THE CITY OF NEWARK CONSERVATION ADVISORY COMMISSION
ANNUAL REPORT FOR THE YEAR 2006

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Overview

This report summarizes the activities of the City of Newark's Conservation Advisory Commission (CAC) during the 2006 calendar year. The direction of anticipated CAC work in 2007 is also described briefly.

The CAC was created in November, 1977 by Ordinance 77-56,

> "to advise in the development, management, and protection of its natural resources with appropriate consideration of Newark's human and economic resources. The Commission shall concern itself with conservation in its broadest sense and may, among its activities:
> (a) Recommend to City Council a program for ecologically suitable utilization of all wet lands, valley streams, and flood plains and other land areas, the condition and use of which will affect the environmental quality of life in the City of Newark;
> (b) Shall file an annual report;
> (c) Maintain informal liaison with the Planning Commission, the Parks and Recreation Department, the City Manager, and the City Council, and cooperate with other public and private bodies organized for similar purposes:
> (d) In addition to the foregoing, carry out any other duties, tasks, or responsibilities, consistent with the objectives of this Commission assigned to it by resolution of City Council."

Ordinance 77-56 gave examples of programs that may be considered by the Commission, such as street tree replacement; improved recycling; beautification plans for volunteer groups; guidelines for multiple use of open space and public areas; community gardens; energy conservation; and review of Zoning Code amendments to encourage conservation, and also stated that "the above list shall not, however, limit the program which the Commission may undertake or be requested to undertake."

The CAC's year 2006 activities are organized in this report into three groups:
-activities in response to City Council Requests
-activities initiated by the CAC
-activities conducted on a regular basis

CAC Membership

The CAC has 9 members when all positions are filled. Several seats on the Commission had new appointments during 2006 as indicated below.

Appointment by Mayor
Steven Dentel (Chairman)
Term expires March 14, 2009

Appointment by Mayor
Katherine Sheedy
Term expires March 13, 2010

Appointment by Mayor
Thomas Fruehstorfer
Term expires March 13, 2008

Appointment for District 1
Jane Dilley, resigned August 14, 2006
Replaced by Ajay Prasad
Term expires March 13, 2010

Appointment for District 2
Steve Beard
Term expires March 13, 2008

Appointment for District 3
Robert Bennett (Vice Chair)
Term expires March 14, 2009

Appointment for District 4
Kurt Philipp
Term expires March 13, 2008

Appointment for District 5
Gerald Kauffman, resigned June 2006
Replaced by Fred Stiegler
Term expires March 13, 2009

Appointment for District 6
Jennifer Byrne
Term expires March 13, 2010

Parks Director Charlie Emerson (ex officio)

2006 Activities in Response to City Council Requests

Floodplain Recommendations: As requested by City Council, the CAC thoroughly discussed floodplain development in the city of Newark. The commission agreed that flooding events are becoming more frequent and more severe and flood heights are increasing due to continued urbanization of the Upper Christina River and White Clay Creek watersheds.

Newark shares the Upper Christina River and White Clay Creek with New Castle County. The City was the first jurisdiction to protect the 100-year floodplain through the zoning codes, but the Unified Development Code of New Castle County approved in 1998 is now in some cases more protective of the floodplain than the City's code. The CAC determined it would be more desirable for the entire length of the stream to be under a unified standard. The CAC agreed that Newark needs more conservative protection of the city's floodplains and forwarded the following recommendations to City staff:

1. The OFD prohibitions should be extended to the 500-year floodplain or 50 feet beyond the 100-year floodplain boundary, whichever is greater.

2. No footprint expansion should be allowed for non-residential buildings currently existing within the 500-year floodplain but beyond the 100-year flood plain.
3. There should be no changes to the restrictions of construction for residential homes currently existing within the 500-year floodplain but beyond the 100-year flood plain.

The CAC recommendations were considered and approved by the Planning Commission on 2 May 2006. The recommendations were then presented to City Council on 14 August 2006. The proposal had strong support from some local individuals and organizations but also met some strong public opposition. The recommendations were rejected by City Council. The CAC is reconsidering some aspects of the proposal.

2006 Activities Initiated by the CAC

Green Building Incentive Proposal

After conducting a successful workshop on the subject in late 2005, the CAC continued its study of the need for green building practices in Newark. A proposal was developed for the city, modeled after the program being used in Arlington, Virginia. This proposal is appended to this report in its form as of late December. It recommended that
"All construction projects will be encouraged to incorporate principles of conservation and sustainability in their design and construction. This program is optional but the City will provide various incentives to foster participation." The plan was to have City Council pass the proposal as a directive for the City Manager to develop the following:

1. For all commercial and industrial development projects requesting site plan approval, a LEED™ accredited professional on the development team, the LEED scoresheet is to be completed, and a deposit to the Green Building Fund will be made. As incentives, the building gets greater density allowance if LEED-eligible, and the deposit is refunded when this certification is completed.
2. For residential developments, a similar plan is to be implemented but, because there is not yet a LEED scoresheet, the Green Home Choice criteria used by Arlington would be substituted.
3. For city buildings, all new construction and major renovations are to be LEED certified.

The proposal was prepared to have a considerable amount of background information on the reasons for green building, particularly with regard to evidence that green buildings are not significantly more expensive to build and that their resale value, energy efficiency, and more contented occupants provide for a very short payback period on any extra costs. This proposal was expected to go to City Council in Spring 2007.

Purchase of Renewable Energy: In 2005 the CAC recommended that City Council commit to an annual purchase of renewable energy. This was passed as Resolution 05-H. The CAC had recommended that the amount by increased to be at 2% of total purchases by 2007. Council did accept the recommendation to increase the purchase but by a dollar amount in 2006 rather than the % increase. In 2006, the City purchased $42,000 of renewable energy. In December, the City, in consultation with the CAC, agreed to increase the purchase to $58,000 in 2007. This is 0.175% of the total electricity purchase. The renewable energy the City purchases has come from Susquehanna Dam power generation.

