# THE CITY OF NEWARK CONSERVATION ADVISORY COMMISSION

# ANNUAL REPORT FOR THE YEAR 2007

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## Overview

This report summarizes the activities of the City of Newark's Conservation Advisory Commission (CAC) during the 2007 calendar year. Some of these overlap with 2006 activities as described that year's report, and some materials are repeated to provide a "stand-alone" document. The direction of anticipated CAC work in 2008 is also described briefly.

## Background

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."

## CAC Membership

The CAC has 9 members when all positions are filled. Several seats on the Commission had new appointments during 2007 as indicated below.

| | |
|---|---|
| Mayor's Appointment: | Steven K. Dentel (Chair) - Term expires 3/13/09 |
| Mayor's Appointment: | Thomas Fruehstorfer - Term expires 3/13/11 |
| Mayor's Appointment: | Katherine Sheedy - Term expires 3/13/10 |
| District 1 | Ajay Prasad - Term expires 3/13/10 |
| District 2 | Steven Beard - Term expires 3/13/11 |
| District 3 | Robert B. Bennett (Vice Chair) - Term expires 3/13/09 |
| District 4 | Kurt R. Philipp - Term expired 3/14/08 |
| | Ann Morrison – Term expires 3/13/11 |
| District 5 | Fred Stiegler - Term expires 3/13/09 |
| District 6 | Jennifer Byrne – Resigned 9/1/07 |
| | Wayne Casanova - Term expires 3/13/10 |
| Parks Director (ex officio) | Charlie Emerson |

An updated CAC roster is maintained on the City's web site at www.cityofnewarkde.us/DocumentView.asp?DID=620 (pdf format).

## 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 one new participant this year and lots of inquiries

| | |
|---|---|
| Current Participants: | |
| Boy Scout Troop 255 | 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 |
| Newark Center for Creative Learning | Phillips Park |
| Unitarian Universalist Fellowship of Newark | Rittenhouse Park |
| Cummings Family | Devon Park |
| 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 |
| (New participants in 2007) | |
| Debski Family | Kershaw 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 2007 Community Clean Up held on Saturday April 21 from 9:00 to 11:00 am. Although the weather was chilly and overcast, the turnout was good. Approximately 127 volunteers participated in the cleanup. Participants included groups from local schools, University students, and family groups. The quantity of trash that was removed was not determined as the weighing scale was out of commission for the day. Park areas that were cleaned included Dickey Park and Madison Drive, Rittenhouse Park, Kershaw Park, Folk Park, Lumbrook Park and Dorothy Miller Park. Other areas that were also cleaned were Christiana Parkway, Library Avenue, Marrows Road, Wyoming Road, Kirkwood Highway, Papermill Road, and the area around the City well field on Chapel Street. The event ran smoothly and was very successful. A barbeque welcomed the volunteers as they arrived back after cleaning their assigned areas.

## Better Newark Award

The property located at 116 Manns Avenue, owned by Steve and Debbie Hegedus, was chosen to receive the "A Better Newark Award" by the City of Newark's Conservation Advisory Commission because of the energy efficiency improvements made to their property with the installation of solar roof panels.

The Commission established this award about 20 years ago to recognize property owners of houses and businesses for improving the environmental integrity and/or the appearance of their property. Such environmental measures as waste reduction, energy, water, and soil conservation and/or aesthetic measures as landscaping and structural renovations are considered in the CAC's selection of the award.

The "A Better Newark Award" is presented periodically and includes a commemorative proclamation signed by the Mayor of Newark accompanied with a mounted photograph. A photograph of the property is also displayed in the lobby of City Hall.

Anyone may nominate a Newark property for this award by completing a nomination form. Nomination forms are available at City Hall, 220 Elkton Road.

## Community Day

The 2007 CAC booth at Community Day (9/16/07) featured informative posters on the topics of Green Building Incentives and Recycling. A rain barrel was also exhibited to demonstrate residential water conservation possibilities. The Better Newark Award was also publicized.

## Green Building Incentives

The CAC continued its work on green building incentives which has been an effort for several years. At the January 2007 meeting, the CAC unanimously approved a resolution for **"Creation of a Green Building Incentive Program"**. Modeled after a program in effect since 2000 in Arlington, Virginia, the resolution essentially called for three things:

1. Industrial and commercial developments asking for site plan approval be required to include a LEED accredited professional on their development team, complete the LEED scoresheet, and incorporate an "appropriate" number of LEED components; developers qualifying for LEED certification then receiving a floor area ratio (FAR) bonus for the building. If not qualifying for LEED certification, contribution to a Green Building Fund is required.
2. For residential developments, a comparable "Green Home Choice" certification program is to be offered. Certification also required preparation of a homeowner's manual describing environmental features of each home. If not qualifying for certification, contribution to a Green Building Fund is required.
3. For all new City buildings or major renovations, LEED certification at the silver level is intended.

The full resolution is appended to this CAC Annual Report as Appendix I. Accompanying it as a submission to City Council was a lengthy report as the culmination of several years of research and analysis by the CAC (**Appendix II**). The proposal and report were presented to City Council on April 23, 2007. City Council then requested City staff to work with the CAC to develop specific proposals.

In August 2007, the City Manager responded to City Council with the following

- The City adopt the 2006 International Energy Conservation Code as part of its building code. This raises the requirements for energy efficiency and conservation for all construction, including University projects.
- No LEED incentives be provided for residential or commercial buildings.
- Site plan approval procedures be amended to include LEED certification for residential buildings as a possible means of qualifying for FAR allowances.
- The City "seriously consider" LEED certification for its future buildings and construction.

The memorandum is appended to this report as **Appendix III**.

Also in August 2007, a memorandum from the CAC Chair responded to the City Manager's recommendations. The memo endorsed the code changes and incentives for LEED certification for residential construction. However, it listed five ways in which the City Manager's recommendations fell short of those endorsed by the CAC. This memo is also appended to this report as **Appendix IV**.

City Council then asked City staff and the CAC to reach agreement on recommendations to move forward. Subsequent meetings developed proposals for City Council that have since been passed, achieving the following:

Incorporation of the 2006 International Energy Code as part of the Newark City Code (Bill 07-33): passed City Council October 8, 2007.

Incorporation of LEED standards as incentives in the site plan approval process (Bill 08-02): passed by City Council February 25, 2008.

These measures are available on-line via the City Council minutes for the above dates. The second of these did include both residential and commercial/industrial construction as eligible for FAR allowances but with specific allowances to be determined by the Planning Department.

As of December 2007, the CAC was looking at one additional step in incentivizing green building: of the items originally proposed by the CAC (bulleted points above), the requirement for completing the LEED scoresheet could be required of all applicants for building permits. Meetings with Mr. Tom Sciulli of the Building Department and Planning Director Roy Lopata had indicated this as feasible. A CAC meeting with the Building Department indicated that somewhere between 4 to 20 LEED points could be earned by adhering to code requirements or minor steps beyond this. It was suggested, therefore, that builders not only be required to complete the scorecard, but also earn a required number of points, through the minimum will be less than that required for LEED certification, and with the exact point types and categories to be chosen by the builder. The required number of points might be increased gradually over time.

