



City of Cumberland

Urban Tree Canopy Program
Strategic Implementation Strategy Plan



Table of Content

Introduction	2
Benefits of Trees	3
A. Environmental Benefit	3
B. Social Benefits	4
C. Economic Benefits	5
Existing and Possible Tree Canopy	7
A. Public Right of Way	8
B. Commercial and Industrial Properties	9
C. Government and Institutional Land	9
D. Residential Properties	9
E. Parks and Open Spaces	10
Urban Tree Canopy Goal	11
Existing Codes and Programs related to Urban Tree canopy	12
A. Shade Tree Commission	12
B. Cumberland City Code	12
C. Subdivision Regulations	15
D. City of Cumberland Comprehensive Plan	15
Potential Urban Tree Canopy approaches	16
A. Public Education Strategies	16
B. Citizen Volunteer Strategies	18
C. Regulatory Strategies	20
D. City Action Strategies	23
Recommended Strategies for the City	24
A. Public Education Strategies	24
B. Citizen Volunteer Strategies	25
C. Regulatory Strategies	27
D. City Action Strategies	27
Funding	29
References	30



Cumberland Tree Canopy Program Implementation Strategies

Introduction

Trees have always been an important part of the City of Cumberland. Urban forests in Cumberland have been a vital environmental, economic, and social asset to the City. Cumberland has relatively high overall tree canopy coverage. However, many trees are aging, being cut down and not being replaced. This results in significant tree canopy loss. The City of Cumberland is determined to conserve existing trees within the City and increase the area covered by the tree canopy.

An urban tree canopy is defined as the layer of leaves, branches, and stems of trees that cover the ground when viewed from above. Urban tree canopies not only protect the environment in which we live by reducing air pollution, improving water quality, and providing wildlife habitat, but they also provide social and economic benefits. Trees reduce energy consumption and thus save money by stabilizing temperature, creating shade and acting as a wind and sound barrier, and reducing stormwater surface runoff. The improved aesthetic quality due to the presence of trees adds value to the properties in the area. Trees create places for active and passive recreation, and provide an opportunity to learn about plants and animals. They create a sense of place and pride in the community and bring the members of the community together. Trees also act as an economic stimulus for the recreational and tourism industry.

This document describes the benefits of trees, summarizes the findings of a study carried out to analyze Cumberland’s existing and potential tree canopy, and sets goals and a vision for the urban tree canopy in Cumberland. Implementation strategies to achieve those goals are then described in detail.



Benefits of Trees

An urban tree canopy provides many benefits to the community, including:

► **Environmental Benefits**

Improved water quality

Tree leaves, branches, and stems intercept falling rain, filter out pollutants, and absorb stormwater. Some of this intercepted water evaporates back to the atmosphere and some soaks into the ground reducing surface runoff and erosion. For example, 100 large trees absorb over a half million gallons of rainfall (DNR Forest Service). The absorption power of trees also reduces the amount of water that a containment facility (stormwater retention facility) must hold.

When stormwater hits an impervious surface, it not only picks up various pollutants such as lawn fertilizers, salt, oil, and other pollutants, it also increases the water temperature. This heated and polluted stormwater flows into receiving waters resulting in serious water quality degradation. Trees help improve the overall quality of water by reducing stormwater runoff, and absorbing pollutants.

Improved air quality

Urban trees and shrubs improve air quality by removing pollutants from the air including nitrogen oxides, carbon mono-oxides, chlorine, fluorine halogens, and ammonia. Trees also reduce carbon dioxide while releasing oxygen as they photosynthesize. A hundred trees on average remove 430 pounds of pollutants per year (DNR Forest Service).

Stabilized temperatures

Trees provide shade that not only lowers stream temperature but also the ambient temperature by an average of 3 to 10 degrees Fahrenheit. Urban trees also help minimize the urban heat island effect. The urban heat island effect is a phenomenon in which temperature in metropolitan areas is significantly higher than the surrounding countryside. This phenomenon is caused by the impervious surfaces of the built environment that absorb sunlight and convert it into heat energy. Temperatures in some city centers have been measured 5 to 9 degrees higher than in the surrounding countryside (Planning the Urban Forest, Schwab, 2009). Trees help stabilize temperatures around a built environment by providing shade to the impervious building structures and absorbing heat generated by impervious surfaces. In winter, trees block cold air if placed strategically around buildings.

