or civic voices and the power of their vision.

The impetus for a green building agenda usually stemmed from past efforts focused on a narrower environmental agenda, whether it was energy conservation, recycling, or even street beautification efforts. A more recent desire to reduce greenhouse gas emissions is advancing interdisciplinary approaches. An ordinance/resolution format was the favored approach for introducing green agendas, with approaches varying from quick, almost immediate implementation to carefully orchestrated reviews with intense committee involvement. Many of the programs are voluntary, with incentives that vary from permit expediting to density bonuses. Other programs are mandatory, some requiring third party certification, others being self-certifying. Often size and building type will influence the scope of the requirements. Many of the programs referenced independent rating systems, such as the US Green Building Council's LEED rating system or more locally developed checklists tailored to the climate and place. A few municipalities preferred using their own program, developing recommended details and identifying local companies that provide preferred products.

As for the administration of green building programs, some municipalities placed the program independently within planning, environmental, or utility departments. Others integrated green building directly into the permit process. The organizational placement of the program sometimes migrated, usually settling within the building permit office. Cooperation and clear definition of responsibilities helped the programs evolve in a multi-disciplinary environment. Many departments had no extra funds, relying on permit fees, sponsored events and publications and even utilities fees for financing. Code issues seemed to center more on administrative directives relative to building codes, waterless urinals, wastewater management, and wind power. Often green building was one factor within a broader sustainable vision.

THE PROGRAMS

Arlington County, Virginia

Ten years ago Arlington County was beginning to fear that rapid development would soon erode the qualities people valued. A pedestrian environment, mass transit and open space preservation were advocated as a result. At first stormwater and indoor air quality were a focus, then recycling and energy conservation naturally followed. With a population of 200,000 on 25 square miles, the county government aimed to set an example by reducing carbon emissions. A knowledgeable and engaged staff was dispersed among the departments, including an energy manager in the facilities department, and staff dedicated to community outreach concerning business, green building and residential construction.

Arlington County now has a mandatory green building program, launched in 2000, upgraded in 2003, and scheduled for review in 2008. The Department of Environmental Services reviews buildings for compliance with LEED (26 points required), with certification only being required for public structures. Others need only meet the intent of LEED, following the checklist to the satisfaction of the County. Applicants have to apply for green building reviews separately. There is no interaction with the building permit office, except that green building approvals must be obtained before a permit is issued.

The implementation of the program ran smoothly, as trial runs with developers educated all players before the program was formally adopted. In addition density bonuses were offered for LEED certified projects, based on the level of certification. To counter the potential for noncompliance if increased densities were to be built, the county required applicants to post a bond of several thousand dollars. This was released once certification had been obtained. If a project failed to achieve the level of certification anticipated, the level of nonconformance was reflected in the amount lost by the client. For instance if the project failed by 1-2 points, the loss was 25%, 3-4 points, 50%.

One complaint that evolved was that clients who registered for LEED had to pay the USGBC fee, while those not applying for certification did not. In response the County raised the application fee by 3 cents per foot on all projects, refunding the fee if LEED certification was obtained. This resolved the discontent.

While there was a good relationship between the separately run building permit office and the green building program, the County intends to eventually integrate the procedures. The county has trained 40 staff for LEED New Construction, so the level of awareness throughout the departments has increased. Both departments work more closely on the Green Homes Choice, a voluntary program adapted from the Earth Craft model for single family homes, developed by Southface Energy Institute. The program has a specific checklist incorporating Energy Star with added features appropriate for the location. Front-of-the-line plan review was the incentive for participation.

The green building initiative had no separate funding and used existing staff. Starting in July of 2007 a utility tax on electric and gas bills based on kilowatt hours or therms will be used for the climate action program. The first 400 kw will be exempt, to encourage low usage, and there is a cap set at three dollars per month. This utility

fee is expected to raise 1.5 million dollars per year. Support for the programs has come from both citizens and local environmental groups. There was also a sense of keeping up with one's neighbors, as green initiatives are being introduced throughout the area, including Washington D.C.

