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ECO-CITY ALEXANDRIA

DRAFT FOR COMMENT

Green Buildings in Alexandria
Policy recommendations

January 8, 2009
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Department of Planning and Zoning
City of Alexandria, Virginia
and
Environmental Resources Management
Annapolis, Maryland

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Executive Summary

Green Buildings are a major component of the City's commitment to sustainable development: the City has required that its own buildings meet high environmental standards for several years; it asks private developers to look to green solutions for their buildings. Furthermore, the City's initiatives through its Strategic Plan and *Eco-City* Charter established the broad policy foundation for a wider and stronger green building practice for the future. It is now time to become more specific, indeed more demanding, and to do so in an orderly way, announcing publicly the City's intentions to partner with the building and development community, as well as with the environmental community, to achieve lasting, superior, and sustainable development.

To accomplish the task of enunciating the City's Green Building Policy, the Department of Planning and Zoning took two steps. First, it hired ERM—Environmental Resources Management, environmental and policy experts, to investigate and report on green building development standards and programs elsewhere and on Alexandria's options for moving ahead with a vigorous green building program.

Second, P&Z formed the Green Building Working Group in order to learn from and to involve the development industry and the community in the work of formulating a City policy. The development industry was helpful in providing staff with a sound understanding of the practical and financial realities in the field. Community and environmental representatives were instrumental in aligning the Green Building work with that of the Environmental Policy Commission and the Eco City process. The combination of voices makes for a strong, dynamic partnership for the environmental challenges that face Alexandria.

As a result of the work of ERM and the Working Group, staff is recommending the Green Building Policy outlined on the following two pages. Participants in the work have not achieved complete consensus on each and every detail. Nevertheless, there is general agreement on the approach and components necessary for a strong and effective policy statement.

Overall, the proposed policy establishes baseline green building standards for both private and public sector construction and provides a framework for the implementation of these standards. The policy is intended to enhance the public health, safety and welfare of residents, workers, and visitors by fostering practices in the design, construction, materials and maintenance of buildings that will minimize per capita energy use, provide energy from renewable sources, divert waste from landfills, use less water and other resources and encourage the use of recycled wastewater in the City of Alexandria. Green building practice also encourages buildings to be located close to public transportation and services and provides amenities that encourage walking and bicycling and therefore offers further potential to achieve a healthy, environmentally sustainable city. The recommended Green Building Policy is intended to advance the sustainability strategies outlined in the City's *Eco-City* Charter and proposed Environmental Action Plan. Given the City's overall environmental policy framework and after the analytical work of the last 18 months, staff recommends adoption of the following Green Building Policy.

DRAFT GREEN BUILDING POLICY

Green Building Benefits. Green buildings bring environmental and economic benefits to present and future generations of the citizens of this City and the region. Even in a developed city with significant historic character, "green" buildings are favored over buildings that are not green.

Policy Statement and Outreach Approach. The City will continue to lead by example through its own public buildings, establish a policy for new private buildings and will make efforts to educate the public, especially the building and development community, about the benefits of green buildings. The City will also take a leadership role to mandate sustainable design for all public buildings. The City will not be adopting a new code to mandate its Green Building Policy. That approach is not legally authorized. Nor is it necessarily desirable.

Leadership in Energy and Environmental Design. The LEED rating system will typically be the green building guide and rating system used as a standard for development in the City because it has become the industry preference, especially for commercial construction.

Development Standard. Public and private development that requires a Development Site Plan (DSP) or Development Special Use Permit (DSUP) should achieve the following green building standard:

1. *Non-Residential:* LEED Silver.
2. *Residential:* LEED Certified, LEED for Homes, or ANSI/ICC-700 2008 National Green Building Standard.
3. *Mixed use:* Each component should follow the applicable rating standard.
4. *Coordinated Development Districts:* Approvals for CDD areas yet to be developed will incorporate these standards.

In each case, applicable ENERGY STAR systems should be incorporated.

Equivalency Acceptable. The above standards provide a performance goal for development. However, to the extent that equivalent rating systems are available and their standards can be demonstrated to be equivalent to the satisfaction of the Director of Planning and Zoning, they are also acceptable.

Third Party Certification. Certification of compliance with green building standards will be provided by independent and accredited third party professionals retained by the applicant and approved in advance by the Director of Planning and Zoning. The City will require the applicant to achieve the green standard approved in its development application within two years of issuance of a certificate of occupancy.

Flexibility. The above standards are applicable to all development subject to a site plan or DSUP. The types and scale of developments within each category vary greatly, however, and certain building types (for example, medical, hotel, industry, affordable housing, historic

buildings, churches, redevelopment of small retail or restaurant establishments, and renovations or small additions to existing buildings) may require a more flexible approach. The Director of Planning and Zoning will consider whether special circumstances in the size, scale, location or use of the building justify an exemption or alternative method of compliance with City policy on a case by case basis and will strive to establish consistent criteria and thresholds for such alternatives based on experience with this policy.

City Environmental Priorities. In assessing compliance with the above standards, including as a matter of equivalency and of flexibility, priority elements in the project's design and construction are those which:

- enhance energy efficiency
- increase water conservation and reduce stormwater runoff, and
- reduce the overall carbon footprint.

Innovation Encouraged. Building owners and developers are encouraged to innovate and achieve higher green building performance than the minimum set in this policy.

Phased Approach. While it is important to establish this policy and implement its critical elements immediately, there are also elements of the green building program that will take longer and will look to the evolving green building industry, and those elements should be implemented over time. Examples of future work include **establishing best practices for retrofitting existing buildings, including historic buildings,** the development of incentives for applicants who reach the highest levels of environmental achievement; incorporation of a sustainable sites, or holistic, approach; and the calculation of financial benefits to the public from development of green buildings.

Education and Outreach. This key element of the City's approach to green buildings requires a partnership with the community, especially the building and development industry, as it and the City continue their effort to educate themselves and others about the benefits of and best ways to achieve green buildings. Together, they should track successes in City projects, changes in national and regional approaches to green buildings, advances in technology, and economic savings on individual projects as well as for public infrastructure systems. They should also provide web based information, hold forums on green buildings, and generally communicate the added benefits of higher rated green buildings to the community. The City will work collaboratively with environmental organizations and the building industry to recognize, award and publicize green building efforts in the City.

Monitoring Progress. All building projects in the City should be monitored to report the effectiveness of this policy to the Planning Commission and City Council on an annual basis.

GREEN BUILDING POLICY FOR THE CITY OF ALEXANDRIA

Building "green" is an approach to building design, construction and management that reduces or eliminates the negative impact of buildings on the environment while promoting enhanced building performance and occupant health. Green Buildings use less energy, consume less water, generate fewer air pollutants and provide healthier indoor environments.

This report has been prepared to consolidate the thoughts, analysis, and experience of experts in the green building field, as well as of a group of local practitioners – builders, architects, environmentalists, and policy analysts -- with those of city staff about the best approach for the City of Alexandria as it moves forward in the 21st Century to implement "green" policies for its built environment.

I. BACKGROUND: CITY AS GREEN BUILDING LEADER

A. City and Regional Policy Framework

The City of Alexandria is among a number of jurisdictions in the forefront of environmental change. It has established policies and taken real steps to become a sustainable City into the 21st Century.

Strategic Plan: City Council's Strategic Plan for 2004 to 2015 includes several elements relative to sustainable development and green buildings. The goals, objectives, and policy actions from the Plan include emphasis on environmentally sensitive development, on becoming less dependent on the automobile and on improving air and water quality in Alexandria.

Climate Protection Agreement: Mayor Euille endorsed and signed the 2005 U.S. Mayors Climate Protection Agreement along with 278 other mayors from 43 states representing a total population of 48.5 million citizens. The agreement commits Alexandria to meeting or exceeding the Kyoto Protocol greenhouse gas reduction targets through the use of local land use planning, urban forest restoration, public outreach campaigns, and other reduction strategies.

International Council on Local Environmental Initiatives: In January 2008, the City adopted a resolution to join the International Council on Local Environmental Initiatives (ICLEI), a membership association of 1,000 local governments committed to advancing climate protection and sustainable development. As part of the ICLEI membership requirement, City staff is developing a City-wide greenhouse gas (GHG) emissions inventory. Upon completion of the emission inventory, the City will create a Climate Action Plan to become part of the *Eco-City*/Environmental Action Plan.

Eco-City Alexandria: With the assistance of Virginia Tech's Urban Affairs and Planning program, the City embarked on the *Eco-City* project which established a new environmental policy framework for the City. Approved in June 2008, the City's *Eco-City* Environmental Charter outlines the City's guiding principles, vision, and overall environmental future, including regarding sustainable development policy.

Environmental Action Plan: An Environmental Action Plan, to serve as the road map for city leaders, staff, and citizens to implement the principles of the *Eco-City* Environmental Charter, is proposed for adoption by Council. Phase One of the Action Plan is slated for adoption by City Council in early 2009 and Phase Two by summer of 2009. The proposed Phase One Environmental Action Plan includes a section of goals and actions relative to green buildings. The Green Building Policy recommended in this report is consistent with these Phase One goals and actions.

Leading by Green Building Example: The City has committed to build new city facilities as green buildings in order to increase energy efficiency, save city financial resources, reduce the environmental impacts of demolition, construction and operation of buildings, and create healthy, productive workplaces for city employees and visitors. The list of public buildings that include green elements is long and includes:

- Duncan Library
- Health Department
- T.C. Williams High School
- Glebe Park ARHA housing
- Charles Houston
- DASH facility
- Potomac Yard fire station housing
- Public Safety Center

Staff has established LEED-Silver as the requirement for new municipal building construction, and three buildings are on track to meet or exceed that goal—the Charles Houston Recreation Center (LEED Silver), the DASH Bus Maintenance Facility (LEED Silver), and the Alexandria Police headquarters building (LEED Gold). The City encourages lifecycle analysis of its public projects under its green building policies and contract requirements for services and commodities have been realigned to favor green products, such as paints, lights, carpet, and other products. Service providers and contractors with LEED certification are preferred on these municipal projects. The General Services Department Director and the Capital Projects Division Chief are already LEED accredited, and two project managers are training for their accreditation – one in Commercial Interiors and one in Existing Buildings – two specific LEED rating systems.

Private Green Building Development: The City's green building experience has been an important catalyst for private development, demonstrating how public sector projects can reach high levels of environmental performance. Building on these efforts, the City has been working with private developments especially within the last three years to incorporate LEED and comparable certification levels into most major recent projects. For several years, all major development applications have been reviewed for compliance with an established checklist of environmental factors, applicants have been given information on recycling building materials, and approvals have included conditions requiring such green elements as green roofs, cisterns, and energy efficient appliances. While the checklist and guidelines are voluntary, Staff and applicants negotiate to achieve the highest number of LEED or equivalent points as possible, and the City's efforts have resulted in a long list of recent green projects. Appendix 1 to this report lists development in the City – both public and private – approved in recent years with strong green and sustainable building elements.

Washington Metropolitan Council of Governments: COG has taken a leadership role in the region as to sustainability generally and Green Buildings in particular. In its December 2007 report, *Greening the Washington Metropolitan Region's Built Environment* (attached as Appendix 2), COG establishes a standard for green buildings and recommends consistency across jurisdictions in the region. Specifically, COG is recommending that LEED become the region's preferred green rating system for new commercial construction and for high-rise residential projects, citing the fact that most localities in the region already use LEED as a guide if not a mandatory system. COG recommends that public projects achieve a LEED-Silver standard and that commercial and high rise residential projects achieve a LEED-Certified standard.

B. Establishing a Long-Term Green Building Policy

Green Building White Paper

It was within this strong policy framework, in July 2007, that the Department of Planning and Zoning hired ERM—Environmental Resources Management to undertake a thorough investigation of Green Building development standards, best practice case studies, and implementation programs, and then formulate a recommended course of action. ERM's initial work resulted in *The Green Building White Paper for the City of Alexandria,* December 25th 2007 (Appendix 3). The ERM White Paper includes detailed information about green building rating systems, case studies from other jurisdictions, and practical advice with regard to establishing a Green Building Policy for Alexandria. One of the major recommendations of the White Paper was that the City should reach out to the development industry and the community to develop a sound understanding and reinforce its commitment to green building and sustainable development in the city.

Green Building Working Group

A working group consisting of city staff from relevant departments, builders, developers, and not-for-profit organizations was established in 2008, and its members participated in a round of facilitated meetings, in order to lay the foundations for the Green Building Policy recommendations contained in this report. A list of the working group members and the organizations they represent is included in Appendix 4 of this report.

The Green Building Working Group was established by the City to help gather information, practical experience and an understanding of the market, and to move toward a working partnership among the City, the community and the building industry as the City creates and implements its Green Building Policy. The Working Group has proven invaluable as a policy research and conceptualization vehicle. It brought a cross section of city officials together to work both within and beyond the working group. Likewise an influential group of development industry and community leaders invested their time and effort in the opportunity to contribute to this public policy formulation process. A full spectrum of views about desirable green building development codes, incentives, and the range of development that should be targeted was expressed in the course of the working group's deliberations. While unanimous agreement on all points was never anticipated, discussion and debate has resulted in a healthy understanding and respect of all party's perspectives.

II. ANALYSIS OF PROPOSED GREEN BUILDING POLICY

The proposed Green Building Policy for Alexandria contains a series of elements that, taken together, amount to a formal program for evaluating the environmental achievements of development within the City while allowing for flexibility as to types of buildings and location, and also allowing for growth and change as green building knowledge and evaluation evolves in the future. Each component of the two page policy (above at pp. 2-3) is restated below and explained in greater detail.

A. Benefits of Green Buildings.

Green buildings bring environmental and economic benefits to present and future generations of the citizens of this City and the region. Even in a developed city with significant historic character, "green" buildings are favored over buildings that are not green.

It is an understatement to recognize that Alexandria faces significant real estate development and building challenges over the next two decades. The City projects that by 2030 it will add another 35,232 residents (26% increase) and another 35,755 jobs (34% increase) over 2005 figures. The United States Department of Interior has forecast that 75% of all U.S. buildings will be built new or renovated by 2035. The Environmental Protection Agency has reported that building construction, maintenance, and disposal account for:

- 12% of potable water use;
- 39% of primary energy use;
- 70% of electricity consumption;
- 40% of all raw materials extraction; and,
- 38% of carbon dioxide emissions.

If the forecasted future development follows the unsustainable model that has characterized much of the conventional United States urban development to date, then the City will face major costs in necessary services, infrastructure and city administration and to its quality of life. Sustainable development which applies green building practice can reduce or eliminate the negative impact of buildings on the environment while promoting enhanced building performance and occupant health—thereby creating a civic asset rather than an on-going liability.

Green building practices provide both site specific and citywide benefits through savings in energy, resource use, and through the reduction of outdoor and indoor pollutants. And the avalanche of new green building projects in recent years has begun to provide significant data about the benefits of green buildings. In general, green buildings:

- Consume 30% to 50% less energy;
- Produce 35% less in carbon dioxide emissions;
- Consume 40% less water; and,

- Produce 70% less solid waste
- Improve public health and building occupant productivity.

Green buildings create economic efficiencies for building owners and operators, increase real estate value, and reduce the tax burden by using existing urban infrastructure more efficiently and through load reduction, and reduce otherwise urgent and expensive infrastructure upgrading.

Figure ES-1. Financial Benefits of Green Buildings Summary of Findings (per ft²)

Category	20-year NPV
Energy Value	$5.79
Emissions Value	$1.18
Water Value	$0.51
Waste Value (construction only) - 1 year	$0.03
Commissioning O&M Value	$8.47
Productivity and Health Value (Certified and Silver)	$36.89
Productivity and Health Value (Gold and Platinum)	$55.33
Less Green Cost Premium	($4.00)
Total 20-year NPV (Certified and Silver)	**$48.87**
Total 20-year NPV (Gold and Platinum)	**$67.31**

Source: Capital E Analysis

A General Services Administration (GSA) survey of 12 of its green buildings found the following specific benefits:

- 26% less energy usage than national average (65 kBtu/sf/yr vs. 88 kBtu/sf/yr);
- 13% lower aggregate maintenance costs than the national average ($2.88/sf vs. $3.30/sf);
- 27% higher occupant satisfaction than the national average;
- 33% fewer carbon emissions than the national average (19 lbs/sf/yr vrs. 29 lbs/sf/yr)
- Two LEED-Gold buildings in the study consumed 54% less water than the national average.

A recent study by Rob Watson of Greener Buildings found that since the inception of LEED, more than half of New Construction and Core and Shell projects have delivered at least a 30% water reduction, with 20% savings from Existing Buildings Operations & Maintenance, while almost 90% of NC and CS projects have achieved 50% reduction in water use for landscaping.

Last year, a New Buildings Institute (NBI) report, released in 2007 and updated in 2008, found that LEED buildings in various occupancy categories saved 25% to 30% of measured energy compared to average commercial energy consumption figures reported by the Department of Energy.

Figure IV-2. Reduced Energy Use in Green Buildings as Compared with Conventional Buildings

	Certified	Silver	Gold	Average
Energy Efficiency (above standard code)	18%	30%	37%	28%
On-Site Renewable Energy	0%	0%	4%	2%
Green Power	10%	0%	7%	6%
Total	**28%**	**30%**	**48%**	**36%**

Source: USGBC, Capital E Analysis

Based on the above data, there is a clear benefit to the environment from green buildings. That fact has been recognized by the City and the region, by GSA and by many other jurisdictions who are adopting standards and policies to drive future building practice.

It is important to acknowledge that some green building features and systems can result in added initial design and construction costs. Current industry estimates range from a 0-2% cost increase for LEED Certified buildings, to a 2-3% for LEED Silver buildings and a 3-5% for LEED Gold buildings. A USGBC study of 33 buildings in all categories found an average cost increase of 1.84%. However, each project has a unique set of factors including size, location, LEED certification level, project credits, timing, architecture and a host of other items that will determine specific project cost. Trends show that costs for green buildings are decreasing as the market continues to grow and mature. It is expected that these costs will decrease even further as designers, builders, subcontractors and manufacturers gain experience in an expanding market. It is not the intent of the proposed Green Building Policy to create a hardship for the construction industry. Rather than seeing green building features as an added cost element, green features should be recognized as a way to increase the building's value for owners and developers by lowering operating costs and providing a more desirable environment for occupants.

B. Policy Statement and Outreach Approach

The City does not have the legal power to adopt a new code to mandate its Green Building Policy, nor is that approach necessarily desirable. Instead, the City will continue to lead by example through its own public buildings, establish this policy for new private buildings and will make efforts to educate the public, especially the building and development community, about the benefits of green buildings. The City will also take a leadership role to mandate sustainable design for all public buildings.

A key issue for the City is the *type* of policy that is most appropriate, given its historic character, its neighborhoods, its development process and its relationship with the building and development industry. One component of the analysis leading to the proposed policy was a close look at what other jurisdictions across the country and the region have been doing with regard to green buildings. ERM's Green Building White Paper is devoted to case studies of the following

jurisdictions, including a discussion of their green building programs, the review process, and the applicability to Alexandria.

Arlington County, Virginia
Fairfax County, Virginia
Montgomery County, Maryland
Normal, Illinois
Pasadena, California
Portland, Oregon
Scottsdale, Arizona
Seattle, Washington

In addition, ERM has researched and compiled a comparison chart of 12 jurisdictions in the Washington region, which is attached as Appendix 5.

A review of other jurisdictions in the nation and the region shows that some are moving toward a mandatory regulatory approach, adopting an ordinance that sets out specific requirements for different building and development types. Montgomery County is an example, where a new ordinance mandates LEED certification for all private development over 10,000 square feet. On the other hand, Virginia law limits Alexandria's options, similar to in the affordable housing field, so that a mandatory regulatory scheme would likely apply only to those cases including a density bonus, thus limiting the scope of green building practice. While the City could ask Richmond for assistance, that effort would take time and might not be successful. Furthermore, the building and development industry is not supportive of a legislative change. Staff also notes that an ongoing process, outlined in Appendix 6, proposes changes to the Virginia Uniform Statewide Building Code (USBC), so that it embraces green building technology.

In formulating the recommended green building approach for the City four options were considered:

The Status Quo: Taking no action to formulate a policy was not seriously considered viable because it puts at risk the City's competitive position and livability standards.

Own Code, Entitlement and Enforcement: This option anticipates that the City would not rely on an independent rating system, such as LEED, but would create its own standards, covering the range of typical Alexandria development cases, and Alexandria's own technical solutions and rating system for energy efficiency, water retention, and other environmental goals. It would require a significant budget allocation for drafting and keeping the code current, together with the high cost of staff to administer and enforce the code. This option was determined to be unnecessarily expensive, not cost effective, and unnecessary given market trends and the high standard of available existing green building codes and certification.

Ordinance but Third Party Option: As a variation, the City could adopt a mandatory regulation but reference an existing, independent rating system for the substantive requirements of the program and rely on third party verification instead of using trained staff to administer and review applications. Given the legal restrictions limiting a mandatory scheme to those projects that qualify by being approved for density bonuses, this option was found to severely limit green

building practice. Such an approach has been adopted in other jurisdictions and may eventually become more appropriate in the City of Alexandria.

Policy and Outreach Option: This option is the one that has been chosen by staff and embraced by the Green Building Working Group. It involves the adoption and application of a strong policy statement that announces standards for development, based on existing independent rating systems. It requires verification by accredited third parties. The policy also relies on education and outreach in the building and development community as well as with the public at large to share knowledge about the benefits – both environmental and financial – of green buildings.

The Working Group agreed that a simple statement, one that could be adopted and implemented immediately, that minimizes cost and staff burden, and that provides flexibility in its approach to a variety of uses and building types would be the best course for the City. In addition, the green building field is fluid and will change. Thus, the policy must be flexible and phased. Finally, it was important to the Working Group that the policy should be one that encourages cost-effective innovation in a period where green building solutions are evolving at a rapid pace.

No new taxes, development levies, or additional permit fees are proposed at this time to cover the cost of this program. Initial emphasis is on third party partnership and on green building outreach and education. Significant resources have not been devoted to a complicated compliance, enforcement, and penalty system at this time, in anticipation that the building and development industry will act in its own interest. If circumstances prove otherwise over time, then this approach can be revisited and refined as necessary.

C. Leadership in Energy and Environmental Design.

The LEED rating system will typically be the green building guide and rating system used as a standard for development in the City because it has become the industry preference, especially for commercial construction.

Staff is recommending that the City use LEED as the typical rating system by which to review projects subject to the City's Green Building Policy. While additional rating systems are included for residential development, and equivalent systems may be recognized (see below), the City should recognize LEED as the strong industry and government preference, especially for nonresidential buildings.

LEED is a green-building rating system developed by the United States Green Building Council (UDGBC) that includes mandatory requirements for factors such as energy and water efficiency. The rating system awards additional points for criteria in the following six categories:

- Sustainable Sites
- Water Efficiency
- Energy and Atmosphere
- Materials and Resources
- Indoor Air Quality

The resulting point total determines a building's final rating. For new construction projects, basic certification is awarded for buildings scoring 26 to 32 points. Higher certification levels include LEED Silver (33 to 38 points), LEED Gold (39 to 51 points), and LEED Platinum (52 to 69 points). It is not difficult to achieve 30 points under the LEED system. Outside analyses have found that of a potential 69 points, some 26-30 points are relatively easy to achieve.

LEED	**Points Possible**	**Easy Points**
Sustainable Sites:	14	6-7
Water Efficiency:	5	4-5
Energy & Atmosphere:	17	0-1
Materials & Resources:	13	6-8
Indoor Environmental Quality:	15	5-7
Innovation and Design:	5	1-2
TOTAL:	**69**	**22-30**

The LEED system is the clear preference to incorporate into the City's Green Building Policy for a series of reasons. First, it is a robust, independent system, administered by the USGBC, and already in the process of an important update. It can be incorporated into the City's system by reference and implemented without cost, staff training or further effort. LEED has been used widely throughout the United States and has been adopted by many federal programs as well as by other cities. The City has already adopted LEED for its own public building projects and several staff members are already LEED accredited or in the process of achieving LEED accreditation. COG has recommended that LEED be adopted as the preferred building rating system for buildings in the Washington Metropolitan region. As evidence of its widespread application, in late 2007, the USGBC listed 18 Green Building projects within the City of Alexandria that were applying for LEED certification. See Appendix 6 for list of LEED registered buildings in City of Alexandria.

The LEED system is especially suited to Alexandria because it is sensitive to the challenges of applying its standards to historic buildings, and USGBC has developed workshops to assist designers to apply LEED concepts to historic projects. LEED is a holistic approach, recognizing everything from locational and site characteristics and transportation impacts to energy efficient utility systems. It includes subsets of standards for different types of buildings, including building renovations, and has systems for both residential and nonresidential development.

The LEED system for analyzing and rating green building practices has become an industry leader but there are many green building rating systems in various development stages throughout the world. Therefore, a principal task of the work of the City's consultant and the Working Group has been to review existing green building codes and rating systems and determine the most appropriate for Alexandria at this time. The Green Building Working Group included members who had a practical experience and knowledge of LEED, NAHB Green Home Building Guidelines, Earth Craft House, Green Communities, Green Globes, and ENERGY STAR. A comparison of different rating systems can be found at Appendix 7.

D. Development Standard.

Public and private development that requires a Development Site Plan (DSP) or Development Special Use Permit (DSUP) should achieve the following green building standard:

1. ***Non-Residential: LEED Silver.***
2. ***Residential: LEED Certified, LEED for Homes, or ANSI/ICC-700 2008 National Green Building Standard.***
3. ***Mixed use: Each component should follow the applicable rating standard.***
4. ***Coordinated Development Districts: Approvals for CDD areas yet to be developed will incorporate these standards.***

In each case, applicable ENERGY STAR systems should be incorporated.

This element of the proposed Green Building Policy addresses the specific expectations for buildings under the policy and identifies specific rating systems for nonresidential and residential development as well as the specific level of certification expected. The policy statement applies equally to public and private development and identifies projects that require a DSP or DSUP as those to which the policy applies. Smaller projects, such as a simple house addition, which do not require Planning Commission or City Council approval, will not be subject to the policy.

While LEED is the rating system cited as the standard for nonresidential development, the policy includes alternatives of LEED Certified, LEED for Homes, or ANSI/ICC-700 2008 National Green Building Standard for residential development, thus recognizing that there are equally appropriate alternative systems. The policy recognizes that mixed use development includes both forms of development, and applies the relevant standard to the applicable portion of the project. As to CDD development, the proposed policy looks forward to future developments within those areas and states that those projects are expected to achieve the stated standards.

Energy Star

Energy Star is an additional requirement and refers to a system developed by EPA for achieving energy efficiency in buildings. It provides strategies, tools and professional assistance to helps buildings and industrial plants improve energy efficiency and it is estimated that Energy Star buildings use about 35 percent less energy than average buildings. More than 3,200 buildings in all 50 states representing near 575 million square feet have earned the Energy Star label. It is included as an additional requirement. Appendix 8 gives additional background on the ENERGY STAR system as well as the process by which the Virginia Uniform System of Building Codes is being updated to incorporate green elements. The foundation of these proposed policy recommendations was presented to the City of Alexandria Environmental Policy Commission at its September 2008 meeting. The Commission was generally supportive of the approach and sought the incorporation of Energy Star ratings compliance as part of the policy.

LEED-Silver vs. LEED-Certified

While the Working Group was relatively comfortable with the overall approach, there was no consensus about the specific LEED standard for non-residential development to include in the Policy. Although Staff is recommending LEED-Silver, there was a healthy debate within the

Working Group, voiced by developer representatives, about whether LEED-Certified, which is easier to attain, was not more appropriate. Some development representatives were clear that they believe the City should require only the LEED-Certified level and, if more environmentally friendly elements were desired, the City could provide assistance to make up the difference.

On the other hand, the federal General Services Administration is requiring LEED-Silver for its buildings, and Alexandria, like other cities, is requiring LEED-Silver for its public facilities. Furthermore, the City's own recent experience with private developers as well as experience elsewhere shows that the market is moving towards, and already achieving, LEED-Silver buildings with some regularity. Although COG has recommended LEED-Silver for public buildings and LEED-Certified for private commercial and high-rise development, Arlington County requires LEED-Silver for private nonresidential development. Staff notes that there are also higher LEED levels attainable, namely Gold and Platinum, which the City hopes to achieve at some point in the not too distant future. If the City were to adopt a Green Building standard lower than what many developers now currently achieve for nonresidential buildings, it would send the wrong message about he City's commitment to both equity and green building. Therefore, staff maintains its recommendation that the City's policy statement set LEED-Silver as its standard for non-residential development.

E. Acceptable Equivalency.

The above standards provide a performance goal for development. However, to the extent that equivalent rating systems are available and their standards can be demonstrated to be equivalent to the satisfaction of the Director of Planning and Zoning, they are also acceptable.

It is clear that, while LEED is a widely used rating system, there are others in existence and still more being developed. The green building industry and practice is fluid. The future may see many more alternative systems evolve for achieving high levels of sustainability in building. It is also true that there are varied development projects that come before the City as DSP and DSUP cases. Thus staff as well as the Working Group found it important to make clear in the policy that, although specific rating systems are stated as the standard for the City, a different model may be acceptable.

Under the proposed policy, if an applicant can demonstrate that an alternative system or approach is the "equivalent" of the stated policy standard, then the Director of Planning will consider and may accept it. This approach provides for evolution and development of alternative green building solutions which may better suit a particular development. It should also promote innovation and provides the building and development industry with flexibility.

F. Third Party Certification.

Certification of compliance with green building standards will be provided by independent and accredited third party professionals retained by the applicant and approved in advance by the Director of Planning & Zoning. The City will require the applicant to achieve the green standard approved in its development application within two years of issuance of a certificate of occupancy.

To assist both staff and developer applicants, the proposed Green Building Policy includes a certification requirement. Independent, accredited third party verification will be a key component of the implementation of the policy. It is therefore important, as part of the City's stated policy, to alert the building and development community about the need to include an accredited third party professional as part of a development team at the outset of the process. Although some development companies hope to become accredited by LEED, those companies will still require outside independent verification.