Wildlife habitat

Urban forests provide food and habitat for a variety of birds, animals, and fish. They also provide valuable resting grounds for migratory species. Trees within urban forest parcels, along meadow edges, and stream banks contribute to the food, cover, and nesting needs for a wide variety of species. Forested areas along linear urban infrastructure such as highways, railroads, and utility lines serve as wildlife corridors. Small parcels with trees in residential backyards can also serve this purpose.

► Social Benefits

Aesthetic and sense of place

Trees significantly improve the aesthetic quality of an area. They provide attractive settings for houses, businesses, and urban public spaces. Trees and the surrounding landscapes mark the uniqueness of an area and create a sense of place.

Trees help soften the natural and manmade environments. The color of trees reflects the change in season. They add a festive palate of colors to the urban environment, especially during spring when the blossoms emerge and in the fall when the leaves change.

Active and passive recreation opportunities

Urban trees provide various opportunities for active and passive recreation. Urban trees make active recreational activities like walking, running, and bicycling more pleasant. They also provide ample opportunities for passive recreation including reading, bird watching, and nature photography. The conservation of forests and trees provides opportunities for fishing and hunting, experiences which not only bolster the quality of life for local residents but also draw ecotourists to the region.

Social and educational opportunities

Trees have great social value, and can help communities come together. Residents of neighborhoods with more trees are likely to meet and socialize with their neighbors more often, thus forming strong social ties. Children in these neighborhoods are more likely to play outside and make friends with other children in the neighborhood. In these neighborhoods where neighbors know each other and are outdoors more frequently, residents feel safer and are better adjusted than residents of barren, but otherwise identical neighborhoods. Programs that involve local residents in conserving, planting, and maintaining trees can bring citizens together. This involvement will help boost the sense of community and belonging.

A study by University of Illinois researcher, F.E. Kuo¹ found that domestic violence and other forms of crime are less in housing projects surrounded by trees and other greenery. Trees reduce mental fatigue, help people relax, and reduce aggression. They also bring people together outdoors, increasing surveillance, and discouraging criminals.

Trees also provide educational opportunities and value. Parks with trees and other environmental features can function as an open classroom where children and adults can learn about different plant and animal species, ecosystems, and the natural environment.

Health benefits

The environmental benefits of trees translate into better physical and mental health for members of the community. Trees contribute to cleaner air and water and also provide increased opportunities for outdoor activities. This, in turn, helps people lead more active and

¹ Kuo, F.E. & Sullivan W.C. (2001). "Aggression and violence in the inner city: Impacts of environment via mental fatigue." *Environment & Behavior*, 33(4), 543-571. <http://www.lhhl.uiuc.edu/violence.htm>
Kuo, F.E., & Sullivan, W.C. (2001). "Environment and crime in the inner city: Does vegetation reduce crime?" *Environment and Behavior*, 33(3), 343-367. <http://www.lhhl.uiuc.edu/crime.htm>

stress free lifestyles. Sedentary lifestyles in urban environments increase the risk for obesity, cardio vascular diseases, certain types of cancer, and serious mental problems.

Urban trees and shrubs improve air quality and clean air decreases the risk of asthma. Trees also help protect against the harmful sun exposure that causes skin cancer. Trees reduce harmful sun exposure in playgrounds and other outdoor urban environments as they provide shade and absorb light directly from sun as well as from the reflective surfaces of buildings and pavements. Research has shown that patients recover faster in an environment where trees are present.

► **Economic Benefits**

Business opportunities

The environmental benefits of trees are well known, but many people may not be aware of the economic benefits of trees and how businesses can benefit from them. Large trees along a retail strip make the area more inviting, therefore generating more business. Trees provide innovative business opportunities by making outside spaces suitable for dining, walkup window purchases, and displaying and attracting year-round activities. They also help to cut energy bills that add up in the cost of products and services. They make parking areas more pleasing and safe by providing shade and reducing glare during hot summer days. Trees also reduce stormwater management costs to property owners by reducing stormwater runoff.