The main building code issues faced were waterless urinals and gray water systems. One sticking point was a code requirement for a certain water pressure in a flush valve, which wasn't needed in the waterless urinal. The County handled this by having a test case reviewed by plumbers and given a temporary approval until the International Code Council issued its determination. The gray water systems were also approved once concerns over public health and crossover were addressed.

Looking back, Joan Kelsch, Environmental Planner, noted that compliance with the commercial program was minimal, since most projects only obtained the 26 credits required. Few pushed for further efficiencies. The County is presently evaluating which points are popular and which are being avoided. Points important to the County may be evaluated for incentives or mandatory compliance, such as heat island mitigation, stormwater management, and water and energy efficiencies. Also Ms. Kelsch would have preferred having all buildings registered for LEED. Third party review, removed from local politics, is invaluable. Also ambiguities exist in the marketing of a green building, if some are not certified. With LEED the measure is clear. There is also a need to improve existing buildings proactively.

In January of 2007, Arlington County announced an initiative to reduce emissions in 2012 by 10% and in 2050 by 80%. Arlington County is assessing its baseline for emissions, fleet management, recycling, and energy management using utility bills, fuel usage and solid waste generation for 2000. Accompanying this program will be educational outreach, employee transit programs and solar projects.

Aspen, Colorado

Initially driven by the City of Aspen and the Aspen Skiing Corporation's recognition of the devastating effect climate change would have on their way of life and economy, Aspen initiated one of the most comprehensive and stringent energy-efficiency codes in the country. Aspen's green building agenda was a natural and obvious complement to their Energy Code. In 1995 Aspen became the first jurisdiction to regulate energy use outside the building envelope, targeting the energy "hogs" and requiring mitigation. For instance owners of outdoor spas and snow melt systems were required to compensate with on-site renewable energy sources, high efficiency mechanical systems or tighter high performance building envelopes.

The more stringent energy requirements made Indoor Air Quality (IAQ) an issue, so there was a need to address whole building systems, dealing with condensation, low VOC's and formaldehyde-free environments. Water and electric usage could be addressed directly as well with a building program.

The green building program was based on Boulder's Green Points Program, where building type and size trigger point targets. When the notion was first introduced, there was some resistance, due mostly to a lack of factual information available to the design and development community. This was countered in a number of ways, with the Community Office for Resource Efficiency (CORE) providing valuable assistance.

The word ***"Green"*** was replaced with ***"Efficient,"*** changing the tenor of the conversation. There were no required costs to projects that could not be recovered in less than seven years. A six-month educational series was offered, followed by a free six-month plan review and consultation period before the program became mandatory. In addition public focus groups evaluated each point and issue. By the time changes were presented to the Council, the issues had been worked out transparently, leading to easy passage. Marketing strategies were presented to realtors that emphasized building economics. Since the Efficient Building Program was more stringent than those of other municipalities, Aspen's buildings were therefore healthier and more affordable, due to lower operation and maintenance costs.

Eventually the challenge of making the energy code requirements work for sites with varying ability to utilize on-site renewable energy systems led to the development of the Renewable Energy Mitigation Program (REMP) which, as part of the energy code, set an energy budget for each project. If the projected energy usage could not fit within the energy budget, two options were available; on-site renewable energy to make up the excess energy use or paying into the REMP fund. The rate set for REMP payments is based on the cost of mitigating twice the carbon footprint of the excess for 20 years. The REMP funds are managed by a community committee that oversees their use and insures that they provide the mandated mitigation. The millions of dollars raised have been used to put solar water heaters and PV systems on schools and affordable housing, create an efficient appliance rebate program, fund the creation of a wind farm in Nebraska and pay for the expenses involved in creating the Efficient Building Program. As of November 2006, REMP has collected almost $6 million, more than two-dozen REMP supported projects are underway, and over 50,000 tons of greenhouse gasses have been avoided. The program was recognized in May 2007 by Harvard University's John F Kennedy School of Government as a finalist in Ash Institute Innovations in Government Award.