Recycling: The CAC reviewed possibilities for curbside recycling in Newark. Mr. Rich LaPointe, Director of Public Works, attended the June and July meetings to provide information on city efforts in this direction. Representatives of Recycle Bank (Mr. Robert Milligan) and Blue Mountain Recycling (Mr. Robert Anderson) were invited and spoke at the July meeting. It was learned that the Recycle Bank was working on a pilot program with the City of Wilmington. The Recycle Bank uses an incentive program with the amount of recyclable material weighed at pick-up from each residence, and coupons are earned that are redeemable at local businesses, including coffee shops, grocery stores, etc. – providing an incentive for recycling. The recyclables are taken to Blue Mountain Recycling which is able to separate all recyclables from one combined stream, making recycling much easier on the user. The city pays for the recycling service, but the idea is to offset this by the decrease in tipping fees to the landfill.
Wilmington completed its trials and has decided to expand the program city-wide even though the level of participation was reported to be somewhat less than would be needed to break even financially. Wilmington's trucks are rear-loaded and it was learned that Newark's are side-loading, which makes the automatic weighing process more difficult. The company is investigating whether this can be retrofitted onto Newark's trucks.
The CAC adopted the following resolution at its March meeting by a vote of 7 - 0:

Resolution of Support for Incentive-Based and Mandatory Recycling

Whereas, the conservation advisory commission applauds current efforts by the city to revamp the current recycling program. The CAC wishes to endorse the concept of incentive-based and mandatory recycling as a replacement for the current fee-based curbside pick up operated by the Delaware solid waste authority. The CAC encourages the city to make any necessary modifications to its solid waste management system to operate with the recycle bank or a comparable system. The CAC also offers its assistance and support in any way that might be helpful.

CAC Activities Conducted on a Regular Basis

Adopt-A-Park/Stream

The CAC conducted a community stewardship program from 1991 to 1993. A similar program was re-initiated in 2001 by the CAC allowing groups or organizations to take care of either City parks or stream sections. Street or block areas were dropped from the program in consideration of vehicular traffic volunteer safety. The program primarily encourages litter and trash clean up and provides plastic bags to participants. Participants clean their areas once a month. A description of the program is included in each issue of the City of Newark Newsletter.

The program continues to grow with five new participants this year with lots of inquiries.

Current Participants

Boy Scout Troop 250	Christina Creek (from Barksdale to Church Road)
Cavanagh Family	Kells Park
McBride Family	Stafford Park
Bauerschmidt Family	Fairfield Park
Fontenelle Family	Christiana Creek (Elkton Road to Barksdale Road)

Menzer Family	Handloff Park (Barksdale Road to Elkton Road)
Newark Center for Creative Learning	Phillips Park
Unitarian Universalist Fellowship Of Newark	Rittenhouse Park
Cummings Family	Devon Park

New participants in 2006

St Marks High Z-Club	Lumbrook Park
Patrick Crupryna	William Redd Park
Karen Cranker	George Wilson Park
Willis Family	Open Space - Park Place Apt.
Friends of Coverdale Park	Coverdale Park

Former participants

Mt. Aviat Academy	George Reed Park
Newark High School	Christina Creek (Arbour Park to Elkton Road)
Boy Scout Cub Pack 56	Lumbrook Park

Community Cleanup

Many members of the CAC participated in Newark's 2006 Community Clean Up held on Saturday April 22 from 9:00 to 11:00 am. Although the weather was chilly and wet, the turnout was good. Approximately 129 volunteers participated in the cleanup. Park areas that were cleaned included Dickey Park and Madison Drive, Rittenhouse Park, Kershaw Park, Folk Park, Lumbrook Park and Dorothy Miller Park. Also included were sections of the future Pomeroy Trail Extension. Other areas that were also cleaned were Christiana Parkway, Library Avenue, Marrows Road, Wyoming Road, Kirkwood Highway, Papermill Road and Chapel Street. In all, 2,980 pounds of trash were removed. The event ran smoothly and was very successful. A barbeque welcomed the volunteers as they arrived back after cleaning their assigned areas.

Community Day

The CAC featured curbside recycling for its Community Day display. A large poster was prepared, presenting various possibilities for future recycling. A reduced version is presented as Appendix B, at the end of this report.

Promoting Improvement through the Better Newark Award

Since 1986, the "Better Newark Award" has been awarded periodically for environmental improvements as well as noteworthy aesthetic improvements. The award includes a proclamation signed by the Mayor, a photo is publicized in the Newark Post and a photo is presented to the property owner. Nominations are reviewed periodically by the CAC, and the winning properties are voted on. In 2006, the Better Newark Award was awarded to Thomas and Kimberly McKenna of 318 Lark Drive.

Review of Planning Department Administrative Reports

The CAC regularly reviews these administrative reports for potential situations involving environmental effects of development within city limits. The following topics, listed in chronological order, were of interest to the CAC and generated discussion at the monthly meetings:

- Continue to monitor new developments related to the Newark Country Club property
- 4th option of the Floodplain development recommendation was passed by Planning Commission (CAC spent a lot of time working on a recommendation last year)
- Continue to monitor the development of the Wilson Property
- Continue to monitor the development of the Stone Ballon redevelopment project
- Casho Mill Project triggered discussions on the current practices involving historical reviews
- Trap redevelopment project - Amstel Square
- Proposed rezoning and subdivision for Home Depot site by Suburban Plaza
- Delaware Avenue Mural sparked discussions concerning safety which CAC determined is a traffic issue
- Development of Crist property (possibly into adult community)

Intended CAC Initiatives for 2007

The CAC expects to respond to any requests from City Council on conservation or environmental concerns during the year 2007, and continue its regular activities as described above for 2006. In addition, expected work is as follows:

- Presentation of Green Building Incentive program to City Council, and work with the City Manager and staff to develop more detailed ways of implementing this program, in a way that will be acceptable to all stakeholders
- Renewed assessment of curbside recycling provided by the city, and its possible incorporation into automated solid waste pickup
- Addition of hybrid vehicles to the city fleet as replacements are needed

APPENDIX.
Dec. 31, 2006 draft of Green Building Incentives Program for Newark

TO: Mayor and City Council, Newark, Delaware

FROM: The Newark Conservation Advisory Commission (CAC)

SUBJECT: Creation of a Green Building Incentive Program.

The CAC endorses the following Resolution and recommends that it be acted upon by City Council.

Whereas, the City of Newark wishes to promote energy conservation and environmental sustainability, for the benefit of our nation, our environment, and our future; and

whereas, the City's Conservation Advisory Commission has conducted considerable study of the attributes of Green Building Incentive Programs to promote efficient use of resources in planning and construction of buildings; and has found that there are many advantages to these programs in improving resource conservation and resulting, over time, in economic gains; and

whereas, the City of Newark wishes to lead by example in establishing Delaware's first Green Building Incentive Program;

Therefore, the City of Newark does ordain as follows:

All construction projects will be encouraged to incorporate principles of conservation and sustainability in their design and construction. This program is optional but the City will provide various incentives to foster participation.

City Council therefore directs the City Manager to oversee development of City Code to implement the following:

A. For all commercial and industrial development projects requesting site plan approval:

4. Projects for which LEED™ criteria are available shall include a LEED™ accredited professional on the development team.

5. For site plan approval, projects shall include evaluation of all LEED™ components through the submission a LEED™ scorecard with an explanation of each LEED™

The savings from green construction have been documented by many studies.

- A report by XEnergy, Inc. for the Portland, Oregon Energy Office found that the cost savings generated by green building design would be 15% of the original construction cost over the life cycle of three examined structures.