Researchers such as K.L. Wolfe² have found that shoppers are willing to pay more for goods and services and often stay longer in shops in downtown business districts that have many large, well maintained trees. In addition, quality landscaping along approach routes to business districts has been found to have a positive influence.

Increased property value

The presence of trees on a residential property enhances the property value and increases the salability of the property as well. According to the Arbor National Mortgage Survey (1994), the value of homes with trees fluctuates 20% less than homes without trees. It is also found that a wooded lot sells for an average 20% more than a similarly-sized, non-wooded lot³. Even a few trees can add to the value of a property. Aesthetics provided by trees plays an important role in increased property value along with the many other benefits trees provide. Each large tree in the front yard adds about 1% to the resale value of a home. Large, specimen-sized trees can add 10% or more to property values.

Energy savings

If placed strategically, trees lower energy bills by providing shade that lowers temperature in the summer and blocking cold air in the winter. Shade from two large trees on the west side of a house and one tree on the east side saves 50% of a typical residence's annual air conditioning costs (American Public Power Association). As trees absorb sunlight and

² Wolf, K.L. 2003. "Public response to the urban forest in inner-city business districts." *Journal of Arboriculture* 29 no. 3 (2003)
Wolf, K.L. 2004. "Trees and business district preferences: A case study of Athens, Georgia US." *Journal of Arboriculture* 30, no. 6 (2004)
Wolf, K.L. 2007. "The Environmental Psychology of Trees." *International Council of Shopping Centers Research Review* 14, 3:39-43.
Wolf, K.L. 2005. "Business District Streetscapes, Trees and Consumer Response." *Journal of Forestry*, 103, 8, 396-400.
<http://www.cfr.washington.edu/research.envmind/consumer.html>

³ *Planning the Urban Forest: Ecology, Economy, and Community Development*

provide shade, they prevent sunlight from reaching building surfaces, roofs, and pavement, all of which radiate heat. Trees also release water through tiny openings in their leaves and that water absorbs heat directly from air, therefore lowering air temperature. Deciduous trees are most suitable for this purpose as they provide shade in the summer and unobstructed passage to the much needed sunlight in the winter when their leaves fall off. Urban trees also provide indirect cooling benefits by reducing urban heat island effects. Evergreen trees properly placed around buildings as windbreaks can save up to 25% on winter heating costs (USDA Forest Service).

Stormwater management

Trees can help reduce stormwater management costs. As trees filter stormwater runoff, there is less stormwater to be stored and treated. In addition treatment of stormwater in an environment with trees requires a less sophisticated system to remove pollutants. Cities spend a lot of money to treat non-point source water pollutants; however, incorporating trees in stormwater management can lower these costs significantly. At a 43 acre, 70 lot site in Emmitsburg, Maryland, the developer saved \$200K in construction costs by eliminating the construction of 2 stormwater ponds and reduced clearing and grading costs by \$160K.⁴

The typical benefits from 100 trees over 40 years outweigh the cost by over 2 to 1. There are several programs that can quantify the benefits of urban forests. A software program called CITYgreen, developed by American Forests, can calculate the dollar value of green infrastructure by applying scientific and engineering models.

Green infrastructure

The urban tree canopy acts as a green infrastructure and can offset the need for traditional infrastructure to some extent. Many jurisdictions have started to encourage and promote green infrastructure in their public investment policies. Green infrastructure is an emerging concept in local planning. Green infrastructure is the interconnected network of open spaces, natural areas, such as greenways, wetlands, parks, forest preserves, and native plant vegetation that naturally manages stormwater, reduces flood risk, and improves water quality.⁵ Green Infrastructure usually costs less to install and maintain when compared to the traditional forms of infrastructure. Green infrastructure projects also foster community cohesiveness by engaging all residents in planning, planting, and maintenance of the site.

With technologies available today, it is possible to measure the existing tree canopy and the monetary value of benefits generated. It is also possible to calculate the potential canopy increase and the monetary benefit of this increase.