The Efficient Building Program was introduced to City Council in early 2002 and adopted in early 2003 by Ordinance within the municipal code. All building department staff participated in the training, and additional staffing helped deal with the perceived increased workload. There were no visible hardships resulting from the mandatory program, which builders and designers now embrace. This may be due in part to the accompanying resource guide that lists acceptable items, even providing preferred details and listing local suppliers of favored materials/features. New businesses, especially those dealing with renewable energies have been established. The lumberyards and supply houses stock materials that comply with the program.

Chief Building Official Stephen Kanipe prefers having a municipal checklist program instead of adopting existing programs, because it allows the municipality to work directly with local issues and people working in the community. New ideas and advancements have been initiated quickly. Currently Aspen is looking to combine the Energy and Efficient Building Programs into one code, using Carbondale and Eagle County's programs, which have built on and further evolved what Aspen initially created, as models. More mandatory items will appear, with incentives offered for favored advances. The program also aims to foster an economy that supports renewable energy sources and recycling. Points are given for innovations that support the community. For instance, instead of demolishing an existing building, the

structure can be moved and given to Habitat for Humanity. The conservation of water, electricity and resources are stressed, while also avoiding material waste.

Austin, Texas

Driven by a desire to avoid the construction of new fossil fuel or nuclear power plants for Austin Energy, its municipal electric utility, the City of Austin implemented several energy and water conservation programs in 1982. The goal for the energy programs was to eliminate 500 megawatts of power plant demand by the year 2000. One of these early programs was the Austin Energy Star Homes Program. This program was an alternative path to residential energy code compliance. Staff consulted with builders and designers to help them exceed energy code requirements in the most cost effective way. In 1990, the City Council, with recommendations from local advocates, directed staff to expand the scope of the Energy Star Homes Program to include water conservation and efficient use of materials. This program then became the Austin Green Building Program, and later Austin Energy Green Building (AEGB), the first in the U.S. to develop a tool for the residential construction industry to evaluate the sustainability of their homes. The program was later expanded to include consultation and evaluation of the sustainability of commercial and multifamily buildings. The general public and their elected politicians have continued to require a strong environmental agenda.

Austin has developed its own rating system for privately owned properties, starting with homes, and extending to multi-family, mixed use and commercial structures. A self-generated program is preferred, as Austin Energy can concentrate on issues pertaining to local climate and land use issues. Their basic requirements are more stringent than LEED, with subsequent levels comparable to LEED levels. The star levels (1-5) allow appropriate targets for the situation. For instance downtown development has a requirement of 1 star, while projects located in the redevelopment of the Robert Mueller Municipal Airport require one star or LEED for commercial building and 3 stars for residential development. When green building is required, a notation on the site plan appears, prompting an energy review and notice of compliance before a building permit review can take place. The green building inspections are entirely separate from building code evaluations, with respective duties identified in a memorandum of understanding. Watershed Protection and Development Review Department is responsible for code related plan reviews and code inspections. Austin Energy, is responsible for the developing new energy codes, green building programs, and industry/code interface. Austin Energy researches alternative methodologies, recommends required documentation for innovations and interprets code intent. Maximizing environmental impact, AEGB focuses attention on volume builders. The interaction between Development Review and Inspections and AEGB is generally very positive with few code/GB issues that cannot be quickly resolved to the satisfaction of both. The only item which had difficulty getting approval was the waterless urinal, and this was due to opposition from the plumbing industry and a faulty test installation.

For municipal structures, in June of 2000, the City Council required LEED silver. This provided a neutral third party review, eliminating the natural conflict of the client and regulator being under the same umbrella or one department enforcing its requirements on another. .