- A report for the Massachusetts Technology Collaborative found that energy savings from green designs come primarily from the increased energy efficiency of up to 28%.

- A study by Enermodel Engineering showed significant energy savings with very modest incremental construction costs as shown in Table 2.

LEED Rating	**Certified**	**Silver**	**Gold**	**Platinum**
Energy Savings	25-35%	35-50%	50-60%	>60%
Annual Utility Savings	$0.75/ft²	$1.00/ft²	$1.25/ft²	$1.50/ft²
Typical Payback	<3 years	3-5 years	5-10 years	>10 years
Incremental Construction Cost				
Small Buildings	3%	7%	10%	15%
Large Buildings	1%	3%	5%	8%

Table 2. From Enermodel Engineering www.enermodal.com/USA/leed_explained.html

- A 2003 report to the California's Sustainable Building Task Force gave the most interesting analysis, shown in Table 3. Although there is a net savings and payback for green construction of all types, the greatest savings is actually found to be in productivity of the occupants. These types of benefits are more difficult to quantify but were believed to be of considerable value. The report stated:

  There is now a very large body of research . . . which demonstrates significant and causal correlation between improvements in building comfort and control measures, and worker health and productivity.

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**

Table 3. From The Costs and Financial Benefits of Green Buildings. Kats et al. (2003), report to the California's Sustainable Building Task Force. NPV = Net Present Value.

Thus, even though the energy savings alone exceeded the green cost premium, many other benefits also accrued. Table 3 indicates that the financial benefits of green design are over ten times the additional cost associated with building green.

To summarize: sustainable construction techniques involve initially increases in construction which are relatively small once the practice is widespread and understood in a geographical area. But even before this is the case, this type of building is cost efficient over the longer term, due to savings in energy, resources, and occupant productivity.

Are the costs of green construction reflected in greater resale value?

Yes. Studies of resale prices of homes over the past 15 years have allowed the National Association of Appraisers to attach an increased value to efficient homes. The value is calculated by taking one year's energy savings (as certified by a state licensed energy rater, part of the national program) and multiplying the savings by $ 20.73. The average increase in green home resale value is $45,533 (Professional Builder, March 2004).

Sub-Appendices

a. Selected internet references for more information on green building

b. Information on LEED™ certification
- **b-1. Arlington, Virginia's Green Building Incentive Program**
- **b-2. LEED™ – New Construction (NC) Project Checklist**

c. Information on residential green building programs
- **c-1. Arlington, Virginia's Residential Green Building Program – General Concept**
- **c-2 Arlington, Virginia – Web Site Excerpts**

Appendix a.
Selected internet references for more information on green building

U.S. Green Building Council – the organization that develops LEED standards:
http://www.usgbc.org/

The Costs and Financial Benefits of Green Buildings A Report to California's Sustainable Building Task Force October 2003
http://www.usgbc.org/Docs/News/News477.pdf

Costing Green: A Comprehensive Cost Database and Budgeting Methodology. L.F. Matthiessen and P. Morris, 2004. Davis Langdon, Inc.
http://www.davislangdon.com/pdf/USA/2004CostingGreen.pdf

Enermodal Engineering - LEED™ Green Building Rating System – Explained
http://www.enermodal.com/USA/leed_explained.html

The Costs and Financial Benefits of Green Buildings. Kats et al. (2003), report to the California's Sustainable Building Task Force
http://www.cap-e.com/ewebeditpro/items/O59F3481.pdf

Arlington, Virginia's Green Building Incentive Program

Introduction

In October 1999, the Arlington County Board adopted a Pilot Green Building Incentive Program to encourage construction of more environmentally-friendly office buildings. Developers can be awarded bonus density or height, if their office buildings incorporate Green Building components. The program uses the U. S. Green Building Council's Leadership in Energy and Environmental Design (LEED™) Green Building Rating System to evaluate special exception site plan requests for bonus density and/or height. The initial focus of this program will be office development, because the LEED ™ standards are most applicable to larger urban office buildings. An alternative program for residential buildings will be developed at a later date.

An interdepartmental team of staff from the Department of Environmental Services, the Department of Economic Development, the Department of Community Planning, Housing and Development, the Office of Support Services, the County Manager's Office and the County Attorney's Office was convened to develop the policy. The staff team sought feedback from the Planning Commission and the Environmental and Energy Conservation Commission in a joint session on February 28, 2000. Staff also received feedback from developers and architects in a focus group meeting on March 20, 2000. The program began in April 2000.

How the Incentive Program Works

The program will allow the County Board to consider awarding bonus density and/or bonus height requests for projects that incorporate green building components. In order to be considered for the incentive program, the proposed building must, at the minimum, meet the Silver award level of the LEED ™ rating system (a building score between 33 and 38 points).

Consistent with Section 36.H.5. of the Zoning Ordinance, the program will allow the County Board to consider a modification of use regulations for additional density up to .25 FAR and/or additional height up to 3 stories for special exception site plan requests.

The provision of LEED™-certified green building components does not guarantee additional density and/or height. Site plan requests for bonus density and/or height will be analyzed on a case-by-case basis based on the characteristics of individual sites. The provision of LEED™-certified green building components will be a part of the typical site plan negotiations for environmental amenities in exchange for the requested bonuses.

Bonus Density

Based on the range of the LEED™ Silver award point system, a range of bonus density will also be considered, from .15 FAR for the lower end of the Silver award (33 points) to .25 FAR for the highest end of the Silver award (38 points). For site plan proposals in which the LEED™-certified Gold or Platinum award levels are being sought, bonus density greater than .25 FAR will be considered utilizing the environmental amenities provision of Section 36.H.5.a. (1) of the Zoning Ordinance.

It is not the intent of this policy to compete with the affordable housing bonus density provisions of Section 36.H.5. The combination of green building and affordable housing incentives can be considered and utilized in a single site plan proposal to allow up to a maximum of .50 FAR (.25 FAR maximum for green building and .25 FAR maximum for affordable housing).

Under the "C-O-Rosslyn" District, the modification of use provisions of Section 36.H.5 cannot be applied to permit densities or heights greater than the district requirements of 10 FAR and 300 feet, respectively. In order to encourage environmentally-sensitive buildings in Rosslyn, density credit would be given towards the community benefit valuation for buildings which are LEED-certified at no less than the Silver award level.

The amount of density credit that can be considered will be greater in "C-O-Rosslyn", ranging from .30 FAR to .50 FAR, for several reasons:

1. the "C-O-Rosslyn" district allows more than twice as much density as other districts, up to 10 FAR;
2. the environmental impacts of denser redevelopment will be greater;
3. the density incentive should be proportionate to the size of the building; and,
4. it will accomplish the planning goals of making Rosslyn a premiere office location.