⁴ Ecosite, Inc. "Case Study: Pembroke Woods LID Development Residential Subdivision." www.ecosite.biz/Pembroke%20LID.pdf
⁵ <http://greenvlues.cnt.org>

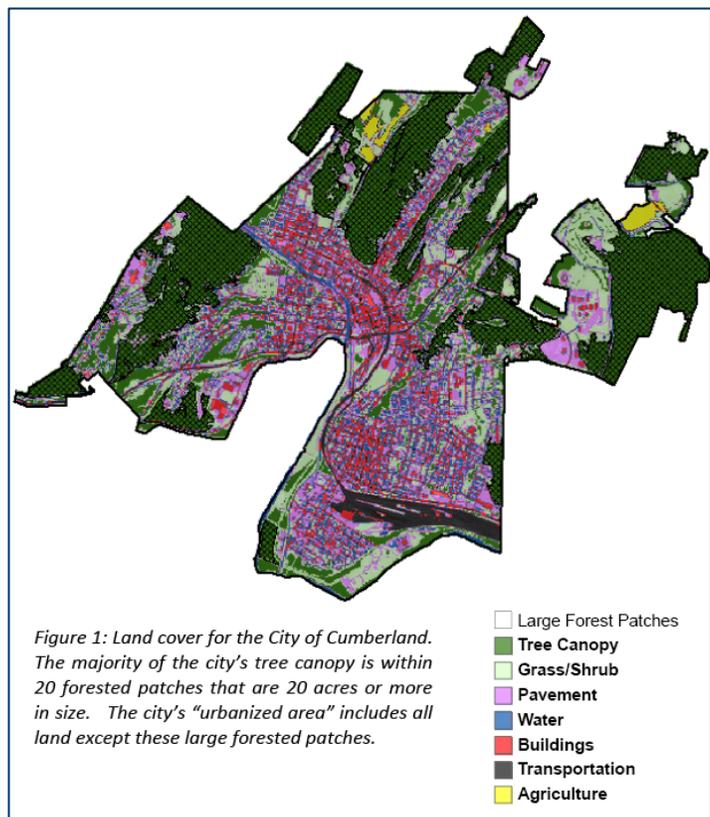
Existing and Possible Tree Canopy

The first step in formulating a Strategic Implementation Plan for Urban Tree Canopy is to measure the existing tree canopy. Conducting a tree inventory is very helpful in determining the number of publicly owned trees, planning for new trees, and tracking their maintenance needs. However an inventory might provide little information about the effect on the overall environmental goal of the city, and it might not account for the benefits provided by trees on privately owned land. An additional tool to help communities assess the condition and benefits of all trees throughout the city is Geographic Information Systems (GIS).

An analysis was done recently of the City of Cumberland’s existing and potential urban tree canopy by the Rubenstein School of Environment & Natural Resources at the University of Vermont, with funding from the Maryland Department of Natural Resources. Using GIS and high resolution aerial photography urban tree canopy was calculated for each parcel throughout the City. Subsequently, land use information from the City’s parcel database was used to determine ownership patterns for existing and possible urban tree canopy.

According to this analysis based on high resolution aerial imagery, more than 3,107 acres of the City is covered by tree canopy. That corresponds to 49% of all land in the City, which is above average both in the State of Maryland and in comparison to cities of similar size. But the majority, 60% of this existing tree canopy, is clustered in contiguous forest patches more than 20 acres in size. Within the City’s more urbanized areas, existing tree canopy is only 27%. This 27% tree canopy is also not evenly distributed throughout the City.

The majority of Cumberland’s tree canopy and the majority of land available to plant new trees is zoned “residential.” Most of this residential tree canopy is contained within a limited number of “estate” parcels. Approximately half of the residential parcels in the City have less than 20% of their land area covered by tree canopy.



According to the same study, an additional 32% (2,058 acres) of the City could theoretically be improved to support additional urban tree canopy with emphasis on the areas that have the least existing tree canopy and highest potential for additional canopy.