The most difficult part of the program was getting builders and designers to understand the changes and the public to recognize which environmental paths to support. Manufacturers also needed to respond to the new needs, insuring that favored systems and materials were available. Austin Energy responded with an intensive 16-year effort. Their outreach includes articles in local media, tables at public events, and four annual all day public workshops on green design and construction, which are constantly sold out. The only incentive offered is marketing. Case studies and the promotion of firms that participate are the primary incentives, in addition to the efficiencies themselves. Looking back, the most important suggestion for other municipalities is to forge close ties with industry groups such as, AIA, ASHRAE, home builders associations, and others. Bringing these groups to the table to assist with evaluating program changes, code improvements, and providing education to their members is imperative to operating a successful program.

Money follows demand, so resources are always stretched. Currently there are fourteen staff members evaluating 1000 homes, 100 commercial projects and 44 multifamily projects in a year. Grants from the Department of Energy in 1991 helped in the early stages of program development. Since then funding has come mainly from Austin Energy with additional funding from the City Water Utility. Collaborations with the industry, AIA, home tours and University of Texas School of Architecture Solar Decathlon projects have helped generate support.

Success is measured by the reduction in demand on Austin Energy power plant capacity, energy savings to the consumers, water conservation, and construction waste diverted from landfills. According to Richard Morgan of Austin Energy, the costs to finance, build and maintain a power plant, not including the fuel, which is a direct pass through, is more than $600 per kilowatt. If the cost of an efficiency measure and avoided sales calculated over a lifespan or identified time frame, usually 10-15 years, is less than this number, then that measure is considered cost effective by the utility. The current demand reduction goal for AEGB is 16 megawatts per year.

Looking to the future, the City of Austin adopted the Austin Climate Protection Plan in February of 2007. The major elements of the plan are;

- The Municipal Plan
  - Make all COA facilities, fleets and operations totally carbon-neutral by 2020
  - Make the entire city fleet carbon-neutral by 2020
  - All City departments are to develop plans, policies, and procedures for maximum achievable reduction of GHG emissions
  - Develop a City employee education program to reduce employees personal carbon footprint
- Utility Plan
  - Achieve an additional 700 megawatts of demand reduction by 2020
  - Meet 30% of all energy needs through renewable resources by 2020, including 100 megawatts of solar
  - Achieve carbon neutrality on any new generation units
  - Establish CO2 cap and reduction plan for all utility emissions
- Homes and Buildings Plan
  - Make all new single family homes zero net-energy capable by 2015

- Increase energy efficiency in all other new construction by 75% by 2015
- Require disclosure of historic energy use, facilitate and require energy efficiency improvements in existing homes and buildings at point of sale
- Enhance incentives and requirements for Green Building, and develop a separate "carbon neutral" certification for homes and buildings.

- Community Plan
  - Establish City Climate Action Team to inventory GHG emissions from activities community-wide and report to Council in one year with recommendations for short and long term reduction targets and implementation strategies
  - Go Neutral Plan
  - Develop online "carbon footprint calculator" for individuals and small businesses, provide individual assessments for complex organizations and entities.
  - Develop a menu of local GHG reduction strategies citizens, businesses and organizations can fund through "carbon offset" credits
  - Develop program for recognition of households, businesses and groups achieving carbon neutrality
  - Promote carbon neutrality among visitors by providing mechanisms and incentives for purchase of offset credits by travelers, conventions, trade shows, and festivals.

Babylon, New York

Babylon is currently in the process of introducing a green building program. The supervisor, Steve Bellone, quickly embraced green building as a way to mitigate the effects of dense suburbanization and carbon emissions. The programs require Energy Star for homes and LEED certification for newly constructed commercial and institutional buildings over 4000 sf. With guidance from the local chapter of the USGBC, A.I.A., the Long Island Power Authority (LIPA), and other advocacy groups, the resolution passed without objection in November, 2006. Supervisor Bellone spoke at the annual meeting of the New York Regional Planning Association on green building that was followed by an all-day workshop on the Island.