Implementation

The Pilot Green Building Incentive Program will be implemented as follows:

1. At the time of 4.1 site plan submission, the developer will be required to submit the LEED™ scorecard along with the site plan application. The LEED™ scorecard is a checklist of green building standards and allows the developer to voluntarily score the building against the LEED™ Green Building Rating System. The scorecard is the documentation supporting the developer's request for bonus density and/or height. The scorecard is located at the end of the LEED™ Version 2.0.
2. The developer is required to submit the scorecard to the US Green Building Council (USGBC) early in the process to signal the specific components of the LEED™ program they intend to pursue. The scorecard is used to select which credits the developer intends to pursue and the number of points "earned" for these credits determines the award level. (The building registration and documentation of green building components will be filed with USGBC near the end of the project for final LEED™ certification and rating.)
3. The proposed site plan (including the requested bonus density and/or height) will undergo the typical community review process. If the County Manager supports the project, it will include appropriate site plan condition language requiring that the green building components identified in the scorecard be constructed or installed in the building.
4. Once the site plan is approved, permit drawings will be reviewed to ensure inclusion of the approved green building components, which were previously identified in the scorecard. The County will utilize LEED-certified inspectors or architects hired by the developer during review of the permit drawings and construction of the building. Permits will not be issued unless approved LEED components are included in the plan drawings.
5. The application for LEED™ certification and rating will be submitted to USGBC when the building construction is complete or substantially complete, depending on the credits elected.
6. If during construction of the building, the developer is unable to include all of the approved green building components previously identified in the scorecard, then the developer will be required to replace components not provided with other green building components acceptable to USGBC and the LEED Rating System.

7. During plan review and construction, the LEED™-certified inspector or architect will provide documentation and submit regular reports to the County ensuring compliance (or at least flag problems early on) with the LEED™ standards and scorecard and the approved site plan.
8. If during construction, the developer is unable to include required green building components, or if the inspector/architect finds that the developer failed to include these components, then the County will pursue enforcement.
9. The Master Certificate of Occupancy will be issued when the building is LEED ™ certified (at the Silver level or better) by USGBC and construction is consistent with the approved site plan. Certification by USGBC will be obtained when the building is complete and the developer has constructed or installed the approved green building components previously identified.
10. During the program period, a working group consisting of staff, community and building representatives will review the operation of the program and make changes as necessary, and evaluate the various issues related to implementing a long-term comprehensive green building program in Arlington.

Revised: 10/06/2002 07:49:09

URL: http://www.co.arlington.va.us/des/
E-mail: http://www.co.arlington.va.us/Scripts/feedback_form.asp?To=des@co.arlington.va.us
Arlington County Department of Environmental Services
Environmental Planning Office
2100 Courthouse Plaza Suite 801
Arlington, VA 22201
703-228-4488

LEED-NC

LEED-NC Version 2.2 Registered Project Checklist

<< enter project name >>
<< enter city, state, other details >>

Sustainable Sites — 14 Points

Yes	?	No			
Y			Prereq 1	**Construction Activity Pollution Prevention**	Required
			Credit 1	**Site Selection**	1
			Credit 2	**Development Density & Community Connectivity**	1
			Credit 3	**Brownfield Redevelopment**	1
			Credit 4.1	**Alternative Transportation**, Public Transportation Access	1
			Credit 4.2	**Alternative Transportation**, Bicycle Storage & Changing Rooms	1
			Credit 4.3	**Alternative Transportation**, Low-Emitting and Fuel-Efficient Vehicles	1
			Credit 4.4	**Alternative Transportation**, Parking Capacity	1
			Credit 5.1	**Site Development,** Protect of Restore Habitat	1
			Credit 5.2	**Site Development,** Maximize Open Space	1
			Credit 6.1	**Stormwater Design,** Quantity Control	1
			Credit 6.2	**Stormwater Design,** Quality Control	1
			Credit 7.1	**Heat Island Effect,** Non-Roof	1
			Credit 7.2	**Heat Island Effect,** Roof	1
			Credit 8	**Light Pollution Reduction**	1

Water Efficiency — 5 Points

Yes	?	No			
			Credit 1.1	**Water Efficient Landscaping**, Reduce by 50%	1
			Credit 1.2	**Water Efficient Landscaping**, No Potable Use or No Irrigation	1
			Credit 2	**Innovative Wastewater Technologies**	1
			Credit 3.1	**Water Use Reduction**, 20% Reduction	1
			Credit 3.2	**Water Use Reduction**, 30% Reduction	1

Energy & Atmosphere — 17 Points

Yes	?	No			
Y			Prereq 1	**Fundamental Commissioning of the Building Energy Systems**	Required
Y			Prereq 2	**Minimum Energy Performance**	Required
Y			Prereq 3	**Fundamental Refrigerant Management**	Required
			Credit 1	**Optimize Energy Performance**	1 to 10
			Credit 2	**On-Site Renewable Energy**	1 to 3
			Credit 3	**Enhanced Commissioning**	1
			Credit 4	**Enhanced Refrigerant Management**	1
			Credit 5	**Measurement & Verification**	1
			Credit 6	**Green Power**	1

continued...

Materials & Resources — 13 Points

Yes	?	No			
Y			Prereq 1	**Storage & Collection of Recyclables**	Required
			Credit 1.1	**Building Reuse**, Maintain 75% of Existing Walls, Floors & Roof	1
			Credit 1.2	**Building Reuse**, Maintain 100% of Existing Walls, Floors & Roof	1
			Credit 1.3	**Building Reuse**, Maintain 50% of Interior Non-Structural Elements	1
			Credit 2.1	**Construction Waste Management**, Divert 50% from Disposal	1
			Credit 2.2	**Construction Waste Management**, Divert 75% from Disposal	1
			Credit 3.1	**Materials Reuse**, 5%	1
			Credit 3.2	**Materials Reuse**,10%	1
			Credit 4.1	**Recycled Content**, 10% (post-consumer + ½ pre-consumer)	1
			Credit 4.2	**Recycled Content**, 20% (post-consumer + ½ pre-consumer)	1
			Credit 5.1	**Regional Materials**, 10% Extracted, Processed & Manufactured Region	1
			Credit 5.2	**Regional Materials**, 20% Extracted, Processed & Manufactured Region	1
			Credit 6	**Rapidly Renewable Materials**	1
			Credit 7	**Certified Wood**	1