## Open Space Resolution

On 05/29/07 McBride and Ziegler issued a plan for the Aston Development Group, proposing a housing development on the property of the present Newark Country Club. At its meeting on July 10, 2007, the CAC reviewed and discussed the plan, and unanimously passed the following two resolutions:

Resolution One

"The Conservation Advisory Commission unanimously recommends that the Planning Commission table the present proposal by McBride and Ziegler for the Aston Development Group for the proposed housing development on the property of the present Newark Country Club. The Commission believes that the plan, as submitted, provides inadequate allowance and design for open space. In particular, the Commission supports two open space features in any future design proposal for this area; specifically, that the development include an ample area appropriate for active recreational use (e.g. playground equipment and ball fields) and also include a wide natural corridor that accommodates a trail for pedestrian and bike use. It recommends also that at least a portion of this trail route extend from the northeast sector of the development with access to Rte 896 to the area's southeast corner with access to Rte 273 near the intersection with Casho Mill Road for convenient access at these respective terminals to already existing walking trails."

Resolution Two

"The CAC also unanimously recommends that the proposed housing development incorporate sustainable methods and materials during the design and construction of Country Club Estates. Many cities nationwide are moving towards sustainable practices for the construction of residential and commercial building such as LEED certification, and the City of Newark has also embarked on an exploration of how these practices could be incorporated into our building code. The CAC believes that any new proposal for construction in the City of Newark will be more favorably received if sustainable practices were voluntarily employed by the builder."

## Floodplain and Stormwater Regulations

The CAC continued its work on improving runoff and riparian zone protections. A document was prepared entitled "**Proposed Improvements to City Policy and Code for Floodplain Protection and Stormwater Management**" and on its April 10th, 2007 meeting, the CAC voted to forward this report to City Council with suggested revisions. The report is provided herewith as **Appendix V**, including the revisions as completed by the July 10, 2007 meeting. Discussions with City staff followed in the fall months. The CAC intends to put some of the proposed changes into the form of a resolution for City Council to consider.

## Sierra Club's Cool Cities Program

The CAC considered a possible recommendation that the City of Newark sign on to the Cool Cities program. Information about the program was collected from a Delaware Sierra Club representative; it is also available on-line at sierraclub.org/coolcities. The City of Wilmington Commissioner of Public Works was contacted to find out how they complied with the program. What was learned did not coincide with what was known about the Cool Cities Program. Further investigation led the CAC to conclude that this program was well meaning, but in itself lacked the

power of enforcement. The general consensus was that the CAC was taking more concrete actions (i.e. LEED proposals etc.) that were in line with the actions proposed by the Cool Cities program and that pushing for the signing of this agreement would be distracting from these efforts. No formal vote was taken on whether to sign on to this program.

## Curbside Recycling

Early in the year the CAC decided to request an update from the City Manager's office on the status of curbside recycling as a possibility for the City of Newark. We were informed in May that Mr. Rich Lapointe, the Director of Public Works, was busy preparing a report on curbside recycling as an option. The report (see Appendix VI) was forwarded to the CAC in October, and Mr. Lapointe and Carol Houck (assistant to the City Manager) were invited to discuss the report with the CAC. This occurred at the Dec. 11th meeting.

The report recommendation was for recyclables to be collected curbside once a week at no extra charge to residents and for regular refuse collection to be reduced to one pick up per week. One benefit to in house collection was that the City would be able to use its existing equipment and personnel and thus have greater control over the program. Mr. Lapointe hoped DSWA could be persuaded to continue to maintain some igloo stations because curbside recycling would not be offered to multi-family dwellings at this time. The igloos would provide recycling opportunities for apartment dwellers and for area businesses. He also stated the DSWA and Blue Mountain transfer stations currently offered no tipping fees to accept mixed recyclables, and the City had the option to use either facility.

Mr. Lapointe said there was not much difference financially between mandatory and voluntary recycling, but two major issues were considered in the decision to implement voluntary recycling. One issue was negative feedback with the automated collection because of difficulty in storing the large carts. With recycling, there would be an additional cart to store. The recycling bins would be the same as the smallest carts we have now but will be a different color. The other possible negative issue was a perception of "losing" a second day of refuse collection. Mr. Lapointe felt these concerns should be addressed before giving consideration to having mandatory recycling.

Ms. Houck envisioned a wide scale publicity campaign and public education program on Channel 22, in the newsletter and at Civic Association meetings. She felt that offering some type of incentive, perhaps in the form of an annual year end credit, would help to increase participation. Ms. Houck said if the CAC felt strongly about implementing mandatory recycling, they should convey that to Council who was waiting for feedback.

The following resolution was approved and sent to city council:

***The Conservation Advisory Commission enthusiastically endorses the curbside collection plan proposed by the City Manager. In addition, the CAC recommends:***

***1. An eventual goal of mandatory recycling should be set for all residents served by curbside collection.***

***2. Delaware Solid Waste Authority should be requested to maintain the igloo collections for the benefit of apartment, business, and University recyclers.***

*3. The CAC looks forward to advocating for this program and will also assist with longer term educational efforts to assure its success.*

## Anticipated CAC Activities for 2008

For 2008, the CAC will continue with a number of the issues that were on our 2007 agenda. We are working on a proposal for additional LEED incentives, probably by requiring completion of the LEED scoresheet and fulfillment of a specified number of points on the scoresheet.

We will also be looking at an anti-idling ordinance that applies to cars as well as trucks, in order to discourage unnecessary idling in many cases when it is economically and environmentally harmful. We will also be examining the possibility of a ban on plastic bags under certain circumstances, given the environmental impact that they have, and that other municipalities and even countries have banned or taxed plastic bags (Australia, Ireland, China). And finally, the CAC will be looking at ways that Newark can quantify its "carbon footprint" since the use of fossil fuels, and production of greenhouse gases, can best be mitigated by clearly understanding the amounts and costs involved.

## Appendix I. CAC Resolution Passed Unanimously April 23, 2007

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:**

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

2. For site plan approval, projects shall include evaluation of all LEED™ components through the submission a LEED™ scorecard with an explanation of each LEED™ credit, describing how the project will achieve each credit, or why it cannot.

3. 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.

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

5. A Green Building Fund shall be established with a contribution from site plan projects of $0.03 per square foot of gross floor area. The contribution will be refunded 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.

3. The developer will contribute to the Green Building Fund described above, also at $0.03 per square foot of gross floor area ($30 per 1,000 square feet). The contribution will be refunded if the developer obtains Green Home certification and completes the Homeowner's Manual.

**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.

## Appendix II. Proposal and Justification for the CAC's Green Building Incentive Program

### Commonly Asked Questions



### Appendices

# 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 significantly lower operating costs as well as the greater resale value of the structure. 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.**
*Data from 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.

**Homes and commercial buildings are responsible for 40% of all energy consumption in the United States.**
*U.S. Energy Information Administration, 2005*

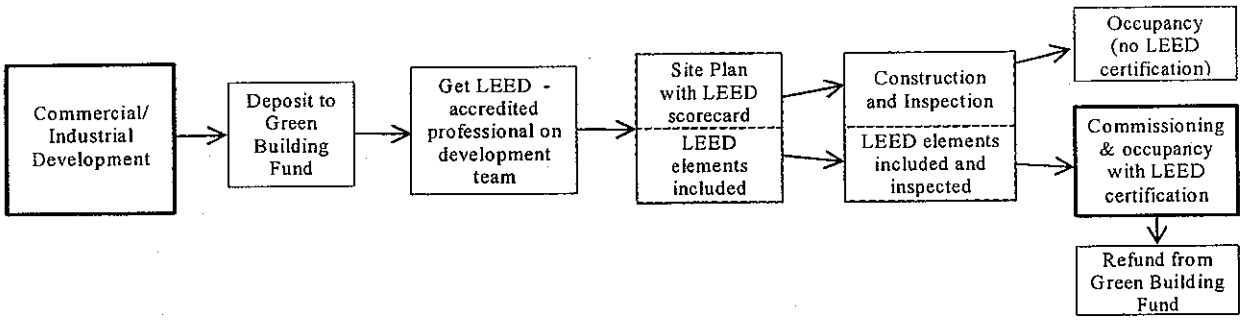
## How will it work?