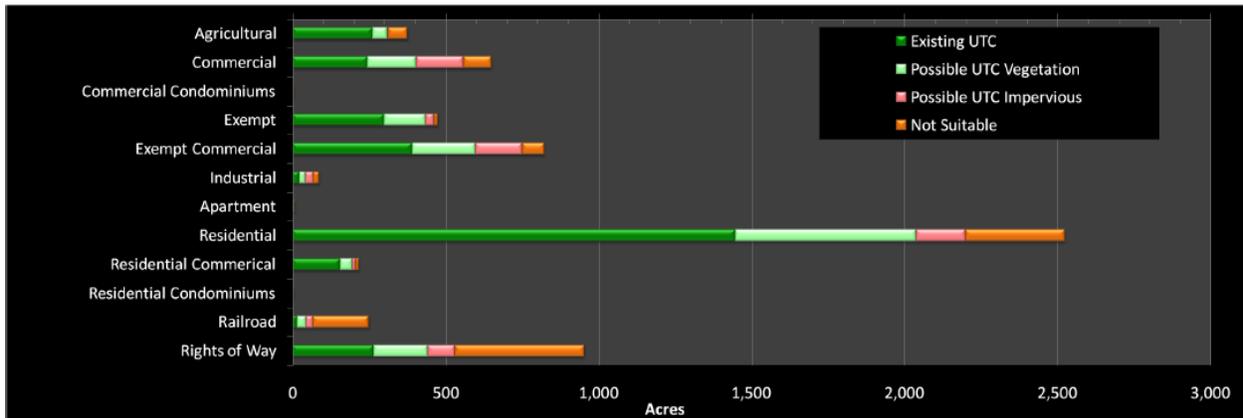


Figure 5: UTC metrics summarized by parcel land use.

Based on this study, the City will be focusing on the following 5 areas to increase tree canopy coverage:

A. Public right-of-way

According to the report on the City of Cumberland’s Existing and Possible Tree Canopy, 28% of the land in the public right-of-way can theoretically support tree canopy. Focus in these areas will be on comprehensive tree planting and maintenance initiatives.

Planting street trees can make for a pleasant, comfortable, healthy, and safe walking experience. Street trees serve as filters for noise and pollution from the vehicular traffic. Trees not only provide a safe and pleasant walking environment for pedestrians, they also provide shade for vehicles parked on streets.

Street trees help create a sense of place and add to the beauty of the City. Trees’ color, texture against the urban background, pattern of light and shade, and utilitarian aspect make a unique impression on the minds of people. That impression becomes the identity of that urban space.

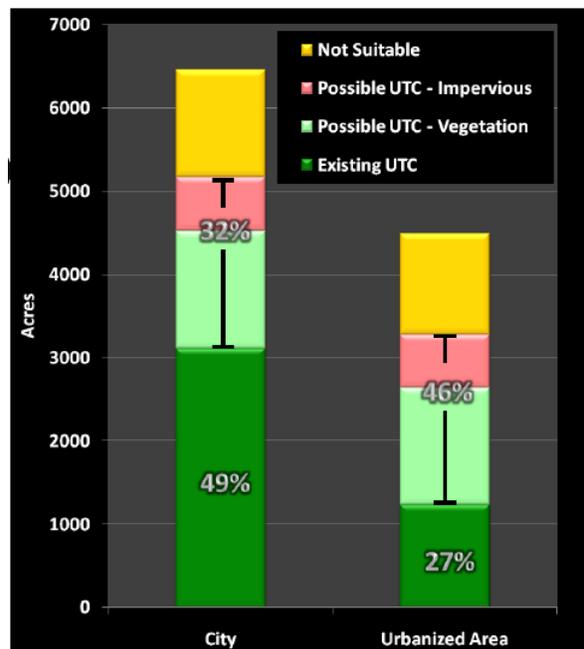


Figure 2: UTC metrics for the city and the city's urbanized areas. Percentages are based on % of land area. The urbanized area excludes forest patches that are 20 acres or larger. Percentages represent the proportion of Existing/Possible UTC of all land in the city and urbanized area.

B. Commercial and industrial properties

It is very important to educate business owners in the area about the economic benefits of trees in commercial and industrial areas. Large trees along a retail strip make the area more inviting which generates more business. Studies of public perception show that customers will spend, on average, 11% more time and money in a well-treed business area. Trees provide more innovative business opportunities by making outside space suitable for dining, walkup window purchases, and displays. Year-round activities are more attractive as surrounding temperature is stabilized in areas with trees. As mentioned earlier, trees also help cut energy bills; they make parking areas more pleasing and safe by providing shade; and they reduce glare during hot summer days. Trees also reduce stormwater management costs to property owners. In addition to these benefits some business may have a direct stake in urban forestry as a function of their own service such as nurseries, home and garden suppliers, and tree care providers.