Indoor Environmental Quality — 15 Points

Yes	?	No			
Y			Prereq 1	**Minimum IAQ Performance**	Required
Y			Prereq 2	**Environmental Tobacco Smoke** (ETS) **Control**	Required
			Credit 1	**Outdoor Air Delivery Monitoring**	1
			Credit 2	**Increased Ventilation**	1
			Credit 3.1	**Construction IAQ Management Plan**, During Construction	1
			Credit 3.2	**Construction IAQ Management Plan**, Before Occupancy	1
			Credit 4.1	**Low-Emitting Materials**, Adhesives & Sealants	1
			Credit 4.2	**Low-Emitting Materials**, Paints & Coatings	1
			Credit 4.3	**Low-Emitting Materials**, Carpet Systems	1
			Credit 4.4	**Low-Emitting Materials**, Composite Wood & Agrifiber Products	1
			Credit 5	**Indoor Chemical & Pollutant Source Control**	1
			Credit 6.1	**Controllability of Systems**, Lighting	1
			Credit 6.2	**Controllability of Systems**, Thermal Comfort	1
			Credit 7.1	**Thermal Comfort**, Design	1
			Credit 7.2	**Thermal Comfort**, Verification	1
			Credit 8.1	**Daylight & Views**, Daylight 75% of Spaces	1
			Credit 8.2	**Daylight & Views**, Views for 90% of Spaces	1

Innovation & Design Process — 5 Points

Yes	?	No			
			Credit 1.1	**Innovation in Design**: Provide Specific Title	1
			Credit 1.2	**Innovation in Design**: Provide Specific Title	1
			Credit 1.3	**Innovation in Design**: Provide Specific Title	1
			Credit 1.4	**Innovation in Design**: Provide Specific Title	1
			Credit 2	**LEED® Accredited Professional**	1

Project Totals (pre-certification estimates) — 69 Points

Certified 26-32 points **Silver** 33-38 points **Gold** 39-51 points **Platinum** 52-69 points

Web sites with more information on LEED™ certification programs

U.S. Green Building Council – the organization that develops LEED standards:
http://www.usgbc.org/
This site includes:

- **Frequently asked questions about LEED:**
  www.usgbc.org/DisplayPage.aspx?CMSPageID=201
- **Full LEED Rating Systems, LEED Reference Guides, brochures, Powerpoint presentations, : site registration is first required (free), at www.usgbc.org/myUSGBC/SiteUserRegistration.aspx**

The Costs and Financial Benefits of Green Buildings A Report to California's Sustainable Building Task Force October 2003
http://www.usgbc.org/Docs/News/News477.pdf

Costing Green: A Comprehensive Cost Database and Budgeting Methodology. L.F. Matthiessen and P. Morris, 2004. Davis Langdon, Inc.
http://www.davislangdon.com/pdf/USA/2004CostingGreen.pdf

Enermodal Engineering - LEED™ Green Building Rating System – Explained
http://www.enermodal.com/USA/leed_explained.html

The Costs and Financial Benefits of Green Buildings. Kats et al. (2003), report to the California's Sustainable Building Task Force
http://www.cap-e.com/ewebeditpro/items/O59F3481.pdf

Arlington, Virginia's Residential Green Building Program
General Concept
May 8, 2003

Title:	Arlington County **Green Home Choice**
Sponsors:	Department of Environmental Services, Inspection Services Division; Arlington County, Green Home Choice Committee- Advisory group to help county staff develop and maintain program.
Synopsis:	This program will be a comprehensive approach to promoting sustainable construction for residential construction projects.
Goals:	Promote the use of environmentally responsible building materials, reduce environmental impact, encourage energy conservation, support the use of sustainable building methods, endorse recycling of construction materials, facilitate solid waste reduction, create a safe indoor air environment, provide for efficient water use.
Overview:	Rate building projects in the following environmental impact areas: 1) Site Use 2) Energy 3) Indoor Air Quality 4) Building Materials 5) Solid Waste 6) Water
Incentives:	1) Lecture series, workshops and special events 2) Promotional package for builders & Developers 3) Expedited Plan Review 4) Development Process assistance 5) Job Site signs indicating: **Arlington Green Home Choice** 7) Directory of participating builders 8) Certification by Green Building Inspectors 9) Homeowner's manual (explanation of features) 10) Press releases & News articles 11) Recognition of builders on website
Participation:	Every builder and designer who enters a project into the Arlington Green Home Choice will be required to attend a County-sponsored green building lecture, workshop or seminar. These educational programs provide information on energy resource and efficiency, environmentally responsible buildings, and feature experts in all areas of environmental design and construction. Promotional incentives, building strategies, and green financing are discussed to help qualify homes under the program. Lectures, workshops and seminars are held throughout the year.
Schedule:	Phase in over one year period beginning in May 2003

Arlington, Virginia – Web Site Excerpts

What is a Green Home?

A green home is a healthy, comfortable, cost efficient home that reduces energy and water usage and protects the environment. Components of a green home may include:

- Specific construction practices to minimize and recycle construction waste;
- Careful insulation practices;
- Nontoxic interior finishes (low VOC paint, sealants, and carpeting);
- Components made from renewable resources (such as cork or bamboo floors, wheatboard cabinetry);
- Recycled content components (such as recycled glass tiles, recycled-content countertops);
- Energy efficient appliances (Energy Star rated refrigerator, dishwasher, water heater, etc.);
- Photovoltaic (solar) panels;
- Water efficient appliances and landscape irrigation (front loading clothes washers and moisture sensing irrigation systems);
- Stormwater collection (rainbarrels or larger cisterns);
- Careful placement of shade trees;
- Careful placement of windows to maximize interior light and ventilation.

The list is endless and allows you to use your imagination and creativity in constructing a green home.

Why Build Green Homes?

There are lots of reasons to build a green home. Green home save money, provide healthy indoor environments, and reduce impacts on the environment.

An energy efficient home reduces your electric and natural gas bills by 30% or more, saving money on your energy bill each month. Careful analysis of house size and configuration, insulation levels, heating and cooling equipment selection, and ductwork location all enhance energy efficiency. Designing your home to take advantage of natural wind currents, sun angles, and on-site shade reduces the need for air conditioning.

Water efficient appliances, faucets, toilets, and landscape watering equipment also save money on your water bill. For example, a conventional washer uses about 40 gallons of water per load. In contrast, a full-size **ENERGY STAR®** clothes washer uses 20-25 gallons per load. This saves as much as 7,000 gallons of water per year, and uses less electricity as well.

If specific attention is paid to the materials used in construction, a green home can reduce exposure to potential allergens and toxins. For example, protecting the ventilation ducts from

dust and moisture during construction reduces the introduction of airborne particulates and mildew into the home. Using paints, adhesives, sealants, and wood products that don't contain volatile organic chemicals and urea formaldehyde reduces exposure to chemicals.

Designing your home to reduce stormwater runoff helps protect Arlington's streams, the Potomac River, and ultimately the Chesapeake Bay. Minimize the building footprint and reduce driveway pavement. Use water from downspouts to water the garden. Save existing trees on the site. Use native plant species for your landscaping. These are just some ideas to make your home an environmentally friendly place!