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

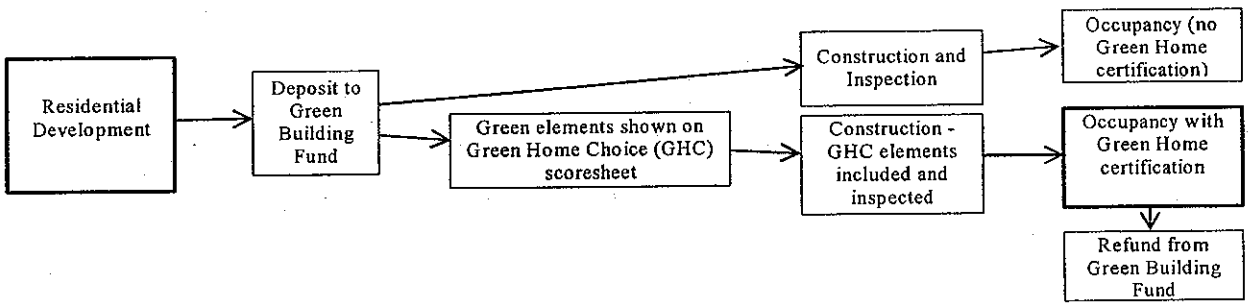
(1) Commercial and Industrial projects will be encouraged to build "green" through a certification program know as LEED™ - Leadership in Energy and Environmental Design. This program is used by many states and municipalities nationally. The incentives for attaining LEED certification will be:

- 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 is a list of some cities with LEED incentive programs:
Arlington, MA
Atlanta GA
Austin TX
Babylon, NY
Berkeley, CA
Boulder, CO
Bowie, MD
Chula Vista, CA
Cranford, NJ
Dallas, TX
East Aston, MA
Eugene, OR
Frisco, TX
Grand Rapids, MI
Kansas City, MO
Madison, WI
New York City
Pleasanton, CA
Princeton, NJ
Scottsdale, AZ
Washington, D.C.

**Arlington, Virginia's program:**

- "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.
- A Green Home Choice program is provided for single-home construction projects.

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

...and here are some counties with Green Building programs:
Alameda County, CA
Baltimore County, MD
King County, WA
San Mateo County, CA
Suffolk County, NY
Arlington County, VA
Chatham County, GA
Montgomery County, MD
Sarasota County, FL

The inset box on this page gives some details on Arlington County's program, on which many aspects of the proposal for Newark is based. On the following page, Scottsdale's program is summarized.

References (access may require free registration with USGBC):
https://www.usgbc.org/ShowFile.aspx?DocumentID=1741
https://www.usgbc.org/FileHandling/show_general_file.asp?DocumentID=691
http://www.usgbc.org/DisplayPage.aspx?CMSPageID=76&#12

**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.
- 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 ?

LEED stands for Leadership in Energy and Environmental Design. It's basically a set of standards, with point values, toward quantifying how "green" a building is. These standards are available for a number of building types, but for the proposed program, the applicable standard is for nonresidential new construction, called LEED-NC. 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. Appendix I-B provides the "LEED-NC" certification scorecard.

## 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

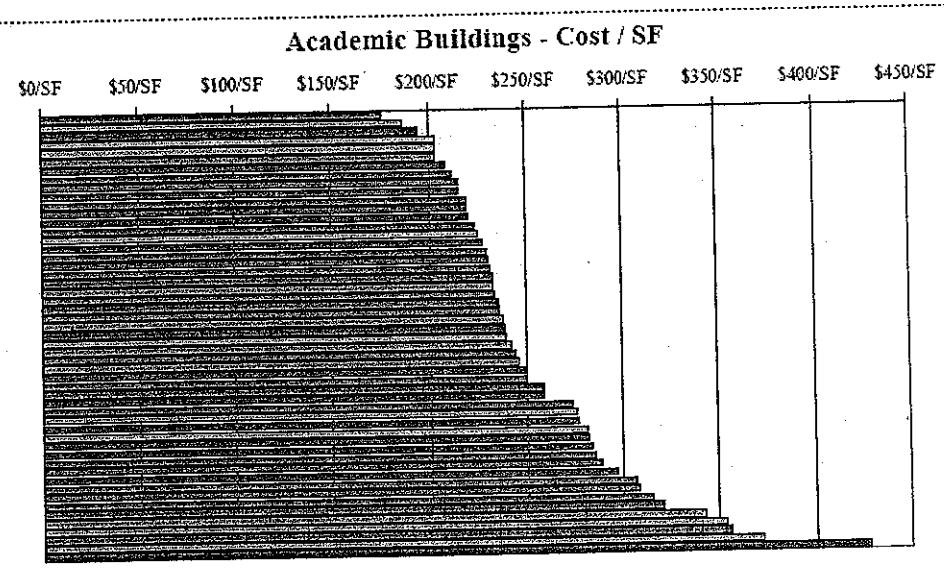
- Site planning
- Energy Efficient Building Envelope and Systems
- Energy Efficient Appliances and Lighting
- Resource Efficient Design
- Resource Efficient Building Materials
- Waste Management
- Indoor Air Quality
- Water – Indoor
- Water Outdoors
- Homebuyer Education
- Builder Operations

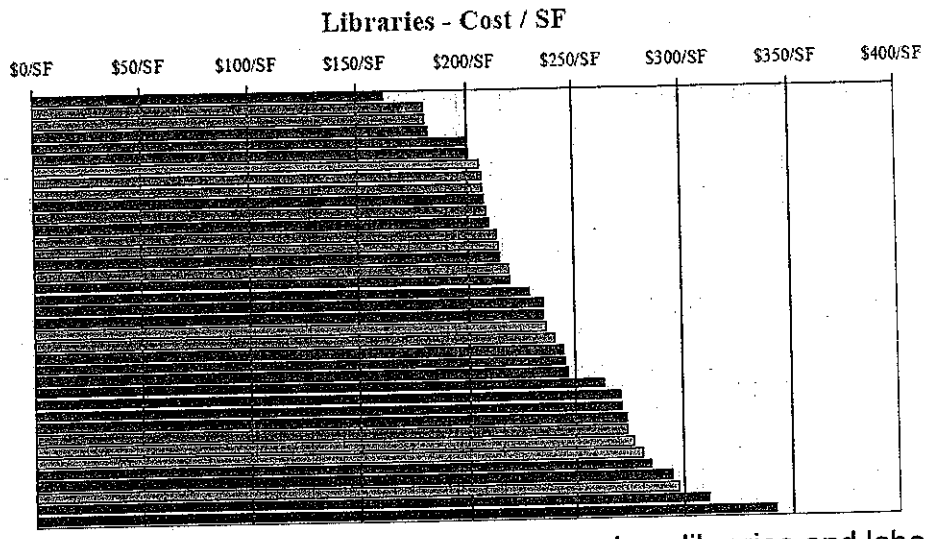
**"An initial upfront investment of up to $100,000 to incorporate green building features into a $5 million project would result in a savings of at least $1 million over the life of the building, assumed conservatively to be 20 years."**
*The Costs and Financial Benefits of Green Buildings A Report to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

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 were 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<br>Location and climate type | Type of LEED Certification<br>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.