During the pilot phase, in which a number of on-going developments, including an 800,000 sf. outlet mall, agreed to voluntarily comply, there was some grumbling about the costs and additional time needed for certification. But educational sessions and a year of fee-free plan review have helped address these issues. There is a steep learning curve in this process, both in terms of oversight and application. Information from the field is sketchy and data gathering techniques needed to be made more accessible for evaluation purposes. The planning staff tasked to these reviews, needed to evolve in short by qualifying for LEED Accredited Professional status. The additional design costs incurred by applicants are partially covered by LIPA, which is providing additional rebates for projects that obtain LEED certification, covering costs for commissioning, point management and a proportion of increased costs of construction related to energy points. So far the only environmental issues relative to codes have been windmills, with noise, spectral discomfort and height limitations hindering acceptance.

Pre-existing and developing programs provide a support structure for the town's green building program. All passenger vehicle purchases since '05 have been hybrids. 10% of municipal energy is derived from onshore wind. 10kW of solar is going on town hall. The primary municipal energy facilities are being refitted for maximum efficiency. Babylon has not only committed to a 12% reduction of GHG emissions by 2012, but their Climate Action Plan targets and quantifies specific measures. We are distributing CFLs to every household in the town and know that if we change one bulb per year the result will be a .62% decrease in CO2.

There are measures Babylon can directly effectuate at the local level, such as requiring that all residential rolling stock comply with Energy Star. Other measures, such as a tax holiday for the purchase of insulation and repowering the Town's forty and fifty year-old power plants must be lobbied at the state level. Dorian Dale, Energy Manager, would like to see the tax incentives offered to ecotech businesses quantified as investment and monetized in the carbon market. Moving the town's 4,489 school buses from diesel will only reduce CO2 by .06%, so how do you measure the direct benefit?

Chicago, Illinois

Chicago's advocacy for environmental excellence came fast and furious from the top, through directives from Mayor Richard M. Daley. It started with a beautification effort, where planted medians, street trees and green roofs were visible reminders of the health of the City and effectiveness of the government. Green building was a natural next step, where visible items, such as construction waste reduction, retention of first 5" of rainwater on site, and reflective roofs, were immediately successful. Energy was more difficult for planners to negotiate. Sadhu Johnston, who originally founded the Cleveland Green Building Coalition, charismatically headed the Department of Environment and was recently made the Deputy Chief of Staff, Chief Environmental Officer, responsible for implementing Chicago's environmental agenda across all jurisdictions. Placing responsibility and accessibility at the highest levels of government ensured accountability for the environmental agenda from all departments. With education, understanding, and strong will, a more sophisticated program could evolve.

The City sponsored a process in which a broad cross-section of people representing the design, construction, development, real estate, material and equipment suppliers, environmental and community groups and government agencies came together to identify barriers to green building and development in the Chicago Building and Municipal Code. This process helped shape the eventual development of the Chicago Green Permit program by identifying both barriers and opportunities for positive change.

Chicago looked to its own structures first, building the Chicago Center for Green Technology with a LEED platinum rating. Based on initial trials, the City introduced the Chicago Standard, guidelines for greening municipal buildings. It selected points from the LEED program that applied to Chicago, stressing energy, water and material conservation, as well as indoor air quality. While obligated for municipal structures, the standard is recommended to the private sector, but not required.

A Green Permit program provides incentives and recognition for green buildings. The main incentive is an expedited permit process, cutting the time in half, with one contact person for the client. The City also has a budget of $25,000 to reimburse the costs of consultant code reviews on a first come first served basis. The program provides free 6' x 4' signs that enhance public relations for both the City and the clients. The main impediment to the program is internal coordination between departments. This is handled by having biweekly interdepartmental meetings and a "green" point person in each department. Since the program lies in the building department, the permit process is integrated. Most of the issues that arise are zoning or development issues, rather than green or code items. The program was initiated quickly, within two months of conception. The administration advocated action, with the process to be finessed as problems arose. The Green Permit program promoted a preliminary design review, with a submittal at 50% of construction documents with calculations, a client narrative on each point claimed and proof of registration with LEED. This allows input in a timely manner, helping final compliance and a smoother permitting process.