Even prior to the submission of a DSUP or site plan, the applicant should enlist the services of a third party certifier to advise it and the City about how the proposed development is going to comply with the relevant green building rating standard as specified by the policy. A report specifying that compliance and the steps to be taken will be required as part of the DSUP or site plan application, together with the name and full contact details of the accredited third party certifier and the green building system which has been used in conceptualizing the project, written certification of the steps that have and are proposed to be taken to secure certification within two years of the date of issue of a certificate of occupancy for the project, and an endorsement of the written certification by the applicant.

After a project is complete, as a pre-requisite to and immediately prior to the issuance of the certificate of occupancy, both the certifier and applicant will confirm in writing that all necessary steps have been taken, procedures followed and building practices effected to secure the third party green building accreditation within two years of the date of issue of the certificate of occupancy. Then, prior to the expiration of two years from the date of issue of the certificate of occupancy the certifier, applicant and building owner will furnish to the city a copy of the accredited third party certification. In lieu thereof, they may furnish such documentation to the absolute discretion and satisfaction of the Director of Planning and Zoning that demonstrates there has been substantial compliance with this policy.

G. Flexibility.

The above standards are applicable to all development subject to a site plan or DSUP. The types and scale of developments within each category vary greatly, however, and certain building types (for example, medical, hotel, industry, affordable housing, historic buildings, churches, redevelopment of small retail or restaurant establishments, and renovations or small additions to existing buildings) may require a more flexible approach. The Director of Planning and Zoning will consider whether special circumstances in the size, scale, location

~~or~~ use or other factors of the building justify an exemption or alternative method of compliance with City policy on a case by case basis and will strive to establish consistent criteria and thresholds for such alternatives based on experience with this policy.

The proposed Green Building Policy recognizes that for certain development applications there will be challenges to achieving green building certification. While all site plan and DSUP projects will be subject to this new green building standard, there are certain projects that, because of their size or type of development, may not be suited to full compliance with the standard. In a near-completely developed City with historic attributes, there are any number of known and unforeseen circumstances that could work to make compliance with the green building development standard a challenge. Smaller projects that require DSUPs, such as the redevelopment of small restaurants or retail establishments, or small additions to existing buildings may need special attention. Projects may include historic buildings or unique uses, such as a small hotel, medical facility, or industrial use. Finally, financial constraints, such as in the case of a church or affordable housing, may create justifiable obstacles.

The proposed policy therefore allows applicants to request a flexible approach and allows the Director of Planning and Zoning to review requests on a case by case basis and to determine the appropriate level of of green building compliance for each. The Director will evaluate the viability of achieving green building certification for these building types and, in so doing, will consider special circumstances, resources, or projects where there is demonstrable hardship or infeasibility imposed by the new Green Building Policy and grant an exemption or alternative method of compliance. The Director will consider the particular circumstances of the project to determine if the Green Building Policy may be waived or a less stringent standard may be applied.

While there was near universal support within the Working Group for a policy that allowed for flexibility, there was also significant and understandable concern with the range of discretion the proposed language affords. Working Group members as well as Planning staff expressed concern about not knowing beforehand the parameters of those cases where exception to the standards would be appropriate. On the other hand, several ideas were suggested about how best to move forward in this context. First, staff feels strongly that not providing some reasonable discretion in the administration and compliance with green building requirements in the early years of the program would make the orderly transition to green building outcomes more problematic than it should be. The last four years of development review with regard to a green building checklist gives staff an appreciation of the variety of cases it will see in the future, the wide range of application of green technology and the ability of staff and applicants working together to fashion unique solutions for exceptional cases.

Planning staff agrees that a policy statement that includes a system with stated criteria for exceptions and parameters for the application of waivers is desirable. However, staff proposes to develop those criteria over time using staff's experience under the proposed Green Building Policy. It is the historical experience with the policy moving forward that will establish the justification for case types and special treatment. Thus, as part of the annual monitoring reports,

and as anticipated in under Phased Approach below, the language of the proposed Policy is expected to be refined over time.

As is always the case, the City will need to balance matters of urban design, economic development, civic policy with the implementation of its Green Building Policy.

H. City Environmental Priorities.

In assessing compliance with the above standards, including as a matter of equivalency and of flexibility, priority elements in the project's design and construction are those which:

- ***enhance energy efficiency***
- ***increase water conservation and reduce storm water runoff, and***
- ***reduce the overall carbon footprint.***

Although staff strongly recommends utilizing established independent rating systems for the City's policy on green buildings, and although the LEED system, as an example, rates a variety of worthy environmental goals, such as sustainable sites, energy efficiency, and indoor air quality, it is important that Alexandria put its own footprint on the Green Building Policy by expressing its own environmental priorities. After thorough discussion among staff agencies, consistent with the *Eco-City* Environmental Charter, and after discussion and amendment by the Green Building Working Group, the proposed Green Building Policy identifies three environmental goals as the most important for Alexandria: energy efficiency, water conservation (including controlling storm water runoff) and reducing the overall carbon footprint. These priority goals will guide the implementation and evaluation of the Green Building Policy. While it is hard to imagine that a development subject to the Green Building Policy would be able to achieve the expected standard without doing so, each development and certification report will be reviewed to ensure that the City's priorities are maximized. In addition, under the "equivalency" and "flexibility" tenets of the City policy, weight will be given to the City's priorities in evaluating proposals. In this way, the City combines its priorities with those of the LEED system to achieve its goals.

I. Innovation Encouraged

Building owners and developers are encouraged to innovate and achieve higher green building performance than the minimum set in this policy.

Nothing in the proposed Green Building Policy statement, or the work of the Green Building Working Group, should be taken to suggest that the work of creating the best environmentally sound built environment is finished, or that solutions to all of the green building challenges have been achieved. To the contrary, as the green building work is evolving, and builders are finding new ways to achieve efficiencies, Alexandria wants to be at the forefront, encouraging creativity

and innovative solutions. Therefore, the Green Building Policy explicitly states the fact, encouraging builders, developers and landowners to innovate and to achieve higher performance levels than the minimum set in the City's policy.

J. Phased Approach

While it is important to establish this policy and implement its critical elements immediately, there are also desired parts of the green building program that will take longer and will look to the evolving green building industry, and those elements should be implemented over time. Examples of future work include the development of incentives for applicants who reach the highest levels of environmental achievement; the calculation of financial benefits to the public from development of green buildings; and including a more complete sustainable sites initiative as part of the City policy.

In an evolving field, it is important that the City not delay the implementation of its policy awaiting a final determination of an ultimate technology or strategy for the long term. The conversion to green buildings is so important that the City needs to promote the highest levels of technical solutions to help solve the serious and radical environmental changes that are coming, and to do so as soon as practicable. It is for this reason that the City began several years ago with its green building checklist, even before a more comprehensive look at the field could occur. That work has already succeeded to some extent. The adoption of a more permanent, more specific Green Policy Statement, as is proposed here, will keep the bar moving forward. But the City must be open to amending, adjusting or expanding this policy in the future, as additional information and solutions are uncovered. During the discussions of the Green Building Working Group, a series of specific ideas surfaced which warrant sustained consideration and closer analysis. Each of them could become part of the City's Green Building Policy in the future.

Incentives for Green Buildings

First, there was serious and vigorous discussion about the City's potential role in supplying incentives to developers to build "green" buildings, or at least to achieve higher LEED levels in their projects. Other communities are working with incentives of various sorts, and they generally fall within the following categories:

- Development yield incentives—bonus FAR and/or building height;
- Processing time incentives—fast tracking or expedited processing; and,
- Financial Incentives—processing fee reduction or waiver; cash grants and rebates; development agreements including city contribution or capital works programs; and, tax credits or rebates.

Appendix 9 provides the USGBC's national summary of state and local government incentives.

Debate within the Working Group about incentives has been wide ranging, and fairly evenly split between those who believe some sort of carrot would attract a larger audience of eager green

builders and those who believe that green buildings should be the expected development practice, not a special, incentivized result.

A variety of specific potential ideas have been raised, and the Working Group continues to discuss the incentives concept. One concrete idea is for the City to provide street parking for Flex vehicles or visitor parking, or bike racks, or other development features that could be placed on city property that would assist the developer score LEED points. Another suggestion that staff can support is the notion that reduced parking ratios near Metro, to some yet to be determined degree, could be granted without the necessity of SUP approval; reduced parking can result in additional LEED points.

Finally, members of the Work Group have expressed the hope that development features that ultimately reduce public expense on maintenance and expansion of utility infrastructure, should be analyzed and reduced to a calculation that approximates the public benefit on a per development basis so that rebates can be provided to the developer in the amount of benefit the development creates. The analysis necessary for such a system has not been done but should be, whether or not a specific rebate is ever granted as a policy matter.

The resolution of fiscal and other incentives should be a major focus of future work on Green Buildings, and the Green Building Working Group, or a subcommittee thereof, should continue to meet and work on this issue.

Sustainable Sites Initiative

An example of the evolution in the field of green buildings is the emerging Sustainable Sites Initiative, which is an effort to develop guidelines and performance benchmarks for site development that will reduce the adverse environmental impacts of planned landscapes. It is a partnership of the American Society of Landscape Architects, the Lady Bird Johnson Wildflower Center and the United States Botanic Garden in conjunction with a diverse group of stakeholder organizations. The Guidelines and Performance Benchmarks being developed will include criteria for site design, implementation and maintenance. The Initiative will analyze, consolidate and advance the research needed to establish sound metrics and create regional guidelines and incentives for sustainable sites.

The Initiative seeks to apply sustainability principles to any site, with or without buildings, which will be protected, developed or redeveloped for public or private purposes. The Sustainable Sites Initiative Guidelines and Performance Benchmarks can apply to all landscapes including commercial and public sites, parks, campuses, roadsides, residential landscapes, recreation centers and utility corridors.

Existing green building rating systems address some site issues but do not fully address landscape sustainability. The Sustainable Sites Initiative is intended to fill this gap. The City should therefore monitor its progress and may wish to incorporate its elements in its Green Building Policy in order to provide more comprehensive criteria for sustainable landscapes and site components. Staff intends to explore the use of the Sustainable Sites Initiative as part of a comprehensive green development program.

K. Education and Outreach.

This key element of the City's approach to green buildings requires a partnership with the community, especially the building and development industry, as it and the City continue their effort to educate themselves and others about the benefits of and best ways to achieve green buildings. Together, they should track successes in City projects, changes in national and regional approaches to green buildings, advances in technology, and economic savings on individual projects as well as for public infrastructure systems. They should also provide web based information, hold forums on green buildings, and generally communicate the added benefits of higher rated green buildings to the community. The City will work collaboratively with environmental organizations and the building industry to recognize, award and publicize green building efforts in the City.

In deciding that a regulatory approach to green buildings was inappropriate at this time for Alexandria, staff and the Green Building Working Group agreed that one of the imperative ingredients in the City's policy and practice must be education. Only by ensuring that the community as a whole, as well as especially the building, architecture and development industry, are fully versed in the wisdom of green buildings in general and the specific methods of achieving environmental efficiencies and meeting the City standards in particular will there be full compliance with the City's policy. In addition, while builders are quick to identify increased upfront costs of building "green," more needs to be done to advertise the cost savings to buildings over time to make the program more acceptable.

The proposed Green Building Policy requires that the City be assertive and proactive in its education efforts, and it will need to partner with the development and environmental community in doing so. There are many programs available, including financial grants for builders who follow specific green methods in their buildings, or who experiment with new green technology. The City needs to provide a clearinghouse of data for interested builders, and has begun to do so on the P&Z website.

In addition, a comprehensive program should be developed in collaboration with the development industry and the community to effect on-going green building training, education, and outreach across all building types including single family dwelling construction, Historic District rehabilitation and for a variety of types of renovation projects.

The City's outreach effort must include recognition for those in the community who do the best work in the green building field, and those local developers who achieve the highest rating levels of environmental efficiencies in their buildings. Therefore, the proposed Green Building Policy specifically states that there will be awards given for the highest achievements, and awards will be based on a collaborative effort with the building industry and environmental organizations.

L. Monitoring Progress.

All building projects in the City should be monitored to report the effectiveness of this policy to the Planning Commission and City Council on an annual basis.

As with all new programs, especially those in fields that are rapidly changing, and those, like this one, that include a significant discretionary component, it is imperative that the City monitor the progress of development approvals under the new Green Building Policy. Thus the proposed policy statement includes a reporting component requiring that P&Z address achievements as well as concerns to the Planning Commission and City Council on an annual basis.

Staff expects that its annual reports will include a list of the developments approved during the prior year under the new Policy; detail about how each one achieved the Policy standard; examples of equivalent standards that were substituted for the standard stated in the Policy; and recognition of any particularly significant innovation or creative building solutions. An additional important component of the annual report will list those projects that the Director of Planning and Zoning determined warranted treatment different from the Policy's standard. In each case, the Director should explain why an exception was justified as well as those green features the development was able to achieve, even if less than the Policy standard would otherwise require.

Finally, the City should continue to monitor green building initiatives being undertaken by other Washington Metro Region governments, innovation in the green building codes, and lessons learned from the impact and administration of the proposed Green Building Policy and make recommendations for program modifications.

III. CONCLUSION: NEXT STEPS

This report and the proposed Green Building Policy will be disseminated to the public and will be discussed at the Green Building Forum to be held on January 28, 2009, at the Masonic Temple. At that time a moderated panel discussion will provide background and analysis of key features in the green building field and explain how the proposed Green Building Policy will be implemented. To the extent there are varying views on elements of the proposed Policy, they are welcomed. The Forum is being held precisely so the community has a time and place for full discussion. In addition, staff will review any comments it receives in reaction to the proposed Policy and this report. The *Green Building Policy*, with any additions or changes that may be appropriate as a result of public comment, will be then presented to the Planning Commission and City Council for adoption.

Green Buildings in Alexandria: Policy Recommendations
Appendix #1

Green Building Developments in Alexandria

Project Name	Owner	Size (Gross SF)	Project Type	Green Building	Registered with LEED	Status
2903 Mt Vernon	Julie K. Wadler	7,500	office w/ retail	Designing to LEED standards - required by Conditions of Approval to achieve up to 26 points.	7/31/2007	Planning Commission and City Council December 2008.
ARHA - West Glebe	Alexandria Redevelopment and Housing Authority (ARHA)	52,000	residential	Earthcraft certification	n/a	Approved by City Council in October 2007. Construction to start summer 2009.
ARHA- Old Dominion	Alexandria Redevelopment and Housing Authority (ARHA)	39,000	residential	Earthcraft certification for ARHA units	n/a	Approved by City Council in October 2007. Construction to start summer 2009.
ATA	Lane Development, LLC	1,059,000	residential and office	Project under review - will be required to incorporate green building into project	6/21/2007	Planning Commission and City Council March 2009.
Braddock Gateway	Jaguar Development, LLC	770,000	Mixed Use - Residential, Retail, Office Possibly Hotel	Required by Conditions of Approval to provide green vegetated roof where possible, achieve 26 points towards LEED-NC certification and reuse existing building materials.	n/a	Approved by City Council in March 2008. Construction to be phased over 5 landbays. Start date unknown.
rlyle Center	Trammell Crow Residential	300,000	residential	Required by Conditions of Approval to achieve up to 20 points under LEED program	n/a	Under construction. To be completed Fall 2009.
Carlyle Plaza One (Block P - east block)	JM Zell Partners, LTD	602,000	office w/ retail	Required by Conditions of Approval to achieve 26 points under LEED program.	6/26/2008	On hold.

Green Buildings in Alexandria: Policy Recommendations
Appendix #1

Green Building Developments in Alexandria

Project Name	Owner	Size (Gross SF)	Project Type	Green Building	Registered with LEED	Status
Charles Houston	City of Alexandria	34,993	community facility	Required by conditions of approval to achieve points toward certification under LEED	12/9/2005	Under construction. To be completed spring 2009.
Cooper Cary Office Space	Saul Centers	13,317	office	LEED Gold certification	3/1/2007	complete
Cromley Lofts	Cromley Lofts, LLC	10,967	residential	LEED Gold certification	10/28/2005	complete
DASH Bus Facility	City of Alexandria	270,880	community facility	Required by Conditions of Approval to achieve points toward Silver Certification under LEED	1/30/2006	Under construction. To be completed fall 2009.
Edmondson Plaza	Carr Properties	117,674	office	Required by Conditions of Approval to achieve 23 points under LEED program	n/a	Under construction. To be completed spring 2010.
Episcopal High School - Baker Science Center	Episcopal High School	27,000	school	LEED certification	10/20/2003	complete
Episcopal High School - Gym Addition	Episcopal High School	54,000	school	Goal of LEED certification	n/a	Approved by City Council September 2008
Harvard and King Streets	Faison and Associates	52,440	residential	registered with LEED for New Construction	12/19/2005	Under concept review
Human Services	Mt. Vernon Avenue LLC	42,301	office	Registered with LEED for Existing Buildings	12/11/2006	
James Bland	Alexandria Redevelopment and Housing Authority (ARHA) and EYA	630,000	residential	Earthcraft for ARHA units. Get LEED for homes certfication for first phase and all other phases built to no less than that standard.	n/a	Received City Council approval Oct 2008. Construction of first phase to start in fall 2009
Landmark Gateway	Tall Cedars, LLC	540,000	residential w/ retail	will be required to incorporate green building into project	n/a	Planning Commission and City Council in Jan 2009.

Green Building Developments in Alexandria

Project Name	Owner	Size (Gross SF)	Project Type	Green Building	Registered with LEED	Status
Lindsay Lexus	Lindsay Cadillac Co. Inc	21,320	auto storage/prep	will be required to incorporate green building into project	n/a	Planning Commission and City Council in March 2009.
Madison	Madison Venture, LLC	276,605	residential w/ retail	Required by Conditions of Approval to hire LEED AP and incorporate green building technologies, including requirement for green roof.	n/a	Approved by City Council in January 2008. Construction to start spring 2009.
Mill Road Marriott	Miller Global	130,000	hotel	Required by Conditions of Approval to achieve up to 20 points under LEED program	n/a	Constructed completed.
Payne Street Condos	621 N Payne, LLC	227,614	Residential with retail	Required by conditions of approval to achieve points towards LEED certification and reuse existing building materials.	n/a	Approved by City Council in September 2008.
Police Facility	City of Alexandria	108,500	community facility	LEED Silver	3/1/2007	Approved by City Council in June 2008 Construction to start spring 2009.
Potomac Yard Fire Station	City of Alexandria	168,630	community facility and residential	LEED-NC and Earthcraft	3/20/2007	Under construction.

Green Building Developments in Alexandria

Project Name	Owner	Size (Gross SF)	Project Type	Green Building	Registered with LEED	Status
Potomac Yard Landbay G	MRP Realty	697,085 sf office, 182,915 sf retail, 623 hotel rooms, 414 dwelling units	mixed use town center	planning to seek LEED certification for office buildings, Virginia Green for hotels and Earthcraft Home for residential	n/a	Planning Commission and City Council in Jan 2009.
Potomac Yard Landbay I and J	Potomac Yard Development PYD	227 dwelling units	residential	will be required to incorporate green building into project	n/a	Planning Commission and City Council in Jan 2009.
SHRM 1800 Duke	SHRM	100,000	office	Registered with LEED for Existing Buildings	5/20/2008	
Slaters Lane	Diamond Linclnia	30,00	residential	LEED Silver	n/a	Approved 2005 by CC Oct 15, 2005
TC Williams High Sschool	City of Alexandria	435,000	school	Achieving points toward LEED certification.	4/9/2003	Received City Council approval in January 2008. Construction nearing completion.
Victory Center	Spaulding and Slye	125,000	office	Requirement to incoporate sustainable elements and technologies wherever possible with goal of possible LEED certification	12/15/2004	Approved by City Council in November 2005 Shell under construction.

Greening the Metropolitan Washington Region's Built Environment

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A Report to the Metropolitan Washington Council of Governments

Board of Directors—Final Report, December 12, 2007.

KEY RECOMMENDATIONS AND RATIONALE

Recommendation 1: Preferred Green building Rating Standards

Establish LEED as the region's preferred green building rating system for new commercial construction and high-rise residential projects. LEED includes several green building rating systems that apply to specific building types, including, but not limited to, LEED for New Construction (LEED-NC), LEED for Core and Shell (LEED-CS), and LEED for Commercial Interior (LEED-CI) rating systems. LEED building guidelines are also available or are in development for specific commercial project types (schools, health care, retail, existing buildings, neighborhoods, etc.) and should be evaluated for applicability as appropriate. In the future, the Intergovernmental Green Building Group will provide formal recommendations for green building standards in these sectors, but in the interim local governments are encouraged to consider available standards for these building types.

The following jurisdictions in the COG region use LEED as a guide and rating system for public and/or private projects: Arlington County, City of Alexandria, District of Columbia, Fairfax County, City of Gaithersburg, City of Greenbelt, Montgomery County, Prince George's County, City of Leesburg, Prince William County, City of Rockville, Takoma Park, and Falls Church.

Rationale

• LEED is the most recognizable and recognized green building guidance and rating system in use nation-wide.

• LEED is the system preferred by metropolitan Washington industry representatives.

• LEED is currently being used by many local governments in the metropolitan Washington region for public and private construction. • There are about 487 LEED registered buildings in the metropolitan Washington region.

• GSA finds that the "USGBC's LEED rating system continues to be the most appropriate and credible sustainable building rating system available for evaluation of GSA projects."

• LEED has clearly defined standards and outlines specific requirements for compliance.

• LEED provides a rigorous, third party certification process.

• LEED provides on-going training as well as local technical support.

The policy rationale behind **Recommendation 1** is that the region will benefit from a consistent, rigorous, and widely understood standard for green building.

Recommendation 2: Green Building Standard for Local Government Public Projects

Establish LEED Silver certification as the goal for all local government facilities constructed in the Washington Metropolitan Region.

The appropriate LEED rating system should be used for each specific type of public project, and should incorporate at least 4 credits as outlined by the COG Regional LEED Certified standard (see Recommendation 3) for private commercial and high-rise residential development. Public buildings should also pursue the Energy Star label as part of their ongoing performance.

Rationale

• LEED Silver is the entry level green building high performance standard among municipal leaders in the nation. Cutting edge municipalities are moving toward LEED Gold for public buildings.

• There are nearly 40 projects in the DC region that have achieved LEED ratings of Certified or higher.

• According to industry representatives, the LEED Certified rating –the baseline LEED ranking – can easily be achieved in the Metropolitan Washington region.

• A growing number of builders in the region strive for LEED Silver as part of their competitive strategy.

• Local government should set a higher bar for building sustainability as an example of their commitment to achieving a sustainable and energy efficiency environment.

• Currently about 10 COG member governments participate in EPA's ENERGY STAR program.

• Energy Star and LEED programs complement one another. Energy Star products can be used in LEED buildings. Energy Star tools, such as Portfolio Manager, can be used to measure a LEED rated building's ongoing energy performance.

• LEED recently enhanced the energy performance requirements. (Two Energy Optimization credits are now required on all projects).

The policy rationale behind **Recommendation 2** is that programs with strong energy conservation and energy efficiency components provide the region with the greatest opportunities for overall economic and environmental sustainability. Recommendation 2 supports making public facilities models for best green building practices.

Recommendation 3: Develop "COG Regional Green Standard" for Private Development

Establish the COG Regional LEED Certified standard for **private commercial and high-rise residential development.***

COG Regional LEED Certified is defined as achieving a LEED Certified rating with at least 4 credits from the following:

(1) Additional EA1 credits -- (Energy Optimization) credits;

(2) SS7.1 – Heat Island, Non-Roof;

(3) SS7.2 – Heat Island, Roof;

(4) EA 2 – On-site Renewable Energy;

(5) EA6 – Green Power;

(6) MR2.2 – 75% Construction Waste Management;

(7) SS 6.1 Stormwater Design – Quantity Control; and/or

(8) SS 6.1 Stormwater Design – Quality Control.

Focusing the LEED certification using these credits directly addresses the critical environmental issues facing the Metropolitan Region including energy efficiency, global warming, heat island impacts, solid waste management stormwater management, and Chesapeake Bay protection.

*Review and revise COG Regional LEED Certified recommendation no later than 2012 with the goal of increasing the standard in future years.

Rationale

• The metropolitan Washington region is diverse, with urban and non urban environments.

• A LEED Certified rating is easily attained in the region due to local expertise and services.

• The USGBC is currently developing criteria to make documentation less onerous in recognition of concerns regarding commissioning and documentation costs.

• The LEED Certified rating allows maximum flexibility in choosing environmental components for cost effective implementation.

• There are nearly 40 buildings in the region that have achieved LEED ratings of Certified or higher.

The policy rationale behind **Recommendation 3** is that the region will benefit from establishing a region specific standard that focuses on environmental issues of regional concern (Chesapeake Bay protection, greenhouse gas emission reduction, and waste management) and respects the diversity of the region's urban and non-urban environments.

Recommendation 4: Education COG shall collaborate and partner with **the private development community, nonprofit organizations, federal programs, educational institutions, financial institutions, and other interested parties** to ensure green building goals are achieved to maximize opportunities for innovation in the region, and to optimize outreach and educational opportunities. One means of implementing this goal is an annual regional green building conference that includes all stakeholders – public, private, and community.

Rationale

• Jurisdictions have successfully pioneered green building programs. They have actively involved the public and private sectors, nonprofit organizations, and financial institutions in the

development and implementation of green building activities. Community action and market development create jobs and are vital to the success of green building.

The policy rationale behind **Recommendation 4** is to promote and support green building innovation in the private sector through incentives, regulatory mechanisms, and information sharing.

Recommendation 5: Implement Actions to Insure the Success of the Regional Green Building Policy

• Local governments should use the IGBG Summary Report and Technical Report as a reference guide in developing and implementing Green Building initiatives;

• Continue further work to streamline the implementation of LEED, including working with the USGBC on a regional portfolio standard and other ways to helping implementation of LEED to be more efficient.

• Develop efforts to train local government staff and facility managers in green building design and management, including a monitoring and tracking recommendation on the numbers, types and certification level of green buildings.

• Develop quantification of the benefits of wide-spread implementation of the green building policy on energy use, greenhouse gas reduction, and other measures between now and 2030.

• Develop regional guidance for green building standard for the residential sector, schools, hospitals, existing buildings, and major renovations.

• Develop regional guidance on Energy Star as a performance measure for Green Building.

• COG should formalize a **Green Building Program within the Department of Environmental Programs** to support green building policy development, education, and regional coordination. The Green Building Program should coordinate with existing COG programs (Energy, Climate Change, Water Quality, Air Quality, Regional Growth and Development, Housing, Procurement, etc).

Rationale

• Widespread regional implementation will insure a level playing field for the private sector.

• Collaboration with the US Green Building Council on streamlining implementation of the LEED certification process should help insure wider acceptance of green building policies and promote efficient implementation.

• Education and training are essential for local government personnel to help speed implementation of green building policies, including those for local government facilities.

• Computation of the benefits of green building will provide reinforcing data supporting the regional green building policy.

• COG's Department of Environmental Programs has the lead responsibility for environmental issues including air, water, energy, climate change, green building and solid waste. The key feature of green buildings is the integration of the various environmental media and sustainability practices in combination with traditional development policies, housing and procurement.

The policy rationale behind **Recommendation 5** is to promote cross-sector collaboration that supports regional goals for green building, environmental conservation, climate protection, and growth of a regional green economy.

Conclusion

Metropolitan Washington faces an unprecedented period of opportunity for developing green building practices and markets. As the region faces many challenges related to air and water quality and climate change, coordinated public policies that promote green building will help overcome those issues while enabling innovators to take advantage of emerging economic opportunities.

LEED currently offers the most reliable and widely understood system for guiding and certifying green commercial projects. ENERGY STAR energy performance guidelines and measurement tools are a valuable accompaniment.

National green building codes, currently in development, will offer a viable option for raising base environmental performance of all buildings, while LEED will continue to push toward high performance. Regional leaders face the unenviable task of coordinating such standards in a tri-state area with varying policies.

The District of Columbia has already stepped up to this challenge by establishing a process for reviewing and updating codes to support green building. In-depth analysis and evaluation will help determine how green building standards should be applied to small-scale residential projects, affordable housing, schools and existing and historic projects.

As green building guidelines and incentives evolve nationally, COG members will need to follow developments closely. Unlike cities such as Seattle, Portland, and Austin, utilities in metropolitan Washington are privately owned, meaning the region's leaders will need to explore alternative options for funding-related incentive tools.

Green building policies and initiatives will be most effective when they are applied with complementary low impact development (LID), smart growth, and community development practices, and in coordination with COG's existing environmental initiatives.

Green building is a vital part of an integrated, coordinated approach to regional sustainable development and environmental stewardship. Most notably, opportunities for integration of green building policies with the region's new climate change initiative remain to be explored.

Building construction, management, and disposal practices have not been well tracked or analyzed at the regional scale. A quantitative tracking and evaluation system for green building in the region will help COG members' measure progress and meet goals for improving the region's water, air, and land resources. Further analysis can also assist in creating targets for energy conservation and carbon dioxide (CO2) emission reductions.

National experience indicates that the best and strongest municipal efforts for green building involve strong leadership, empowered staff, and strong engagement on the part of the private sector, education institutions, and nonprofit organizations. As the metropolitan Washington region moves from public policy toward an integrated regional approach, such partners will have to be a vital part of the regional conversation.

All will have to be engaged in an ongoing process of education and information sharing as we move toward best green building practices in the region.

Source: http://www.mwcog.org/store/item.asp?PUBLICATION_ID=304

Green Building White Paper for the City of Alexandria

Alexandria, Virginia

December 25th, 2007

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Executive Summary

The purpose of this White Paper is to examine how a Green Building program might be cost-effectively incorporated in the policy, regulations, and processes that are administered by the City of Alexandria's Department of Planning and Zoning, so as to ensure that development and building activity within the City in the period 2005 to 2030 creates real assets and not liabilities for the City of Alexandria and its citizens.

The City of Alexandria has already taken a leadership position in promoting sustainable development. With the expected population and employment growth within the City through to 2030, green as opposed to conventional building practice will use less energy, consume less water, generate fewer air pollutants and provide healthier living and working environments. Green building can also reduce the claim and consequent cost of development on the City and its taxpayers. The City's Department of Zoning and Planning can play an essential role in promoting green building as part of its commitment to sustainable development—by formulating and adopting a green building policy balancing regulatory and educational elements tailored to civic, community and development industry needs and implemented through a genuine partnership.