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).

## What will this program cost to the City of Newark?

Because the Green Building Incentive Program will be integrated into existing procedures for planning, approving, and inspecting, there should not be a need for additional personnel. There may be a need for some training so that city staff are conversant in the appropriate elements of LEED and Green Home Choice programs (the US Green Building Council conducts suitable workshops costing $175 -$375). However, it is important to note that LEED certification itself is done through the US Green Building Council and not through the city. Consequently, it will not be necessary for the city to have a LEED-certified person on its staff. The Green Home Choice

certification will be done by city personnel and the scoresheet for this program is more detailed to facilitate this process.

The income from the Green Building fund is anticipated to offset the expected training costs. For example, a large building supply company, constructing a 100,000 square foot store in Newark, would contribute $3,000 to this fund. A housing development with 10 homes of 3,000 square feet would contribute $900. These funds should be adequate for training purposes.

## Would this program cause potential businesses to locate outside of Newark because of the costs of the Green Building Fund or of certification?

This scenario has not been reported elsewhere where such programs have been implemented. In fact, large companies are actively seeking LEED-certified sites for many reasons, such as improved hiring, job satisfaction, and retention of employees. In this context, the proposed program would encourage companies to locate in Newark. In addition:

- Newark is already a desirable location for many reasons. The environmental benefits of this program should contribute to our positive image and the desirability of locating within city limits.
- For a given project, the costs of certification and of the Green Building Fund are mutually exclusive: if a building becomes certified, the fund deposit is returned.
- As discussed above, the additional costs of LEED or Green Home Choice construction are small compared with the overall building costs and with the economic benefits.
- The program is designed to educate builders through completion of the score sheet and familiarization with LEED or Green Home Choice features. This process is expected to convince builders that green building is advantageous. With this realization, the program becomes an incentive rather than disincentive.
- New Castle County is also studying programs for green building. Although their process is just beginning, we may expect that surrounding areas will also be covered by similar incentives and procedures.

## Appendices

II-A. Selected internet references for more information on green building

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

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

## Appendix II-A.
## Selected internet references for more information on green building

**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
- Extensive links to other cities, counties, and states with LEED and green home construction programs
  https://www.usgbc.org/ShowFile.aspx?DocumentID=1741
  https://www.usgbc.org/FileHandling/show_general_file.asp?DocumentID=691
  http://www.usgbc.org/DisplayPage.aspx?CMSPageID=76&#12

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

## Appendix II-B-1. 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

# Appendix II-B-2. LEED™ – New Construction (NC) Project Checklist

LEED-NC

## LEED-NC Version 2.2 Registered Project Checklist

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

| Yes | ? | No | | | |
|---|---|---|---|---|---|
| | | | **Sustainable Sites** | | 14 Points |
| 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 |
| Yes | ? | No | | | |
| | | | **Water Efficiency** | | 5 Points |
| | | | 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 |
| Yes | ? | No | | | |
| | | | **Energy & Atmosphere** | | 17 Points |
| 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

**Appendix II-C-1.**
**Arlington, Virginia's Residential Green Building Program - General Concept**

| | |
|---|---|
| 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:<br>1) Site Use<br>2) Energy<br>3) Indoor Air Quality<br>4) Building Materials<br>5) Solid Waste<br>6) Water |
| Incentives: | 1) Lecture series, workshops and special events<br>2) Promotional package for builders & Developers<br>3) Expedited Plan Review<br>4) Development Process assistance<br>5) Job Site signs indicating: **Arlington Green Home Choice**<br>7) Directory of participating builders<br>8) Certification by Green Building Inspectors<br>9) Homeowner's manual (explanation of features)<br>10) Press releases & News articles<br>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 |

## Appendix II-C-2. 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 III. Response from City Manager to CAC's Green Building Proposal

**CITY OF NEWARK**
Delaware

August 8, 2007

TO: Mayor and City Council

FROM: Carl F. Luft, City Manager

SUBJ: LEED "Green Building" and Related Energy Conservation Issues

In April, based on a report from the Conservation Advisory Commission, Council asked the City staff to work with the Commission to develop a proposal regarding the LEED Green Building Rating System in order to improve energy conservation and energy efficiency in new construction in the City of Newark.

As a result, the staff has had a series of meetings with Steve Dentel, CAC Chairman, and has also researched this matter and suggests the following for Council's consideration and direction:

- Based on the Building Department's final review, Council will be asked to adopt the 2006 International Energy Conservation Code that significantly updates the City's local Building Code requirements for construction to promote energy efficiency and conservation. Most important in terms of the CAC's goals in this regard, the new code will apply to all buildings constructed in the City of Newark – residential, commercial, industrial and those owned by the University of Delaware. Because so much of the City's new construction is conducted on campus, we believe that a meaningful energy efficiency and conservation program must include University projects.

- The Planning Department will propose an amendment to Zoning Code Article XXVII, Site Plan Approval, stipulating that its density bonus provisions for residential uses will apply to LEED certified buildings. The LEED (Leadership in Energy and Environmental Design) "Green Building" Rating System is the most prominent national program intended to provide incentives for "green" building construction. It should be noted that while the LEED Rating System at the moment is specifically designed for commercial and industrial buildings, the United States Green Building Council, the developers of LEED, are working on a companion system for residential structures. This means that once the residential LEED system is created, the City's amended Site Plan Approval process will be in place to provide density bonuses for "green" residences.

- Regarding commercial and industrial buildings, we believe that the City's adoption of the new International Energy Conservation Code will ensure that new construction of this type meets the latest and most appropriate standards for energy conservation and efficiency. We do not believe additional incentives for more "intensive or larger buildings (buildings with more floor area than typically permitted) make sense in Newark in light of the community and related impacts that will result from more intense projects on existing parcels within the City. Nothing in our current regulations precludes a commercial or industrial developer from voluntarily complying with LEED requirements in order to receive LEED certification.

- Regarding City buildings and construction, we recommend that in the future, the City seriously consider utilizing LEED certification standards for municipal construction.

Finally, we thought it would be helpful to attach a recent report from the ICC (International Code Council) recently issued that evaluates the LEED Program as well as providing related information concerning the status of "green buildings," in the United States. As you will see, our recommendations are in line with the approach endorsed by the ICC.

Please let me know if you would like to have this item placed on a future Council agenda for final discussion and direction. If you have any other questions, please also let me know.

CFL/ed
Attachments
c: Thomas J. Sciulli, Building Director
Charles R. Emerson, Parks and Recreation Director
Roy H. Lopata, Planning Director
Steve Dentel, Chair, Conservation Advisory Commission

**Appendix IV. Response to City Manager Memorandum**

TO: Mayor and City Council, Newark, Delaware

FROM: Steve Dentel, Chair, Newark Conservation Advisory Commission CAC)

SUBJECT: LEED "Green Building and Related Conservation Issues

DATE: August 8, 2007

Having received the City Manager's memorandum on this topic last Friday, I wish to endorse the proposed action of updating the City's building code by incorporating the 2006 International Energy Conservation Code, and citing LEED as a means for obtaining a density bonus for residential construction.