What is the Arlington Green Home Choice Program?

Arlington has developed the Green Home Choice program as an incentive for homebuilders to build green. The program provides a listing of building techniques and components that result in a more efficient and healthy home. Builders who participate in the program are offered front-of-the-line plan review, lawn signs indicating participation in the program, attendance at County-sponsored seminars, and recognition as "green" builders.

The Arlington Green Home Choice program is based on the Earthcraft House program, a green home rating system designed by the Southface Institute in Atlanta, Georgia. A draft guidance document describes the various green components you can choose from in order to achieve the Green Home Choice certification. A draft scoresheet helps homebuilders track green components and add up points. In order to receive "Green Home Choice" certification from Arlington County, the builder must achieve a predetermined number of points as outlined on the scoresheet.

How Does the Green Home Choice Program Work?

If you are a homebuilder interested in participating in the program, you should first download the guidance document and scoresheet to make sure you understand what is required. Next, contact Joan Kelsch in the Environmental Planning Office at 703-228-3599 to discuss the project. You will be asked to sign an Intent Form and your plans will be labeled as a "green home" project. You will be assigned a plans examiner and a building inspector who will both track the project through the program.

Appendix B. Community Day Poster

Newark Conservation Advisory Commission

Choices for Recycling in Newark - What's Your Opinion?

WHY RECYCLE AT ALL ??

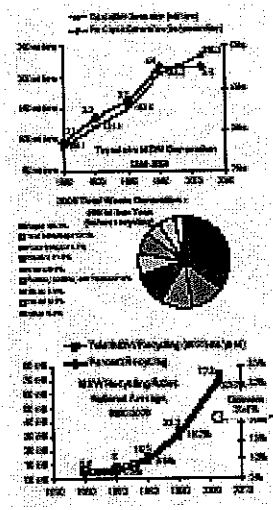
Of course recycling is a pain! Of course it's easier to chuck everything into one big can! And why not?

There are two big reasons to recycle: *environmental* and *economic*.

Recycling is good for the environment. It allows us to re-use materials that otherwise must be extracted from the earth. Many of these materials come from mining of coal and minerals and from crude oil. These are non-renewable resources, so it's senseless to use them once on a throw-away item. Recycling saves these resources for future generations, and also saves energy - another valuable resource.

Recycling can even save money. Locally, recycling can also save money. Some materials, such as aluminum cans, are worth quite a bit to manufacturers as a raw material. Disposal of trash also costs money for landfill construction, operation, and closure, which the city pays as a "tipping fee" every time a garbage truck is emptied.

But suppose recycling did NOT save money. Should we pay extra to conserve resources? What do YOU think?



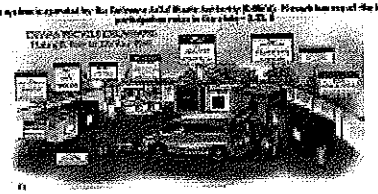
More trash all the time

Lots of types of wastes to deal with!

Recycling on the rise – *but we're way behind in Delaware*

How "green" can a building be? It's important to have standards for the environmental, economic, and community benefits of sustainable construction. The U.S. Green Building Council has developed one set of standards, known as LEED: Leadership in Energy and Environmental Design. These are available, or soon available, for commercial construction and renovations; homes; existing building operations; commercial interiors; and core and shell construction. In Newark, the permitting process could include economic and procedural incentives for LEED certification.

Igloo Drop-Off Plus Fee-Based Curbside Pickup

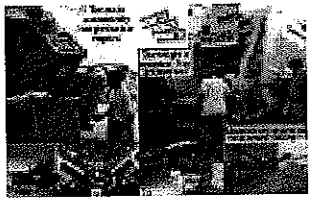


Sorting Required

What do you think of this option? Fill out the questionnaire!

Recycle Bank - Mixed Material, Curbside Pickup

Sorting Not Required



What do you think of this option? Fill out the questionnaire!

Want to learn more? Come to the CAC meetings – second Tuesday of every month, 7 pm upstairs at City Hall

credit, describing how the project will achieve each credit, or why it cannot.

6. For site plan approval, an appropriate number of LEED™ components shall be incorporated, with reporting and compliance linked to specific permit applications throughout the demolition and construction processes.

7. The site plan approval process may provide up to a .15 density bonus for achieving a LEED™ rating, plus options to potentially achieve up to .25 bonus for a LEED™ silver-certified building and up to .35 for a platinum rating.

8. A Green Building Fund shall be established with a contribution from site plan projects of $0.03 per square foot of GFA. The contribution will be refunded or waived if a developer applies for and obtains formal certification of the project from the US Green Building Council. Alternatively the fund will provide resources for any additional expenses required of the City in administering this program, and also for additional education, outreach and support on green building issues.

B. For all residential development projects:

1. The builder may participate in a voluntary Green Home Choice program which will include a scoring worksheet to evaluate the project's environmental attributes. The scoring worksheet is as developed by Arlington, Virginia which enjoys a similar climate and geography.

2. Green Home certification will require a required point value be attained on the scoresheet. A Homeowner's Manual must also be prepared, which described the environmental features of the home, including the Green Home Choice scorecard and guidelines, manuals, warranties, and operating instructions.

C. For all new City buildings, and major renovations to existing City buildings:

The City also adopts the goal that all construction of new City buildings, and major renovations to existing City buildings shall meet or exceed a Silver Certification based on LEED™ criteria. The planning team for any such construction shall include a LEED™ certified professional, and a LEED™ scorecard shall be completed as described above. Any plan not eligible for silver certification must be granted an exemption only after its presentation to City Council.

Green Building Incentive Program Proposal

Table of Contents

Newark's Green Building Incentive Program

Why build green?

Energy costs are rising rapidly as, globally, the demands for fossil fuels outpace their availability. Buildings should be constructed with this future in mind. "Green" buildings are also environmentally friendly in other ways: by conserving other resources, such as water and new construction materials, and by providing a pleasing workspace that enhances productivity.

These types of buildings—whether commercial, industrial, or residential—may have increased initial costs, but these are more than offset by the resale value of the structure as well as the lower operating costs. But generally, these gains are not considered by builders unless there are reasons to do so. This is why a Green Building Incentive Program is important.

Delaware's per capita electrical usage is more than twice that of California's.
New York Times, 9/14/2006

This program is consistent with, and will strengthen, Newark's image as an environmentally friendly community. Our parks, residences, and downtown are already clean and inviting. The Green Building Incentive Program, in the long term, will further enhance the appearance of our homes, offices, businesses, and campus. Its incentives will invite developers to "think outside of the box" and offer innovative architecture to enrich our built environment while preserving our natural environment. We will also set an example that may be emulated throughout Delaware as its long-term advantages are realized.

How will it work?

The program covers three categories of buildings: (1) commercial/industrial, (2) residential, and (3) municipal.