Continuing support of the business community is important not only for tree planting and long term care and maintenance of trees in commercial areas but these community members can be powerful contributors to the urban tree canopy through financial support. The City should initiate an education program targeting business owners and explain the economic benefits of trees and how they influence business activities.

C. Government and institutional land (County, State, Federal, and NGO Owned Land)

Government land, institutional land, and other tax exempt properties provide ample opportunities for increasing the urban tree canopy. As these parcels are usually larger in size and in some cases are under government control, there are opportunities for the City to directly engage in a large-scale tree canopy initiative.

The City can coordinate with institutions as potential partners such as Allegany College for the urban tree canopy program. Potential partners include hospitals, universities, schools, and other institutions.

D. Residential properties

As mentioned earlier, the majority of Cumberland's tree canopy and the majority of land available to plant new trees are on land zoned "residential". Approximately half of the residential parcels in the city have less than 20% of their land area covered by tree canopy. For this reason, it is very important to involve private property owners to gain true success in increasing and maintaining the City's tree canopy.

The development regulations affecting private properties alone cannot be as effective because these regulations deal largely with preservation and planting but not with long term

Cumberland Urban Tree Canopy

maintenance. Continuing support from home owners is vital to the success of an urban tree canopy program.

The City should focus on educating homeowners and residents of the benefits of trees and provide incentives for planting and maintenance of the trees. A comprehensive resource guidebook should be developed that will provide information pertaining to tree selection, planting, and proper maintenance of trees including strategic tree planting to reduce energy consumption.

Residents' participation can be encouraged through volunteer involvement and stewardship programs.

E. Parks and open spaces

Trees can be used for active or passive recreation. As the City has full control over public parks and open space, implementing programs related to tree conservation and increases in tree canopy can be effective.

The recreational and social values of parks are well known. To add to the list of benefits of parks, city parks can be used as open classrooms to educate people about the different species of trees, planting, and maintenance techniques. The City should identify or facilitate tree establishment with the Facility Plan for each developed City park and recreation area.



Cumberland's 28% of the land in Public Right of Way can support additional tree canopy. Pictures above show the existing and potential tree canopy cover on Kent Avenue.

Urban Tree Canopy Goal

The City of Cumberland has developed a vision statement to guide the development of goals, objectives, and implementation strategies. A vision statement is a short focused statement about how and why trees are important to the community now and in the future. It provides an image of what the community wants to look like in the future and how it wants to function.

The vision statement for the Cumberland urban tree canopy has been crafted on the basis of citizens' opinions on the future of Cumberland's trees. To involve the public in the visioning and goal setting process, a community workshop was organized in October 2008. Participants were asked how they envisioned Cumberland with relation to its trees. Ideas and statements thus generated were refined to craft a vision statement for the Urban Tree Canopy Program. A reasonable timeframe was decided and attendees participated in an exercise to articulate a long term urban tree canopy goal for the City within that time frame. They were asked what they would like to see as a numeric increase in percentage of Cumberland's urban tree canopy. A goal of 35% to 55% increase in urban tree canopy by 2020 and 45% to 60% increase by 2030 was set for the urban areas in Cumberland. Participants also suggested implementation strategies to achieve those goals.

Citizens of Cumberland envision Cumberland as a City where:

- ▶ Trees should be valued, nurtured, integral, diverse, attractive, and functional. Trees are everywhere. Trees are older, bigger, representative of the future, and an integral part of the planning process.
- ▶ Trees provide habitat for wildlife and a connection to and an understanding of nature. They are a path to the future. They provide shade, beauty, color, and a sense of place / community, character / shape to the community, recreational and tourism opportunities, education, and a sense of pride. They also provide food and the benefits of reduced stormwater and energy consumption.
- ▶ Trees celebrate nature, transform communities, and connect generations by passing continued appreciation of nature to the next generation.

Vision Statement:

“In the next twenty years, Cumberland will focus on preserving the natural environment, protecting wildlife habitat, creating educational, social, and recreational opportunities, and increasing the quality of life of Cumberland residents by preserving and increasing its tree canopy.”

Goals:

Increase urban tree canopy from 27% to 45% by 2020 and to 55% by 2030.

Conserve existing forest blocks and tree canopy.