Only a couple of code issues have needed special consideration, such as a waterless urinal, which required a pilot phase, and gray water systems. A Committee on Standards and Tests was in place to review technical submittals and interpret the intent of the code. In both cases over-engineering and redundant protections were required, for instance including a chlorine drip and UV filters for water purification. The program is growing quickly, from 19 permits in 2005 with over 100 permits expected in 2007.

Rohnert Park, California

Incorporated in 1962, Rohnert Park is a relatively new municipality consisting of mostly residential tracts. Although Rohnert Park is currently built out, annexation of additional land is underway that will result in an additional 6000 houses to be built in the near future. Following Sonoma County's lead, Rohnert Park has adopted a community-wide goal to reduce greenhouse gases 25% by 2015. The City has completed their baseline inventory, is in the process of adopting a climate action plan for city operations, and has already commenced with the implementation of facility upgrades. In 2005 the staff was directed to develop a green building ordinance consisting of mandatory measures. With no budget or increased staffing, Peter Bruck, Building Official, decided to investigate the development and implementation of a green building program as part of his master's thesis, thus becoming the champion within the building department.

To ensure that developers would embrace the program, requirements were tailored by building type such as single family, remodeling, multi-family, and commercial. The size of the project and the relative impact of the project on the environment were the key factors affecting the three tier rankings within the programs. The ordinance works in conjunction with two resolutions that specify compliance thresholds, green building guidelines, and rating systems based upon building type, and tier level. This allows the rating system and compliance levels to change without an amendment to the ordinance itself. LEED is referenced, but only required for specified higher tiers. At the lower levels self-certification is allowed. No incentives are offered. Permit fees pay for consultants (LEED AP's and Certified GreenPoint Raters) to review the plans, while the program is administered by one-to-three staff members. The residential

program follows Build It Green Guidelines and checklists, with guidelines by the Alameda County Waste Management Authority for multi-family housing and remodeling also referenced. Small structures and additions require the checklist more as an educational tool than for environmental impact, as the initial requirements are minimal. The municipality is considering incentives for remodels or energy retrofits.

The major issue with codes in California is that local municipalities cannot modify the codes unless it is reasonably necessary to do so. For instance the enhanced goals for energy efficiency were found reasonable due to the high number of rolling blackouts experienced when electric grid capacities were breeched. If energy efficiencies were cost effective because of payback periods and local climatic conditions, the changes were considered reasonable. It also meant that some points could not be maximized if state codes already addressed the issue. Eventually the building codes in California will incorporate stronger green requirements that build upon municipal experience. Generally Rohnert Park has found the International Codes to complement green building objectives.

Rohnert Park took time to carefully evaluate the green building program before implementation so that the whole community would become sustainable, not just a few buildings. There was a sustainability ordinance workshop that discussed energy, green building, water conservation, transportation, solid waste, and solar access. The multidisciplinary approach encouraged a shared vision, evident in citizen support.

San Francisco, California

In 1999 San Francisco introduced a Resource Efficient Building ordinance that provided guidance for policy, training and technical oversight of projects, establishing minimum standards for buildings. In 2004 San Francisco introduced their Climate Action Plan that sought to reduce carbon emissions by 25% below 1990 levels by 2012. In 2004 the City required LEED silver for all municipal buildings. Priority expediting was given as an incentive to private permits that were LEED gold or better. Mayor Gavin Newsom's Green Building Task Force is now recommending that large-scaled projects over 25,000 be required to attain LEED certification in 2008 and LEED Gold by 2012, and that smaller buildings submit checklists with phased-in point requirements. Residential building of 1-4 units and mid-rise buildings less than 75 feet high are recommended to achieve a rating of 75 points by 20012 using the GreenPoint Rated system developed for the California climate by "Build It Green," a nonprofit. The proposed green building program gradually introduces stricter levels of compliance as it helps educate all involved. Incentives will also be offered for buildings that exceed the requirements, offering priority permits, with additional incentives being considered including: increased height or F.A.R. rebates on project fees and equalization of assessments, ensuring that owners are not taxed for green initiatives.