However, these proposals by themselves do not provide meaningful incentives for "Green Building" in Newark. The CAC's proposal to accomplish this, submitted to City Council last spring, includes significant recommendations beyond those of the City Manager's memo. Specifically, the following have been recommended unanimously by the CAC:

- Density allowances for commercial and industrial development projects designed for LEED certification
- Completion of the LEED scoresheet for all commercial and industrial developments seeking site plan approval
- Use of an existing certification program (Green Home Choice) for residential developments, since a LEED program for residences does not yet exist
- Creation of a Green Building Fund as a financial incentive for green building and source of funds for publicity and education.
- Construction by the City has the stated goal of Silver LEED certification, with completion of the LEED scorecard required for all projects.

It is important to go beyond the use of building codes to incentivize resource-conserving structures. The 2006 International Energy Conservation Code states that it "establishes minimum regulations for energy efficient buildings." However, the ICC white paper provided by the City Manager states clearly that the concept of green building is "building above and beyond minimum code requirements, with the primary focus and intent being to protect the environment." This is why a certification program, with incentives, is needed.

Explicit citing of LEED in Article XXVII of the City Code (Site Plan Approval) is not sufficient, though perhaps helpful. Roy Lopata pointed out to me that this section already contains language allowing area and density allowances based on improved

energy collection, conservation, and storage – and yet it does not appear that this language has ever led to construction of a "green" building in Newark. This is also why a certification program, with incentives, is needed.

In summery, while the steps recommended by the City Manager are positive, they are unlikely to effect significant change by themselves. The CAC has provided recommendations which provide proactive incentives and education to bring Green Building to Newark.

The CAC will soon be proposing specific language for the Newark Code of Ordinances in order to implement the above, bulleted items. We welcome suggestions from City Council or City Staff during this effort, and we ask that they be implemented in the interest of our environment, climate, and future.

## Appendix V. City of Newark Flood Plain Protection and Storm Water Management: Proposed Improvements to City Policy and Code

### Introduction

Several months ago a proposal was forwarded from the CAC to City Council regarding Flood Plain protection. That proposal increased the size of the restricted building area along the streams. The primary justification of the previous proposal was to protect the public from potentially increasing floods. That proposal had some support from some organizations, but was strongly opposed by some private landowners and a church group. Those opposing the changes denied the need for increased protection. They did not see a potential for their structures to be flooded, or they were willing to risk an occasional minor flood. They did not see a valid reason for them to loose their right to use their entire property as they pleased. If the only reason for additional protection of the floodplains was for the protection of the individual property owners I would agree with them. But there are many other reasons to protect the floodplains and it is not just about the flood plains. This document attempts to identify these reasons.

Flooding is also tied into storm water management throughout the city and the region. Just restricting development along streams without reducing the city discharge to the streams would be short sighted. The issues need to be examined together. This document examines both issues.

The strangest thing about the failure of the last proposal was the location of the church that headed the opposition. The church is built on fill in the floodplain. In reality, by just about any standard, it should not be there and would never be allowed to be built there now. Other than the commercial properties along Route 896 between Chestnut Hill Road and I-95 and the car dealers along Cleveland Avenue, this church is about as bad as it gets for the local streams. The bulk of this property is paved and is about 20 feet away from Christina Creek. The only reason it isn't flooding now is that it is built on fill and located just downstream of what is essentially a dam (Barksdale Road). I'm not saying the church should be removed, but it should never be allowed to do anything to increase the runoff from the property. The church should definitely not prevent the rest of the stream through the city from being better protected.

I've been asked several times as I prepared this document what I expected to be done with this information. I hope this document can be the beginning of a conversation. If City Council agrees with the ideas included I hope they will ask city staff to investigate how it can be included in city policy and code. This is not just a list of things that I feel should be done. Instead it is hopefully also a justification for why some changes should be made. Hopefully some of these changes can be incorporated soon, and others can be considered in the future. Obviously, the city and its citizens can not afford to make all the proposed changes now, but that does not mean that we can't start thinking of the future and get prepared for necessary and inevitable changes that will be required in the future.

**Thomas K. Fruehstorfer**
**Member, CAC**

**Proposed Alterations to City of Newark Flood Plain Protection and Storm Water Management Codes**

In the past year changes to the city floodplain codes have been examined and changes proposed as a result of perceived flooding dangers. The proposed changes failed due to a lack of public support. Part of why they may have failed is that changes to the flood plain code will play only a minor part in preventing flooding and the storm water code may be just as important to examine and refine to protect both the public and the environment.

It has been argued by some that the City of Newark's current Flood Plain Protection and Storm Water Management legislation may not be adequate. In determining if they are adequate one must examine the objectives and goals of the legislation. The city code generally includes requirements for Storm water Management (drainage) and Floodplain Management. Their objectives are listed below.

The city Drainage Code (Appendix III) indicates that the objective of the code is to:

1) To protect persons and property from serious harm and significant damage from flooding caused by storms of up to one-hundred year intensity;
2) To assure that each residential, commercial, industrial, or public development, home and yard is constructed with adequate drainage;
3) To provide that public drainage facilities and watercourses are designed and constructed to require minimal maintenance;
4) To preserve water quality of the streams and natural watercourses in Newark;
5) To minimize sedimentation and erosion;
6) To promote delayed runoff by requiring the use of on-site detention/retention;
7) To promote the utilization of groundwater recharge techniques where feasible;
8) To enable the City of Newark to comply with its National Pollutant Discharge Elimination System (NPDES) permit and applicable regulations for storm water discharges; and
9) To prohibit illicit connections and discharges to the municipal separate storm sewer system.

A quick observation shows that the code covers many of these objectives very well but may fall short on a couple of the objectives. The cite code is rated highly by outside agencies, but these may be agencies that primarily focus on protection of public health and safety. The points that the code may fall short of covering include 4) *To preserve water quality of the streams and natural watercourses in Newark, 6) To promote delayed runoff by requiring the use of on-site detention/retention, and 7) To promote the utilization of groundwater recharge techniques where feasible.*

The city code also has a separate section that focuses on floodplain protection. The city code currently indicates in Article XXVI. SPECIAL PROVISIONS FOR FLOODPLAINS AND LAND ADJOINING FLOODPLAINS that the regulations are needed:

*"to promote the public health, safety, and general welfare by regulating the use of flood hazard areas subject to and necessary for flood waters; to reasonably provide for the increased flow of flood waters due to expanding urbanization; to protect water quality and to encourage natural recharging of ground water supplies; and to constitute a harmonious and appropriate aspect of the physical development of the city as provided for in the comprehensive development plan"*

Generally, in summary, the code indicates these regulations are needed to

1) Protect the public health and safety
2) Protect the stream and ground water
3) Provide protections of public interest

It could be argued that there could be another reason - to protect the diversity of the local native ecosystem of plants and animals. The high concentration of development in our region is reducing the natural habitat available for native plants and wildlife necessary to provide biodiversity in our region. Without the native habitat we risk loosing the native insects and plants necessary to support the natural food chain. Our streams and the land bordering them can provide corridors to connect many of our regions existing green and open spaces and help protect native wildlife.