It is proposed that green building be cost-effectively achieved through the selection of the LEED system and the use of its third party certification procedures, as opposed to the City developing its own system which would entail significant additional cost and a greater lead time to put in place. This recommendation is based on this white paper's:

- Analysis of alternative green building certification systems;
- Best practice case studies drawn from cities throughout the USA;
- Lessons learned both from the case studies and the significant additional research undertaken as part of the white paper's preparation.

The City of Pasadena provides a very useful model on which to found and tailor the City of Alexandria's green building policy and procedures given its particular civic, community and development industry needs, and use of the vehicles of consultation and partnership, as opposed to a purely regulatory approach

Effective education and outreach will be fundamental to the success of the City of Alexandria's success in the area of green building policy formulation and implementation. Use of incentives should be carefully matched to real need and calculated having regard to the present value of future cost savings to the City. The green building policy and instruments should be calibrated to meet the special needs and requirements of the City of Alexandria and other levels of government should be called upon to amend where required the State building code and Federal tax laws to encourage green as opposed to conventional building.

The white paper concludes by outlining The Next Steps—a Cost Effective Way Forward for the City of Alexandria's Department of Planning and Zoning in developing its Green Building Program.

ERM gratefully acknowledges the insights provided by Rich Josephson and Jeffery Farner of the City of Alexandria's Department of Zoning and Planning in the production of this white paper.

1.0 Introduction

Come gather 'round people Wherever you roam
And admit that the waters Around you have grown
And accept it that soon You'll be drenched to the bone.
If your time to you Is worth savin'
Then you better start swimming Or you'll sink like a stone
For the times they are a-changin'.

Come senators, congressmen Please heed the call
Don't stand in the doorway Don't block up the hall
For he that gets hurt Will be he who has stalled
There's a battle outside And it is ragin'.
It'll soon shake your windows And rattle your walls
For the times they are a-changin'.

Bob Dylan (1963).

1.1 The times they are a changin'

Gro Harlem Brundtland, the former Prime Minister of Norway was asked in 1983 by the Secretary-General of the United Nations to establish a World Commission on Environment and Development. The commission worked for three years and produced what is commonly known as "The Brundtland Report." Published in book form in 1987 as *Our Common Future*, the report inter alia, brought into common parlance the concept of "sustainable development."

"**Sustainable Development** is development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (United Nations World Commission on the Environment and Development, 1987).

The three interdependent elements of Sustainable Development are:

- **Environmental sustainability** -involving the management and consumption of the Earth's renewal natural resources so as not to exceed the rate at which they are renewed, and ensure that the absorptive capacity of the natural environment to assimilate wastes should not be exceeded or degraded. The extraction of non-renewable resources should be minimized. Future degradation of the natural and man-made environment should be avoided and existing degradation remediated;
- **Social sustainability** - relating to the cohesion of society and its ability to work towards common goals. Meeting individual needs, such as those for health and well-being, nutrition, shelter, education and cultural expression are considered a priority; and,
- **Economic sustainability** - working in concert with environmental and social sustainability to create and maintain robust economies that better meet the needs of its citizens.

Two years after the publication of the report, Brundtland summarized the findings of her Commission's report in a speech to the National Academy of Sciences in the United States. She

explained that the core concept of the report was "that development must be sustainable and the environment and world economy are totally and permanently intertwined." She went on to assert that these concepts "transcend nationality, culture, ideology, and race." Her urgent warning, "Present trends cannot continue. They must be reversed."

Now almost twenty years on, a strong global consensus is emerging that is motivating citizens, governments, and the private sector to adopt new sustainable practices in city development and building.

Why?

For the first time in our history over half the world's population are city dwellers. In 1900 this figure was 19% and as recently as 1950 it was only 29%. By 2030 the United Nations projects that 60% of the world's population will live in cities. In its 2004 *Buildings and the Environment – A Statistical Summary* report (www.epa.gov/greenbuilding/pubs/gbstats.pdf) the US Environmental Protection Agency reported that building construction, maintenance, and disposal account for:

- 12% of potable water use;
- 39% of primary energy use;
- 70% of electricity consumption;
- 40% of all raw materials extraction; and,
- 38% of carbon dioxide emissions.

Most urban residents now spend up to 90% of their lives indoors and given that an estimated 30% of all newly constructed and renovated buildings suffer from "sick building syndrome," it is not surprising that urban dwellers have high rates of asthma and other respiratory problems, immune disorders and allergies, with consequent adverse impact on building occupant productivity and increased absenteeism.

Not a day goes by without the New York Times, the Washington Post, CNN and other mainstream western media carrying stories about the dire consequences of global climate change, carbon emissions, rapidly escalating costs of energy, water, and other essential services and the public health impacts of sick buildings, polluted and degraded living environments. Former US Vice President, Al Gore this year won an Oscar for his documentary, *An Inconvenient Truth,* and has shared the 2007 Nobel Peace Prize with the U.N. Intergovernmental Panel on Climate Change for their work to raise awareness about global warming.

An historically well educated and rapidly aging population in the western world is now acutely aware of the threats to their health and well-being. Their retirement savings have become a potent force in creating what are now known as "socially responsible investment funds."

Not surprisingly consumer behavior is undergoing significant change – political consciousness has been aroused – the private sector, ever alert to an opportunity, is moving to meet the demands of this new market.

The Global Reporting Initiative on asset valuation and organizational performance involves environmental, social and economic sustainability assessment to make transparent both the performance and risk associated with the asset or entity's operation. This trend is largely being

driven by electors and shareholders who are demanding both the public and private sector be more transparent and complete in their reporting on the environmental, social and economic consequences of their strategy, programs and investment.
http://www.globalreporting.org/NR/rdonlyres/ED9E9B36-AB54-4DE1-BFF2-5F735235CA44/0/G3_GuidelinesENU.pdf

1.2 *The Context and Purpose of this White Paper*

The challenge facing the City of Alexandria is both immediate and real. The Washington Metropolitan Region is set to gain 1.6 million new residents and 1.2 million new jobs between 2005 and 2030. The City of Alexandria being only 15.75 square miles in area and centrally located within the region has projected that it will be called upon to house another 35,232 residents (a 26% increase on the City's 2005 population) and to accommodate another 35,755 jobs (a 34% increase on the City's 2005 employment figure) in the period 2005 to 2030.
http://alexandriava.gov/planningandzoning/pdf/statisticalprofile2007.pdf

The City of Alexandria faces major real estate development and building activity over the next two decades.

The US Department of Interior has forecast that 75% of all US buildings will be built new or renovated by 2035. The quality of the buildings being erected in the City of Alexandria in the next twenty years will have a major physical, social and financial impact on the City. Conventional building design, construction, maintenance and operation are not sustainable because of their adverse environmental impacts (high levels of energy and water consumption, greenhouse gas emissions, stormwater runoff and waste generation); human health and productivity liabilities (respiratory problems, immune disorders and allergies, reduced building occupant productivity and increased absenteeism); and, the high "external" costs of development borne by the municipal government for physical and social infrastructure (energy supply, water, stormwater, and wastewater, education, emergency services, and public health).

In its July 2007 interim report, *Greening the Washington Metropolitan Region's Built Environment*, the Metropolitan Washington Council of Governments made clear that, "Building decisions in the private and public sector impact stormwater systems management, transportation network requirements, local medical networks costs, and major investments in waste management and water treatment. Buildings—and the human activity they support—are primary drivers for public infrastructure and of public spending."

Green building practices provide both site specific and city wide benefits through savings in energy, resource use, and through the reduction of outdoor and indoor pollutants. Quoting research material from the not-for-profit United States Green Building Council, the Metropolitan Council of Governments in their July, 2007 Interim Report state that in general, green buildings:

- Consume 30% to 50% less energy;
- Produce 35% less in carbon dioxide emissions;
- Consume 40% less water; and,
- Produce 70% less solid waste

Not to mention the consequent improvement in public health and building occupant productivity.

The purpose of this White Paper is to examine how a Green Building program might be cost-effectively incorporated in the policy, regulations, and processes that are administered by the City of Alexandria's Department of Planning and Zoning, so as to ensure that development and building activity within the City in the period 2005 to 2030 creates real assets and not liabilities for the City of Alexandria and its citizens.

1.3 *What is Green Building?*

Green Building is a major component of sustainable development. It is an approach to building design, construction and management that reduces or eliminates the negative impact of buildings on the environment while promoting enhanced building performance and occupant health. Green Buildings use less energy, consume less water, generate fewer air pollutants and provide healthier indoor environments.

1.4 *How does the Green Building Program fit within the City's Sustainable Development Initiatives?*

The City of Alexandria's Strategic Plan for 2004 to 2015 includes several elements relative to sustainable development and green buildings. The goals, objectives and subsequent policy actions from the plan include:

- applying greater environmental sensitivity in planning new development and redevelopment and public facilities;
- increasing the number of people who travel in the city by mass transit, bicycle or walking;
- becoming less auto dependent; and
- improving the quality of air and water in Alexandria.

The City's environmental leadership is reflected in its use of public policy and administration to reduce resource consumption and waste generation, improve air and water quality, preserve natural resources, and create sustainable communities.

In 2005, Alexandria Mayor William D. Euille was one of 278 mayors from across the United States to sign the U.S. Conference of Mayors Climate Protection Agreement, and in November 2005, the Sierra Club recognized Alexandria as a "Cool City."

As part of its response to re-engineer City government procedures to better align with the demands for sustainable development the City is working with the Virginia Tech University Urban Affairs and Planning Program in a three-phase strategic planning process for the city called *Eco-City 2007* consisting of:

- An Inventory of the City's Environmental Policies and Programs (draft completed in June 2007);
- A Draft Eco-City Action Plan; and,
- An Eco-City Community Summit

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One of the Policy Actions for the city for 2004-2005 was to develop a "Green Building" Policy for City Buildings and Facilities. Consequently, the City has used green roofs on several facilities including the Alexandria Health Department in order to reduce stormwater discharge and energy consumption for heating and cooling. The City's General Services staff have adopted United States Green Building Council (USGBC) Leadership for Energy and Environmental Design (LEED) standards for new municipal construction projects, existing building modifications, commercial interiors, and daily facility maintenance. The Department Director and the Capital Projects Division Chief are already LEED accredited, and two project managers are training for their accreditation - one in Commercial Interiors and one in Existing Buildings - two LEED rating systems.

The City of Alexandria has also set LEED Silver-Certification as the requirement for new municipal building construction, and three buildings are on track to meet or exceed that goal – the Charles Houston Recreation Center (LEED Silver), the DASH Bus Maintenance Facility (LEED Silver), and the Alexandria Police Headquarters Building (LEED Gold). The City encourages lifecycle analysis of its public projects under its green building policies and contract requirements for services and commodities have been realigned to favor green products, such as paints, lights, carpet, and other products. Service providers and contractors with LEED certification are preferred on these municipal projects.

As at the 19th October, 2007 there were 18 Green Building projects registered by the US Green Building Council in the City of Alexandria as projects preparing to apply for LEED certification. This list includes a variety of projects applying for certification such as New Construction (NC), Existing Building (EB), Commercial Interiors (CI), Schools and Core and Shell (CS).

Table 1. Registered US Green Building Projects

Project Name	Owner	Size (Gross Sq. Ft.)	Date Joined	Project Type
2903 Mount Vernon Avenue	Private Sector	7,500	7/31/2007	Commercial Office Retail
Carlyle Plaza One	Private Sector	602,000	6/26/2007	Commercial Office Retail
Charles Houston Recreation Center	City of Alexandria	34,993	12/9/2005	Commercial Office Assembly (e.g., conv. Center) Daycare Recreation Library Park (i.e. greenway) Community Center
City of Alexandria Police Department Facility	City of Alexandria	108,500	3/1/2007	Commercial Office Laboratory
Cooper Cary Office Space	Saul Centers Private Sector	13,317	1/10/2006	Commercial Office
Cromley Lofts	Cromley Lofts LLC. Private Sector	10,967	10/28/2005	Multi-Unit Residential
DASH Bus Operations & Maintenance Facility	City of Alexandria	270,880	1/30/2006	Transportation
Echelon	Private Sector	474,000	6/21/2007	Multi-Unit Residential

Project Name	Owner	Size (Gross Sq. Ft.)	Date Joined	Project Type
Episcopal High School New Science Facility	Episcopal High School Non-Profit Corporation	27,000	10/20/2003	Laboratory K-12 Education
Harvard & King Streets	Faison & Associates Private Sector	52,440	12/19/2005	Multi-Unit Residential
Human Services	Mt. Vernon Avenue LLC Private Sector	42,301	12/11/2006	Commercial Office
Kim Family's First	Private Sector	14,500	4/20/2007	Commercial Office
LEED-NC v2.2 (LO2 Max2) (USGBC Test)	Private Sector	44,444	4/27/2007	K-12 Education
Lincoln Cottage – Visitor Education Center	National Trust for Historic Preservation Non-Profit Corporation	5,080	1/18/2006	Interpretive Center
Mt. Vernon Mental Health Center	Fairfax County	38,000	8/11/2006	Healthcare Community
Test Project - PDF Reg	Federal Government	4,000,000	4/20/2007	Recreation
The Station at Potomac Yard	City of Alexandria	168,630	3/20/2007	Multi-Unit Residential Retail Public Order & Safety Other
Victory Center	Spaulding & Slye Private Sector	125,000	12/15/2004	Commercial Office

Source: http://usgbc.org/LEED/Project/RegisteredProjectList.aspx

At present only the Cromley Lofts project has received its LEED certification (at the Gold level). The City's just opened new flagship TC Williams High School was designed and constructed according to standards and principles set forth in the U.S. Green Building Council's LEED "Green Building Rating System" version 2.1. It provides an environment that is better for learning, teaching and the planet. The school is now a "Titan" of sustainable design given its emphasis on natural light, energy efficiency, roof design, on-site storage and recycling of rain water, carbon dioxide sensing and management, air flow and heating and cooling innovation. In 2007 this new City of Alexandria school won the Virginia Sustainable Building Network's prestigious Green Innovation Award. The City of Alexandria wishes to dramatically expand private and public sector Green Building development through the use of its Master Plan, Comprehensive Zoning Plan and development guidelines made pursuant to the City Charter and Code of the City of Alexandria.

The City wishes to achieve this objective in a cost-effective and timely manner through a partnership with the development industry. The selection of a third party Green Building project certification and accreditation system is critical to the achievement of this outcome. Accordingly the White Paper summarizes the leading green building systems both in the USA

and internationally. It draws on US best practice examples to inform the City on how best a Green Building program might be cost-effectively incorporated in the policy, regulations, and processes administered by the City of Alexandria's Department of Planning and Zoning.

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2.0 Green Building Certification and Rating Systems

2.1 *Criteria for Selection of a Green Building Rating System*

Several factors were considered in reviewing green building rating systems for incorporation in this White Paper including the ease with which a green building rating system can be incorporated into the City of Alexandria's existing programs and the level of effort required from City employees to implement such green building provisions.

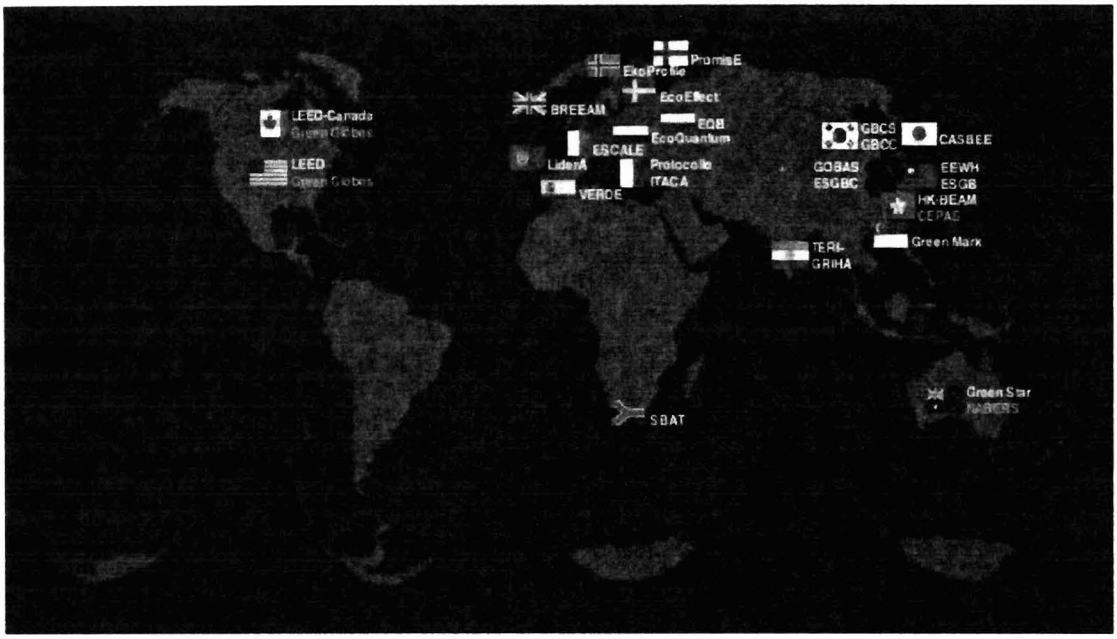
In addition, the rating system should be applicable to multiple building types, including residential buildings; be supported by readily available, adequately funded research and training support relevant to conditions in the USA; and be holistic in that it incorporates all the following aspects of green building that the City required to be addressed:

- Location of Facilities and Uses to promote efficient transportation and infrastructure provision;
- Community and Site Design;
- Increased tree planting and vegetated areas and surfaces in the urban environment;
- Energy Efficiency;
- Water Conservation, Management and Disposal;
- Resource-Efficient Material Selection;
- Indoor Environmental Air Quality;
- Environmentally sound Construction Management;
- High standards of Building and Site Maintenance; and,
- Government incentives, education, and programs to encourage and effect the above.

In addition, special consideration has been given to the complications and tradeoffs necessitated by historic buildings and how a rating system would be applied to these buildings. Applying green building design concepts when renovating historic buildings can create some challenges, especially in the areas of improving energy efficiency and material use. At a summit held in October 2006, these specific challenges were discussed among experts drawn from the green building and historic building preservation fields. A separate white paper was developed from this summit which outlined some strategies for incorporating green building design into historic buildings. (Source: The 2006 Greening of Historic Properties National Summit, White Paper: Pinpointing Strategies And Tactics For Integrating Green Building Technologies Into Historic Structures. http://www.gbapgh.org/GreenHistoric.pdf [See Appendix 3]).

Finally, the City having already embarked on its own green building program for municipal projects, making it a goal to seek LEED certification for all new municipal buildings, (Source: Eco-City Alexandria Phase One – A Green-Ventory of City Environmental Policies, Plans, and Programs, by: Virginia Polytechnic & State University, September 2007) now requires developers of all major new developments in the City to complete a checklist based on the LEED standards as part of its assessment of development applications.

Figure 1. Green Building Rating Systems



There are many green building rating systems in various development stages throughout the world. For this analysis, the following rating systems were reviewed for incorporation into the City of Alexandria's planning programs. These programs were selected for their potential of meeting the criteria outlined above.

The rating systems reviewed for this white paper were:

1. **Leadership in Energy and Environmental Design (LEED) Green Building Rating System:** LEED was developed by U.S. Green Building Council (USGBC) and is the most widely used rating system in the United States;
2. **EarthCraft House:** This residential green building program of the Greater Atlanta Home Builders Association in partnership with Southface develops guidelines for energy- and resource -efficient homes;
3. **Green Globes:** A Canadian based system which has been adapted for use in the United States by the Green Building Initiative™ (GBI). It is an on-line self auditing tool that assesses and rates buildings against best practices and standards. Third party verification is also available through GBI;
4. **ENERY STAR:** A program developed by the US EPA to promote energy efficiency in building. Energy use of buildings is rated against similar buildings and can earn the ENERGY STAR certification by being the top performers for energy efficiency nationwide. On average, building which have been certified use about 35 percent less energy than average buildings;
5. **Standard 189P (Standard for the Design of High-Performance Green Buildings Except Low-Rise Residential Buildings):** A building standard developed by ASHRAE (American Society of Heating, Refrigerating and Air-Conditioning Engineers) in conjunction with

USGBC and IESNA (Illuminating Engineering Society of North America) to provide minimum guidelines for green building practices. It is not a rating system, and is meant to be used in conjunction with other ASHRAE standards. The standard is scheduled to be finalized in late 2007;

6. **BREEAM (Building Research Establishment Environmental Assessment Method):** Developed in 1990 in the United Kingdom, this rating system is the basis for many of the rating systems developed since, including Green Globes. Many building types are covered by this rating system. "BREEAM International" is a guideline developed to create a BREEAM version for countries and regions outside the United Kingdom;
7. **GREEN STAR by Green Building Council of Australia:** This rating system was developed to meet the specific needs of development in the Southern hemisphere and for use in Australia.

Attached below in Table 1 is a comparison of each of these different rating systems.

Table 2. Comparison of Green Building Rating Systems

Rating System and Governing Body	Green Building Design Criteria	Building Types Covered	Certification Process
Leadership in Energy and Environmental Design (**LEED**) Green Building Rating System™ Developed by United States Green Building Council (USGBC) Number of LEED Certified Projects Worldwide: Commercial buildings: 1,004/ Homes: 267 Source: http://www.usgbc.org	Sustainable site development. Water savings Energy efficiency Materials Selection Indoor environmental quality Innovation in Design	Specific LEED rating systems have been developed for: - Homes (currently in pilot stage) - New Commercial Construction and Major Renovations - Existing Building - Commercial Interiors - Core and Shell development - Neighborhood Development - Schools - Retail - Health Care is currently under development	USGBC conducts third party verification prior to awarding a certification. Cost of certification: $2,500 to $22,500 depending on member status, building type and size. Significant documentation required for submittal. Accredited Professional is recommended but not required to be part of the design team
EarthCraft House™ is a residential green building program of the Greater Atlanta Home Builders Association in partnership with Southface. To date: 4,000 EarthCraft House single family homes and over 1,500 EarthCraft Multifamily dwelling units have been certified. Source: http://www.earthcrafthouse.com	Site Planning Energy Efficient Building Envelope and Systems Resource Efficient Design Resource Efficient Building Materials Waste Management Indoor Air Quality Water Conservation (Indoor and Outdoor) Homeowner Education Builder Operations Bonus/Innovation Points	New and renovated homes, including: - Single family homes - Multi-family homes - Duplexes - Townhouses - Low-rise apartment - Condominiums	Third party certification is conducted by Southface. Cost to builder for joining EarthCraft House program - $825 The EarthCraft House fee for each house is $0.10/sq.ft. (minimum $250). The builder is required to: Attend a one-day EarthCraft House training. Attend a design review with EarthCraft House staff to generate an individualized EarthCraft House scoring worksheet. And then participate in a walk-through with EarthCraft House staff.

Rating System and Governing Body	Green Building Design Criteria	Building Types Covered	Certification Process
Green Globes - an on-line auditing tool that lets designers, property owners and managers assess and rate buildings against best practices and standards. Run by the **Green Building Initiative™ (GBI).** Source: http://www.thegbi.org	Project Management Site Energy Water Resources Emissions, Effluent and other Impacts Indoor Environment	New commercial building. Existing commercial buildings. The GBI works with NAHB to promote Green Home Building Guidelines which are designed to be a tool kit for the individual builder looking to engage in green building practices and home builder associations (HBAs) looking to launch their own local green building programs.	Third party certification is required to obtain certification but self-certification is an option. $4,000-$6,000 per building for third party verification. On line questionnaire required to be completed by building owner.
ENERY STAR Buildings that earn the ENERGY STAR are the top performers for energy efficiency nationwide and use about 35 percent less energy than average buildings. Developed by EPA who provides strategies, tools, professional assistance, and recognition opportunities to help buildings and plants improve energy efficiency. More than 3,200 buildings in all 50 states representing almost 575 million square feet have earned the ENERGY STAR label. Source: http://www.energystar.gov/	Energy Efficiency	Homes and commercial and industrial buildings including offices, bank branches and financial centers, courthouses, hospitals, hotels and motels, K-12 schools, medical offices, supermarkets, dormitories and warehouses.	A Professional Engineer must verify the Statement of Energy Performance for verification to obtain ENERGY STAR rating above 75. No fee.

Rating System and Governing Body	Green Building Design Criteria	Building Types Covered	Certification Process
Standard 189P (Standard for the Design of High-Performance Green Buildings Except Low-Rise Residential Buildings) is a building standard that is being developed to provide minimum guidelines for green building practices and will provide a baseline for sustainable design, construction, and operations in order to drive green building into mainstream building practices. Source: Proposed Standard 189, Standard for the Design of High-Performance Green Buildings Except Low-Rise Residential Buildings First Public Review (May 2007)	Sustainable sites Water use efficiency Energy efficiency Building's impact on the atmosphere Materials and resources Indoor environmental quality	New commercial buildings and major renovation projects. Excludes Low-Rise Residential Buildings. Excludes existing buildings.	No certification. It is not a rating system, and is meant to be used in conjunction with other ASHRAE (American Society of Heating, Refrigerating and Air-Conditioning Engineers) standards. Submittals required as outlined in code.
BREEAM (Building Research Establishment Environmental Assessment Method) BRE is the certification and quality assurance body for BREEAM ratings in the UK. Source: http://www.breeam.org	Management Health and Wellbeing Energy Transport Water Material and Waste Land Use and Ecology Pollution	Courts Homes Industrial Multi-Residential Prisons Offices Retail Schools Bespoke - system for buildings that fall outside the standard BREEAM categories International can assess a single development or BRE can also assist in creating a BREEAM version for a country or region outside of the UK.	There are several licensed assessment organizations mainly in the UK.

Rating System and Governing Body	Green Building Design Criteria	Building Types Covered	Certification Process
GREEN STAR Developed by Green Building Council Australia (GBCA) Source: http://www.gbcaus.org	Management Indoor Environment Quality Energy Transport Water Materials Land Use & Ecology Emissions Innovation	Commercial office design and construction. Rating systems have been recently developed for shopping centers, healthcare facilities education facilities, mixed use/multi-unit residential, industrial, and public buildings.	In Australia, GBCA validates the project's achievement through a formal assessment.

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3.0 Learning from other US Cities Green Building Programs

The City of Alexandria in developing its Green Building program for the Department of Planning and Zoning is not keen to reinvent the wheel. The White Paper preparation included the research, analysis and presentation of what leading US cities had already achieved in terms of incorporation of Green Building programs in their Planning and Zoning administration. The national green building leaders profiled in the case studies below are distinguished in part by:

- Well defined policies for green building performance; and
- Staffed green building programs with clear lines of authority and communication to other Departments plus a dedicated funding source.

Portland and Seattle's green building programs are part of larger, comprehensive municipal sustainability agendas. It has been found that a combined strategy of "leading by example" with exemplary public buildings and active private sector engagement enables municipalities to achieve their green building policy goals.

It is evident from the case studies, that integrating a variety of implementation tools in the municipal green building program is essential. The primary tools are:

- Standards and organizational planning;
- Regulatory and incentive mechanisms;
- Technical assistance and permitting advice;
- Educational programs and web resources;
- Targeted cross-sector partnerships; and,
- Recognition for excellence.

Finally, in assessing each case study the White Paper paid particular heed to the findings of the PriceWaterhouseCoopers's 2005 study prepared for the American Institute of Architects entitled "The Economic Impact of Accelerating Permit Processes on Local Development and Government Revenues."

- **Reduced permitting times encourage economic development --** even shortening the permitting process by 3 months on a 22-month project cycle could influence investors whether or not to advance a project.
- **Permitting delays increase tenant costs in both new and existing buildings -** tenants pay higher rents when permitting delays are the norm as the return on investments are delayed as well.
- **More efficient permit processes may attract investment from other areas -** improved permitting processes can be a cost effective tool in addition to or in lieu of other inducements such as preferential tax rates or regulatory relief.
- **Increased construction spending provides broader economic benefits -** these benefits include not only employing more construction workers but also purchasing construction-

related materials and services from local suppliers, creating local jobs, and increased spending at local establishments.

3.1 *Arlington County, Virginia*

Program History and Purpose:
Arlington County, Virginia's green building efforts combine mandatory and voluntary programs. The County initiated a Pilot Green Building Incentive Program in April 2000 which focused on the construction of more environmentally friendly office buildings. The Arlington County program was the first municipal green building program established in the Washington Metropolitan Region (MWCOG, 2007). The County chose to use the LEED 2.0 Rating System because it was the system that was most applicable to office buildings at that time. In addition, the goal for County public facilities is LEED Silver-level certification.

For residential projects, the County established its voluntary "Green Home Choice for Single Family" program which is based on the EarthCraft House Program and adapted it for urban conditions. This program offers expedited, "front-of-the-line" plan review, site signs, acknowledgement of the participants, awards, and a Green Home Fair. County building inspectors verify the voluntary compliance with the Green Home Choice program.

Program History: Pilot program beginning in 2000.

Applicability: Commercial and residential projects; County facilities.

Standards Used: USGBC LEED standards; local green building residential program and standards.

Planning Instruments: Site plan review and permitting processes; expedited plan review.

City Review Process: Same as regular requirements; staff verify green building components.

Submission Requirements: LEED checklist, LEED Accredited Professional on team, Construction Waste Management Plan, and ENERGY STAR features and appliances.

Incentives: Priority plan review; Green Building Incentive Program; Green Building Fund; and website.

Lessons Learned: Local Leadership is key; County is transforming market place; local staff verification.

Next Steps for program: Information not available.

Source:

Website:
www.co.arlington.va.us/des/epo/green.htm

Arlington County now has green building projects that include schools, community centers, fire stations, and their Parks Department's Operations Building. The County also has its Green Lease for County Offices which offer a number of green features such as low-VOC paints and carpet tiles, green roofs, and low-flow restroom fixtures, among others.

Planning Instruments/City Review Process/Submission Requirements: Arlington County has incorporated green building reviews into their regular site plan review and permitting processes, with the following specific items required. For all site plan applications:

- A LEED Scorecard with the specific green components of the project and an explanation of how each credit will be achieved.

- A LEED accredited professional on the project team. The LEED accredited professional is required **even if** the project does not intend to seek LEED certification.
- A Construction Waste Management Plan detailing where waste will be sent for recycling, reuse, reprocessing, or disposal must be prepared and implemented. Letters from each recipient facility must be included as a part of this plan.
- Multi-family residential projects' appliances and fixtures must meet U.S. EPA's ENERGY STAR standards.