San Francisco's success originated from strong grass roots activism, usually with staff-crafted programs supported by the council. The more recent recommendations were instigated from the Mayoral level, with a task force supported by staff. Help from the USGBC, AIA, West Coast Green, Build It Green, utilities, partnerships with other cities, the EPA, and UCalif, as well as grant programs have all helped forward San Francisco's cutting edge programs.

Green related code issues arise when rethinking building systems and resources. To address issues the Department of Building Inspection's Code Advisory Committee formed a green building subcommittee. Examples of issues include streamlining the permit process for photovoltaic installers, disconnecting roof drains for irrigation purposes, exploring biological wastewater treatment, and introducing natural ventilation in high-rise buildings. The City is also examining changing infrastructure needs, such as municipal gray water systems, the integration of wind energy in urban contexts, and solar easements and/or compensation for their loss.

San Francisco is actively trying to make all aspects of its processes as accessible and transparent as possible. Measurements of success include the number of training sessions, group presentations and LEED buildings issued monthly, the latter with help from the local USGBC chapter. A new Google map displays green buildings throughout the city. Another map tracks solar installations, providing information on the systems. Plans for tracking projects online, with public visibility and additional mapping tools are being developed. San Francisco is also considering the USGBC's portfolio program, which will allow review of policies and prototypes to quicken the certification process. There is a sense that San Francisco is moving in all directions, working with all players, for a more sustainable future.

Scottsdale, Arizona

Scottsdale's program developed naturally, almost seamlessly. A fortuitous alliance formed between a builder, citizens and staff member, who formerly headed the building department. When Anthony Floyd, an architect who had been the Scottsdale Building Official, returned to city employment after a sabbatical, he came armed with an interest in green building. Concerned with the special issues of a Sonoran desert environment, he helped the Environmental Office develop a brochure on sustainable building in the desert. This supplemented education materials already offered on recycling, composting and energy. The municipality had also been interested in desert preservation and environmentally sensitive development. A sales tax was used to acquire the McDowell Mountain Preserve. Green building was a natural outcome of this desire to protect the fragile desert environment.

After a builder approached the City to gain exposure for an environmentally responsible building, the support to establish al green building program followed. As the program evolved, so did the citizen driven Green Building Advisory Committee. Its second chairman, Dan Bassinger, attended all city council meetings, commented and reported on environmental and green building issues on a regular basis. This resulted in an educated council, whose support grew greater over time.

The residential green building program that developed was voluntary, supported by the advisory committee, and administered by Anthony Floyd, within the Building Department. As a result it did not require a city council resolution. The program was introduced in January of 1998, only six months after the concept was introduced. At first the intention was to have all green buildings be reviewed separately, by its own building inspector. Due to the building department experience of the program's founder, acceptance and integration within the building department was eased, even encouraged. Eventually the Building Department integrated green building evaluations with normal permit reviews, after a six-month training program. A six month, interdepartmental, biweekly review identifying which items of the green

building checklist would be self-certified and which enforceable considered the insights of both inspectors and policy makers. Separate lists were tailored for building/function types (commercial, residential, multifamily, tenant improvements to shell structures). The checklists vary from LEED by emphasizing local concerns, increasing the prescriptive requirements, emphasizing water conservation, and strongly encouraging that at least 5% of the energy load be from renewable sources. Many of the checklist requirements are closely linked with local ordinances, such as stormwater management and environmental concerns, thus making the regulations easily incorporated when applicable. The ranking is by %. A pre-submission meeting lasting 2-5 hours initially discusses the project in relationship to the checklist and provides the client with resource and contact information.

Scottsdale's green building program is voluntary, with incentives limited to expedited plan review, recognition on Scottsdale's website, and free job site signs. Information about available tax credits is also provided. Success is measured by the percentage of projects that become part of the green program. Starting with less than 1%, this percentage rose to 35% in 2005. A slight dip in 2006 was due to the introduction of stricter requirements. Now Scottsdale is considering a mandatory program.