The current code does a pretty good job of providing for number 1 above - Protect the public health and safety, but seems to fall short on the other goals.

So, in the past year changes to the city floodplain codes have been examined and changes proposed. In 2005 the storm water code was also examined and revised. At the time much of the organization and wording was greatly improved to create a clear and easily understood document, but the content may not have been thoroughly examined to verify that the objectives were being met. Maybe the two documents should be examined together, as a whole, to determine if the codes do actually meet the stated objectives.

The general objectives of the city storm water and flood plain regulations can be summarized as the following:

1) Protect the public health and safety
2) Protect the streams and ground water
3) Provide protections of public interest
4) Protect the diversity of the local native ecosystem of plants and animals

Obviously each of these is of varied importance and every person may have different opinions on how important each of these is. What our codes need to do is strike a balance between the good of the public, the good of the environment, and the rights of individual property owners. No decision is going to please everyone. Hopefully the details below can help provide some ideas on how the city can proceed with figuring out a balance that addresses each of the objectives above and provides for the

continued economic growth of our city while protecting the environment and city resources for future generations. Each objective is addressed in greater detail below.

**Protect the public health and safety**

The objectives of both the flood plain regulations and the storm water regulations include protection of the public health and safety.

The code currently provides prohibition of building in the 100-year flood plain. Although some say that floods are extending beyond the 100-year flood plain specific examples have not been provided. The current flood plain building restrictions seem to protect public health and safety. The city has numerous homes that were built in the 100-year flood plain before the current restrictions and they do not seem to be in extreme danger of flooding. Even if a flood does extend to a home outside of the 100-year flood plain the most it is likely to do in our region is flood basements and result in minor property damage. When comparing the cost of drying out a basement once every 50-100 years to a property owners rights, extending the building restriction beyond the 100-year flood plain may not seem to be justified if the intention is to protect the public health and safety.

This document assumes that properties outside the 100-year flood plain are not currently being flooded from our local streams during storm events, but that if current storm water management practices are continued they may flood in the future. This may be an issue that should still be open to public debate. If there are properties in town that are getting flooded by our local streams hopefully they can be identified and their problems should be considered when finalizing any recommendations about future city storm water and flood plain code.

To address the comments of some of the public that storms are getting bigger, floods are getting bigger, and drainage to streams is increasing due to increased development the current storm water regulations should be examined. The current storm water regulations seem to focus on efficiently removing storm water from property. This protects most properties by quickly draining storm water and transferring it to streams, but this is not helping the streamside property owners.

If we want to protect properties along streams in Newark and downstream from Newark every property owner in town, not just properties along streams, should be held responsible for the amount of storm water that is discharged from their property. Both new development and existing development should be included. There are talks of storm water taxes to tax property owners on their impermeable lands, but the taxes will do no good if nothing is done to decrease runoff and increase infiltration.

A new study recently released by the U.S. Army Corp of Engineers and reported on in the Delaware News Journal indicates that New Castle County is withdrawing too much ground water. We should be making better attempts to recharge the ground water rather than just pumping it.

New developments currently are required to maintain discharge rates after development to pre-development rates, but the total volume discharged is not regulated. Maybe new developments should be required to restrict storm water discharge volume rather than just the rate that is currently regulated. Any new construction that decreases permeable ground should be required to compensate for the change.

Existing properties or neighborhoods built before storm water management was required could have goals set for addition of storm water systems by a certain date even if that date is 10-20 years in the future. This could be accomplished on individual properties with something as simple as rain barrels to collect rain water from gutters to be discharged to lawns after a storm event and on a neighborhood scale with the addition of storm water retention ponds in places like Norma B. Handloff Park. A second possible location for a new storm water pond is south of **East Park Ave west of Chapel Street.** Critics may be quick to say that some small properties may be unable to provide infiltration and not all neighborhoods have space available to provide retention ponds, but that does not mean that some attempt should not be made to reduce storm water runoff where it can be accomplished.

Storm water runoff could also be reduced by reducing the width of roads in new developments and in some older developments. One example of where this could be done is Briar Lane in the Oaklands development between Old Oak and Bent Lane. The road is currently about 28 feet wide and is a Special Permit Parking District (I.P.R. Zone) meaning only occasional quests are permitted to park on the street with a temporary pass displayed in the vehicle window. The road is 28 feet wide and all the homes have driveways and garages. Very few cars park on the street. Reducing the width of the road by three feet on each side and restricting visitor parking to only one side of the street would provide a 22-foot wide paved surface for parking and normal traffic and reduce the paved surface by about 12,000 square feet - about a 20% reduction. In a 0.5 inch rainfall event about 3,750-gallons less rainfall would fall directly on an impervious paved surface if the width of the road were reduced. Again this could be planned as part of an overall goal over the next 20 years to be included as part of regular maintenance when the street surface and curbs are replaced during normal replacement cycles. The 20% reduction in paved surfaces would also result in reduced pavement costs.

There should also be an effort made to encourage Maryland, Pennsylvania, and New Castle County to control storm water discharge that ultimately drains into our waterways. Interestingly, many of the flooding complaints that regional politicians hear from constituents are not along streams at all but are drainage from developments in New Castle County including drainage from Covered Bridge Farms and Academy Hill. The city needs to work with our neighbors to address storm water management as a region. Some progress is being made by our neighbors. The Chester County Water Resources Authority has developed a Post Construction Storm Water Management Model Ordinance that is much more detailed and progressive than Newark's storm water code. Newark should review this document and work with our neighbors upstream to get more communities involved in implementing similar practices.

**Protect the stream and ground water**

The objectives of both the flood plain regulations and the storm water regulations also include protection of streams and groundwater. While the current code does a pretty good job of protecting the public health and safety it does not do much to protect the streams and groundwater.

Long time residents of Newark talk about the past water quality and water levels of Christina Creek and White Clay Creek compared to current conditions. Apparently in the past Christina Creek generally contained a much greater volume of water as its base flow and the peaks during storm events were not

nearly as high. One property owner in the Cooch's Bridge area has indicated in public meetings that years ago Christina creek did not flood his fields until the day after storm events. Now he has a couple of hours to remove his livestock from his lower fields before the Christina floods his property. This may not be a result of a change of climate with bigger storms as some suspect. Instead it could be because greater development has resulted in reduced infiltration that reduces groundwater flow to the streams. During storm events the dirty storm water is quickly drained to streams without the added benefit of being filtered by the ground. The result is a high and dirty peak flow with lower groundwater levels to feed the streams between rain events.

Current floodplain code prevents new construction in the 100-year flood plain, but currently allowable uses of the flood plain may be too loose to provide stream protection. The streams need a buffer to filter water before it enters the stream. Current research cited in many documents seems to indicate a great benefit derived from three stage riparian buffer system. The first stage is a **minimum** of 15 feet of forest type growth. The next zone is a **minimum** of 20 feet of mixed trees and brush. The third zone is a minimum of approximately 125 feet of grass or brush. This puts a minimum buffer of about 150 feet before construction of buildings or parking lots is allowed. In some areas this is included in the 100-year flood plain, but in areas of steeper slopes this will extend beyond the 100-year flood plain. Research indicates a pronounced decrease in levels of stream pollutants as it is filtered through the soils in this buffer zone as the water flows through the ground and vegetation roots before being discharged to the stream. The roots of the trees and shrubs reach far deeper than grass roots providing important cleaning of the water.