For the County's green home program, there is expedited, "front-of-the-line" plan review, site signs, acknowledgement of the participants, awards, and a Green Home Fair.

Incentives: Under the County's Green Building Incentive Program, initially established in 1999 and expanded in 2003, developers of commercial projects and private developers earning LEED-Silver certification may apply for a bonus density via the County's special exception/site plan process for seeking this LEED certification. The Floor-to-Area Ratio (FAR) bonuses they may be awarded range from .15 (Certified) to .35 (Gold/Platinum Certification) as well as additional building heights of up to three stories can be considered. To ensure compliance, the County requires that LEED reports be completed when applying for specific permits, and if these LEED requirements are not met, then the County withholds the permits.

The Arlington County Board may consider approving such bonuses on a case-by-case basis during the site plan review process because the County Zoning Ordinance provides broad discretion within the site plan process to modify permitted uses and use regulations. To date, seven development projects have received these bonus intensity awards as a result of green building design. To enforce these bonuses, the developer posts a bond that is released when USGBC issues its certification. If the project does not achieve certification, then the bond is forfeited. To date, there have been no bond forfeitures.

Regardless of whether or not a developer pursues LEED certification, all site plans projects must contribute to the County's Green Building Fund, calculated at a rate of $0.03 per square foot. This is a separate contribution from any other green building bond. The fund is used for green building education and outreach activities to the development community throughout the County.

Outcomes: According to the Metropolitan Washington Council of Governments' "Greening the Washington Metropolitan Region's Built Environment" Interim Report of July 2007, Arlington County's green plan requirements and incentive program are "greening" hundreds of thousands of square feet of commercial space. Per the County's website, some examples of projects that benefited from the County's density bonuses include The Navy League Building (37 LEED credits and 10,000 additional square feet), the National Rural Electric Cooperative Association building (26 LEED credits and 16,000 additional square feet), and 1200 N. Irving Street (155 units with retail and 7,754 square foot bonus for LEED certification). Also, Arlington County's Langston-Brown School and Community Center achieved Virginia's first Sliver LEED certification.

On page 48, this same report states that regarding the County's residential program, the Green Home Choice Program was established as a voluntary new homes program targeted at small-scale homebuilders. Approximately 30 of the Program's 40 participating projects are green

home renovations initiated by homeowners with an upswing in homebuilder participation in the County's outreach programs and in participating projects over the last year. Turning large-scale suburban developers toward green building practices remains one of the region's challenges.

Lessons Learned/Next Steps: Since initiating its Green Building Program, Arlington County has learned some valuable lessons. As Joan Kelsch, Environmental Planner for the County stated in her September 29, 2006 presentation, their program is setting an example in Arlington County because of:

- Leadership from the County Board, Planning Commission, County Manager, and School Board; and,
- Helping transform the marketplace; and,
- Variety of green building projects.

The Metropolitan Washington Council of Governments' "Greening the Washington Metropolitan Region's Built Environment" Interim Report of July 2007, states on pages 33 and 34 that standards that incorporate a third party verification process offer the best assurance of performance. Arlington County responded by creating a publicly funded green home program where standards are managed by municipal staff, and publicly funded inspectors verify compliance.

Applicability to Alexandria: A successful mix of sustainable development regulation and education from a county in close proximity to Alexandria and with similar regional concerns; mix of mandatory and voluntary compliance program elements; resulted so far in variety of types of projects meeting green building design requirements, increasing interest in the County in green building.

3.2 *Fairfax County, Virginia*

Fairfax County, Virginia is in the early stages of devising a green building program. County staff have reviewed and discussed with Arlington County staff their green building program to determine suitability of their program to the needs of Fairfax County. As of September 2007, Fairfax County Planning Division staff ("staff") had drafted a "Strawman" outline of a possible approach of encouraging green building practices through the comprehensive plan. This "Strawman" was being discussed with the County Environment Committee. Their "Strawman" report summarizes the history of Fairfax County communications regarding this matter, the various aspects of Arlington County's program, and issues for consideration by the Fairfax County Board of Supervisors before a green building program may be established.

The specific issues that Fairfax County is considering are:

1) Establishment of Bonus Density/Intensity Provisions;
2) Establishment of Green Building Performance Levels;
3) Geographic Application of Green Building Policy;
4) Residential vs. Non-residential Application;
5) Enforcement; and,
6) A Green Building Fund.

The "Strawman" report offers proposals under each of these issues and concludes with a summary of the County staff's "Strawman" proposals. Below is a summary of each of these proposals for the issues identified above:

1) **Establishment of Bonus Density/Intensity Provisions**:
   a) Pursue a Policy Plan amendment to establish linkages between Area Plan density/intensity/use options and ranges for certain levels of green building.
2) **Establishment of Green Building Performance Levels; Geographic Application of Green Building Policy; and Residential vs. Non-residential Application.**

   These three components are considered by staff to be strongly interrelated and therefore proposals for these three should be considered together.

   a) Incorporate the concept of certification under an established green building program, where applicable, as a preferred means of third party verification of green building performance. Recognize that other viable approaches may be suggested by applicants during the course of the zoning process and remain open to the pursuit of such approaches.
   b) Identify LEED as an acceptable green building rating system but recognize the ability to pursue and to evaluate alternative equivalent systems or approaches as they are proposed.

c) Limit the application of LEED-based (or equivalent) linkages to Plan options/density/intensity ranges to nonresidential development, mixed-use development, and multifamily residential development of four or more stories.

d) Limit the linkage of green building performance and Comprehensive Plan options and density/intensity ranges to transit station areas and other growth centers until experience is gained and effectiveness may be evaluated.

e) Establish the LEED certified level (or equivalent) of green building performance as the expected level of performance linked to plan options and densities. Seek commitments to higher levels of LEED certification of particular developments of local/regional importance.

f) Apply green building performance linkage for (a) Comprehensive Plan options in transit station areas and growth centers; (b) Overlay levels of development where specified; and (c) "High end" of the density/intensity range.

g) Adopt Policy Plan text providing broad support for the application of green building practices and pursue commitments from developers to green building.

h) Pursue commitments to the U.S. Environmental Protection Agency's "Designed to earn the Energy Star" program.

i) Establish expectation that for residential development within the high end of Plan Density range eligible homes will qualify for the "Energy Star Qualified Homes" designation.

3) **Enforcement**:

a) Retain flexibility to consider enforcement approaches that may be identified by applicants during the zoning process. Recognize (i) linkage to issuance of occupancy permits; (ii) linkage to refunds of project bonds; and (iii) establishment of a green building bond linked to green building performance and to value of Plan option or density/intensity range.

4) **Green Building Fund**:

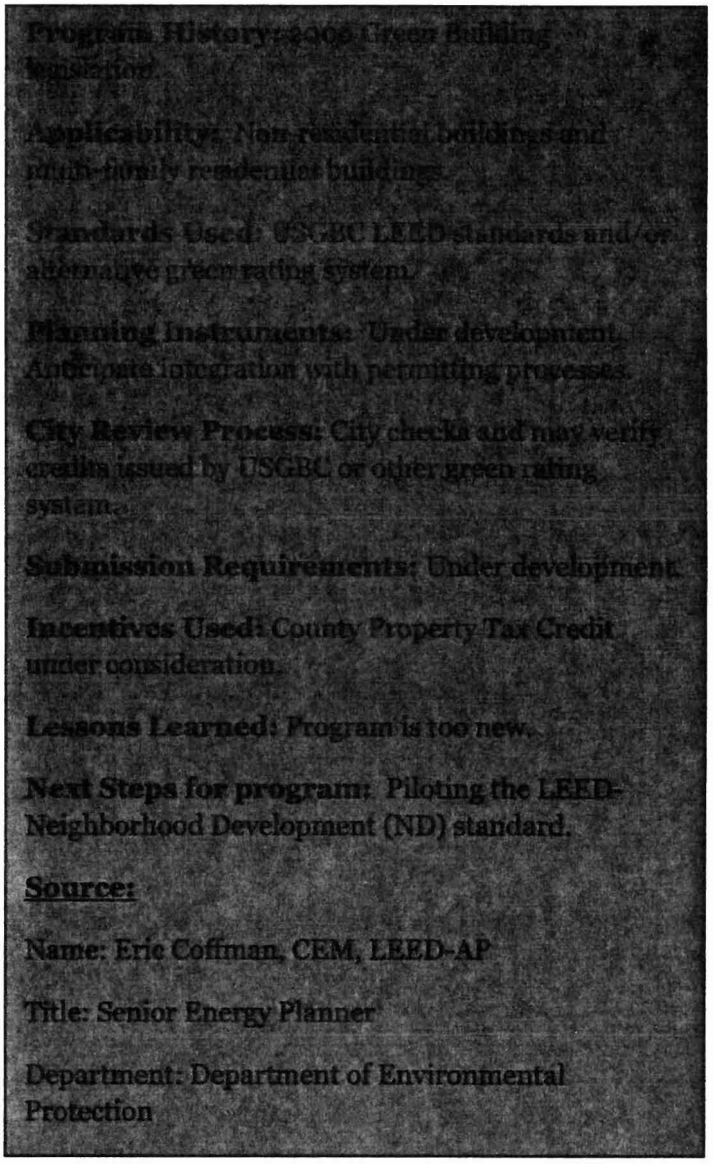
a) Staff does not have a recommendation for establishment of a Green Building Fund contribution at this time.

Fairfax County is considering an amendment to its Master Plan that supports and encourages green building. Currently, the County has a demonstration project for green building and Low Impact Development (LID) for both public and private development projects. The County counts fire stations and libraries among their pilot green projects.

3.3 *Montgomery County, Maryland*

Program History and Purpose:
Montgomery County has the most recently adopted green building policy in the Washington Metropolitan region. The Montgomery County's Environmental Sustainability Policy is the responsibility of the County Department of Public Works and Transportation (DPWT). This policy was developed because, as stated on the County's website, "the DPWT is committed to providing leadership which will foster conservation, protection, and improvement of the environment by planning, designing, constructing and maintaining buildings that are energy efficient, environmentally friendly, and resource efficient." It is part of a broader sustainability policy, as of March 1, 2007, Bill 17-06 Buildings – Energy Efficient and Environmental Design became effective. As stated in Bill 17-06, the bill generally amended the law relating to the construction of buildings, development review, building permits, energy and environmental design.

Planning Instruments Used/Town Review Process/Submission Requirements: Below is a summary of Bill 17-06 that became effective on March 1, 2007.



MONTGOMERY COUNTY BILL 17-06

BUILDINGS – ENERGY EFFICIENCY AND ENVIRONMENTAL DESIGN

WHAT BUILDINGS DOES THE LAW APPLY TO?

The following non-residential buildings and multi-family residential buildings more than 4 stories high, if they receive a building permit in Montgomery County (except certain independent municipalities) after the law takes effect (see below), are subject to the "green buildings" requirements in Bill 17-06:

(1) a new building with at least 10,000 square feet gross floor area (GFA);

(2) a renovation or reconstruction of an existing building with at least 10,000 square feet gross floor area that alters more than 50% of the building's GFA; and

(3) an addition that doubles the building's footprint and adds at least 10,000 square feet of GFA.

WHAT DOES THE LAW REQUIRE?

- County-built or -funded buildings must achieve a LEED silver rating (33-38 points on the LEED rating scale), or the equivalent as defined by County regulations. A building is County-funded if the County finances at least 30% of the cost of its construction or modification.
- Private buildings must achieve a LEED certified rating (26-32 points on the LEED rating scale), or the equivalent as defined by County regulations.
- The County Department of Permitting Services (DPS) can employ equivalent standards to LEED and accept verification of compliance by itself or other qualified persons and organizations. DPS must propose regulations for County Council approval that specify which version of the LEED ratings, or the equivalent, apply to a particular building type.
- The "green buildings" requirement triggers only at the building permit stage. An applicant for a building permit must submit design plans for a building that are likely to achieve the appropriate standard. DPS cannot issue a final use and occupancy permit until it finds that the building satisfies the appropriate standard.
- DPS by regulation may propose standards for waivers of the "green buildings" requirements when compliance would be impractical or unduly burdensome and a waiver would serve the public interest. DPS must submit an annual report to the County Executive and Council that identifies each approved waiver.
- DPS may propose enforcement mechanisms, such as a performance bond, to enforce the law.

WHEN DOES THE LAW TAKE EFFECT? Its effective date depends on whether the building is a private or County building.

- A private (non-County-funded) building must achieve a LEED-certified rating if its building permit application is filed on or after either (1) one year after the Council approves the implementing regulations; or (2) September 1, 2008, whichever occurs first.
- A County-built or -funded building must achieve at least a LEED-certified rating, or the equivalent, if its design is initially funded in the capital budget in Fiscal Year 2008. If its design is initially funded in Fiscal Year 2009 or later, a County-built or -funded building must achieve a LEED-silver or equivalent rating.
- If a County-built or -funded building is not included in the capital budget, the building must achieve a LEED-silver rating or the equivalent if its building permit application is filed on or after either (1) one year after the Council approves the implementing regulations; or (2) September 1, 2008, whichever occurs first.

Per the Montgomery County Executive Regulation Number 19-07, the County's Department of Permitting Services (DPS) has identified the LEED rating systems as the benchmark for

evaluating proposed equivalent rating systems on a project per project basis, based on the findings of a July 2006 report by the Pacific Northwest National Laboratory for the General Services Administration. This report is entitled *Building Rating Systems Summary.*

For the buildings identified above as covered by the County's green building policy, the Department of Permitting Services will accept permit applications via three optional methods of certification. These are:

1) Submission to the U.S. Green Building Council to demonstrate compliance with LEED - DPS may review and inspect certified credits as it deems necessary;
2) For projects **not** submitted to the U.S. Green Building Council for formal review, a complete review and inspection process by DPS, using the LEED rating system to document planning, design, and construction phase compliance, will be done; and,
3) For projects utilizing an alternative green rating system than LEED, sufficient information regarding the alternative rating system and credit documentation must be certified by a registered design professional and submitted to DPS for review.

Although the implementing regulations are still being established and need to be approved by County Council, Mr. Eric Coffman, Senior Energy Planner, from the Montgomery County Department of Environmental Protection, anticipates that the green building review will be integrated with the DPS' application review and permitting processes.

The County Planning Department has also developed a separate "Going Green At Home" program for single family residential projects as part of their outreach and education efforts. The program primarily provides information about green building resources, various tax credits and grants offered by the federal government and the State of Maryland, and education events.

Incentives Used: According to Mr. Coffman, while Montgomery County Council discussed utilizing incentives such as expedited application and permit review, density bonuses, and elimination of impact fees to encourage green building, the Council chose **not** to use any of these potential incentives. Instead, the Council will be discussing Bill 37-06 which offers a significant County property tax credit on buildings that have achieved LEED Silver-level certification or meet the energy and environmental standards adopted by the Maryland Green Buildings Council. Coordination of this incentive would be done by the County Departments of Environmental Protection, Permitting Services, and Finance. This bill will be discussed by Council in November 2007.

Outcomes: Lifecycle cost analysis of public projects makes it possible to calculate and plan for payback periods for initial green building investments. The Green Building Program for Montgomery County Public Schools (MCPS) works with students, staff and the community to establish MCPS as a model for sustainable school design and operations. As stated in the Metropolitan Washington Council of Governments' "Greening the Washington Metropolitan Region's Built Environment" Interim Report of July 2007 on page 9, Montgomery County's Public Schools Department of Facilities and Management expect to save $60,000 annually in utilities at the recently completed Great Seneca Elementary School. According to the Montgomery County Public Schools' website, their new 84,000 square foot elementary school in Germantown is the first public school in Maryland registered for LEED certification. Payback on

green building investment is not always measured in dollars, but in health and environmental benefits.

The Metropolitan Washington Council of Governments' "Greening the Washington Metropolitan Region's Built Environment" goes on to state on page 64 that like the City of Alexandria, Montgomery County encourages lifecycle analysis of public projects through these new green building policies.

Lessons Learned/Next Steps: Because Montgomery County's green building program is so new and the implementing regulations are still under development, it is too early to ascertain the lessons the County will learn. As stated in the Metropolitan Washington Council of Governments' "Greening the Washington Metropolitan Region's Built Environment" Interim Report of July 2007 on page 50, Montgomery County is also piloting the new LEED-Neighborhood Development (ND) standard.

3.4 *Normal, Illinois*

Program History and Purpose:
Located in rural Central Illinois, approximately 3 hours from Chicago and home to Illinois State University, Normal, Illinois' green building program was initiated in 2002. According to Mercy Davison, Town Planner, this program was an outgrowth of their 1999 downtown renewal plan. Their urban planning consultant strongly supports and encourages environmental sustainability in design. As part of the town's community comprehensive planning process that focused on the Business District, officials and residents were educated about the environmental, energy, and economic benefits of instituting green building principles. The town's final plan has a strong focus on sustainable development and green building. This plan included a recommendation that the downtown redevelopment be as green as possible and specifically that the Town require LEED certification on all new construction. Significant redevelopment is occurring in the B-2 Central Business District. Features such as uniform lighting, rooftop gardens, energy efficient building materials, and recycling of building materials are all incorporated into Normal's downtown redevelopment plans. Support for the policy has continued since 2000.

Program History: 2002 Green Building Ordinance.

Applicability: Redevelopment projects only in downtown.

Standards Used: USGBC LEED standards.

Planning Instruments: Ordinance & development agreements.

City Review Process: City checks that USGBC's approved plans for LEED certification.

Submission Requirements: Same as regular requirements; developer works with USGBC.

Incentives Used: None.

Lessons Learned: Wide support; becoming easier to do as gain understanding and experience with LEED; positive public relations for town.

Next Steps for program: Possibly expand to all new municipally built facilities.

Source:

Name: Mercy Davison

Title: Town Planner

Department: Planning Division

City: Normal, Illinois

Telephone Number: 309-454-9590

E-mail Address: mdavison@normal.org

Website:
http://www.normal.org/Gov/Inspections/Planning.asp

Planning Instruments Used/Town Review Process/Submission Requirements: The Town followed their planning consultant's advice and in 2002 adopted their own Green Building Ordinance, SEC. 15.17-14 - ENVIRONMENTALLY SENSITIVE DESIGN, with specific design guidelines for the town's small B-2 Central Business District Zone. Normal was first in the country to require LEED standards on all new downtown construction and renovation for buildings larger than 7,500 sq. ft. Normal did not modify LEED for their new Ordinance.

However, the code permits the town to adopt the most recent version of LEED, which Ms. Davison reports has not been done formally (although developers know they must use the most current version of LEED to be certified by the USGBC). This Ordinance sets the LEED requirement for all buildings with a 7,500 sq. ft. building footprint or greater, which is large for their downtown. (However, it should be noted that this requirement does **not** apply to stand-alone parking decks or to portions of a building that are a parking deck). Town staff knew that this threshold would only apply to a few very large projects in the downtown area, all of which would already be subject to some sort of development agreement with Town financial assistance included and are therefore public-private undertakings. LEED was chosen because it was the system their urban planning consultant recommended and because Township officials view the LEED system as the most well-known and trusted green building rating system available.

This Ordinance is used as the town's green building compliance mechanism. The code requires that LEED certification be sought through the USGBC. Because Normal's green building program only pertains to a small section of the community, Ms. Davison has stated that no real "integration" into their planning and development review processes has been necessary. Only the Planning Department is responsible for implementing the green building program. Also, Ms. Davison stated that no one on staff is an expert in green building or LEED. Normal relies on the developer to work directly with the USGBC to obtain LEED certification. Also, the Town does **not** require a bond because the code requirement only applies to buildings subject to a larger development agreement with the Town. All of the major redevelopment projects utilize public incentives and would be necessary, even if there was no LEED requirement. These incentives are incorporated into development agreements. Thus, there are many contractual remedies in the development agreement if the project fails to obtain LEED, should they be needed.

Outcomes: To date, two buildings have been built to LEED-Silver certification levels in Normal. They are the municipally owned Children's Discovery Museum and the privately owned Bank of Illinois building. While the Township leaders were fully committed to meeting LEED requirements for the museum, they encountered some issues with the USGBC review process (e.g. some of the credit interpretations were problematic, members of the review team changed). The process for the Bank of Illinois building went more smoothly.

Three more mixed-use and very large (approximately 100,000 sq. ft.) buildings, which will all be built by the same developer, are planned to receive LEED certification. The developer saw official LEED certification as an unnecessary expense, but the Town maintained that there were many benefits of third-party certification. After several discussions, the developer agreed with the Town and will build to LEED certification requirements. One building just broke ground, and the other two have yet to be designed.

Lessons Learned/Next Steps: Ms. Davison reports that the advantages of their green building Ordinance is that they have garnered attention both locally and nationally for their LEED requirements and related environmental initiatives. They expect that this will help them to receive some grant funding for certain aspects of their downtown redevelopment project.

She also reports that there were no disadvantages although she could anticipate disadvantages in requiring LEED in other parts of the community where public financial assistance does not apply—something which distinguishes the redevelopment projects in their downtown area.

Questions such as what would you do if a building failed to meet the LEED standards and would it be reasonable to deny them a certificate of occupancy are among those that would need to be answered. Because of Normal's successful track record with their green building program, the Town Council recently approved a Town Green Team recommendation to use LEED in any new municipally built facilities.

Applicability to Alexandria: Use of green building and LEED standards in their downtown redevelopment areas and on larger projects; increasing ease of use with LEED as municipality, building professionals, and contractors gain more experience with LEED; and facilitated within review and redevelopment processes.

3.5 *Pasadena, California*

Program History and Purpose:
According to the City of Pasadena, California's website, because the City realized that Pasadena's rich architectural fabric and community livability should be complimented with environmentally sound buildings, the City pursued the development of a green building program focused on new development. To initiate their green building program, in early 2005, Pasadena retained the services of a green building expert. This expert:

a) reviewed existing City regulations;

b) analyzed building activity;

c) examined other jurisdictions' environmental programs; and,

d) solicited advice from development groups with the goal of having a green building program approved by year end.

A green ribbon committee of industry and community stakeholders was formed to provide guidance. As a result of these efforts, on December 19, 2005, the Pasadena City Council unanimously approved a green building program with three components:

a) green building ordinance;

b) incentives, and,

c) outreach and education.

Program History: 2005

Applicability: Public and private & various types of buildings.

Standards Used: USGBC LEED standards

Planning Instruments: Ordinance

City Review Process: Extensive. City checks that USGBC's approved plans for LEED certification.

Submission Requirements: Same as regular requirements; developer works with USGBC.

Incentives Used: Technical assistance, rebates, education, and public relations.

Lessons Learned: Comprehensive program and local leadership are key; respond to needs for more information.

Next Steps for program: Green building development guide.

Source:

Name: Alice Sterling

Title: Green City Coordinator

Department: Planning Division

City: Pasadena, California

Telephone Number: 626-744-3726

E-mail Address: asterling@cityofpasadena.net

Website:

http://www.ci.pasadena.ca.us/permitcenter/greencity/building/gbprogram.asp

Planning Instruments Used/City Review Process/Submission Requirements: Effective as a permanent city policy on April 15, 2006, the City of Pasadena, California Council approved a set of progressive green building regulations for both public and private sector buildings throughout the city - Pasadena Municipal Code Chapter 14.90 Green Building Practices Ordinance.

Buildings required to comply with Chapter 14.90 include:

a) municipal buildings of 5,000 square feet or more of new construction;

b) non-residential buildings with 25,000 square feet or more of new construction;

c) tenant improvements of 25,000 square feet or more; and

d) mixed use and multi-family residential buildings four stories in height or more.

These thresholds were chosen as they represent a majority of construction projects in Pasadena and coincide with thresholds for other mandatory City reviews. As part of a greater city sustainability program, in April 2008, the City Council plans on evaluating the effectiveness and success of the Green Building Practices Ordinance and may consider lowering the thresholds.

Pasadena decided to use the LEED rating system. The compelling reasons for selecting LEED over other green guidelines, and in lieu of creating separate guidelines for Pasadena, include LEED's recognition as a national green building rating system, its flexibility, and its integrated approach to achieving "greenness." In fact, Ms. Alice Sterling, Pasadena's Green City Coordinator, reports that the City has not needed to make special green building accommodations for historic buildings because of LEED's flexibility with its provisions.

To assist developers in obtaining LEED certification, the City has developed a detailed process. The importance of having LEED Accredited Professionals (AP) in this process on both the City's side and the developer's side is vital to its success. The City has laid out the following steps on their website to assist in the review and approval of a project with a building that meets one of the Green Building Practices ordinance thresholds:

a) **Pre-Plan Check Steps:**

1. Retain the services of a LEED Accredited Professional as part of the design team.
2. Register the building with the USGBC.
3. Discuss City requirements and plan review procedures with the City's LEED AP consultant.
4. Obtain City forms for LEED review at the Permit Center or online.

b) **Initial Plan Check Submittal (typical turnaround time 30 days):**

1. Incorporate the applicable LEED checklist as a sheet in the plan sets indicating points meeting at a minimum LEED Certified level. (LEED checklist must be signed and dated by the project LEED AP).
2. Provide a three point margin for credits that might be compromised during construction.
3. Submit required number of plans for review (the City's LEED AP consultant will receive one set of plans).
4. Submit one set of documents in support of LEED credits (e.g. Title 24 modeling, specifications, LEED templates or access to LEED templates on line).
5. Submit the appropriate Pasadena LEED checklist:

   LEED NC;

LEED CS; or,

LEED CI.

Note:

- All building documents must indicate in the general notes, specifications, and/or individual detail drawings, where feasible, the green building measures employed to attain the applicable LEED rating.
- Plans submitted that do not provide the required information for green building review will be returned as incomplete.

c) **Plan Check Corrections:**

1. Upon completion of the Green Building review, the city's LEED consultant will provide comments on why or why not the LEED points indicated have been approved on the Pasadena Plan Check LEED checklist reference guide.
2. If the minimum number of points have not been approved the applicant must make corrections and submit for re-check (typical turnaround time 14 days).
3. If the project passes Green Building review and no changes to the points will be impacted by any other department corrections, the project can submit for final sign off (FSO).

d) **Final Sign-Off:**

1. The City's LEED AP will review the plans and sign-off if no changes have been made to the project (typical turnaround time seven days).
2. The City will retain a hard copy of the project's LEED templates for its record.

e) **Construction:**

1. The City's Building inspectors will perform normal building inspections.
2. It is the applicant's responsibility to notify the city of changes in the field that impact LEED points and to seek remedial action and city approval immediately.
3. If discrepancies or changes to LEED credits occur during construction, the City may issue a stop-work order if the project LEED points are below the minimum number (the City recommends a three point margin to avoid this situation).

f) **Guidelines:**

1. The City is developing a green building development guide with graphics and sample templates to assist project applicants with understanding the LEED requirements applicable to Pasadena.

Incentives Used: Pasadena has also tailored the green building incentives they offer to different stages of the planning, construction, and design of green buildings as well as to their own capabilities and needs. As an incentive to building green, the City offers LEED Accredited Professional (AP) experts to guide new projects through the green building review at no cost to the project applicant. After a building is completed, the City offers $1,000 rebates for each affordable housing unit provided in a green building. This is above and beyond other

affordable housing incentives offered by the City. Lastly, the City's Water and Power Department offers a variety of incentives, assistance, and rebates for green buildings and energy and water saving features. Among the financial incentives offered by the City's Water and Power Department are the following based on the level of LEED certification achieved:

- LEED Certified -- $15,000
- LEED Silver -- $20,000
- LEED Gold -- $25,000
- LEED Platinum -- $30,000

These programs are subject to funding availability, and incentives are approved on a first-come, first-serve basis. Applicants are required to provide verification of LEED registration and receive their City building permit before incentive funds may be reserved for them. Incentives are awarded once proof of LEED certification by the USGBC can be demonstrated.

The third important component of Pasadena's Green Building Program as required by the City Council is its outreach and education efforts. To increase the commercial sector and the general public's awareness of available green choices in 2007 the City offered a series of green workshops conducted by a leading green building expert, culminating with a tour of City green buildings. Ms. Sterling reports that these were well received by the public and that the Los Angeles Chapter of the American Planning Association gave them an award for these efforts. In addition, green resource guides and green building displays are available at the City's Permit Center.

Outcomes: Since Pasadena initiated its green building program approximately 1½ years ago, per the U.S. Green Building Council's website, 19 projects have been registered. These projects include a range of private and public buildings that are a mix of academic, theological, non-profit, recreational, residential, and commercial projects. Of those 19 projects, three have attained LEED certification - 1 Certified, 1 Silver, and 1 Gold.

Lessons Learned Next Steps: Pasadena's comprehensive program is having positive results in a short period of time. However, Ms. Sterling reports that one of their challenges is the increased need for staffing to review plans for compliance with the Ordinance and staff training on the basics of green building. The City thus retained consultancy services of LEED Accredited Professionals to review plans, work with applicants, and train plan review staff from multiple City departments. Another important lesson or advice from Pasadena is that each jurisdiction must consider seriously its own needs and the management, administration, and enforcement of a green building program. One option may be to create a voluntary program at the onset for a short period of time but to realize that it can only be truly effectual when it is mandatory.

As a next step, Pasadena is developing a green building development guide with graphics and sample templates to assist project applicants with understanding the LEED requirements applicable to the City. Also, Ms. Sterling has indicated that the City is considering requiring some LEED credits to be local prerequisites (i.e. no flexibility) pertaining to water conservation credits (because of California's critical water delivery and availability issues) and transportation issues by requiring bicycle storage, changing rooms, and shower facilities. Another consideration for the City is possibly lowering their thresholds in their current Ordinance.

Applicability to Alexandria: This program began with a green building expert's evaluation; their green ribbon committee provided important guidance to the City Council; and having quick results and thereby gaining recognition for its green building efforts.

3.6 *Portland, Oregon*

Program History and Purpose: In 1999, the Portland City Council adopted the Green Building Initiative to promote resource-efficient, healthy building practices in Portland. Portland's Office of Sustainable Development (OSD) was created in September 2000 by merging the City of Portland Solid Waste & Recycling Division, previously part of the Bureau of Environmental Services, with the Energy Office, which housed the City's energy and green building programs and staffed the Sustainable Development Commission.