(1) Commercial and Industrial projects will be encouraged to build "green" through a certification program know as LEED™ - Leadership in Energy and Environmental Design. This program is used by many states and municipalities nationally. The incentives for attaining LEED certification will be:

- Scoring for certification will be integrated into the site plan approval process, so any project requesting site plan approval will need to complete it. The project will need to have a LEED-certified professional involved in completing this scoring. Since the site plan must explain how each is or is not attained, the builder is likely to learn of LEED elements that can be easily incorporated and/or have significant aesthetic, environmental, and economic advantages.
- Site plans that include attributes that will give LEED certification will be eligible for density allowances which will provide an economic incentive.
- A Green Building Fund contribution, based on floor area, will be refunded if certification is attained.

(2) Residential projects will be eligible for a similar type of certification, but developed by Arlington, Virginia (as a modification of the Earthcraft program developed by the Southface Energy Institute). This program is voluntary but, like the LEED certification, will be publicized for its value-added features. A Green Building Fund contribution, based on floor area, will be refunded if certification is attained.

(3) City projects will seek LEED certification in all cases where the project type is appropriate for this certification.

What are "Green Buildings" ?

There is not any one single technique for designing and building a green building, but green buildings often:

- Preserve natural vegetation;
- Contain non-toxic or recycled-content building materials;
- Maintain good indoor air-quality;
- Use water and energy efficiently;
- Conserve natural resources;
- Feature natural lighting;
- Include recycling facilities throughout;
- Include access to public transportation;
- Feature flexible interiors; and
- Recycle construction and demolition waste.

Why should a certification program be necessary?

It is true that the certification process itself adds to project and construction costs. For example, waste disposal practices, or the use of environmentally friendly paint, must be substantiated by proper documentation. This documentation process adds costs beyond the expenses of different disposal practices or different paint. But these extra documentation steps—and the resulting certification—also provide advantages to the builder:

- Green features of a building are validated by a third party, preserving their value.
- The complete implementation of designed and intended green features is assured.
- Features that may be difficult to quantify, such as degree of sustainability, are "refereed" by the certification process.
- The LEED "brand" is widely recognized, and certification and other values—such as future energy savings—are therefore trusted..
- City incentives are easily pegged to certification levels.

Do other cities have these types of programs? How do they work?

Yes. Here are some cities with LEED incentive programs:

Arlington, MA
Atlanta GA
Austin TX
Berkeley, CA
Boulder, CO
Bowie, MD
Chula Vista, CA
Dallas, TX
Eugene, OR
Frisco, TX
Kansas City, MO
New York City
Scottsdale, AZ
Washington, D.C.

Here are some details about <u>Arlington, Virginia's program</u>:

- "Front of the Line" permit processing
- Possible increases in floor area ratio (FAR increased by up to 15% for basic certification, 35% for Gold)
- Green Building Fund ($0.03 per sq ft) required of site plan developers, but refunded when LEED certification is obtained
- All site plan projects must have a LEED accredited professional on the development team.
- All site plan applications complete the LEED scorecard with an explanation of each credit, describing how they intend to achieve the credit, or why they are unable to.
- For multi-family residential projects, appliances, fixtures, and relevant building components must be EPA's Energy Star qualified.

Additional details on the Arlington program are provided as appendices to this document, and also at www.arlingtonva.us under "Environment/Green Buildings."

Here are some details about Scottsdale, Arizona's program:

- Priority plan review - All qualified green building projects receive fast track plan reviews, roughly halving the time required, depending on degree of complexity.
- Job site signs - City green building signs are available to distinguish participating job sites, and informing the public of the builder's commitment to environmentally responsible building and the long-term health of the community.
- Directory of participating designers and builders - Participating architects, designers and builders are listed and published in promotional materials, the city web site, and green building information packets.
- Green building certification through inspections - the city provides a series of green building inspections during construction. From a homebuyer's perspective, this extra process ensures a superior quality product as compared to typical building projects. Upon successful completion of the project, a green building certificate is awarded. As of 2005, 33% of all single-family residential building permits adhered to the city's green building program standards
- Homeowner's manual - A homeowner's manual is available which explains—in layman's terms—the features and benefits of green building, including indoor environmental health, energy, water, and resource efficiency.
- Promotional package for builders/developers - including a green building logo for ads, brochures, and abbreviated green building checklists. Additional publicity is provided as press releases and articles in the local news media.
- Educational programs – the city sponsors green building lectures and seminars to introduce energy/ resource efficient and environmentally responsible buildings.
- The city uses a voluntary Green Building Advisory Committee to develop and provide guidance on green building qualification criteria, promotion, education and special events and to advise the city's Environmental Quality Advisory Board (EQAB) and city staff on green building technologies, strategies, materials, products and standards of practice.
- More on Scottsdale's program is available at www.scottsdaleaz.gov/greenbuilding .

What is "LEED" certification ?

> **"An initial upfront investment of up to $100,000 to incorporate green building features into a $5 million project would result in a savings of at least $1 million over the life of the building, assumed conservatively to be 20 years."**
> *The Costs and Financial Benefits of Green Buildings A Report to California's Sustainable Building Task Force – October 2003.*

On the next two pages is the "LEED-NC" certification scorecard for new construction. Categories cover

- Use of a sustainable site
- Water efficiency
- Energy and atmosphere
- Materials and resources
- Indoor air quality
- Innovation and design process

Each of these has sub-categories with point values, which are totaled for the LEED score. Out of a total of 69 possible points, 26-32 provides basic certification, 33-38 points give silver certification, 39-51 give gold certification, and 52-69 give platinum certification. A great deal of information is available on how these points are attained, most readily by on-line documentation at www.usgbc.org which is the web site of the U.S. Green Building Council.

What is the "Green Home Choice" program?