Maryland studies have shown that forested riparian buffers remove 21 pounds of nitrogen and 4 pounds of phosphorous per acre per year. An acre is about a 25 foot wide strip about 1/3 of a mile long – the approximate distance from Rahway Park (behind Downes Elementary School) to Barksdale Road. Providing a 25-foot buffer through Cherry Hill along Christina Creek would remove almost 25 pounds of nutrients from Christina Creek every year resulting in cleaner water in Smalleys Pond, the Christina River, The Delaware River, and the Delaware Bay.

EPA documents indicate that a riparian buffer width of about 80 feet can remove 75% of Nitrogen from runoff while a width of about 350 feet will remove around 90% of Nitrogen from runoff. The same EPA document indicates that forest is 90% effective at removing nitrogen compared to grass at 50% effective at removing nitrogen. Forest is clearly more effective than grass.

New construction should be restricted to some distance at least 150 feet from the stream. Natural forest should be required for at least the first 15-25 feet from the stream. A mix of trees and native shrubs should be required for at least 20 feet beyond that. Others in our region are looking at similar regulations. Regions of northern New Jersey (Highlands) are considering building restrictions of up to 300 feet from streams to provide protection of critical water supplies. This is reasonable and prudent to protect our resources.

Legislating what homes that are currently constructed along the stream can do with their property may be more difficult, but some sort of incentive should be provided to encourage homes to return at least 15 feet along the stream to forest with a transition zone of trees and shrubs before mowed lawns. The streams and bays need protection from our chemically treated yards.

Changes to the current storm water management code may also be necessary to protect the groundwater and streams. One of the listed objectives of the drainage code is to encourage infiltration, but there is little or nothing in the code that does actually encourage infiltration. EPA documents indicate that subsurface flow is almost 90% effective at removing nitrogen compared to 33% removal of nitrogen in surface flow. Again, the Chester County Water Resources Authority Post Construction Storm water Management Model Ordinance provides many ideas for reducing runoff and increasing infiltration. It details methods of separating flow instead of concentrating it. It encourages the use of retention basins that provide infiltration of collected water instead of detention basins that simply collect water and discharge it at a controlled rate. It requires Permanent Storm water Management Design Standards that "maintain the natural infiltration process and rate, and infiltrate runoff at its source". It requires property owners to provide for infiltration of the first 0.5 inches of rainfall of each rain event. If a property reduces permeable surfaces then the reduced infiltrated must be compensated for. While Newark's code may be highly rated by outside agencies it does not include the most progressive ideas in the region. Newark should review the Chester County Water Resources Authority Post Construction Storm water Management Model Ordinance and consider adopting similar design standards.

Looking at what should be done with a property like the Baptist church on Barksdale road things can get interesting. Obviously the property can not be returned to a natural setting to provide filtering of the water before discharge to the stream. This property, and any other like it, should be grandfathered to allow rebuilding if damaged (by anything other than flooding). I don't think it, or any other property in town should be allowed to reduce its permeable space without providing some balance to reduce the volume of runoff. Any new regulations should look at the goals of the regulation in determining what can be done on a property. If the church wants to expand their structure they should be allowed to do it only if it does not negatively impact the good of the community and the environment also. Maybe a permit to allow expansion could be allowed if they added a 15 feet buffer of permeable space along the stream. Maybe expansion of their structure, which in reality is all built within the 100-year floodplain, could be contingent upon them providing infiltration systems under their parking lot or planting special native species along their parking lot which are know to have superior filtering properties. New structures could be designed with "green" roof. There are some options now which can provide the goals of storm water and floodplain regulations and more will surely be developed in the future. What we can't do is not protect the entire length of the stream because an African American Baptist church with lots of members that will come to a City Council Meeting and say "AMEN" happens to be along a couple hundred feet of the stream.

**Provide protections of public interest**

Public access to streams and rivers has always been provided in this country for the purpose of navigation and fishing. While public access to stream banks has been less protected, in today's environment of a society with more recreational interest access to trails and paths along streams has become especially attractive. Public paths can increase regional property values and improve the entire community's standard of living. Research has proven that public access trails has improved both the property values of the neighboring properties, but also of other properties in the region by making neighborhoods more attractive.

While a property owner may complain about loosing the rights to their land along the stream their property values could actually increase. A back yard bordering a scenic pathway with protected natural area could result in a more desirable property.

If the existing trail along the train tracks were extended to connect to the Mason-Dixon Trail along Christina Creek and connected to White Clay Creek with the Pomeroy Trail a "Green Loop" could be created around Newark resulting in a wonderful recreational facility for the entire community.

Sections of the Current Mason-Dixon Trail can be observed to determine a minimum buffer needed to provide a scenic path along the stream. Areas where lawns extend to the stream do not provide an enjoyable walking experience along the stream. Areas with as little as 25 feet of natural growth begin to provide a buffer from the homes. Areas with 100 feet of mixed trees and shrubs practically block homes from view even in the winter.

With these considerations the limits set for protection of the stream (150-foot riparian buffer) should be adequate to also provide an area for public recreation.

While the City of Newark Planning Department strives to include sections of streams in new development as part of the required open public space, nothing in the code requires the streams and their buffer area to be maintains as public space. If a developer meets all the other requirements of the city code and is not asking for any variances there does not seem to be enough tooth in the current code to maintain the streams as open public space. Perhaps streams and waterways can be better protected by city code to protect our natural resources for all to enjoy.

**Protect the diversity of the local native ecosystem of plants and animals**

While protection of the diversity of the local native ecosystem is not currently stated as a goal or objective of the city storm water and floodplain codes it is worth considering its addition.

Past and current development in New Castle County, DE; Cecil County, MD; and Chester County, PA has reduced the amount of natural habitat for native species of plants and animals. As this development increases we risk loosing the necessary habitat for native plants and animals necessary for our continued well being. Research has indicated that corridors of habitat can be influential in providing habitat for native species. The corridors allow for migration of animals and even plants as conditions change from season to season and year to year.

Some research has shown that 50-foot corridors can protect native species. Even plants have been shown to migrate along 50-foot corridors in even a time span of several years as weather conditions have shifted during dry and wet cycles. If growing conditions for a plant in a small forest area surrounded by mowed lawns change, the plant is likely to die out. If connected to other areas with a natural corridor the plant has a chance of migrating over a period of years to a more desirable location and continuing to thrive in a region providing necessary habitat for native animals.

Our regional streams can be developed as corridors of green space to provide natural ecosystems for our native wildlife. Efforts could be made to remove invasive plants and encourage the planting of native species on both public and private property.

Public education of the potential results of loss of native plants and animals could encourage some property owners to plant native special in the forest and forest shrub zone along the stream. May the recommended buffer widths could even be decreased by a small percent for a property owner who agrees to plant native species.

A requirement for 35 to 50 feet of a minimum of a certain percent of native plantings along each side of the regions streams could provide important habitat for native plants and animals necessary for their continued survival.

**Summary**

There may not be a simple fix to the storm water and floodplain issues currently faced by the city. Instead a change in thinking from the current concentration on piping storm water away from property to a concentration on reducing runoff and maximizing infiltration of storm water at its source may reduce flooding concerns and result in protection of the environment. Rather than one big fix, many small steps addressed over a period of time can help prevent additional flooding problems in the future.