The Office of Sustainable Development, under City Commissioner Dan Saltzman, was formed to provide leadership and support practical solutions to improve the environmental, social and economic health of Portland. OSD delivers policy and programs that integrate efforts related to energy efficiency, renewable resources, waste reduction and recycling, global warming, green building and sustainable food systems. OSD has offered technical assistance and outreach, and set policy from the program's initiation. OSD is housed in a LEED-Gold certified historic warehouse from 1895.

In terms of OSD's green building focus, Portland's Green Building Program requires developers receiving financial assistance from Portland's Development Commission (PDC) and direct Commission funded construction projects to meet USGBC LEED standards. USGBC LEED standards have been adapted to meet Portland's regional environmental needs with requirements pertaining to energy conservation, stormwater management, materials and construction waste management, and measures to support automobile alternatives. OSD has collaborated with the PDC, the City's urban renewal agency, on the City Green Building Policy and Affordable Housing

Program History: Portland's Green Building Policy of 2001

Applicability: Public and private projects of various types of building

Standards Used: USGBC LEED standards plus local supplemental requirements

Planning Instruments: Green building policy regulations

City Review Process: City checks that USGBC's approved plans for LEED certification

Submission Requirements: Same as regular requirements; developer works with USGBC

Incentives Used: Tax breaks, loans, grants

Lessons Learned: Wide support; becoming easier to do as gain understanding and experience with LEED; positive public relations for City

Next Steps for program: Expect new green building policy addressing carbon-footprint

Source:

Name: Valerie Garrett

Title: Green Building Specialist

Department: Office of Sustainable Development

City: Portland, Oregon

Telephone Number: 503-823-5431

E-mail Address: valerie.garrett@ci.portland.or.us

Website:

http://www.portlandonline.com/osd

Guidelines which apply to new construction and rehabilitation projects of residential, commercial, and mixed-use projects with PDC funding within the City of Portland.

Planning Instruments/City Review Process/Submission Requirements: The City of Portland Bureau of Development Services (BDS) which handles permitting, is currently collaborating with OSD. OSD's plan is to have green building specialists in the planning bureau to promote and review sustainable projects. Currently the City does not do development reviews. Owners rely on their design team, or they can hire consultants for LEED projects. Per Resolution Number 36310 of April 27, 2005, when PDC provides financial assistance to projects, the PDC must enforce the applicable development standards. PDC funded projects have to attain LEED-Silver certification.

Incentives Used: Portland uses a number of educational and financial incentives to encourage green building. Portland established its ReThink educational training program for building, design, and construction professionals in 2003: a "Build It Green!" annual home tour; economic development initiatives; publications; and, more recently, a Green Building Hotline serving the tri-county area (the first piece of a regional Green Resource Development Center).

The City's Green Building Policy established a Green Investment Fund to support the work of the G/Rated Building Program, which coordinates the expertise and resources of six city bureaus. The program sets goals and recommends strategies to leverage local expertise and develop cost-effective solutions. Among its educational tools are lists of technical resources, best practices, case studies, and technological profiles of innovative practices.

The City also utilizes voluntary and regulatory green building guidelines coupled with incentives to promote green building in the private sector; these incentives were developed in collaboration with citizens and business leaders. Tax breaks, loans, grants, and other incentives are used by the City. OSD has a five-year $2.5 million Green Investment Fund (GIF) which makes $500,000/year available to innovative green projects. Applicants go through a competitive grant process, and OSD reviews their funding applications. Industrial, residential, commercial, and mixed-use public and private organizations may apply. OSD also refers projects to the energy cash incentives offered by the Energy Trust of Oregon, and to Federal and State tax credit programs. PDC has loan and grant funding available for both governmental and non-profit projects and to homeowners.

Outcomes: Portland boasts 32 LEED certified buildings. OSD staff report that all of the many components of Portland's green building program have experienced great success in greening Portland. Continued growth and staffing is expected. OSD will be phasing out the G-Rated Program due to confusion that it is a certification program. The tours and workshops and publications have been highly successful.

Lessons Learned/Next Steps: Since initiating its Green Building Program, Portland has learned some valuable lessons. Because of the success of their Green Building Program, OSD expects to develop in the near future a new city-wide green building policy addressing carbon-footprints.

Other important lessons they have learned include:

- High demand for green built facilities
- Market is very receptive

- Consumers drive the market
- High level of green education in Portland area
- Market constantly
- Must have collaboration of permitting bureau
- Educate and tie into Planning Department
- Carbon emissions are of critical concern
- Holistic viewpoint
- Have cooperative waste recycling and salvage centers in the area
- Walk your talk
- Green own municipal office and operations and be a model for others

As an example of the high demand referenced above, the new Green Building Hotline established as the first step in creating a regional Green Building Resource Center has experienced significant levels of inquiry.

At this time, OSD does not have a specific program in place for historic buildings. The current procedure is that historic building projects undergo Historic Design Reviews at the time of permitting. They are also referred to the State Historic Preservation Office (SHPO). OSD may explore this further in the future.

Applicability to Alexandria: Use of their own green building program and LEED standards for various types of development and projects; mix of incentives to achieve goals; adaptability; and local leadership and vision.

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3.7 *Scottsdale, Arizona*

Program History and Purpose:
Located in the Sonoran Desert region. Scottsdale established Arizona's first Green Building Program to encourage environmentally responsible building in 1998. Their program's goals are to reduce the environmental impacts of building; achieve both short- and long-term energy, water, and natural resources savings; and encourage a healthier indoor environment. Also, the City sought to encourage more widespread thinking about sustainability issues. Mr. Anthony Floyd, Scottsdale's Green Building Program Manager, reports that the Green Building Program developed as an outgrowth of the City's culture regarding environmental issues. Scottsdale formed an Advisory Committee that examined other green building programs in the United States. In the end, the City decided to create their own tailor-made green building program. Scottsdale's green building program is voluntary, and incentives are used to gain builder and developer participation.

Planning Instruments/City Review Process/Submission Requirements:
The City's code was amended to allow for reinforcement of their green building requirements during the construction process. The development reviews for green projects are done in-house and are integrated into the regular Planning Department's review process. Expedited plan review is offered; projects receive a green building permit and at the end of the project, a

Program History: 1998 as outgrowth of other environmental initiatives

Applicability: Residential projects; City owned facilities

Standards Used: Local green building program and standards

Planning Instruments: Ordinance and expedited plan review

City Review Process: City issues special green permits and Certificates of Occupancy; staff verify green building components

Submission Requirements: Same as regular requirements

Incentives: Priority plan review, job site signs, directory certification, homeowner's manual, promotions, public education, and website

Lessons Learned: Comprehensive program breeds success; importance of national program and standards combined with local approach; ongoing education; and positive public relations for City.

Next Steps for program: Possibly convert residential program to LEED-Homes.

Source:

Name: Anthony Floyd

Title: Green Building Program Manager

Department: Plan Review Department

City: Scottsdale, Arizona

Telephone Number: 480-312-7080

E-mail Address: afloyd@scottsdaleaz.gov

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

green building Certificate of Occupancy. Scottsdale does not have separate or special submission requirements such as additional fees or needing an accredited professional on the design team for green building projects.

Incentives Used: Scottsdale uses a number of incentives during the development review and the construction processes. Specifically, the incentives used are:

- **Priority Plan Review** - all qualified green building projects receive fast track plan review service, on average receiving building permits in half the time that regular projects do.
- **Job Site Signs** - City green building construction job site signs are available to distinguish those projects that are part of the green building program. This helps to advertise the builder's commitment to green building.
- **Directory of Participating Designers and Builders** - Participating architects, designers, and builders are identified in various promotional materials, which is on the City's website and part of the green building information packets distributed at public events and mailings to the public when requested.
- **Green Building Certification through Inspections** - The City conducts green building inspections throughout the construction process to ensure the project is following the prescribed guidelines. This offers extra assurance to home buyers about the quality of the product. Green building certificates are awarded at the conclusion of projects.
- **Homeowner's Manual** - A homeowner's manual, explained in layman's terms, serves as an educational tool by explaining the features and benefits of green building.
- **Promotional Package for Builders/Developers** - The City's green building logo for ads, brochures, and abbreviated green building checklists are included in promotional packages. In addition, the City's Green Building Program provides additional media coverage through press releases and articles in the local news media.
- **Educational Programs.** – .Monthly lecture series and seminars as well as an Annual Green Building Expo and Home Tour are among the outreach activities Scottsdale employs.
- **Website Resources** - Scottsdale's Green Building website provides program criteria, builder and project profiles, upcoming events, and links to other environmental building resources.

As can be seen from the list above, Scottsdale employs incentives that combine municipal processes, public relations, education, and builder recognition to promote the program to the construction and home-buying communities.

Outcomes: Initially, the City's own green building program/rating system targeted primarily residential development. The City has realized 35% participation in their residential program as well as increasing awareness and interest in green building by home buyers and by residents who are remodeling. In addition, they have been able to raise the bar on energy efficiency achieving approximately 15% greater efficiency on all buildings.

Lessons Learned/Next Steps: Since initiating its Green Building Program in 1998, Scottsdale has learned some valuable lessons that are guiding the review and further development of the program. Chief among those lessons are that integration into their existing development review process and as part of their code and planning work. This has proven to be a successful

approach as well as the importance of ongoing education of the public, officials, etc. This "hand and glove" regulation/education balance has been critical in tapping community support for the program and its successful ingraining in the local culture.

As a result of the City's efforts to promote green building, on March 22, 2005, the Scottsdale City Council unanimously approved Resolution No. 6644 and became the first city in the United States to adopt a LEED Gold policy for new City buildings and rehabilitation. The Scottsdale Senior Center is the City's first municipal green project and the first Senior Center green certified in Arizona. The City has also developed a commercial green building checklist which builds upon Scottsdale's successful residential program and the City's 2005 green building LEED policy.

Scottsdale learned that they needed to update their rating checklist and inspection checklist requirements in order to improve efficiency of their inspection process into one streamlined inspection process for green building projects. This is currently under development. The City may also eventually convert to LEED-Homes if it suits their needs and regional context.

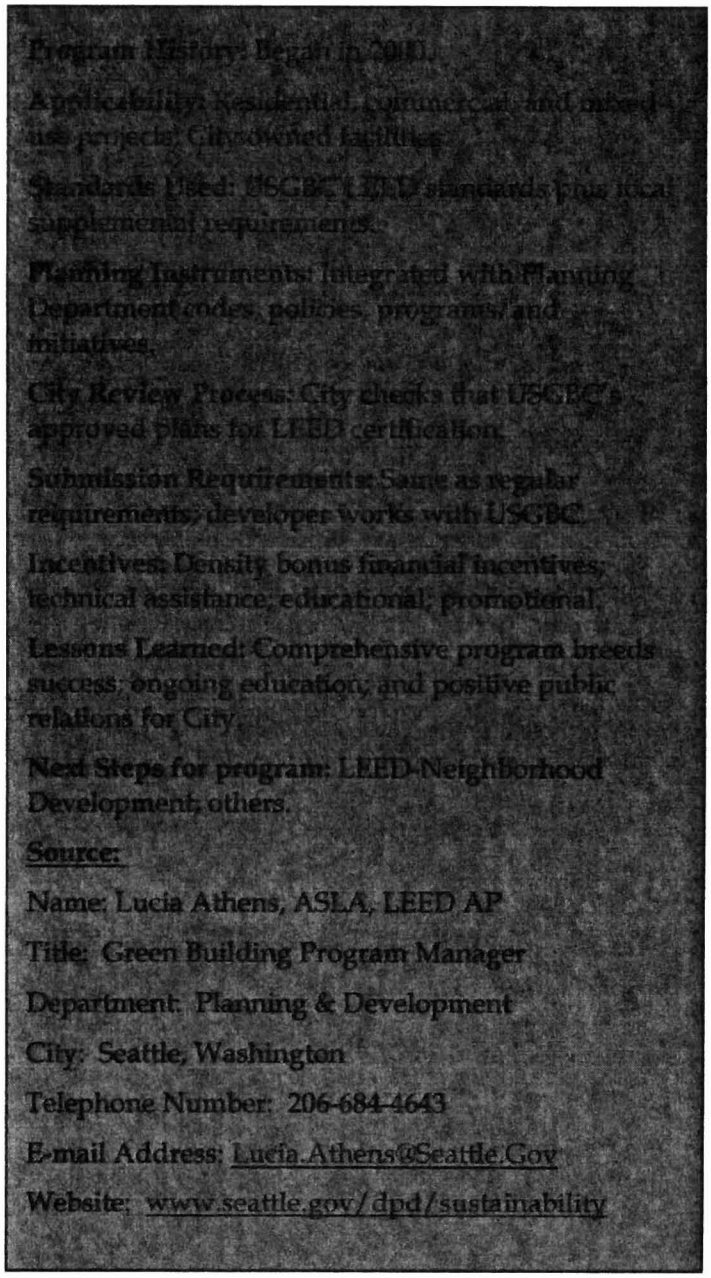
In addition, Scottsdale learned that it is important to explore and evaluate national green building standards because they offer uniformity, national benchmarking, and are easier to buy into. However, national standards do not account for the uniqueness of each locale and region. National standards such as ASHRAE 189 and the National Association of Home Builders' (NAHB) Green Home Building Guidelines can be very useful, but are not rating systems like LEED.

On the other hand, Scottsdale learned that a disadvantage of developing their own residential green building rating system is that it takes more resources to establish it and to maintain it. For example, Scottsdale's rating checklist needs to be updated approximately every two years because it becomes dated as innovations and new technologies are developed and utilized.

Applicability to Alexandria: Use of their own green building program and LEED standards for various types of development and projects; mix of incentives to achieve goals; adaptability; and local leadership and vision.

3.8 *Seattle, Washington*

Program History and Purpose: Mayor Greg Nickel's leadership on environmental issues and strong citizen engagement has propelled Seattle to national and international prominence in this arena. Seattle's Green Building Program formally began in 2000. A component of a larger public sustainability agenda, Seattle's green building program has both adopted LEED as-is and supplemented it with additional criteria or mandating certain criteria. Therefore, the City is responsible for ensuring that the supplemental criteria are met while USGBC administers the normal LEED applications. Furthermore, City agencies work with the private sector to support green building. The city's Sustainable Building Policy of 2000 requires that all new city-funded projects and renovations larger than 5,000 square feet of occupied space achieve LEED Silver certification. In addition, the City supports development of single-family residential, multifamily residential, commercial, industrial, and institutional projects.



Planning Instruments/City Review Process/Submission Requirements: Seattle has integrated their green building requirements with the Planning Department's building and land development codes. The review process of green buildings is integrated seamlessly into the City's regular plan review processes. The US Green Building Council verifies that the plans meet the LEED certification levels the City mandates.

Incentives: Their Sustainable Building Program supports public and private projects with a variety of:

- financial and code based incentive packages and referrals to utility conservation programs;

- technical assistance;
- education programs; and,
- recognition awards and publicity.

The City and its utility companies offer financial incentives tied to density bonuses depending on the type of construction and project. A significant example pertains to multi-family and commercial projects. On April 12, 2006, Mayor Nickels signed new downtown zoning legislation updating rules for the central office core and adjoining areas, including Denny Triangle and a portion of Belltown. Changes in the new regulations were made to provide greater heights and/or greater floor area for commercial and residential buildings. To gain greater height or density, projects must achieve a LEED Silver-certification rating or higher, as well as contribute to affordable housing and other public amenities. The zoning changes also offer greater transferable development rights for historic structures.

Outcomes: The City of Seattle leads the nation in local government ownership of LEED certified buildings as home to ten LEED certified buildings (5 Gold; 3 Silver; 2 Certified; one project is located outside City limits); 4 projects pending LEED certification, 3 under construction, 9 in design and 10 in planning.

- **LEED Projects** -- Home to 31 LEED Certified buildings, Seattle is second only to Portland (with 32) with the highest number of LEED-rated projects within city limits.
  - 31 LEED Certified building in Seattle representing 3 million square feet and $768 million capital investment
  - 134 LEED registered projects in Seattle, representing over 50 million square feet of planned development

  ** Statistics are based on data provided by the USGBC. Not all project entries include a real or estimated square footage*

Lessons Learned/Next Steps: Since initiating its Green Building Program, Seattle has learned some valuable lessons and is continuing to build on its widely recognized successes and serve as a model for LEED and sustainable development. In addition to the importance of integration with the City's Planning Department, another key component has been working with stakeholders. Further examples of next steps include:

- **Model Program for Cities Nationwide** -- Cities and municipalities nationwide (such as Chicago, Albuquerque, New York, Boston, and Bellevue) call on Seattle's City Green Building team for advice and resources to help set up similar Green Building Programs, codes, and policies to benefit their own communities.
- **The Playbook for Green Buildings and Neighborhoods: A Climate Toolkit** - Seattle's City Green Building team convened a partnership of 16 organizations to co-fund and develop a guide for cities that have signed the US Mayors Climate Protection Agreement (MCPA) and 2030 Challenge. The guide focuses on strategies to advance green buildings, neighborhoods, energy and infrastructure in support of MCPA climate protection targets, and will be released at the upcoming Mayors' National Climate Protection Summit.

- **Sustainable Communities** -- Seattle is pioneering LEED for Neighborhood Development (ND) with 2 pilot projects, including Seattle's burgeoning new live, work, play community called South Lake Union.
- **European Best Practice Adaptation** -- Passed by the City Council in January 2007, the Seattle Green Factor is a new program inspired by policy in place in Berlin, Germany. The intent is to increase the amount and quality of urban landscaping in new development in commercial zones while providing flexibility for developers and designers to efficiently use their properties. The program requires new development in neighborhood business districts to meet a landscaping target of 30% green coverage of development area through use of a menu of landscaping strategies including green roofs, vertical plantings. It is intended to be introduced to multifamily projects early in 2008.

Applicability to Alexandria: Use of their LEED standards for various types of development and projects; use of incentives to achieve goals; adaptability; and local leadership and vision.

4.0 Recommending LEED as the City of Alexandria's Green Building Certification and Accreditation System

The various rating systems assessed as part of this white paper were evaluated for their potential for incorporation in the City of Alexandria's planning process. The case studies from across the United States were prepared and presented on leading city green building programs to better inform the assessment. Specifically, the systems were assessed on the following criteria:

- Ease with which the rating system can be incorporated into existing programs and level of effort required from City employees to implement the program;
- Obstacles for applying the rating system to historic buildings;
- Incorporation of a holistic approach to green buildings; and
- Inclusion of multiple building types, including residential structures.

The ability of the various green building rating systems to meet these criteria is discussed below.

4.1 Ease of Incorporation and Level of Effort required for Implementation

LEED is a well established rating system which is regularly updated by USGBC. Incorporation of the rating system in the city's planning process would be relatively simple. In addition, because the LEED rating system is administered by the USGBC, city personnel would not be required to verify compliance that buildings meet the standards set by LEED.

Similar to LEED, Green Globes can also be integrated into the city's planning process relatively easily because it is maintained by a third party, the GBI. Although Green Globes was initially developed as a self-auditing tool, a third party verification is now available.

Incorporating EarthCraft and EnergyStar into the City's planning process would also be relatively easy since these rating systems are also verified by a third party.

Standard 189P, on the other hand, is a building code and not a third party verification system. Incorporation of Standard 189P would be done by amending current city codes to reflect the requirement in Standard 189P. Compliance of the standard would be conducted in the same manner that existing city building code is verified and not by a third party.

Lastly, BREEAM and Green Star are rating systems that are used widely outside of the United States but are not widely recognized or resourced here in the United States. Accordingly to utilize these systems both city personnel and developers in the City of Alexandria would have to look outside the USA for support thereby incurring significant additional cost and disincentive to Green Building.

4.2 Application to Historic Buildings

As noted previously in this white paper, there are several issues to consider when applying green building rating systems to historic buildings, including the limitation in building

materials and the potential difficulties in improving energy efficiency of existing historic buildings.

The majority of the rating systems reviewed in this white paper encourage the use of renewable and/or recycled materials as well as improved energy efficiency. In fact, a certain level of energy efficiency is a pre-requisite for many of the LEED standards.

For material types, the rating systems included in this analysis do give credit for the use of materials which are made from recycled or reused materials and rapidly renewable material.

With the growing trend toward green buildings, manufacturers of building material are developing materials which are made from reclaimed and recyclable materials, including materials for historic buildings, such as historical bricks.

For energy efficiency, all of the rating systems encourage improved energy efficiency and most require a certain level of energy efficiency to be met to earn certification. Since there are no pre-requisites in the Green Globes rating system, there is no minimum energy efficiency required, however, it may be difficult to achieve the required level of credits to achieve certification without energy efficiency improvements.

USGBC recognizes that applying LEED standards to historic buildings provide challenges and have developed workshops to assist designers to apply LEED concepts to historic projects.

4.3 Holistic Approach

Of the rating systems evaluated, EnergyStar is the only system that does not incorporate a holistic approach to green building design since it focuses on energy use.

Standard 189P incorporates many of aspects of green building design. However, it is not as holistic as the other systems described in this paper because it does not include standards for site selection.

LEED, GreenGlobes, Earth Craft, Green Star and BREEAM all incorporate a holistic approach to green building design. The green building design criteria covered in each rating system are listed in Table 1.

4.4 Inclusion of Multiple Building Types

The LEED rating system includes many building types, including homes. USGBC has also developed a LEED standard for existing buildings.

Green Globes includes various building types as well and has worked with NAHB (National Association of Home Builders) to develop guidelines for home builders for building green homes. Green Globes is also developing standards for existing buildings.

However, the EarthCraft House rating system is designed only for homes while Standard 189P has been developed for commercial buildings and does not include residential building.

The EnergyStar program includes homes as well as commercial buildings.

4.5 *LEED is the preferred system at this time*

Overall, the two systems which appear to meet most of the criteria set for the city is LEED and Green Globes. Pre-existing rating systems such as these, that are managed by a third party, will be easier to incorporate into the city planning documents.

Many comparisons have been made between LEED and Green Globes. Both rating systems include many of the same green building criteria and are similar in content. However, one of the areas in which the two systems differ historically is in the certification system. Green Globes uses an on-line questionnaire designed to be used by any member of the design team who has general knowledge of the building where as LEED was originally a paper based certification and encourages the use of a LEED Accredited Professional. However, LEED now provides an on-line version.

Another area where the two rating systems differ is the cost of certification. Both systems have a registration fee in the $500 range. LEED certification can cost more than $20,000 for non-USGBC members. Green Globes certification costs around $5,000.

Both systems have been approved by the American National Standards Institute (ANSI) as an accredited standards developer for green buildings.

LEED has been used widely throughout the US and has been adopted by many federal programs as well as cities and towns. The City of Alexandria has already adopted LEED for the Green Building certification system for its municipal buildings and several staff members are already LEED accredited or in the process of achieving LEED accreditation. The Metropolitan Washington Council of Governments has recommended that LEED be adopted as the preferred building rating system for public and private commercial buildings in the Washington Metropolitan region. A summary of LEED and the resources currently available through the US Green Building Council for its implementation is summarized at Appendix 1 of this white paper.

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5.0 Lessons Learned

The lessons learned from the research, analysis and preparation of this White Paper are summarized as follows:

Lesson 1: The City's major growth through to 2030 can create liabilities or assets

Along with the other municipalities of the Washington metropolitan region, the City of Alexandria expects to experience a major phase of building and development in the period to 2030. The City projects that its population will increase by 35,232 residents (a 26% increase on the City's 2005 population) and its employment base by another 35,755 jobs (a 34% increase on the City's 2005 employment figure). In the event that all this development follows the unsustainable model that has characterized much of the conventional US urban development to date, then the City will face major costs in necessary services and infrastructure provision, city administration and to its quality of life. Sustainable development which applies green building practice can reduce or eliminate the negative impact of buildings on the environment while promoting enhanced building performance and occupant health – thereby creating a civic asset rather than an on-going liability.

Lesson 2: Regulation is but part of an effective Sustainable Development Strategy

Regulation, like all forms of enforceable human behavioral modification, is the city administration instrument of last and not first resort. The City of Alexandria Department of Zoning and Planning has control over a fraction of all development and building that will occur in the City through to 2030. Even if its regulatory reach were more comprehensive, it lacks the resources to discharge an enlarged mandate. The City Code provides the Department with discretionary permitting of certain forms of building and development through controls over density, height and to a lesser extent use. Building approvals are issued subject to The Uniform Statewide Building Code of Virginia – this program is not the responsibility of the Department of Zoning and Planning. The City could consider joining with other local governments in the State of Virginia in seeking to amend the Statewide Building Code to incorporate green building provisions.

While sustainable development is increasingly supported by the development and building industry, it is clear from the best case study findings presented in this white paper that effective education, and incentives, where necessary and cost-effective, are potent adjuncts to the regulatory regime. The regulatory solution on its own, is likely to work against the City at this time – more of the "carrot" and less of the "stick" may be needed to achieve increased levels of green building in Alexandria. Clearly the Department's proposed green building policy response to work in partnership with the community and the development industry and through a third party Green Building project certification and accreditation system is critical to success of the City's sustainable development strategy.

Lesson3: A Green Building partnership between the Community, City, and the Development Industry is the most cost-effective solution

In April, 2006 the U.S. National Association of Home Builders reported that green building is near a "tipping point." The green construction industry segment will climb from 2 percent of all

residential starts in 2005, to between 5 percent and 10 percent in 2010 – driven by higher energy costs and a growing public concern about human impact on the environment. An interesting portent of what will further shape future consumer demand was revealed in an April, 2007 Washington Post report, "*For many children and young adults, global warming is the atomic bomb of today. Fears of an environmental crisis are defining their generation in ways that the Depression, World War II, Vietnam and the Cold War's lingering "War Games" etched souls in the 20th century.*"

The issue of global warming and climate change is moving sustainable development practices from the radical fringe, to the practical mainstream. A major shift in the paradigm of designing our urban settlements from triumphing over nature, to one of turning nature to our advantage in land use and real estate asset creation is taking hold. Increased upfront capital cost has been cited as the reason not to embrace green building. However in its July 2007 report, *Cost of Green Building Revisited – Re-examining the Feasibility of and Cost Impact of Sustainable Design in the Light of Increased Market Adoption*, international quantity surveying firm, Davis Langdon, have concluded that, "there is no significant difference in average costs for green buildings as to compared to non-green buildings." At the CoreNet Global Real Estate Summit held in October, 2007 in Atlanta, a recent joint JLL/CoreNet study and survey of development industry leaders on *Corporate Real Estate Perceptions and Trends in Sustainability* found:

- A strong majority (79%) view sustainability as very important today or within the next two years;
- A growing proportion (77%) are willing to pay a premium for sustainability; and,
- Others (22%) are willing to pay the same.

Although, clearly the capital cost of different levels of LEED certification remains an issue to be worked through with the development industry and the community (we will address this in Lesson 4 below), there is a growing recognition that green building makes financial sense.

For commercial buildings the "sustainability dividend" lies in enhanced financial performance of real estate asset/portfolios that arises from the application of environmental science to:

(i) increase the percentage of the tenant's total occupancy cost that is paid to the landlord as net rent; and,

(ii) groom existing assets; conceptualize, design and deliver new assets; which cost less to operate thereby achieving comparatively lower capitalization rates.

By managing down the proportion of the tenant's total occupancy cost consumed by building outgoings and consequently managing up the remaining balance that is paid to the building owner as net rent.

With the rapid escalation in the cost of energy (including possible new carbon taxes), water, waste removal and all other elements of building operations including insurance, those real estate assets that continue to follow the old maxim, "that it matters not what the outgoings cost as they are fully recoverable from the tenant," will put their capacity to maintain and grow their net rental incomes at serious risk, as more and more of the tenant's threshold total occupancy cost is eaten up by outgoings.

As the net rental income stream is put at increasingly greater risk upward pressure is placed on the asset's capitalization rate. Its capital value as a consequence, declines, dragging down its value and the portfolio of which it forms a part.

Development industry leaders now know that the sustainability dividend is real and they have to secure it to give their real estate portfolio the competitive advantage and continuing highest quality investment grade. What may have started as mere public relations "green wash" is evolving very quickly into the principles of fundamental investment analysis and prudent asset design and management.

Environmental science will be increasingly used by socially responsible investors, developers and tenants to determine which real estate assets can deliver a sustainability dividend.

In the residential market, the sub-prime mortgage meltdown has proven yet again, that the whole of life is a cash flow and that the more of your limited family income is eaten up by other expenses the less remains to cover the mortgage. Sustainable development therefore has a real financial return where it reduces the operational cost of the real estate asset regardless of whether it is tenanted or owner-occupied.

The Sustainability Dividend is real and the faster it evolves through the application of Environmental Science from mere marketing PR "green wash" into real operational cost savings, the faster the real estate market will be able to capitalize on the demographic fundamentals that make the performance of US real estate market even stronger.

For this reason the City of Alexandria has the real option of entering into a three way sustainable development partnership with its citizens and the building and development industry from which all will benefit. In this manner the City's scarce staff resources can be focused on education and applied research to better align the LEED codes to local circumstances rather than being consumed by increased regulation and enforcement.

Lesson4: The Development Thresholds & Level of LEED Certification should be set following consultation

The City of Alexandria is already leading by example and has set LEED Silver-certification as the requirement for its new municipal building construction. The Alexandria Police Headquarters Building goes one level higher to LEED Gold. The Development industry cannot therefore accuse the City of setting higher standards for private development than those that it has adopted for civic real estate assets.

The Metropolitan Washington Council of Governments in their interim report dated 10 July, 2007 have recommended that its constituent governments adopt LEED Certified, as the standard for commercial and high-rise residential development, and that they develop green building programs for single family and small scale multi-family residential. The U.S. Green Building Council reports that additional construction costs exceed conventional building cost by 6% for LEED (Platinum); 2.2% for LEED (Gold); 1.9% for LEED (Silver); and, 0.66% LEED (Certified).

The problem of setting a higher standard of LEED certification in the City of Alexandria than that being applied by other local governments in metropolitan Washington is potentially one of unnecessary controversy and needless resistance to the widespread adoption of green building practice.

By seeking to develop its own green building program for single family and small scale multifamily residential the City would need to devote significant resources to its formulation or adoption from another jurisdiction, rather than using the significant research, education and third party certification resources provided through LEED by the U.S. Green Building Council.