A **scorecard** for homes is similar to the one for LEED. It's available at www.arlingtonva.us/Departments/EnvironmentalServices/epo/pdffiles/gh_worksheet.pdf **and is reproduced as an attachment to this document. Its categories are**

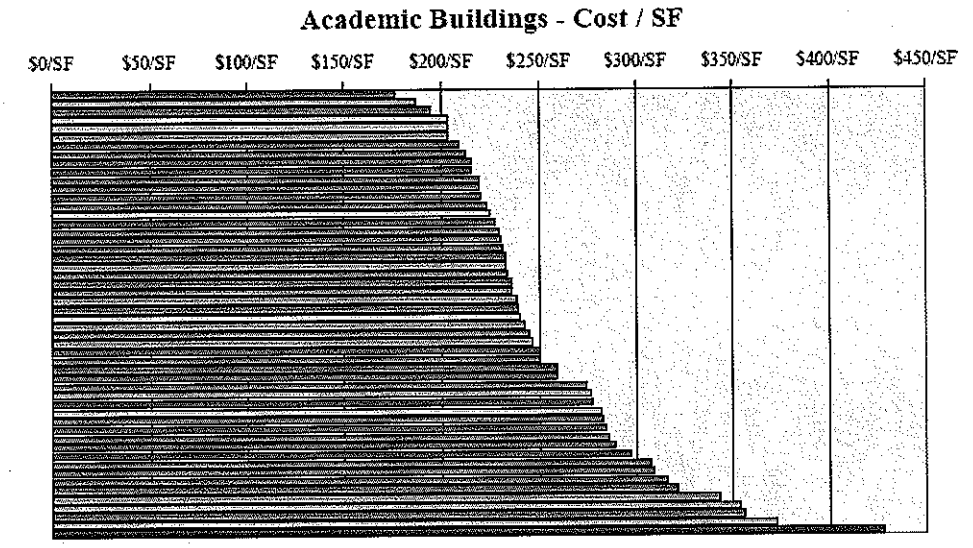
- Site planning
- Energy Efficient Building Envelope and Systems
- Energy Efficient Appliances and Lighting
- Resource Efficient Design
- Resource Efficient Building Materials
- Waste Management
- Indoor Air Quality
- Water – Indoor
- Water Outdoors
- Homebuyer Education
- Builder Operations

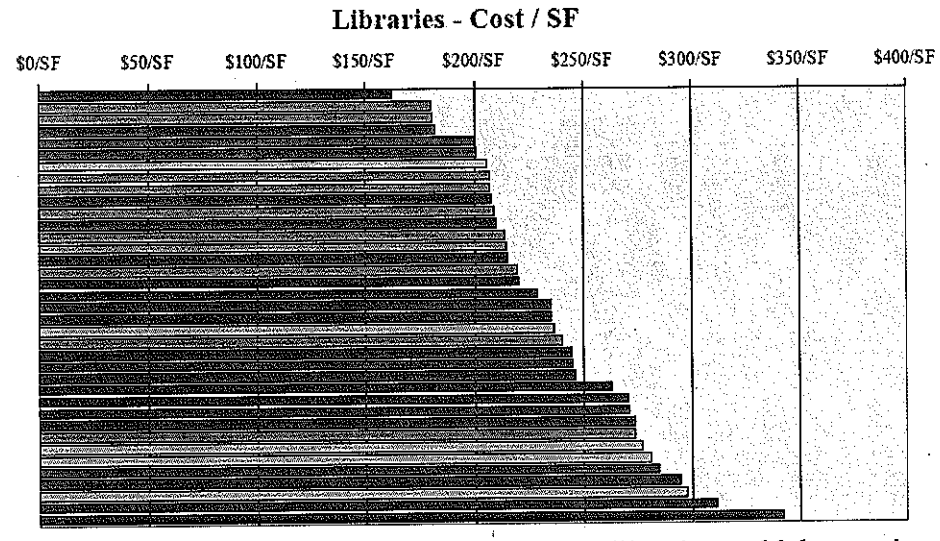
In addition, the Newark proposal requires that a Home Buyers Manual be prepared, as used in the Scottsdale program. The manual serves to educate the occupants about the home's environmental attributes. It includes operating instructions for all appliances and equipment. A copy of the completed Green Home Choice Scorecard and Guidelines will also be included. This Manual will help preserve not only the "green" attributes of the home, but many others, simply by providing continuity of knowledge when the home is passed on to a new owner.

What is the additional cost of construction for a "green building"**?**

Studies have shown that basic LEED certification may be achieved in some cases with no extra development or construction costs. Figure 1 exemplifies this with the costs for 52

academic buildings. The green bars are for LEED-certified projects, and the grey bars for Silver-certified projects. The 37 blue bars are for non-LEED-certified academic buildings. There does not appear to be a connection between LEED-rated buildings and cost, as was confirmed by appropriate statistical assessments.





The same was true of other structures, such as libraries and laboratories. **Figure 2 shows the comparison for libraries. In this case, costs for some of the certified units was decreased because they were built by the same owner.**

The above comparisons were done for the state of California, the data were for structures in 19 different states and a variety of different climates. A comparison was also made of the relative costs of LEED certification for a building placed in several different climatic locations, with the results shown in Table 1. Although no location is clearly comparable to Delaware, the variability is within a few percent.

Cost Premium Location and climate type	Type of LEED Certification Silver	Gold	Platinum
California Coastal	+1.0%	+2.7%	+7.8%
California Central Valley	+3.7%	+5.3%	+10.3%
Denver/Rocky Mountains	+1.2%	+2.8%	+7.6%
Boston/Northeast Coast	+2.6%	+4.2%	+8.8%
Houston/Gulf Coast	**+1.7%**	+6.3%	+9.1%

Table 1. From "Costing Green: A Comprehensive Cost Database and Budgeting Methodology." L.F. Matthiessen and P. Morris, 2004. Davis Langdon, Inc.

In the Philadelphia area, a LEED-certified architect has stated that, if initial cost minimization is the primary objective, silver LEED certification can even be achieved at the same cost as a non-certified building. However, additional costs are advisable in achieving longer-term savings. This architect also stated that the cost for the LEED certification itself, with the use of a LEED accredited architect, runs approximately $2000 for a building of 100,000 square feet. Compared to the cost per square foot in Figures 1 and 2, this is not significant.

> Buildings consume 36% of the energy and more than 68% of the electricity used in the U.S. annually. Optimizing energy performance and installing ENERGY STAR® appliances and fixtures can reduce energy consumption, save money, and reduce greenhouse gas emissions by 20% or more.
> — *U.S. Green Building Council, 2004*

A key impediment to LEED implementation in the Newark area appears to be the lack of construction firms familiar with the requirements and techniques involved. This increases demand for firms that are capable of such projects, and increases bid amounts from firms who have not learned cost efficient practices for this type of construction. For example, a current program underway to build a learning facility at the site of the Iron Hill Museum has found cost premiums of 20-25% for initial green building plans (this effort is still underway and may arrive at a lower ultimate cost). This argues for governmental incentives for LEED, because awareness of them will provide additional incentives for construction firms to adopt the necessary practices. This has occurred most clearly in California, but even in nearby Maryland and in the Philadelphia area. For example, the Maryland Task Force to Study Efficiency in Procurement found that increased construction costs for high performance (LEED Silver) were from 1 to 2%. Even if larger cost premiums initially encountered, the long-term costs are still less, as documented in the following section.

Does the additional cost of green construction provide a net savings over time?

Very much so. This is an important feature of LEED, because it means that the incentives for green construction provide long-term savings – quite the opposite of a "tax" on development. Essentially, the intent of governmental incentives for LEED is to induce developers, builders, and owners to realize that sustainable buildings save money over the long term.