Existing Codes and Programs Related to Urban Tree Canopy

There are a number of provisions in the Cumberland City Code directly involving trees while there are other provisions that influence the tree canopy program directly and/or indirectly. This plan intends to look into all such provisions.

Shade Tree Commission

The Shade Tree Commission is a nine member Commission created to advocate sound urban management practices, to preserve and enhance the beauty of Cumberland, and also to study the problems and determine the needs of the City with regard to tree planting and maintenance programs. The mayor and the City council appoint a total of seven members. One member must be the Director of Public Works or his designated appointee, and one must be the Director of Parks and Recreation.

The Shade Tree Commission serves the following functions:

1. Study the problems and determine the needs of the City with its tree planting and maintenance programs, culminating in the development of a plan, including setting priorities.
2. Recommend to the proper authority the type and kind of trees to be planted upon municipal streets, parts of municipal streets, or in designated parks.
3. Assist the mayor and City council and citizens of the City in the dissemination of news and information regarding the selection, planting, and maintenance of trees within the corporate limits whether on private or public property, and to make recommendations from time to time to the mayor and City council as to desirable legislation concerning the tree program and activities for the City.
4. Investigate and recommend alternative funding sources for the planting and maintenance of trees and shrubs on public lands within the City.
5. Provide regular and special meetings at which the subject of trees, insofar as it relates to the municipality, may be discussed by the members of the commission and all others who are interested in the tree program.

Provisions related to Shade Tree Commission are contained in Chapter 2, Article V, Division 3 of the Cumberland City Code.

For more information visit

http://www.ci.cumberland.md.us/new_site/index.php/contents/view/96

Cumberland City Code

Chapter 22, Article V of the Cumberland City Code establishes provisions regarding trees and shrubs. The purpose of this article is to protect and encourage protection of trees and shrubs, to provide public health and quality of life, safety and general welfare, and promote the City's aesthetic value. The article suggests that a comprehensive master plan be created for planting and maintaining trees, and that standard laws be adopted for the purpose of regulating, developing, and providing for the planting, maintenance, and removal of trees and stumps in any street, park,

right-of-way or other public place within the City, in order to better serve the needs of soil conservation, climate moderation, air quality, noise, etc.; and to provide a mechanism for funding a uniform program for the purpose of beautifying the community as a whole and increasing property value.

The Code grants the Shade Tree Commission with the authority to designate trees worthy of preservation. It also requires the Shade Tree Commission to ensure that all permits issued by Maryland Department of Natural Resources pertaining to roadside trees are compatible with the community forestry plan. It is also responsible for updating the tree inventory at least every three years.

The Code requires procuring a permit from Maryland Department of Natural Resources to perform or undertake any work regarding trees in the public right-of-way. It also provides guidance on where trees can and cannot be planted on public right-of-ways. It establishes a Shade Tree Fund that consists of monies collected from donations, monies allocated by the City's general fund, and grant monies from State and Federal resources. This money is available to the Shade Tree Commission for its programs. There is also a penalties provision for violations of the Code.

For more information visit

<http://www.municode.com/resources/gateway.asp?pid=12316&sid=20>

Chapter 14, Article 1, establishes provisions for removal or trimming of trees. It establishes that the City Engineer is responsible for inspection of the trees located in public places and right-of-ways or in any privately owned lot within the City upon request. The Code also states that the property owner of the lot on which the tree is located is responsible for removal or trimming of any hazardous trees.

For more information visit

<http://www.municode.com/resources/gateway.asp?pid=12316&sid=20>

Chapter 8, Article II, the Floodplain Management Ordinance, establishes setback and vegetation buffer requirements for floodplains, streams, and drainageways. The following are the setback requirement for each type stream and drainageway:

- minimum 100-foot setback (maintained in natural vegetation) from the top of bank of any watercourse delineated as having a floodplain on the Floodway or Flood Insurance Rate Map;
- minimum 50-foot setback from the top of bank of any stream which has no designated floodplain and a drainage area larger than 400 acres; and
- minimum 25-foot setback from all other streams and drainageways, including intermittent streams.

Although it does not require any tree canopy, it does require the maintenance of natural vegetation including trees for development within floodplains. The Code also states that the Director of Community Development or an entity authorized to grant permits may require plans

for tree maintenance, revegetation, establishment of vegetation buffers, prevention of erosion, and accommodation of stormwater runoff as part of permit application process.