The case studies indicate no consistent threshold size for development projects that are required to achieve LEED certification. It varies according to the special circumstances and preferences of each local government. For the City of Alexandria, the best result is one where the greatest percentage of new development (including renovation) constitutes green building. Consensus rather than conflict is likely to be the most direct route to this desired outcome.

Accordingly, the most cost-effective public policy for the City with respect to setting the appropriate LEED certification levels and development thresholds for various types of development is to do so through consultation with the Community and the development industry. This white paper establishes the strong foundation for such informed outreach, consultation, policy development and ultimate implementation.

Lesson5: Incentives need to be funded by those who benefit and be aligned with the capacity to pay

Several of the case studies presented in this Green Paper use incentives to encourage green building. These incentives take one of three forms:

- Development yield incentives—bonus FAR and/or building height;
- Processing time incentives—fast tracking or expedited processing; and,
- Financial Incentives—processing fee reduction/waiver; cash grants and rebates; development agreements including city contribution or capital works programs; and, tax credits/rebates.

Table 3. Summary Comparison of Incentive Types

Incentive Type	Pro	Con
Development Yield	Municipal Budget Impact is minimal	Can conflict with other planning policy priorities
Processing Priority	Municipal Budget Impact is minimal	Requires additional staff
Financial	Potentially strong inducement for developers to engage in sustainable development	Impact on Municipal Budget can be significant

Of particular interest is the City of Pasadena's City's Water and Power Department incentive program which is calibrated to the level of LEED certification achieved. Appendix 2 sets out the U.S. Green Building Council's summary of State and Local Government incentives in North

America. There is no size that fits all cities but it is considered that City of Alexandria's incentives should be no more generous than circumstances deem absolutely necessary. If the City wishes to provide incentives they would best be calculated having regard to the present value of savings the city may make in terms of infrastructure or other capital expenditures and consequent recurrent expenditure that would otherwise be incurred.

The incentives, wherever possible, should be funded by those levels of government and organizations that receive the benefits of green building. As a case in point, the City of Alexandria may seek through the Metropolitan Washington Council of Governments and/or the U.S. Conference of Mayors Climate Protection initiative to encourage the US Congress to legislate accelerated depreciation allowances for certified green buildings.

Lesson 6: Historic Building and Precincts are not inconsistent with LEED

The evidence from the City of Pasadena is that because of LEED's flexibility the City has not needed to make special green building accommodations for historic buildings. While each of the case studies presented in this white paper hold something of value to the City of Alexandria in developing its own green building program, it is the City of Pasadena that Alexandria could well use as its policy formulation foundation.

Lesson 7: Urban Design, Green Building and Civic Policy priorities may need balancing

In its green building policy development and implementation the City of Alexandria will need to balance matters of urban design, economic development, civic policy and green building. One example given by City officials in the development of this white paper was that of local grocery stores that are of marginal economic viability but essential for residential neighborhood service and livability—any additional costs associated with green building entitlement or construction may see a conflict between city policy priorities which will need to be addressed on a case by case basis.

Important matters of green walls, tree planting, historic precincts are all issues of urban design and character that the City of Alexandria will wish to incorporate into its green building and will require tailoring of development policy and codes.

Lesson 8: Green Building Funds, Levies and Bonds may be necessary

To fund the green building educational and any incentives program, the City may have to draw on the best practice case study examples in putting in place a Green Building Fund and a development levy (similar to that charged by Arlington County, VA) Care needs to be taken not to delay or significantly increase the development entitlement process to the extent that the City's green building program itself becomes a disincentive to green building. The findings of the PriceWaterhouseCoopers's 2005 study prepared for the American Institute of Architects entitled, *The Economic Impact of Accelerating Permit Processes on Local Development and Government Revenues*, are particularly relevant in this regard.

Finally, it is noted that there are three vital components in a green building program which determine the on-going value created by sustainable development:

- Development location (determined through the zoning plan);

- Development design and construction (determined through the zoning plan, variations and building approval mechanisms); and,
- On-going maintenance (largely the province of the building occupier or owner).

As the City of Alexandria will be reliant in large measure on third party certification of green building the use of performance bonds may be the most cost-effective method of ensuring that what is approved is in fact constructed as a green building. Here again the best practice case studies included in this white paper provide a range of options for the City of Alexandria.

In Essence

This white paper has concluded that:

- The formulation and adoption of a green building policy by the City of Alexandria using LEED as a third party certification system can be of significant value given the projected population and job growth the City is likely to experience in the period to 2030;
- The City of Pasadena provides a very useful model on which to found and tailor the City of Alexandria's green building policy given its particular civic, community and development industry needs, use of the vehicles of consultation and partnership, as opposed to a purely regulatory approach;
- Effective Education and Outreach will be fundamental to the success of the green building policy;
- The green building policy and instruments should be calibrated to meet the special needs and requirements of the City of Alexandria and other levels of government should be called upon to amend where required the State building code and Federal tax laws to encourage green as opposed to conventional building.

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6.0 The Next Steps—a Cost Effective way forward for the City of Alexandria's Department of Planning and Zoning in developing its Green Building Program

It is recommended that the foundation and understanding of the issues and options set out in this white paper be the starting point for internal review, value adding, and the determination of a policy position by the City of Alexandra. An internal policy workshop would be a vital first step. In developing that policy position green building champions should be identified and engaged to tap their intellectual capital and lessons learned from their green building projects.

Attention then needs to be focused on developing the partnership, infrastructure, procedures and support material necessary for the Green Building policy formulation and program implementation. Outreach, feedback and analysis need to be effected and any required additional staff recruited, regulations and procedures amended, and educational material published in order to achieve cost-effective program launch, on-going monitoring and review.

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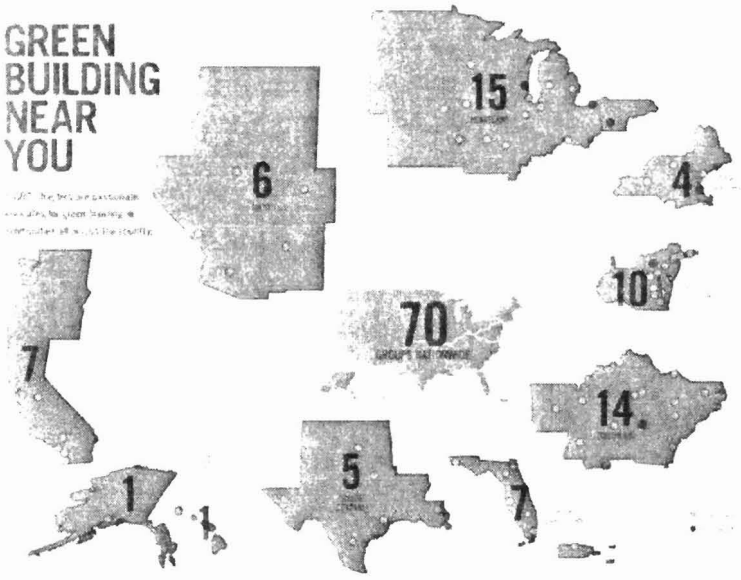
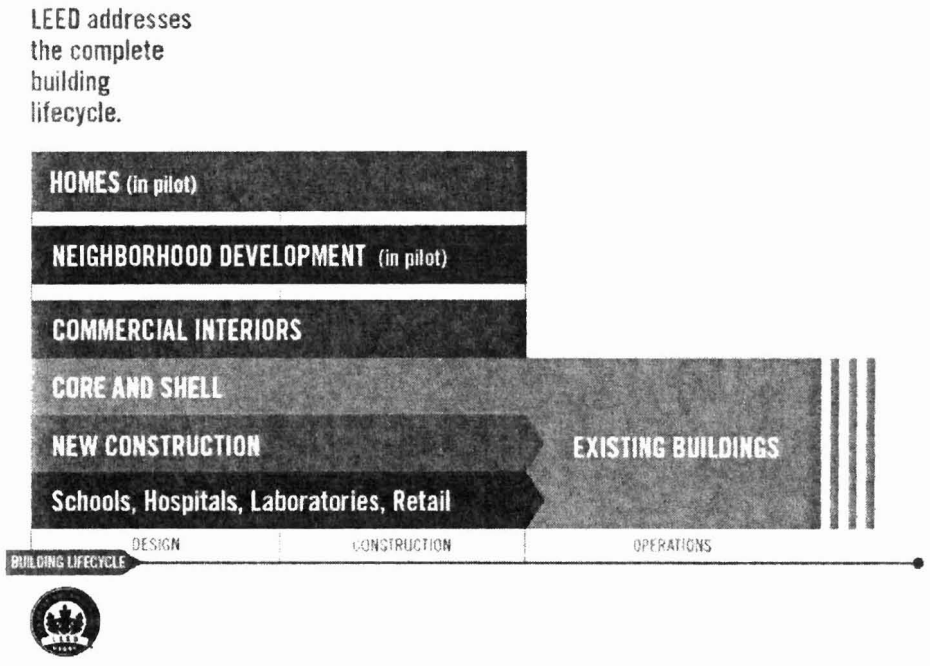
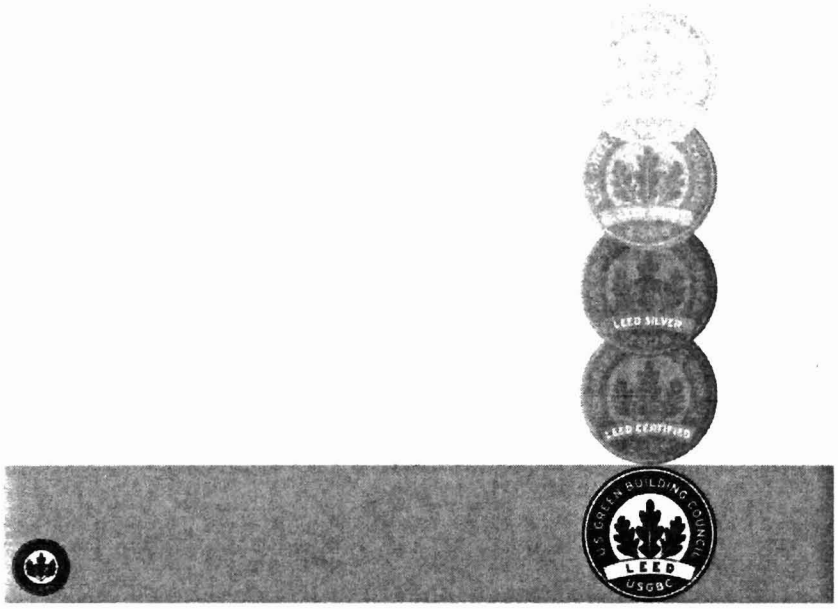
APPENDIX 1
LEED CERTIFICATION AND RESOURCES



The Leadership in Energy and Environmental Design (LEED) Green Building Rating System™ encourages and accelerates global adoption of sustainable green building and development practices through the creation and implementation of universally understood and accepted tools and performance criteria.



LEED is the nationally accepted benchmark for the design, construction and operation of high performance green buildings. LEED gives building owners and operators the tools they need to have an immediate and measurable impact on their buildings' performance. LEED promotes a whole-building approach to sustainability by recognizing performance in five key areas of human and environmental health: sustainable site development, water savings, energy efficiency, materials selection and indoor environmental quality.



LEED certification provides independent, third-party verification that a building project meets the highest green building and performance measures. All certified projects receive a LEED plaque, which is the nationally recognized symbol demonstrating that a building is environmentally responsible, profitable and a healthy place to live and work.

Find all the resources you need to help you achieve LEED certification, including reference guides for each rating system, templates for submitting projects' documentation, other reference documents, and the tools you need to keep your projects' status up-to-date at: http://www.usgbc.org/DisplayPage.aspx?CMSPageID=75

Source: http://www.usgbc.org

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APPENDIX 2
SUMMARY OF GOVERNMENT LEED® INCENTIVES
AUGUST, 2007.

This document summarizes efforts on the state and local level to build incentive-based programs for the development of green buildings, with a focus on USGBC's LEED Rating System. Government incentives are categorized as either emanating from the state level or the local level.

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See www.usgbc.org - Resources - Government for the most current list.

COUNTIES, CITIES & TOWNS

ACTON, MA
density bonus
April 5, 2004: A new zoning by-law (section 5.5B.2.2.d) unanimously adopted at the Annual Town Meeting gives a density bonus for buildings achieving LEED certification.

ARLINGTON COUNTY, VA
density bonus
expedited permitting
Arlington County's Green Building Incentive Program, adopted in 1999 and expanded in 2003, allows commercial projects and private developments earning LEED Silver certification to develop sites at a higher density than conventional projects. All site plan applications for commercial projects are required to include a LEED Scorecard and have a LEED Accredited Professional on the project team regardless of whether or not the project intends to seek LEED certification. All projects must contribute to a green building fund for county-wide education and outreach activities. The contribution is refunded if projects earn LEED certification. Arlington sponsors a voluntary green home program that encourages builders of new single-family homes to incorporate energy efficient and other green building components in their projects. The County offers "front-of-the-line" plan review, site signs, and publicity to program participants who achieve a given number of points as outlined by Arlington's Green Home Choice program.

BABYLON, NY
fee reduction/ waiver
On November 29, 2006, the Town of Babylon passed a resolution adopting a local law that requires LEED certification for any new construction of commercial buildings, office buildings, industrial buildings, multiple residence, or senior citizen multiple residence over 4,000 square

feet. If certification is achieved, the Town will refund the certification fees paid to USGBC by the developer.

BALTIMORE COUNTY, MD

tax break

On June 5, 2006, the County Council passed bill # 85-06 that gives a county property tax credit to any commercial building that achieves LEED-NC Silver certification. The duration of the tax credit is for ten consecutive years.

BAR HARBOR, ME

density bonus

On June 13, 2006, Bar Harbor amended its municipal codes to award a density bonus of an additional market-rate dwelling unit for construction projects in which all dwelling units meet LEED standards. This bonus applies to projects within a Planned Unit Development and compliance is determined by either application or by affidavit for adherence during construction.

CALGARY, AB

fee reduction/ waiver

The City Council passed a Sustainable Building Policy (#CE001) on September 13, 2004 that requires new or significant renovations over 500m2 to achieve LEED Silver certification or higher. In the spring of 2007, the City Council passed the Calgary Building Permit Bylaw (64M94 page 17) allowing for a fee reduction for all private projects pursuing LEED or Build Green certification.

CHATHAM COUNTY, GA

tax break

In May, 2006, the Board of Commissioners of Chatham County passed an ordinance amending Chapter 7 of the county code that gives full property state and county tax abatement for commercial buildings achieving LEED Gold certification for the first five years, then tapering off by 20% each year until the tenth year. Qualifying projects are new or expanding businesses in an enterprise zone that increase employment opportunities. (See pages 79-85)

CINCINNATI, OH

tax break

On May 9, 2007, the City of Cincinnati amended legislation that established and defined The City of Cincinnati Community Reinvestment Area, adding an automatic 100% property tax exemption for developments that meet a minimum of LEED Certified for newly constructed or rehabilitated commercial or residential buildings. For buildings that meet LEED Certified, Silver and Gold, the maximum amount of abatement per dwelling unit is $500,000 over 15 years for new construction or over 10 years for renovation/ remodel. There is no maximum for LEED Platinum. Previous legislation - Ordinance #274-2006 and Ordinance #342-2002 – offered the tax exemption at a maximum of 10 years and capped the maximum tax abatement amount lower than that of 2007. The latest 2007 legislation supersedes both the older 2006 and 2002 ordinances. On September 20, 2006, the City of Cincinnati passed an ordinance requiring new

municipal buildings to be LEED certified. Renovated municipal buildings should incorporate LEED principles during construction.

CRANFORD, NJ
incentive by request
On November 15, 2005 the Township of Cranford adopted Ordinance No. 2005-46 requiring all township-funded facilities projects and township-owned facilities to meet LEED Silver certification. The Township also adopted LEED-EB for its existing facilities. The township also has an incentive program whereby redevelopers may request an incentive, such as a density bonus, for achieving LEED certification.

GAINESVILLE, FL
fast-track permitting
fee reduction/ waiver
The city passed Ordinance # 1835 (Chapter 6, Article I.5) requiring government county buildings be LEED certified. Additionally, the county is providing a fast-track building permit incentive and a 50% reduction in the cost of building permit fees for private contractors who use LEED.

HONOLULU, HI
tax break
In February, 2006, the City and County of Honolulu passed Ordinance #06-06 requiring new city facilities over 5,000 square feet to be LEED Silver beginning in FY2008. A 2004 ordinance provides an exemption from real property taxes on the building improvements for a period of one year on all new commercial, resort, hotel and industrial construction that achieves LEED Certification.

HOWARD COUNTY, MD
expedited permitting
tax credit
On July 30, 2007, Howard County passed Bill #47-2008, requiring all new county projects (new construction, major renovation and core & shell) to achieve LEED Silver. Private construction greater than 50,000 square feet is required to achieve LEED Certified. The bill also includes expedited permitting for projects seeking LEED Gold or Platinum. On the same day, as part of the county's green building policy package, Bill #49-2007 established a five-year property tax credit for projects that achieve LEED-NC and LEED-CS. The credit increases depending on the level of certification: 25% for LEED Silver, 50% for LEED Gold and 75% for LEED Platinum. County tax credits for buildings certified under LEED for Existing Buildings extend for three years: 10% for LEED Silver, 25% for LEED Gold and 50% for LEED Platinum. These tax credits will be available for tax years beginning after June 30, 2008.

ISSAQUAH, WA
expedited permitting
The City of Issaquah passed Resolution #2004-11 in December, 2004, adopting a sustainable building and infrastructure policy. Developers intending to use LEED may receive free

professional consultation and projects achieving LEED certification are placed at the head of the building permit review line.

KING COUNTY, WA
grant
King County Council established a Green Building Grants Program that offers from $15,000 to $25,000 in grant funding to building owners who meet a minimum of LEED Silver for new construction or major renovation in the county, but outside the City of Seattle.

LOS ANGELES, CA
expedited permitting
grant
In July, 2007, Mayor Villaraigosa announced the City's new private sector green initiative that, among certain large commercial project requirements, will offer expedited permitting to all projects meeting or exceeding LEED Silver. On March 14, 2007, the Los Angeles Department of Water and Power Board of Commissioners, who are appointed by the Mayor and approved by the City Council, approved a policy to expedite water and electrical connections for buildings that meet LEED Silver. LADWP has also adopted a policy to require that its construction projects meet LEED Silver. In addition, builders and developers can take advantage of the LADWP Green Building Incentive that offers up to $250,000 in financial incentives to assist a building in becoming more green and meeting LEED standards.

MONROE COUNTY, NY
tax credit
On June 14, 2007, Monroe County Executive Maggie Brooks launched an initiative that requires adherence to LEED standards for new county buildings and major renovations of greater than 5,000 gsf. The initiative also directs the County of Monroe Industrial Development Agency to extend tax abatements from 10 to 14 years and adopt any further green building incentives to encourage the private sector to implement LEED.

MIAMI LAKES, FL
expedited permitting
fee reduction/ waiver
On July 10, 2007, the Miami Lakes Town Council adopted Ordinance #07-92, establishing a Green Building Program that requires all future buildings built by the town to meet at least 50 percent of LEED requirements. The program also allows for expedited permitting and possible fee reductions or rebates for private developers who build to the Green Building Program's standard.

NASHVILLE, TN
density bonus
On Feb. 22, 2007, the Nashville Planning Commission approved a density bonus for applying LEED to construction projects in certain neighborhood districts. In the downtown area, development in the Central Business District is eligible to increase the Floor Area Ratio (FAR) cap from 15 to 17 if the project achieves LEED Silver. Projects in this district benefit from a FAR of 19 if the project achieves LEED Gold. In the SoBro neighborhoods, developments are eligible

to increase the FAR cap from 5 to 7 if the project achieves LEED Silver. Projects in these neighborhoods benefit from a FAR cap of 9 if LEED Gold is achieved. Read the report.

OAKLAND, CA
free consultation/ promotional services
Oakland's 2005 Ordinance also promotes the use of green building strategies in private sector development by offering free technical assistance, green building guidelines and public promotion for qualified projects.

PASADENA, CA
grant
free technical assistance
Developers who exceed the minimum certification will qualify for a rebate from Pasadena Water and Power. The PWP High-Performance Building Program matches one month's electricity savings for each percent efficiency better than code that the building performs (capped at $100,000). Additionally, developers who include affordable housing will earn a construction tax rebate of $1000 per unit. PWP's Pasadena LEED Certification Program offers $15,000 grants for applicants who achieve LEED Certified ($20,000 for Silver, $25,000 for Gold and $30,000 for Platinum). $1000 per unit. PWPs Pasadena LEED Certification Program offers $15,000 grants for applicants who achieve LEED Certified ($20,000 for Silver, $25,000 for Gold and $30,000 for Platinum).

PORTSMOUTH, NH
density bonus
Through an update in its zoning ordinance on April 4, 2007, the City Council of Portsmouth adopted a density bonus (see page 90) for private projects that use LEED. In Central Business [district] A, projects benefit from a 0.5 increase in Floor Area Ratio that meet appropriate open space requirements and that also build to a minimum of LEED Certified.

SAN DIEGO, CA
expedited permitting
free technical assistance
In addition to its public sector adoptions, in 2002 San Diego developed the Sustainable Building Expedite Program that uses LEED criteria and provides significant plan review and construction incentives. Private sector buildings registering for LEED certification may be eligible to receive technical green building training, support, and education. Commercial projects achieving LEED Silver certification will benefit from expedited discretionary processes.

SAN FRANCISCO, CA
expedited permitting
On September 28, 2006, the Director of the San Francisco Planning Department issued Director's Bulletin 2006-02 giving priority permit review to all new and renovated buildings that achieve LEED Gold certification.

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SANTA MONICA, CA
grant
expedited permitting
In April 2004, the city launched the Santa Monica Green Building LEED Grant Program that provides a financial incentive for private developers who achieve LEED certification. In August 2005, the city passed an ordinance allowing LEED registered projects to receive expedited permitting. This includes all LEED for New Construction, Homes, Core and Shell. See Santa Monica's Green Building Program website for a comprehensive overview of the City's green building initiatives.

SEATTLE, WA
grant
density bonus
As of 2002, the city of Seattle encourages the private sector to incorporate LEED design standards into new and existing buildings by providing grants for qualifying projects. On April 12, 2006, Mayor Nickels signed zoning legislation that gives a height or density bonus to commercial or residential projects that achieve at least LEED Silver certification and contribute to affordable housing.

SAN ANTONIO, TX
fee reduction/ waiver
On June 15, 2006, the San Antonio City Council adopted Ordinance #2006-06-15-0722 that approves Phase II of the City's Incentive Scorecard System and authorizes administrative waiver or reduction of certain development fees for projects reaching specified scores from the scorecard. Points are awarded for projects achieving LEED-NC or LEED for Homes certification.

SARASOTA COUNTY, FL
fee reduction
expedited permitting
fast-track permitting
On March 18, 2005 the county passed a resolution mandating that all government county buildings be LEED certified. Additionally, the county is providing a fast-track building permit incentive and a 50% reduction in the cost of building permit fees for private contractors who use LEED. On August 22, 2006, the county approved a Green Development Incentive Resolution (#2006-174) that provides fast-track permitting for residential and commercial green developments. Incentives apply to projects pursuing LEED for Neighborhood Developments (ND) or FGBC Green Development Standards.

SUNNYVALE, CA
density bonus
On January 26, 2004, the City of Sunnyvale adopted Ordinance #2002- 0076, updating the city's building codes in areas zoned for industrial use to allow a density bonus of 5% FAR for buildings that achieve a minimum of LEED Certified. The municipal code improvement can be found under Title 19.32.075 of the Sunnyvale Municipal Code.

WASHINGTON, DC
grant
expedited permitting
Bill #B16-0515 also called on the mayor to establish an incentive program for private residential and commercial buildings. Incentives will include an expedited permit review and may also include grants. The mayor will also establish a Green Building Fund for technical assistance and monitoring of green buildings, education, and incentive funding for private buildings.

WEST HOLLYWOOD, CA
free technical
assistance
On July 16, 2007, the City Council of West Hollywood passed the Green Building Requirements and Incentives for Private Development with an ordinance requiring residential and commercial projects to meet minimum energy conservation and renewable energy requirements. The Ordinance also calls for the establishment of a Green Buildings Resource Center at West Hollywood City Hall.

STATES

HAWAII
expedited permitting
The Hawaii state legislature amended its provisions to Hawaiian counties with HRS 46 19.6, requiring priority processing for all construction or development permits for projects that achieve LEED Silver or equivalent.

MARYLAND
tax credit
In October 2001, Maryland's governor issued an Executive Order calling for all capital projects greater than 5,000 square feet to earn LEED certification. In April 2005, the Maryland House and Senate passed legislation requiring that a green building standard, such as LEED (Silver), be used for state capital projects. The state also approved a green building tax credit for commercial developers.

MINNESOTA
free technical
assistance
On May 25, 2007, Governor Pawlenty signed into law the Next Generation Energy Act of 2007 setting a roadmap towards a smarter energy future and requiring utilities provide technical assistance for commercial or residential projects that incorporate green building principles in their construction. By December 31, 2010, the Act established a goal of 100 commercial buildings achieving LEED certification, or equivalent, by December 31, 2010.

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NEW YORK
tax credit
low interest loans
In June 2001, New York Governor Pataki issued Executive Order #111 encouraging state projects to seek LEED Certification. The New York State Energy Research and Development Authority will be offering an incentive for design teams of any New York State building that achieves a LEED rating. NYSERDA's New Construction Program offers a 10% increase on incentives for energy efficiency measures that reduce the use of electricity. NYSERDA provides low interest loans (4% below market rate) for energy efficiency measures and building materials that meet LEED or other generally accepted green building standards. The New York State Green Building Tax Credit Program provides a tax incentive to commercial developments incorporating specific green strategies informed by LEED.

OREGON
tax credit
Oregon's LEED Business Energy Tax Credit (BETC), administered by the state Office of Energy, is tied to the level of LEED certification achieved. LEED for New Construction, Core and Shell, or Commercial Interiors projects achieving a minimum Silver certification will be eligible. Projects must also meet certain technical requirements.

PENNSYLVANIA
grants
Four state funds including the $20 million Sustainable Energy Fund provide grants, loans and "near-equity" investments in energy efficiency and renewable energy projects in Pennsylvania. In July 2005, the Pennsylvania State legislature passed House Bill 628, amending the Public School Code to provide a financial incentive to public school districts that achieve LEED Silver certification

Source: http://www.usgbc.org

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APPENDIX 3
THE GREENING OF HISTORIC PROPERTIES NATIONAL SUMMIT WHITE PAPER, 2006.

THE Greening of Historic Properties National Summit

WHITE PAPER

(WORKING DRAFT)

Pinpointing Strategies And Tactics
For Integrating Green Building Technologies
Into Historic Structures

Supported by: The Heinz Endowments, the Roy A. Hunt Foundation and the Massaro Corporation

Pittsburgh History & Landmarks Foundation

Green Building Alliance®

Overview

Historic preservation efforts have provided many of America's most notable structures with new leases on life. Through initiatives that apply historic preservation standards developed by the Department of Interior in 1977, countless historic structures in large cities and small towns across the country have had their life spans extended by efforts that have staved off the harmful effects of time, environmental damage, deferred maintenance, poorly conceived urban redevelopment initiatives and shifting societal priorities. The benefits generated by these projects have been significant. Beyond simply preserving buildings and reversing the effects of decay, historic preservation efforts have:

Encouraged large- and small-scale community renewal efforts
Facilitated the rebirth of numerous downtown areas
Provided opportunities to cultivate and strengthen community and regional pride
Supported the development of new business opportunities
Created opportunities for the collection of incremental tax revenues

Over the past 29 years, numerous historic structures across the country have been returned to their original appearance through the removal of aesthetically insensitive facades and structural updates, restoration and cleaning of original structural and ornamental features, repair or replacement of fenestration with original equipment or historically accurate replicas, and rehabilitation of building systems with appropriate new technologies that do not obscure or destroy the integrity of original floor plans or interior finishes. These undertakings have resulted in accurate preservation of America's strong and varied architectural heritage and continued confirmation of the relevance of regionally and nationally recognized architecture in day-to-day life.

The standards governing historic preservation projects have been questioned – or even disputed – by a number of groups throughout the years. One of the most notable, and perhaps most interesting, discussions in recent memory has involved the green building movement. Within the past 15 years, green building initiatives have challenged existing historic preservation standards with new approaches to building reuse, restorations, materials selection and system retrofits.

Designed to provide architects and building owners with a framework of energy-efficient and environmentally responsible building techniques, green building guidelines are quickly changing the face of both new construction and historic restoration. In addition to providing building owners with more creative approaches to building reuse and energy efficient design, green building guidelines are also encouraging the development of new strategies for recycled material application and integration of new structures with existing historic buildings. Most importantly, green building guidelines are encouraging architects and engineers to think beyond the confines of traditional construction and retrofit techniques, and are enabling building owners to specify, construct and own structures that truly fit their needs, both today and in the future.

Many professionals in the historic preservation and green building communities have recognized that the intersection of these two initiatives has the potential to generate a nearly endless array of positive results for all parties involved. At the same time, however, these same professionals have also found that joint projects have the potential to create points of friction between the two groups, due to a lack of flexibility between their respective standards and guidelines.

The Existing Situation

Three decades ago, the National Parks Service drafted the U.S. Department of Interior Standards for Historic Preservation. As written, these standards focus tightly on the accurate restoration of historic buildings to their original as-built states. This restoration approach entails cleaning and repairing materials whenever possible, rather than simply replacing with new components. The standards also champion the removal of unsympathetic or aesthetically offensive alterations that may have been added over the years. If original materials are damaged beyond repair or restoration and replacement materials must be used, it is mandated that historic preservationists use identical materials – such as stone, terra cotta, replica lighting fixtures, remanufactured wooden windows, etc. – as often as possible. Historic standards also demand that new building systems, including electrical service, HVAC, electronic and fiber optic cabling, security and fire protection components, be installed without compromising the appearance or integrity of interior surfaces, such as plaster or woodwork. Clearly, this requirement can pose a significant challenge, particularly in structures that do note have attics, basements or behind-the-wall access passages to house equipment or cabling.