In summary some changes required to provide the protections outlined above include:

- Building restrictions should be modified to include restrictions preventing new construction in the 100-year flood plain or 150 feet from the stream, whichever is greater. (rebuilding of structures with the same footprint would not be restricted)

- Forest zones (15-25 feet) and transition zones (20 additional feet) along the stream should be set for new construction

- Current storm water regulations should be altered to regulate total post development discharge volumes in addition to post development discharge rates.

- All construction in the city should be subject to greater restrictions on reduction of permeable space

- Consider reducing the widths of existing and new roads

- Target dates should be set to require storm water management for properties that currently do not have any storm water management

- Existing developed property in the stream buffer area should be encouraged to provide native tree and shrub planting along the stream

- If existing structures in the flood plain or riparian buffer wish to expand they should be required to also enlarge the natural buffer along the stream to provide improved filtering of water before discharge to the stream

- Public access trails and paths should be provided along all waterways and connected to existing paths and trails wherever possible

- Code should be strengthened to require area along streams in developments to be designated as public space rather than relying on city staff to get these designations as concessions for permit approval.

## Appendix VI. Department of Public Works Recycling Recommendations

TO: Carl F. Luft, City Manager

FROM: Rich Lapointe, Public Works Director
Carol S. Houck, Assistant to the City Manager
Dennis McFarland, Finance Director

RE: **Curbside Recycling Recommendation**

In response to Council's desire to implement a curbside recycling program, curbside recycling was evaluated for four (4) alternatives based on a mandatory or voluntary basis. The alternatives as summarized below included 1) Performing the collection in house, 2) A Recycle Bank/Blue Mountain Recycling proposal utilizing a per household cost, 3) A Recycle Bank proposal utilizing a cost share of savings on tipping fees, 4) A program offered by the DSWA.

Curbside Recycling by the City of Newark

- Refuse and recycling collected once per week each.
- City of Newark would purchase recycling carts for single source collection. This will require a capital outlay of approximately $230,000 (voluntary) to $320,000. (mandatory)
- City of Newark would use existing equipment for the collection of both refuse and recyclables.
- Recyclables would be taken to the DSWA material recycling facility at the currently proposed zero dollar tipping fee including glass.
- The current diversion percentage of 29% and set-out percentage of 72% from Wilmington's curbside recycling program were utilized as reference points.
- The City could experience a savings of $23,000 to $32,000. This will depend on participation rate in recycling program, percentage of Newark residents actually participating in current DSWA igloo program (can not accurately determine this), diversion rate, and whether mandatory or voluntary.
- No resident incentive program is included in this option.
  *If zero tipping fee fails to continue, Blue Mountain Recycling has also offered Newark a zero tipping fee at it's Wilmington, DE center.

Blue Mountain Recycling/Recycle Bank

- The City of Wilmington is currently using Blue Mountain Recycling/Recycle Bank for their curbside recycling program.
- The current diversion rate is approximately 29% and the current set out rate is approximately 72% in Wilmington.
- Recycle Bank supplies all of the carts and truck retrofits for single source collection. The retrofits are currently only available for semi-automated (tipper) trucks.
- The City of Newark would offer once a week refuse collection and once a week recyclable collection utilizing our own equipment.

Blue Mountain Recycling/Recycle Bank (Continued)

- Currently this program is set up for semi-automated equipment. Recycle Bank has indicated that they are working on a fully-automated system but it is yet to be finalized. Recycle Bank normally provides coupon incentives to those that recycle based on the weight of materials recycled. In our program, it would be based on an even distribution to all participants with a value of up to $400 a year per resident.
- Cost for the Recycle Bank Program was calculated from two (2) proposals at $2.00 per household per month ($57,000) and the second at a 90%/10% split of all tipping fee savings ($153,000) after subtracting 25% by weight of that currently disposed at the Recycle Delaware igloos.
- Blue Mountain Recycling cost is based on a $0 tipping fee at their Wilmington Transfer Station. Although, DSWA is currently offering zero tipping fees for recyclables in Wilmington.
- Estimated annual cost after savings and tipping fees equals anywhere from $57,000 to $153,000 depending on % of participation in program, actual existing participation of Newark residents in Recycle Delaware igloos, diversion rate, and whether voluntary or mandatory and whether the $2.00 per household or the 90% Recycle Bank – 10% Newark split were selected.
- A three (3) to five (5) year commitment is required.

DSWA Curbside Recycling Program

- The DSWA will provide a program for the City of Newark as they have provided for the City of Rehoboth and Milford.
- DSWA will provide the recycling carts for single source collection.
- The DSWA will collect the carts for $1.00 per week per household.
- Since collection is provided by DSWA, twice a week collection could continue.
- The cost to the City with continued twice a week refuse collection would be $145,000 to $220,000 depending on program participation and actual existing participation of Newark residents in Recycle Delaware igloos, diversion rates and mandatory/voluntary program.
- The cost to the City if it went to a once a week refuse collection and a once a week recyclable collection would be $36,000 to $110,000 depending on recycling participation rates, diversion rates, Newark resident actual participate in DSWA igloo program and whether voluntary or mandatory. Additionally, this option would serve to encourage recycling whereas maintaining twice a week refuse collection would not.
- A two (2) year commitment is required.

In summary, all the above costs are based on the percentages achieved by the City of Wilmington over the past year. The cost calculated will vary according to the actual diversion and set out percentages experienced in the City of Newark. (See Attachment 1) It is anticipated that the biggest issues the residents will be concerned about will be 1) The cost of the program, 2) Going from a twice a week to once a week refuse collection and 3) The acceptance and storage of an additional 65-gallon cart. The assumptions used based on Wilmington's results are as follows:

A. Voluntary Program
Diversion: 29%
Participation: 72%

B. Mandatory Program
Diversion: 33.5% (based on 18 pounds/household/week)
Participation: 100%

Assumption of Newark resident's contribution of materials to existing Recycle Delaware Program. 40% of Newark homes place 50% of the materials into the Newark igloos.

Based on the evaluation conducted, it is recommended that the City initially start with a voluntary, in-house provided curbside collection program based on a once per week refuse collection and a once per week recyclables collection. Due to the fact that this will require a capital outlay for the purchase of carts, it is anticipated that money will be allocated in the 2009 Capital Program. 2008 will be utilized for promoting this program, sending out a survey to establish the participation rate, establishing code revisions and program policy/requirements and the actual ordering of carts to be delivered the first part of 2009. The two (2) incentives that should increase recycling participation rates are the loss of a refuse collection day therefore, making recycling essential and the ease to recycling when commingled into one (1) cart. Those who participate should not recognize a significant impact to their normal practice since the percentage of anticipated recyclables should be close to the actual percentage of trash now collected on Thursdays and Fridays.

If you should have any questions concerning the above or attached, we will be happy to respond.

RML/ac

| | Mandatory | | Voluntary | |
|---|---|---|---|---|
| Option | Cost | # Refuse Pickups per Week | Cost | # Refuse Pickups per Week |
| City | ($31,545) Savings | 1 | ($23,654) Savings | 1 |
| Recycle Bank Proposal 1 | $80,662 | 1 | $56,935 | 1 |
| Recycle Bank Proposal 2 | $153,334 | 1 | $121,212 | 1 |
| DSWA | $145,822 | 2 | $220,192 | 2 |
| DSWA | $36,000 | 1 | $110,000 | 1 |