Education is a significant part of the program. Cosponsored with other municipalities, an annual Green Building Expo is free of charge, incorporating lectures, exhibition hall, and a resource guide. Ads for the guide support the venture, with the guidebook used throughout the year as a resource. In addition monthly lectures, handouts and an annual tour are offered.

Scottsdale's program supports innovative technology by allowing variances for innovation, which must be supported by an evaluation report that will inform future acceptance. For instance non-ventilated structures were allowed as an exception in 1997 due to energy conservation, and were ultimately incorporated into national code in 2003.

The success of Scottsdale's program is due largely to the tenacity of staff and the support of an advisory board. There is no dedicated budget for green building. The staff is part of the normal building program. Fee surcharges were disapproved. A revenue account, which can roll over fiscal years, draws revenue from ads and booths associated with the annual expo, which in turn pays for educational materials. After 9/11, when budget cuts during an economic downturn threatened the program, the support of the advisory board and the positive press gained from the Town Council unanimously requiring LEED gold status for all city facilities, helped the program survive. In Floyd's opinion, a resolution associated with the public programs would have protected the program more effectively. While it is important, even crucial, to have a point person for a green building program, the sustainability of the program is enhanced by the training of permit staff and inclusion of inspectors in the development of the program. Each person's involvement adds to effectiveness of green building.

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Melissa Gallagher Rogers, Manager, LEED Government Sector, USGBC

Prepared by Glynis Berry, AIA, LEED AP
studio a/b architects, Riverhead, NY
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WEB SITES

Arlington, VA

http://www.arlingtonva.us/Departments/EnvironmentalServices/epo/EnvironmentalServicesEpoGreenBuildings.aspx
Green Home Choice information is at
http://www.arlingtonva.us/Departments/EnvironmentalServices/epo/EnvironmentalServicesEpoGreenHomeChoice.aspx?lnsLinkID=1075
http://www.southface.org

Aspen, CO

http://www.aspenpitkin.com/depts/41/bldg_efficient.cfm
http://www.aspencore.org/
Carbondale; http://www.aspenpitkin.com/depts/41/bldg_efficient.cfm
Eagle County' ECObuild; http://www.eaglecounty.us/commDev/building.cfm

Austin, TX

http://www.austinenergy.com
www.**austin**energy.com/Energy%20Efficiency/Programs/**Green**%20**Building**/About%20Us/index.htm

Babylon, NY

http://www.lipower.org
http://www.rpa.org

Chicago, IL

www.egov.cityofchicago.org then go to environmental initiatives (right side)

Rohnert Park, CA

http://www.rpcity.org/content/view/468/1/
Masters thesis:
http://www.rpcity.org/component/option.com_docman/task.doc_download/gid,571/

San Francisco, CA

http://www.municode.com/Resources/gateway.asp?pid=14134&sid=5
http://www.sfenvironment.org/downloads/library/gbtfrrreleasev1.2.pdf
http://www.sf.solarmap.org/
www.sfgreenprint.org
http://maps.google.com/maps/ms?ie=UTF8&msa=0&msid=117497997817714386604.00043669fd5921ec7ac05&ll=37.778984,-122.433991&spn=0.056849,0.11673&z=13&om=1
www.westcoastgreen.org
www.builditgreen.org

Scottsdale, AZ

http://www.scottsdaleaz.gov/greenbuilding/

USGBC - http://www.usgbc.org

Press Kit - http://www.usgbc.org/DisplayPage.aspx?CMSPageID=97&
LEED - http://www.usgbc.org/DisplayPage.aspx?CategoryID=19
Government Resources - http://www.usgbc.org/DisplayPage.aspx?CMSPageID=1496
Chapters - http://www.usgbc.org/DisplayPage.aspx?CategoryID=24
Research - http://www.usgbc.org/DisplayPage.aspx?CMSPageID=78&

Development Center for Appropriate Technology - **http://www.dcat.net**