Green building guidelines, on the other hand, encourage the incorporation of innovative building techniques utilizing newly created and recycled materials into new or renovated structures. Green building guidelines also mandate energy efficiency standards, and assume that state-of-the-art building, environmental and life safety control systems will be used as a matter of course. Integrating these materials and technologies into an existing historic structure, particularly those with solid-wall masonry construction, can provide significant challenges, and may bring green building advocates into direct conflict with accepted historic preservation standards.

The Fresh Approach To Common Ground

To overcome the hurdles between the historic preservation standards and green building guidelines, proponents of both agree that it is essential to reach a meeting of the minds on key areas of concern. After reviewing numerous projects undertaken across the country, both groups have pinpointed four key areas that frequently generate issues with items, such as project funding, tax credits, certification, designer and contractor selection, materials selection and application, construction planning and scheduling, and project management The four key areas of common concern include:

Envelope – the outer structure of a building, including roof, walls, windows, and foundation

Lighting – natural and electric illumination methods, including lighting fixtures, fixture placement, electrical service requirements, and the use of exterior and interior windows and skylights

HVAC – the systems used to heat and cool buildings

Materials – the structural components and finishes used to build a structure, enclose it, and then complete the interior spaces

To address the specific concerns involving these key areas, and to encourage larger scale discussion of the integration of historic preservation and green building guidelines, the *Greening of Historic Properties National Summit* was held in Pittsburgh on October 30, 2006. The purpose of the meeting was to coalesce experts from both the green building and historic preservation movements to formulate common goals and guidelines for greening historic properties. It is hoped that the outcomes and recommendations from this meeting – which are detailed in this paper – could be embraced by both the United States Green Building Council and the National Trust for Historic Preservation, and subsequently be applied to projects by members of these groups, as well as by the general public.

Common Areas Between The Green Building and Historic Preservation Movements

While it is clear that the green building and the historic preservation movements each have their own sets of requirements and organizational goals, it is important to note the areas where both groups share common views.

Embodied Energy And Reuse Of Existing Resources

Historic structures required significant expenditures of both energy and natural resources to be constructed. Examples include:

> Stone that was quarried in order to create building blocks and architectural elements
> Iron ore and coal that was mined, processed, and then converted into steel in a highly energy intensive process
> Sand and gravel that was mined for concrete and that involved expending fossil fuels and compromising the natural landscape
> Substantial trees that were felled for wooden structural members, woodwork, and flooring

Both green building and historic preservation advocates agree that demolishing historic structures effectively wastes both the natural resources and energy expended to create the building. In fact, many components used to build historic properties represent high levels of embodied energy and offer excellent durability characteristics. In most cases, the effective lifespan of many materials used in historic structures extends far beyond that of most materials used in modern structures. Demolition also creates a wide range of recycling and disposal challenges for developers, landfill operators and communities. By reusing, restoring and adapting historic structures to the needs of today, society is able to effectively leverage the energy and resource expenditures of past generations, while minimizing waste and current energy and materials usage.

Conservation of Resources

With many historic structures, resources that were once inexpensive and in plentiful supply have been either been entirely depleted over the generations or have increased significantly in price. An extensive array of building materials used in historic buildings – such as specific varieties granite and marble – are no longer available, as their original, naturally occurring deposits have been exhausted. In addition, the energy and labor costs involved in manufacturing construction materials and building a structure have skyrocketed over the generations. Looking at this situation collectively, green building advocates and historic preservation professionals agree that existing structures represent a significant investment in resources and that such investments should not be written off simply due to age or disrepair.

Preservation of Regional And Natural Cultural Heritage

Regional architecture is an important fiber in our nation's historic fabric. In many long-established communities, various styles of architecture speak to the historic presence of a city or town and to the wealth and success of its residents. Both green building advocates and historic preservationists share the belief that the importance of regional architecture must be acknowledged and should play a key role in determining appearance and placement of new structures built in established neighborhoods or communities. Frequently, historic structures exist in the cultural heart of a community where businesses and other cultural amenities exist. Reinvesting in these areas can help to mitigate suburban sprawl, maintain local economies and decrease the environmental and health costs of transportation by encouraging walkable communities.

Preservation Stimulates Local and State Economies

Throughout the last thirty years, numerous historic preservation projects have delivered significant financial benefits on both local and state levels. Historic preservation has breathed new life into dwindling downtown areas, stimulated interest in urban living, provided funding sources and the professional support needed to restore urban neighborhoods, and generated significant revenues by nurturing the development of small and mid-sized businesses and creating opportunities for the collection of tax receipts.

Adapting Existing Historic Structures To Current Societal Needs

For years, historic preservationists have advanced the cause of adaptive reuse of historically significant structures. Such reuse ensures the relevance of a structure and encourages ongoing maintenance and preservation. Green building advocates share this view, as adaptive reuse provides exceptional opportunities for architectural and engineering creativity without squandering existing investments in energy and resources.

Common Challenges Shared Between Green And Historic Audiences

While green building practitioners and historic preservationists do indeed share a number of common views, the two movements also share many challenges. Many of these challenges can slow progress on green/historic projects or can hinder acquisition of funding to complete them.

Lack of Clear, Coordinated Public Policy That Encourages Green/Historic Initiatives

Many leaders on the local, state and federal levels of government do not have a clear grasp on the benefits that can be generated by the greening of historic structures in their districts. For many government officials, these projects are more about aesthetics than energy conservation and the recycling of materials and existing structures. This mindset results in a weakened public support for green/historic initiatives and frequent battles over project funding.

Lack of Significant Public Investment In Green/Historic Undertakings

Rather than preserve and enhance existing structures with green technologies, numerous public officials favor new construction to address community goals. In many cases, there seems to be significantly more public relations value inherent in the announcement and implementation of new construction projects than there is in "fixing up" the historic structures in architecturally and culturally significant neighborhoods. As a result, public funding for construction frequently goes to projects that involve new construction.

Lack of Public Interest In Green/Historic Issues

The vast majority of the public knows little or nothing about green/historic initiatives. While the public may see the renovation of existing structures as positive for their communities, few members truly understand the benefits that come from integrating green building techniques into existing historic structures.

Growth of Urban Sprawl And Reliance On Disposable Architecture

The advent of expressways and increased reliance on the automobile over public transit systems has resulted in new developments being located further and further from the urban core or many metropolitan areas. As businesses move from older, historically significant urban structures to suburban buildings with life spans estimated in some cases to be less than 50 years, competition for tenants in inner city green/historic projects becomes increasingly fierce.

Inflexibility Between Existing Green Building Guidelines and Historic Preservation Standards to Support Building Re-use

Green building guidelines and historic preservation standards pose several areas of conflict for owners and developers of historic structures. Rather than try to mediate between the two distinct sets of regulations, many building owners will simply avoid areas of conflict altogether. The outcome is a less than perfect solution for both green building practitioners and historic preservationists.

Cost of Historic Restoration with Green Attributes Compared to New Construction

At this point in time, no good data is available to document the costs of green/historic projects compared to new construction. While the benefits from new construction projects may be fairly straightforward to estimate, green/historic projects typically must deal with issues such as demolition, remediation and retrofitting which can result in unanticipated costs and project overruns.

Cultural Focus On Short-Term Gains

Over the past 50 years, American culture has put more emphasis on short-term gains than long-term benefits. Funding organizations, building owners and tenants want to see returns from their green and historic restoration investments in the shortest time periods possible. Many of the new technologies do not have long-term track records, and may be difficult to justify when projects are specified

Challenges To LEED Standards Used To Rate Green Building Projects

The Leadership in Energy & Environmental Design (LEED) standards form the foundation of the rating scale used to assess the level of compliance with green building guidelines. LEED standards also determine the performance benchmarks for buildings equipped with green building technologies. These comprehensive standards assess every facet of a structure, from the foundation materials to roofing finishes. Green building certification points are awarded for compliance with green construction and technology techniques, as well as for the structure's energy performance attributes.

The Importance of Energy Efficiency

A primary concern with green building guidelines involves the weight given to compliance with energy efficiency benchmarks. While energy efficiency is a paramount concern in both new construction and historic restorations, it is often not possible to incorporate many energy-saving construction techniques in historic structures. For example, in established structures, particularly those in urban environments, it is nearly impossible to insulate a foundation without completely excavating the area around the structure. In addition, in masonry buildings with walls comprised of layers of brickwork, or in structures with exterior walls comprised solely of stone, there is essentially no way to install wall insulation without furring out interior walls and subsequently violating the standards set forth by the Secretary of the Interior.

Direct Conflicts with Secretary of Interior's Standards for Rehabilitation

Green building guidelines often cause concern for owners of historic structures, as many of the guidelines appear to be in direct conflict with the Secretary of Interior's Standards for Rehabilitation, which were developed nearly thirty years ago. A great deal of these conflicts may be attributed to the fact that much of the technology and many of the materials – particularly recycled materials – used in green buildings did not exist when the Secretary of Interior's standards were drafted. Areas of frequent conflict include the envelope of a building, lighting, HVAC systems and selection and application of materials.

Incomplete Data

To date, little data on the benefits generated by "greening" historic structures is available. Since many green building guidelines assume that certain building techniques and technological applications will be used, it can be difficult to measure the impact of green building initiatives on older buildings where such techniques and technologies have not been used or cannot be incorporated.

Issues with the Secretary of Interior's Standards

When the National Parks Service created the U.S. Department of Interior's Standards for Rehabilitation in 1977, great attention was focused on developing clearly defined standards that spelled out what was – and what was not – acceptable in a historic preservation project. Compliance with the standards qualifies owners of historic properties to apply for public and foundation funding to help underwrite the costs involved with their historic restoration projects.

Since their creation nearly thirty years ago, the standards have remained essentially unchanged. While consistency of the standards establishes benchmarks for quality, accuracy and compliance, it also creates a number of challenges for owners considering the integration of green building technologies into their historic structures.

The following are some of the notable challenges faced by green building practitioners when encountering Secretary of Interior's standards.

Lack of Flexibility To Accommodate New Technologies and Changing Preferences

Green buildings routinely incorporate a wide array of resource-saving technologies and create new and innovative environments for users of the spaces. The advent of high-tech building systems, coupled with the market's growing preference for open, flexible floor plans has the potential to create direct conflicts with historical preservation standards. The inability to integrate current technologies into historic structures without disturbing interior finishes, coupled with the constraints presented by having to closely adhere to existing floor plans to preserve the historic integrity of the structure, can make the greening of a historic building considerably more costly, if not entirely prohibitive.

Inflexibility with Replacement Materials

Preservation standards are particularly stringent with it comes to the use of replacement materials in historic structures. Designed to encourage the restoration and conservation of original building features, the standards mandate that replacement materials, such as stonework, windows and lighting fixtures have the same material, aesthetic and functional qualities as the component originally specified for the project. In the time since the standards were drafted, a nearly endless array of new building materials has been introduced to the marketplace. In addition, a growing selection of recycled products has been created to address a variety of application needs. Unfortunately, nearly all of these new products – such as synthetic slate and terra cotta, high-performance windows comprised of thermo panes and composite framing, and high-efficiency lighting – are not viewed as compatible or acceptable for use in historic restoration projects.

Difficulty in Retaining Interior Finishes While Incorporating New Building Control Systems

Many historic buildings were built to accommodate mechanical systems that are considered primitive by today's functional, safety and comfort standards. Gravity heating systems, non-existent or inefficient cooling systems and substandard electrical, fire protection and plumbing systems are more often than not the norm in older, non-updated structures, and are well-known for their inefficiency and ineffectiveness. Integrating new HVAC systems and retrofitting old wiring and plumbing often requires the gutting of an interior of a structure to reach or create mechanical spaces. Unfortunately, this creates a direct conflict with historic standards that mandate the retention of existing interior finishes the replacement of damaged surfaces with like materials, and the invisibility of any new systems or equipment.

Finding Professionals Interested in Integrating Green and Historic Preservation Standards

Without a doubt, it is considerably faster and easier to incorporate green building technology into new structures that pose significantly fewer design and construction obstacles. It is also much less difficult to adhere to historic preservation guidelines by installing old-style building systems, rather than trying to embrace and integrate new green technologies into a historic structure. It is also clear that if an integrated approach is not taken, both historic preservationists and green building advocates fail to take advantage of the substantial benefits the other group offers.

The challenge facing the marketplace involves finding historic preservationists who subscribe to green building concepts, and green building professionals willing to work within the framework of the Secretary of Interior's standards. While there are a growing number of professionals who recognize the importance of integrating both approaches in their work, there is still a shortage of those who can effectively design to accommodate both disciplines.

Common Ground Moving Forward

While there are challenges to overcome, significant benefits can be garnered through the greening of historic properties. From a joint perspective, the positive outcomes that can be created when historic preservationists and green building practitioners partner closely on projects include:

Innovative reuse of historic structures
Increased relevance of historic structures to current building users
Stronger demand for historic structures located within urban areas
Significantly higher levels of operating system efficiency
Markedly lower building operation costs
Preservation of community and natural resources
Reduction in solid and energy waste
The potential for significant revenue generation though rents and sales
Bolstering of the local economy through improved tax and business bases

To tap these benefits, it is necessary to develop flexible policies and creative approaches to new technology integration, materials use, retention of existing materials, integration of new design techniques and the development of innovative protocols.

Finding Points For Cooperation

On October 30, 2006, historic preservationists and green building practitioners gathered in Pittsburgh, Pennsylvania, for a summit meeting, *The Greening of Historic Properties.* At this meeting, more than 75 professionals drawn from the historic preservation, green building, architecture, engineering and government agency communities participated in a series of roundtable discussions to formulate ways preservationists and green building practitioners could work together to overcome challenges in the topic areas of HVAC, envelope, lighting and materials. A subset of attendees also worked on the development of policy initiatives to encourage more effective partnerships between preservationists and green building professionals. Workshop participants were asked to focus their attention on pinpointing three key areas of improvement in their respective topics, as well as to formulate tactics to bring about change in these key areas.

Reaction To The Proposed Strategies

At the **National Preservation Conference**, *Making Preservation Work,* held in Pittsburgh, Pennsylvania from October 31 through November 5, 2006, an intercept survey incorporating the recommendations and findings of the roundtable discussions was conducted in the convention hall. The 202 attendees surveyed were asked how much they agreed with the recommendations and tactics. For purposes of this report, a 100-point index scale for each item was created, with 100 points representing very strong agreement and 0 points representing very strong disagreement (i.e., strongly agree=100, agree=75, neither agree nor disagree=50, disagree=25, strongly disagree=0).
The recommendations and tactics from each of the summit roundtable groups, and the results from this survey, follow:

HVAC

In the area of HVAC, two roundtable groups discussed the challenges of incorporating state-of-the-art HVAC systems into historic structures.

	Index
1. **Get to know your client *and* building**	93.1
Conduct and sponsor more HVAC research (produce tech reports—develop more data on embodied energy and life cycle analysis)	85.4
Create a system for collecting case studies on new and old buildings	88.5
Use evidence-based research and development for HVAC decisions	87.4
2. **Capitalize on the opportunities a building has**	91.9
Apply passive systems and properties	87.4
3. **Consider separating ventilation from heating and cooling**	77.3
Use radiant and displacement ventilation	79.1

Envelope

The roundtable group on envelope issues touched on a number of subjects, including the important topics of windows and roofing.

	Index
1. **Improve understanding and analysis of historic materials assemblies, then incorporate performance of historic assemblies into energy modeling tools**	90.6
Windows/walls: Choose 15 assemblies to test and publish performance	80.3
Windows: develop full methodology for full Life Cycle Cost Analysis (LCCA) of window restoration vs. replacement windows	87.7
2. **Show mutual respect of historic preservation and green building guidelines**	93.5
Roofs: When not visible, green roofs, white roofs and photo-voltaic panels are acceptable	83.6
Under certain circumstances, photo-voltaic panels and wind turbines are acceptable, as long as they are reversible and are located on non-primary elevations or accessory buildings	78.3
3. **Undertake additional steps:**	
For small projects, create a list of prescriptive energy efficiency measures	85.7
Work with USGBC to develop embodied energy technology for credit in LEED	83.9
Preservation community should engage with USGBC in the development of new LEED "V3"	84.0

Lighting

In the area of lighting, the roundtable group focused their discussions on the deployment of various lighting technologies, the role of natural light and the integration of technology.

	Index
1. **Utilize professional lighting experts to meet the basis of design regarding historic character, function, use, energy conservation and passive lighting technologies**	86.4
Take advantage of natural attributes of historic buildings (high windows)	94.7
Coordinate lighting with the rest of the design team so interior finishes are properly lighted	89.0
2. **Keep it simple and manageable—educate users on how the system should work**	91.1
3. **Incorporate modern technology, such as bulbs, fixtures, and lighting control technology (new products) appropriate for historic properties**	89.0

Materials

The materials roundtable group focused their efforts on the development of educational programs, product definition and certification, and research.

	Index
1. Educate the public, practitioners and architecture and vocational school students	92.1
Reach out to major distributors by advertising successes of green buildings	89.1
Sponsor apprenticeships in restoration manufacturing and construction	90.0
Sponsor apprenticeships at vocational schools in preservation while educating them in green technologies	90.4
Educate on the health impact of materials	89.6
2. Define and certify products	87.1
Materials must become readily available	88.0
Build a network (provider/consumer) to raise awareness of products and reuse opportunities	89.8
Materials must be ranked comparably	86.3
Products must be available and suitable for the lay audiences	86.4
Establish a point system for building materials tied to historic restoration	85.5
3. Gain more information on life cycle costs of green material appropriate for historic preservation	90.2
Implement ASTM standards and testing of cleaning products	82.5
Consider maintainability and sustainability of materials	88.3

Policy Initiatives

The policy roundtable groups focused its attention on developing guidelines, increasing knowledge and developing meaningful tools.

	Index
1. Develop application guidelines and standards for sustainable design and historic preservation	93.0
Encourage early consultation with designers and materials manufacturers to develop products that address historic preservation requirements	92.4
Increase national awareness through development of policy briefs on green issues, cyclical maintenance, HVAC and energy use	90.3
Create federally certified product ratings	82.5
Develop a list of current policy initiatives	85.7
2. Increase sustainable design at historic preservation review agencies and vice-versa	88.9
Develop case studies to demonstrate sustainable preservation	89.6
Cross train and develop communication materials targeted at multiple user levels	87.5
Offer economic incentives for coordinated initiatives	89.8

3. **Implement life cycle assessments and embodied energy elaboration tools** 87.6
   - Develop a multifaceted approach for innovation (government, corporate developers, foundations) 86.8
   - Emphasize the value of energy embodied in existing structures through all levels of education 90.4
   - Create user-friendly language for life cycle assessment and embodied energy credit for better project marketability 91.0

Conclusions

To bring about meaningful change and unity between historic preservationists and green building practitioners, it is essential to maintain open and constructive dialogs that will support the development of mutually beneficial and effective guidelines, ratings and construction strategies. Each group brings significant value to the table, both for building owners and users, as well as communities at large. This is confirmed by the survey results, which consistently indicate strong support for these initiatives.

By pursuing the tactics discussed at the *Greening of Historic Properties* summit and documenting their outcomes, it is clearly possible to implement the recommendations that will leverage the power and potential of both the historic preservation and green building movements.

Green Buildings in Alexandria: Policy Recommendations
Appendix #4

The City of Alexandria Green Building and Sustainable Development Working Group

Members	Organization
Erica Bannerman	Senior Air Pollution Specialist Office of Environmental Quality, Department of Transportation and Environmental Services, City of Alexandria
Geoffrey Booth (Chair)	Senior Fellow, Sustainable Development ERM—Environmental Resources Management
Casey Callahan	Urban Planner ERM—Environmental Resources Management
Shane Cochran	Program Implementation Chief Division Chief Office of Housing, City of Alexandria
Al Cox	City Architect Office of Building and Fire Code Administration, City of Alexandria
William (Bill) Cromley	Principal and Owner William Cromley Restoration/Preservation
Eric N. Dobson	Director of Government Relations and Communications NAIOP—National Association of Industrial and Office Properties
Robert (Bob) J. Elliott, Jr., LEED AP	Senior Development Officer The JBG Companies
Jeffrey Farner	Deputy Director, Design and Development Department of Planning and Zoning, City of Alexandria
Gregg Fields	Deputy Building Official, Office of Building and Fire Code Administration, City of Alexandria
Brian M. Gordon	Vice President of Government Affairs Apartment and Office Building Association of Metropolitan Washington
Patrick Hagan	Senior Director of Development American Rivers Member, City of Alexandria Environmental Policy Commission
Faroll Hamer	Director Department of Planning and Zoning, City of Alexandria

Members	Organization
Elizabeth (Beth) Heider, AIA, LEED AP	Senior Vice President Preconstruction Skanska USA Building Inc.
Martin OBrien Johnson, PE	Civil Department Manager ADTEK
Richard (Rich) Josephson	Deputy Director Department of Planning and Zoning, City of Alexandria
Roger J. Limoges	Manager, State & Local Advocacy USGBC-US Green Building Council
Jeremy McPike, PMP, LEED AP	Division Chief, Capital Projects, City of Alexandria
Carlos Martin	Assistant Vice President Construction Codes and Standards Department USGBC-US Green Building Council
Judy R. Guse-Noritake AIA, LEED AP	Architect and Principal Noritake Associates
Annette Osso, LEED AP	President Virginia Sustainable Building Network
Peter Pennington	Member, City of Alexandria Environmental Policy Commission
Robert Phinney, AIA, LEED AP	Director of Sustainable Design Wisnewski Blair and Associates
Gregory (Greg) Ruff	Development Manager Winchester Homes
Frederick W. Rothmeijer	Principal MRP Realty
Lou Sagatov	President Sagatov Associates
William (Bill) Skrabak	Director Office of Environmental Quality, Department of Transportation and Environmental Services, City of Alexandria
Alex Strong	Director, Government Affairs NAHB-National Association of Home Builders
Kenneth W. Wire	Associate McGuireWoods LLP

Green Buildings in Alexandria: Policy Recommendations
Appendix #5

Regional Green Building Policies and Programs Overview: COG Members

February 5, 2008 (with updates for Fairfax County)

Jurisdiction and Green Building Contact Information	Policies for Public Facilities	Policies for Private Development
VIRGINIA		
City of Alexandria, VA www.alexandriava.gov Jeremy McPike jeremy.mcpike@alexandriava.gov Erica Bannerman erica.bannerman@alexandriava.gov	Green Building Policy for City facilities. Requires: • Analysis procedures for LEED feasibility for facilities 5,000 or greater • Staff green building training • Procurement practices for green Architectural/ Engineering services, buildings maintenance, and supplies • LEED-registered projects in planning and construction.12, 000 sq ft green roofs. • LID demonstration projects • Participation in Energy Star, Rebuild America, and the USGBC. • Public Schools incorporate energy conservation and green measures Green public projects in construction include TC Williams High School - LEED certification pending (Awarded Virginia Sustainable Building Network's Green Innovation Award), and the Charles Houston Recreation Center. LEED registered projects include the new DASH Bus Facility, Police Department, and Human Services under LEED Existing Building. A 5,000 square foot green roof and 5,000 square foot bioretention area will be installed at Coral Kelly Magnet Elementary School by 2009. Additionally, the Station at the Yard project is a mixed-use building with a LEED registered fire station and retail for the first floor and four stories of EarthCraft affordable/ workforce housing units above.	Checklist that tracks green building/ sustainable development practices Contractors of new developments required to complete LEED assessment checklist explaining how the development will voluntarily comply with LEED. Private Development includes the first LEED - Gold certified condo Project in Virginia at the Cromley Lofts. Ongoing public education to encourage the implementation of green building practices. Planning staff is developing possible incentives, appropriate standards, submission requirements, and the City's review process for green buildings.

Jurisdiction and Green Building Contact Information	Policies for Public Facilities	Policies for Private Development
Arlington County, VA www.arlingtonva.us Joan Kelsch jkelsch@arlingtonva.us	Internal working policy supporting sustainable practices. Formalized policy requiring LEED Silver certification of all public buildings over 5,000 sq ft. in development. Demonstration green roof on County office building. Green public buildings include LEED certified Langston Brown School and Community Center; LEED certification pending for Walter Reed Community Center, the Parks Operations building, and Shirlington Library.	1. LEED Scorecard for site plan projects. Expectation 26+ credits. Staff oversight. 2. Density Incentive of .15-.35 FAR for LEED certification (ranging from certified to platinum). Bond to ensure compliance. 3. $0.03/sq ft contribution to Green Building Fund for projects not seeking LEED certification. 4. Energy Star requirement for appliances and fixtures in multifamily buildings. 5. Voluntary Green Home Choice program based on EarthCraft.
Fairfax County, VA www.fairfaxcounty.gov Noel Kaplan Department of Planning and Zoning Noel.Kaplan@fairfaxcounty.gov	Sustainable Development Policy for Capital Projects adopted by Board of Supervisors, February 2008. Goal of LEED silver certification for county projects greater than 10,000 square feet in size; project teams encouraged to meet LEED ratings beyond Silver if practicable. Goal of LEED certification for projects between 2,500 and 10,000 square feet; project teams encouraged to attain LEED Silver level if practicable. Highest LEED level practical for smaller projects. Energy Management Control Systems into all new county buildings and retrofits. LID demonstration projects.	Comprehensive Plan Amended in December 2007 to incorporate support for green building practices. Plan linkages established between the incorporation of green building/energy conservation practices and the attainment of certain Comprehensive Plan Options, planned uses, and densities/intensities of development. • LEED certification or equivalent for nonresidential and multi-story multifamily residential zoning proposals in growth centers seeking: - The high end or Overlay Level of the planned density/intensity range; - A Comprehensive Plan Option; - A change in use from what would be allowed as a permitted use under existing zoning. • ENERGY STAR® Qualified home designations for other residential development proposals at the high end of the Plan density range. Policy Plan support for better site design, LID, and energy/water conservation Proffer commitments during zoning process for variety of green building and LID practices. Ongoing public education to encourage LID techniques, including LID

Jurisdiction and Green Building Contact Information	Policies for Public Facilities	Policies for Private Development
City of Falls Church, VA	City Council 2007 Vision and Strategic Plan promotes green building and LID. Directs staff to create green building program for public and private buildings. 2006 Comprehensive Plan incorporates policies for green building. Pursuing use of recycled carpets in City building renovations. Energy management system in City Hall. LID demonstration project in City Hall area.	City Council 2007 Vision and Strategic Plan promotes green building and LID. Directs staff to create green building program for public and private buildings. 2006 Comprehensive Plan incorporates policies for green building. Successful negotiations for LEED and green roofs on four private projects.
Town of Leesburg, VA	Leesburg Town Plan promotes energy efficiency and use of green building standards such as LEED	Leesburg Town Plan promotes energy efficiency and use of green building standards such as LEED
Loudoun County, VA www.loudoun.gov	Green building practices currently being implemented. Energy efficiency and green design in current RFPs. ENERGY STAR appliances, tankless water heaters, dual flush toilets, waterless urinals, programmable thermostats, and ultraviolet lighting in ductwork are a County standard. LEED accredited professionals on staff. Energy manager on staff since 2001. Energy accounting software in use for public buildings. Undertaking lighting retrofits.	Countywide Housing Policies, CPAM 2007-0001 - Adopted September 18, 2007 Guiding Principles Policies - The County encourages development that utilizes energy efficient design and construction principles, promotes high performance and sustainable buildings, and minimizes construction waste and other negative environmental impacts. Mixed Use Business Zoning District - Adopted December 19, 2007 Incentive Program - The Board of Supervisors may grant an increase of 0.1 FAR above the maximum permitted floor area ratio when at least 20% of the total floor area of the district achieves the Leadership in Energy and Environmental Design (LEED) Certification at the Gold level.
Prince William County, VA www.pwcgov.org Lou Ann Purkins lpurkins@pwcgov.org	Internal policy for green building under consideration Recently completed green police station and development services building to meet LEED certification Energy management control systems being implemented in all new buildings and building upgrades	Green building for private development under review by senior staff Amendment to the Environmental Chapter of the Comprehensive Plan for green building to be considered during 2008 update. Policy support for better site design, LID, and energy/water conservation in the

Jurisdiction and Green Building Contact Information	Policies for Public Facilities	Policies for Private Development
		Comprehensive Plan. Proffer commitments and SUIP conditions negotiated during zoning process for a variety of green building and LID practices.

Jurisdiction and Green Building Contact Information	Policies for Public Facilities	Policies for Private Development
MARYLAND		
City of Gaithersburg, MD www.gaithersburgmd.gov Erica Shingara eshingara@gaithersburgmd.gov	Master Plan Environment Element states following goals and strategies: • Municipal facilities, City funded projects, and infrastructure projects be constructed, renovated, operated, maintained and deconstructed using green building, LID, waste management, and conservation landscaping principles and practices to the fullest extent possible. • Incorporate sustainable requirements in bid requests for new building projects or renovations, when feasible, and utilize construction consultants with green experience. • Perform energy audits of existing City facilities and implement energy retrofits when appropriate. Green building education of City officials and staff City considering legislation requiring LEED Silver certification for municipal buildings. New LEED certified Youth Center	Green building education and outreach to residents, and development community. Partner in M-NCPPC Going Green at Home program with M-NCPPC. Green residential building code standards in development. Development Review: Requires new commercial, institutional, or multi-family development to complete and submit a LEED checklist as part of the site plan and building permit application process. Commercial Incentive Program with tiered incentives discounting City building permit fee according to levels of LEED certification: • LEED Platinum: 50% refund; • LEED Gold: 40% refund; • LEED Silver: 30% refund; and • LEED Certified: 20% refund.
Greenbelt, MD	City requires LEED Silver certification for public buildings	
Montgomery County, MD www.goinggreenathome.org Marion Clark, M-NCPPC marion.clark@mncppc-mc.org	Green Building Bill of 2007 requires all new County buildings, additions and major renovations greater than 10,000 square feet, and all building projects receiving County funding of 30% or more meet LEED Silver and Energy Design Standards. Includes life-cycle-cost analysis of alternative systems and components. Required written certification of	Green Building Bill of 2007 requires that all private commercial and multifamily development projects over 10,000 sq ft meet LEED certification or equivalent. The regulation to implement this Montgomery Green Building Law has been adopted. Senior staff developing green building implementation plan,

Jurisdiction and Green Building Contact Information	Policies for Public Facilities	Policies for Private Development
	compliance to energy standards. The regulation to implement this Montgomery Green Building Law has been adopted. Senior staff developing green building implementation plan. Energy conservation practices in all County buildings The Green Building Program for Montgomery County Public Schools (MCPS) works with students, staff and the community to establish MCPS as a model for sustainable school design and operations. www.Schools2Green.org	including tax incentive package. Going Green at Home outreach and education program for homeowners, builders, and contractors. Master and Sector Plans language encourages green building technology. White Flint and Glenmont redevelopment piloting LEED for Neighborhoods standard Development Review promotes and requests use of high performance measures.
Prince George' County, MD	General guidelines for environmentally sustainable development. Green building program launch in mid-2007. Low VOC paint purchasing for all public buildings. Energy Manager to be hired. Energy audits of County buildings underway.	General guidelines for environmentally sustainable development. Green building program under development.
City of Rockville, MD www.rockvillemd.gov Nate Wall nwall@rockvillemd.gov	Environmental Commission studying green building programs from other jurisdictions, and will make recommendations to Mayor and City Council for program.	Environmental Commission studying green building programs from other jurisdictions, and will make recommendations to Mayor and City Council for program. City currently has a moratorium in place on most new construction activities. Would like to have green building program in place before moratorium expires in December 2007.

Jurisdiction and Green Building Contact Information	Policies for Public Facilities	Policies for Private Development
DISTRICT OF COLUMBIA		
Washington, D.C. www.dc.gov Chris Shaheen, chris.shaheen@dc.gov	Green Building Act of 2006 legislates green building practices for government buildings: • Effective immediately, residential buildings over 10,000 sq ft and all commercial projects that result from lease of public	Green Building Act of 2006 legislates green building practices for private buildings: • In January 2009, all commercial buildings over 50,000 sq ft must complete LEED checklist as part of permit process • In January 2010, commercial

Jurisdiction and Green Building Contact Information	Policies for Public Facilities	Policies for Private Development
DISTRICT OF COLUMBIA		
	property through disposition must meet Green Communities or LEED Silver certification standards. • Building projects first funded in FY08 budget, including interior renovations, residential, and commercial, must meet Green Communities or LEED Silver certification standards. • Starting in FY09 budget, all new construction or substantial improvement of projects receiving more that 15% of total costs through public financing must meet Green Communities or LEED certification standards. • District of Columbia building code to be updated to include green building practices Energy efficiency, green power, and environmentally preferable purchasing. ENERGY STAR and green design included in RFP's. LID demonstration projects.	buildings greater than 50,000 sq ft and resulting from sale of public property through deposition must meet LEED certification standards • In January 2012, all commercial buildings over 50,000 q ft must meet LEED certification standard Expedited permitting of green building projects before policy implementation date Office of Planning Sustainable resource guide for development community Ongoing energy efficiency and conservation programs: • Free energy audits. • Renewable Energy Demonstration Project provides up to 50% of installation costs • District Solar Initiative • ENERGY STAR appliance and lighting rebates • Grants for small business energy efficiency measures • Support for energy efficiency/weatherization in low income homes and CDC projects
Anacostia Waterfront Corporation www.anacostiawaterfront.net	Draft green development standards for public and private development in review.	Draft green development standards for public and private development in review.

Source: Greening the Metropolitan Washington Region's Built Environment, 2007, Metropolitan Washington Council of Governments
http://www.mwcog.org/environment/greenbuilding/
http://www.fairfaxcounty.gov/news/2008/030.htm

Green Buildings in Alexandria: Policy Recommendations
Appendix #6

Registered US Green Building Projects in Alexandria

Project Name	Owner	Size (Gross Sq. Ft.)	Date Joined	Project Type
2903 Mount Vernon Avenue	Private Sector	7,500	7/31/2007	Commercial Office Retail
Carlyle Plaza One	Private Sector	602,000	6/26/2007	Commercial Office Retail
Charles Houston Recreation Center	City of Alexandria	34,993	12/9/2005	Commercial Office Assembly (e.g., conv. Center) Daycare Recreation Library Park (i.e. greenway) Community Center
City of Alexandria Police Department Facility	City of Alexandria	108,500	3/1/2007	Commercial Office Laboratory
Cooper Cary Office Space	Saul Centers Private Sector	13,317	1/10/2006	Commercial Office
Cromley Lofts	Cromley Lofts LLC. Private Sector	10,967	10/28/2005	Multi-Unit Residential
DASH Bus Operations & Maintenance Facility	City of Alexandria	270,880	1/30/2006	Transportation
Echelon	Private Sector	474,000	6/21/2007	Multi-Unit Residential
Episcopal High School New Science Facility	Episcopal High School Non-Profit Corporation	27,000	10/20/2003	Laboratory K-12 Education
Harvard & King Streets	Faison & Associates Private Sector	52,440	12/19/2005	Multi-Unit Residential
Human Services	Mt. Vernon Avenue LLC Private Sector	42,301	12/11/2006	Commercial Office
Kim Family's First	Private Sector	14,500	4/20/2007	Commercial Office
LEED-NC v2.2 (LO2 Max2) (USGBC Test)	Private Sector	44,444	4/27/2007	K-12 Education
Lincoln Cottage – Visitor Education Center	National Trust for Historic Preservation Non-Profit Corporation	5,080	1/18/2006	Interpretive Center
Mt. Vernon Mental Health Center	Fairfax County	38,000	8/11/2006	Healthcare Community
Test Project - PDF Reg	Federal Government	4,000,000	4/20/2007	Recreation

Project Name	Owner	Size (Gross Sq. Ft.)	Date Joined	Project Type
The Station at Potomac Yard	City of Alexandria	168,630	3/20/2007	Multi-Unit Residential Retail Public Order & Safety Other
Victory Center	Spaulding & Slye Private Sector	125,000	12/15/2004	Commercial Office

Source: http://usgbc.org/LEED/Project/RegisteredProjectList.aspx

Green Buildings in Alexandria: Policy Recommendations

Appendix #7

Comparison of Green Building Rating Systems

Rating System and Governing Body	Green Building Design Criteria	Building Types Covered	Certification Process
Leadership in Energy and Environmental Design (**LEED**) Green Building Rating System™ Developed by United States Green Building Council (USGBC) Number of LEED Certified Projects Worldwide: Commercial buildings: 1,004/ Homes: 267 Source: http://www.usgbc.org	Sustainable site development. Water savings Energy efficiency Materials Selection Indoor environmental quality Innovation in Design	Specific LEED rating systems have been developed for: - Homes (currently in pilot stage) - New Commercial Construction and Major Renovations - Existing Building - Commercial Interiors - Core and Shell development - Neighborhood Development - Schools - Retail - Health Care is currently under development	USGBC conducts third party verification prior to awarding a certification. Cost of certification: $2,500 to $22,500 depending on member status, building type and size. Significant documentation required for submittal. Accredited Professional is recommended but not required to be part of the design team
EarthCraft House™ is a residential green building program of the Greater Atlanta Home Builders Association in partnership with Southface. To date: 4,000 EarthCraft House single family homes and over 1,500 EarthCraft Multifamily dwelling units have been certified. Source: http://www.earthcrafthouse.com	Site Planning Energy Efficient Building Envelope and Systems Resource Efficient Design Resource Efficient Building Materials Waste Management Indoor Air Quality Water Conservation (Indoor and Outdoor) Homeowner Education Builder Operations Bonus/Innovation Points	New and renovated homes, including: - Single family homes - Multi-family homes - Duplexes - Townhouses - Low-rise apartment - Condominiums	Third party certification is conducted by Southface. Cost to builder for joining EarthCraft House program - $825 The EarthCraft House fee for each house is $0.10/sq.ft. (minimum $250). The builder is required to: Attend a one-day EarthCraft House training. Attend a design review with EarthCraft House staff to generate an individualized EarthCraft House scoring worksheet. And then participate in a walk-through with EarthCraft House staff.

Rating System and Governing Body	Green Building Design Criteria	Building Types Covered	Certification Process
Green Globes - an on-line auditing tool that lets designers, property owners and managers assess and rate buildings against best practices and standards. Run by the **Green Building Initiative™ (GBI).** Source: http://www.thegbi.org	Project Management Site Energy Water Resources Emissions, Effluent and other Impacts Indoor Environment	New commercial building. Existing commercial buildings. The GBI works with NAHB to promote Green Home Building Guidelines which are designed to be a tool kit for the individual builder looking to engage in green building practices and home builder associations (HBAs) looking to launch their own local green building programs.	Third party certification is required to obtain certification but self-certification is an option. $4,000-$6,000 per building for third party verification. On line questionnaire required to be completed by building owner.
ENERY STAR Buildings that earn the ENERGY STAR are the top performers for energy efficiency nationwide and use about 35 percent less energy than average buildings. Developed by EPA who provides strategies, tools, professional assistance, and recognition opportunities to help buildings and plants improve energy efficiency. More than 3,200 buildings in all 50 states representing almost 575 million square feet have earned the ENERGY STAR label. Source: http://www.energystar.gov/	Energy Efficiency	Homes and commercial and industrial buildings including offices, bank branches and financial centers, courthouses, hospitals, hotels and motels, K-12 schools, medical offices, supermarkets, dormitories and warehouses.	A Professional Engineer must verify the Statement of Energy Performance for verification to obtain ENERGY STAR rating above 75. No fee.
Standard 189P (Standard for the Design of High-Performance Green Buildings Except Low-Rise Residential Buildings) is a building standard that is being developed to provide minimum guidelines for	Sustainable sites Water use efficiency	New commercial buildings and major renovation projects. Excludes Low-Rise Residential Buildings.	No certification. It is not a rating system, and is meant to be used in conjunction with other ASHRAE (American Society of Heating, Refrigerating and Air-

Rating System and Governing Body	Green Building Design Criteria	Building Types Covered	Certification Process
green building practices and will provide a baseline for sustainable design, construction, and operations in order to drive green building into mainstream building practices. Source: Proposed Standard 189, Standard for the Design of High-Performance Green Buildings Except Low-Rise Residential Buildings First Public Review (May 2007)	Energy efficiency Building's impact on the atmosphere Materials and resources Indoor environmental quality	Excludes existing buildings.	Conditioning Engineers) standards. Submittals required as outlined in code.
BREEAM (Building Research Establishment Environmental Assessment Method) BRE is the certification and quality assurance body for BREEAM ratings in the UK. Source: http://www.breeam.org	Management Health and Wellbeing Energy Transport Water Material and Waste Land Use and Ecology Pollution	Courts Homes Industrial Multi-Residential Prisons Offices Retail Schools Bespoke - system for buildings that fall outside the standard BREEAM categories International can assess a single development or BRE can also assist in creating a BREEAM version for a country or region outside of the UK.	There are several licensed assessment organizations mainly in the UK.

Rating System and Governing Body	Green Building Design Criteria	Building Types Covered	Certification Process
GREEN STAR Developed by Green Building Council Australia (GBCA) Source: http://www.gbcaus.org	Management Indoor Environment Quality Energy Transport Water Materials Land Use & Ecology Emissions Innovation	Commercial office design and construction. Rating systems have been recently developed for shopping centers, healthcare facilities education facilities, mixed use/multi-unit residential, industrial, and public buildings.	In Australia, GBCA validates the project's achievement through a formal assessment.

Green Buildings in Alexandria: Policy Recommendations
Appendix #8

ENERGY STAR and The Virginia Uniform Statewide Building Code (USBC)

What is ENERGY STAR? What Building Elements does it address?

Buildings that earn the ENERGY STAR are the top performers for energy efficiency nationwide and use about 35 percent less energy than average buildings. It was developed by the US Environmental Protection Agency which provides strategies, tools, professional assistance, and recognition opportunities to help buildings and plants improve energy efficiency. More than 3,200 buildings in all 50 states representing almost 575 million square feet have earned the ENERGY STAR label. Source: http://www.energystar.gov/ (See Page 12 of the City of Alexandria Green Building White Paper, December 25th, 2007 for further details and Appendix 4 of this report for details of what building elements are addressed in ENERGY STAR).

The Virginia Uniform Statewide Building Code and how it is amended?

The Virginia Uniform Statewide Building Code (USBC) is a state regulation promulgated by the Virginia Board of Housing and Community Development, a Governor-appointed board, for the purpose of establishing minimum regulations to govern the construction and maintenance of buildings and structures. The provisions of the USBC are based on nationally recognized model building and fire codes published by the International Code Council, Inc. The model codes are made part of the USBC through a regulatory process known as incorporation by reference. The USBC also contains administrative provisions governing the use of the model codes and establishing requirements for the enforcement of the code by the local building departments and other code enforcement agencies. In keeping with the designations of the USBC used previously, since the 2003 editions of the International Codes are incorporated by reference into this version of the USBC, it is known as the 2003 edition of the USBC.
Source:
http://www.dhcd.virginia.gov/StateBuildingCodesandRegulations/PDFs/Virginia_Construction_Code_USBCPart_I.pdf

The International Code Council is currently developing ICC 700, "The National Green Building Standard" (NAHBSv2) working with the National Association of Home Builders. This code is referenced as NAHBSv2 in point 12 above.
Source: http://www.iccsafe.org/dyn/prod/9551S08.html

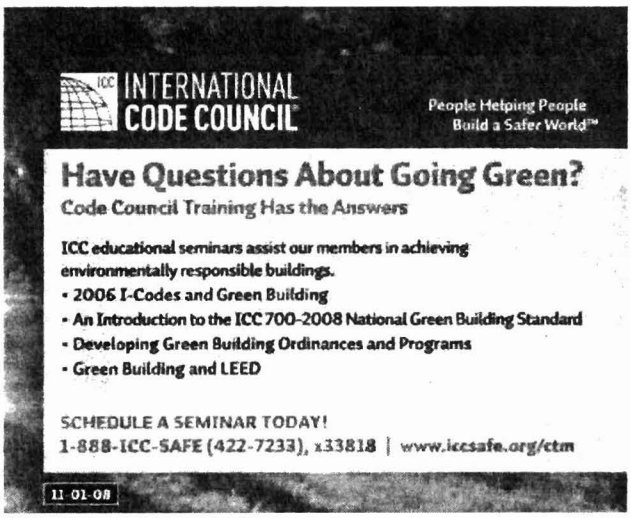
The 2009/2010 ICC CODE DEVELOPMENT SCHEDULE has been set with the deadline for receipt of applications for Code Committees set for January 2nd, 2009. Source:
http://www.iccsafe.org/cs/codes/2009-10cycle/CD-Schedule.pdf

The International Code Council Board at its July 19th, 2008 meeting approved the creation of a Sustainable Building Technology Committee (SBTC) to support its many ongoing efforts in green, sustainable and safe construction. The SBTC will provide an open forum for discussion of sustainability and ensure that Code Council members and stakeholders have a key voice in the critical debate. The SBTC will be charged with:

- Developing proposed code changes and analysis/response of related changes proposed for the Code Council family of codes and standards,
- Participating in the development of Council guidelines to assist members and jurisdictional authorities in implementing sustainable construction practices in their communities,
- Providing input on related Council programs such as green training and a green certification program for First Preventers, code officials who ensure buildings are safe and energy efficient, and,
- Serving in an advisory role to the Council's Board of Directors regarding the development of new International Codes or Standards in support of sustainable construction practices.

Source: http://www.iccsafe.org/news/nr/2008/0724green.html

The International Code Council also provides training programs:



Source: http://www.iccsafe.org/training/

Green Buildings in Alexandria: Policy Recommendations
Appendix #9

Summary of Government LEED® Incentives - August, 2007

This document summarizes efforts on the state and local level to build incentive-based programs for the development of green buildings, with a focus on USGBC's LEED Rating System. Government incentives are categorized as either emanating from the state level or the local level. For updates, contact:
Jason Hartke – Manager, State and Local Advocacy – (202) 742-3781
jhartke@usgbc.org
Jeremy Sigmon – Advocacy Coordinator – (202) 742-3811
jsigmon@usgbc.org
See www.usgbc.org - Resources - Government for the most current list.

COUNTIES, CITIES & TOWNS

ACTON, MA
density bonus
April 5, 2004: A new zoning by-law (section 5.5B.2.2.d) unanimously adopted at the Annual Town Meeting gives a density bonus for buildings achieving LEED certification.

ARLINGTON COUNTY, VA
density bonus
expedited permitting
Arlington County's Green Building Incentive Program, adopted in 1999 and expanded in 2003, allows commercial projects and private developments earning LEED Silver certification to develop sites at a higher density than conventional projects. All site plan applications for commercial projects are required to include a LEED Scorecard and have a LEED Accredited Professional on the project team regardless of whether or not the project intends to seek LEED certification. All projects must contribute to a green building fund for county-wide education and outreach activities. The contribution is refunded if projects earn LEED certification. Arlington sponsors a voluntary green home program that encourages builders of new single-family homes to incorporate energy efficient and other green building components in their projects. The County offers "front-of-the-line" plan review, site signs, and publicity to program participants who achieve a given number of points as outlined by Arlington's Green Home Choice program.

BABYLON, NY
fee reduction/ waiver
On November 29, 2006, the Town of Babylon passed a resolution adopting a local law that requires LEED certification for any new construction of commercial buildings, office buildings, industrial buildings, multiple residence, or senior citizen multiple residence over 4,000 square

feet. If certification is achieved, the Town will refund the certification fees paid to USGBC by the developer.

BALTIMORE COUNTY, MD
tax break
On June 5, 2006, the County Council passed bill # 85-06 that gives a county property tax credit to any commercial building that achieves LEED-NC Silver certification. The duration of the tax credit is for ten consecutive years.

BAR HARBOR, ME
density bonus
On June 13, 2006, Bar Harbor amended its municipal codes to award a density bonus of an additional market-rate dwelling unit for construction projects in which all dwelling units meet LEED standards. This bonus applies to projects within a Planned Unit Development and compliance is determined by either application or by affidavit for adherence during construction.

CALGARY, AB
fee reduction/ waiver
The City Council passed a Sustainable Building Policy (#CE001) on September 13, 2004 that requires new or significant renovations over 500m2 to achieve LEED Silver certification or higher. In the spring of 2007, the City Council passed the Calgary Building Permit Bylaw (64M94 page 17) allowing for a fee reduction for all private projects pursuing LEED or Build Green certification.

CHATHAM COUNTY, GA
tax break
In May, 2006, the Board of Commissioners of Chatham County passed an ordinance amending Chapter 7 of the county code that gives full property state and county tax abatement for commercial buildings achieving LEED Gold certification for the first five years, then tapering off by 20% each year until the tenth year. Qualifying projects are new or expanding businesses in an enterprise zone that increase employment opportunities. (See pages 79-85)

CINCINNATI, OH
tax break
On May 9, 2007, the City of Cincinnati amended legislation that established and defined The City of Cincinnati Community Reinvestment Area, adding an automatic 100% property tax exemption for developments that meet a minimum of LEED Certified for newly constructed or rehabilitated commercial or residential buildings. For buildings that meet LEED Certified, Silver and Gold, the maximum amount of abatement per dwelling unit is $500,000 over 15 years for new construction or over 10 years for renovation/ remodel. There is no maximum for LEED Platinum. Previous legislation - Ordinance #274-2006 and Ordinance #342-2002 - offered the tax exemption at a maximum of 10 years and capped the maximum tax abatement amount lower than that of 2007. The latest 2007 legislation supersedes both the older 2006 and 2002 ordinances. On September 20, 2006, the City of Cincinnati passed an ordinance requiring new municipal buildings to be LEED certified. Renovated municipal buildings should incorporate LEED principles during construction.

CRANFORD, NJ
incentive by request
On November 15, 2005 the Township of Cranford adopted Ordinance No. 2005-46 requiring all township-funded facilities projects and township-owned facilities to meet LEED Silver certification. The Township also adopted LEED-EB for its existing facilities. The township also has an incentive program whereby redevelopers may request an incentive, such as a density bonus, for achieving LEED certification.

GAINESVILLE, FL
fast-track permitting
fee reduction/ waiver
The city passed Ordinance # 1835 (Chapter 6, Article I.5) requiring government county buildings be LEED certified. Additionally, the county is providing a fast-track building permit incentive and a 50% reduction in the cost of building permit fees for private contractors who use LEED.

HONOLULU, HI
tax break
In February, 2006, the City and County of Honolulu passed Ordinance #06-06 requiring new city facilities over 5,000 square feet to be LEED Silver beginning in FY2008. A 2004 ordinance provides an exemption from real property taxes on the building improvements for a period of one year on all new commercial, resort, hotel and industrial construction that achieves LEED Certification.

HOWARD COUNTY, MD
expedited permitting
tax credit
On July 30, 2007, Howard County passed Bill #47-2008, requiring all new county projects (new construction, major renovation and core & shell) to achieve LEED Silver. Private construction greater than 50,000 square feet is required to achieve LEED Certified. The bill also includes expedited permitting for projects seeking LEED Gold or Platinum. On the same day, as part of the county's green building policy package, Bill #49-2007 established a five-year property tax credit for projects that achieve LEED-NC and LEED-CS. The credit increases depending on the level of certification: 25% for LEED Silver, 50% for LEED Gold and 75% for LEED Platinum. County tax credits for buildings certified under LEED for Existing Buildings extend for three years: 10% for LEED Silver, 25% for LEED Gold and 50% for LEED Platinum. These tax credits will be available for tax years beginning after June 30, 2008.

ISSAQUAH, WA
expedited permitting
The City of Issaquah passed Resolution #2004-11 in December, 2004, adopting a sustainable building and infrastructure policy. Developers intending to use LEED may receive free professional consultation and projects achieving LEED certification are placed at the head of the building permit review line.

KING COUNTY, WA

grant
King County Council established a Green Building Grants Program that offers from $15,000 to $25,000 in grant funding to building owners who meet a minimum of LEED Silver for new construction or major renovation in the county, but outside the City of Seattle.

LOS ANGELES, CA
expedited permitting
grant
In July, 2007, Mayor Villaraigosa announced the City's new private sector green initiative that, among certain large commercial project requirements, will offer expedited permitting to all projects meeting or exceeding LEED Silver. On March 14, 2007, the Los Angeles Department of Water and Power Board of Commissioners, who are appointed by the Mayor and approved by the City Council, approved a policy to expedite water and electrical connections for buildings that meet LEED Silver. LADWP has also adopted a policy to require that its construction projects meet LEED Silver. In addition, builders and developers can take advantage of the LADWP Green Building Incentive that offers up to $250,000 in financial incentives to assist a building in becoming more green and meeting LEED standards.

MONROE COUNTY, NY
tax credit
On June 14, 2007, Monroe County Executive Maggie Brooks launched an initiative that requires adherence to LEED standards for new county buildings and major renovations of greater than 5,000 gsf. The initiative also directs the County of Monroe Industrial Development Agency to extend tax abatements from 10 to 14 years and adopt any further green building incentives to encourage the private sector to implement LEED.

MIAMI LAKES, FL
expedited permitting
fee reduction/ waiver
On July 10, 2007, the Miami Lakes Town Council adopted Ordinance #07-92, establishing a Green Building Program that requires all future buildings built by the town to meet at least 50 percent of LEED requirements. The program also allows for expedited permitting and possible fee reductions or rebates for private developers who build to the Green Building Program's standard.

NASHVILLE, TN
density bonus
On Feb. 22, 2007, the Nashville Planning Commission approved a density bonus for applying LEED to construction projects in certain neighborhood districts. In the downtown area, development in the Central Business District is eligible to increase the Floor Area Ratio (FAR) cap from 15 to 17 if the project achieves LEED Silver. Projects in this district benefit from a FAR of 19 if the project achieves LEED Gold. In the SoBro neighborhoods, developments are eligible to increase the FAR cap from 5 to 7 if the project achieves LEED Silver. Projects in these neighborhoods benefit from a FAR cap of 9 if LEED Gold is achieved. Read the report.

OAKLAND, CA
free consultation/

promotional services
Oakland's 2005 Ordinance also promotes the use of green building strategies in private sector development by offering free technical assistance, green building guidelines and public promotion for qualified projects.

PASADENA, CA
grant
free technical
assistance
Developers who exceed the minimum certification will qualify for a rebate from Pasadena Water and Power. The PWP High-Performance Building Program matches one month's electricity savings for each percent efficiency better than code that the building performs (capped at $100,000). Additionally, developers who include affordable housing will earn a construction tax rebate of $1000 per unit. PWP's Pasadena LEED Certification Program offers $15,000 grants for applicants who achieve LEED Certified ($20,000 for Silver, $25,000 for Gold and $30,000 for Platinum). $1000 per unit. PWPs Pasadena LEED Certification Program offers $15,000 grants for applicants who achieve LEED Certified ($20,000 for Silver, $25,000 for Gold and $30,000 for Platinum).

PORTSMOUTH, NH
density bonus
Through an update in its zoning ordinance on April 4, 2007, the City Council of Portsmouth adopted a density bonus (see page 90) for private projects that use LEED. In Central Business [district] A, projects benefit from a 0.5 increase in Floor Area Ratio that meet appropriate open space requirements and that also build to a minimum of LEED Certified.

SAN DIEGO, CA
expedited permitting
free technical
assistance
In addition to its public sector adoptions, in 2002 San Diego developed the Sustainable Building Expedite Program that uses LEED criteria and provides significant plan review and construction incentives. Private sector buildings registering for LEED certification may be eligible to receive technical green building training, support, and education. Commercial projects achieving LEED Silver certification will benefit from expedited discretionary processes.

SAN FRANCISCO, CA
expedited permitting
On September 28, 2006, the Director of the San Francisco Planning Department issued Director's Bulletin 2006-02 giving priority permit review to all new and renovated buildings that achieve LEED Gold certification.

SANTA MONICA, CA
grant
expedited permitting
In April 2004, the city launched the Santa Monica Green Building LEED Grant Program that provides a financial incentive for private developers who achieve LEED certification. In August 2005, the city passed an ordinance allowing LEED registered projects to receive expedited

permitting. This includes all LEED for New Construction, Homes, Core and Shell. See Santa Monica's Green Building Program website for a comprehensive overview of the City's green building initiatives.

SEATTLE, WA
grant
density bonus
As of 2002, the city of Seattle encourages the private sector to incorporate LEED design standards into new and existing buildings by providing grants for qualifying projects. On April 12, 2006, Mayor Nickels signed zoning legislation that gives a height or density bonus to commercial or residential projects that achieve at least LEED Silver certification and contribute to affordable housing.

SAN ANTONIO, TX
fee reduction/ waiver
On June 15, 2006, the San Antonio City Council adopted Ordinance #2006-06-15-0722 that approves Phase II of the City's Incentive Scorecard System and authorizes administrative waiver or reduction of certain development fees for projects reaching specified scores from the scorecard. Points are awarded for projects achieving LEED-NC or LEED for Homes certification.

SARASOTA COUNTY, FL
fee reduction
expedited permitting
fast-track permitting
On March 18, 2005 the county passed a resolution mandating that all government county buildings be LEED certified. Additionally, the county is providing a fast-track building permit incentive and a 50% reduction in the cost of building permit fees for private contractors who use LEED. On August 22, 2006, the county approved a Green Development Incentive Resolution (#2006-174) that provides fast-track permitting for residential and commercial green developments. Incentives apply to projects pursuing LEED for Neighborhood Developments (ND) or FGBC Green Development Standards.

SUNNYVALE, CA
density bonus
On January 26, 2004, the City of Sunnyvale adopted Ordinance #2002- 0076, updating the city's building codes in areas zoned for industrial use to allow a density bonus of 5% FAR for buildings that achieve a minimum of LEED Certified. The municipal code improvement can be found under Title 19.32.075 of the Sunnyvale Municipal Code.

WASHINGTON, DC
grant
expedited permitting
Bill #B16-0515 also called on the mayor to establish an incentive program for private residential and commercial buildings. Incentives will include an expedited permit review and may also include grants. The mayor will also establish a Green Building Fund for technical assistance and monitoring of green buildings, education, and incentive funding for private buildings.

WEST HOLLYWOOD, CA
free technical
assistance
On July 16, 2007, the City Council of West Hollywood passed the Green Building Requirements and Incentives for Private Development with an ordinance requiring residential and commercial projects to meet minimum energy conservation and renewable energy requirements. The Ordinance also calls for the establishment of a Green Buildings Resource Center at West Hollywood City Hall.

STATES

HAWAII
expedited permitting
The Hawaii state legislature amended its provisions to Hawaiian counties with HRS 46 19.6, requiring priority processing for all construction or development permits for projects that achieve LEED Silver or equivalent.

MARYLAND
tax credit
In October 2001, Maryland's governor issued an Executive Order calling for all capital projects greater than 5,000 square feet to earn LEED certification. In April 2005, the Maryland House and Senate passed legislation requiring that a green building standard, such as LEED (Silver), be used for state capital projects. The state also approved a green building tax credit for commercial developers.

MINNESOTA
free technical
assistance
On May 25, 2007, Governor Pawlenty signed into law the Next Generation Energy Act of 2007 setting a roadmap towards a smarter energy future and requiring utilities provide technical assistance for commercial or residential projects that incorporate green building principles in their construction. By December 31, 2010, the Act established a goal of 100 commercial buildings achieving LEED certification, or equivalent, by December 31, 2010.

NEW YORK
tax credit
low interest loans
In June 2001, New York Governor Pataki issued Executive Order #111 encouraging state projects to seek LEED Certification. The New York State Energy Research and Development

Authority will be offering an incentive for design teams of any New York State building that achieves a LEED rating. NYSERDA's New Construction Program offers a 10% increase on incentives for energy efficiency measures that reduce the use of electricity. NYSERDA provides low interest loans (4% below market rate) for energy efficiency measures and building materials that meet LEED or other generally accepted green building standards. The New York State Green Building Tax Credit Program provides a tax incentive to commercial developments incorporating specific green strategies informed by LEED.

OREGON

tax credit

Oregon's LEED Business Energy Tax Credit (BETC), administered by the state Office of Energy, is tied to the level of LEED certification achieved. LEED for New Construction, Core and Shell, or Commercial Interiors projects achieving a minimum Silver certification will be eligible. Projects must also meet certain technical requirements.

PENNSYLVANIA

grants

Four state funds including the $20 million Sustainable Energy Fund provide grants, loans and "near-equity" investments in energy efficiency and renewable energy projects in Pennsylvania. In July 2005, the Pennsylvania State legislature passed House Bill 628, amending the Public School Code to provide a financial incentive to public school districts that achieve LEED Silver certification

Source: http://www.usgbc.org