For more information:

<http://www.municode.com/resources/gateway.asp?pid=12316&sid=20>

Chapter 8, Article III, Stormwater Runoff Control or the Sediment Control Ordinance, mainly focuses on structural management practices but provisions for alternative non-structural management practices are also available subject to approval from the City Engineer. The Code does not provide sufficient information on non-structural management practices.

For more information:

<http://www.municode.com/resources/gateway.asp?pid=12316&sid=20>

Chapter 25, Zoning Code, suggests that the existing vegetation be preserved to the maximum extent possible through design, layout, and other facilities. The ordinance lacks detailed specifics on how that will be done. All graded or disturbed areas that are not otherwise developed or protected from soil erosion are required to be permanently vegetated.

The ordinance permits selective harvesting (defined as cutting of less than 1/3rd of trees on the property that are greater than 4 inches in trunk diameter or larger at 4.5 feet above the ground) or cutting of trees and/or the pruning of standing trees on any property within the City by right. If the property owner/s seeks to clear cut or remove all trees from property, where existing tree canopy covers 50% or more of the lot area, they need to submit a plan to the natural resources specialist for the issuance of a permit. It also requires retaining an undisturbed buffer area of at least 50 feet in width adjoining all property boundaries and the banks of all perennial streams and water bodies that adjoin or cross the property.

There are several tree related provisions for steep slopes. Trees planted in random clusters are required between the terraces when the land is terraced. When new development occurs near the crest of the hill, the crest's natural appearance should be maintained by tree planting and other landscape features. Also, tree planting is required around the non-confirming structures to serve as visual screening to surrounding properties. All lots or part of the lots adjacent to residential properties and with predominant nonresidential uses and whose side or rear line are adjacent to residential uses are required to be screened from the residential zone by an 8 foot landscape buffer strip which may include deciduous trees.

The ordinance does not encourage trees but requires use of low, thick shrub planting to screen parking areas in the Gateway District. Planting along fences, walks, foundations, and porches is also encouraged, which may include trees. The Ordinance also requires open space and parkland be provided and that sensitive natural areas be protected in proposed developments.

For more information:

http://www.ci.cumberland.md.us/new_site/app/webroot/files/file/community%20development/Zoning%20Ord%202008/Cumberland%20Zoning%20Ordinance%20Ch%201%20to%2015.pdf

Subdivision Regulations

There are no provisions requiring tree canopy or tree planting in the City's Subdivision Regulation. However, there are several provisions in the Subdivision Regulations that can be used to increase urban tree canopy.

The Subdivision Regulations require at least 5% of the area of every subdivision to be set aside, exclusive of streets for public use, for park and open space. Where the tract contains less than 40 acres, such reservations for open space may be combined wherever possible with similar reservations in adjoining tracts. There is no specific requirement regarding trees. A certain percentage of tree canopy in the open space can be included as a part of the requirement.

According to the regulation, cluster development is permitted in order to provide an alternative method of development in lieu of conventional subdivision, that permits variation in lot sizes without an increase in the overall density of population; that allows home buyers a choice of lot sizes according to their needs; that preserves green space, tree cover, views, natural drainageways, or preserve features of outstanding natural topography, in order to prevent soil erosion and provide green areas for rest and recreation. Cluster Development is allowed in R-E and R-S Districts. Developments in R-S Districts don't have enough incentive to cluster as the maximum number of units allowed per acre is 4 units which is equal to the density allowed in this district without clustering. However, cluster developments in R-E Districts receive density bonuses, much smaller minimum lot sizes, and greater land coverage in return for avoiding development on environmentally sensitive areas and preserving natural features. Reduction of individual lot areas will contribute to more area reserved as open space.

For more information:

http://www.ci.cumberland.md.us/new_site/index.php/contents/view/16

City of Cumberland Comprehensive Plan

The City of Cumberland Comprehensive Plan encourages the retention and planting of trees and other natural vegetation as buffers along streams and drainageways. It also recommends the protection of forested habitat and encourages cluster development to protect forested areas.

For more information:

http://www.ci.cumberland.md.us/new_site/index.php/contents/view/81

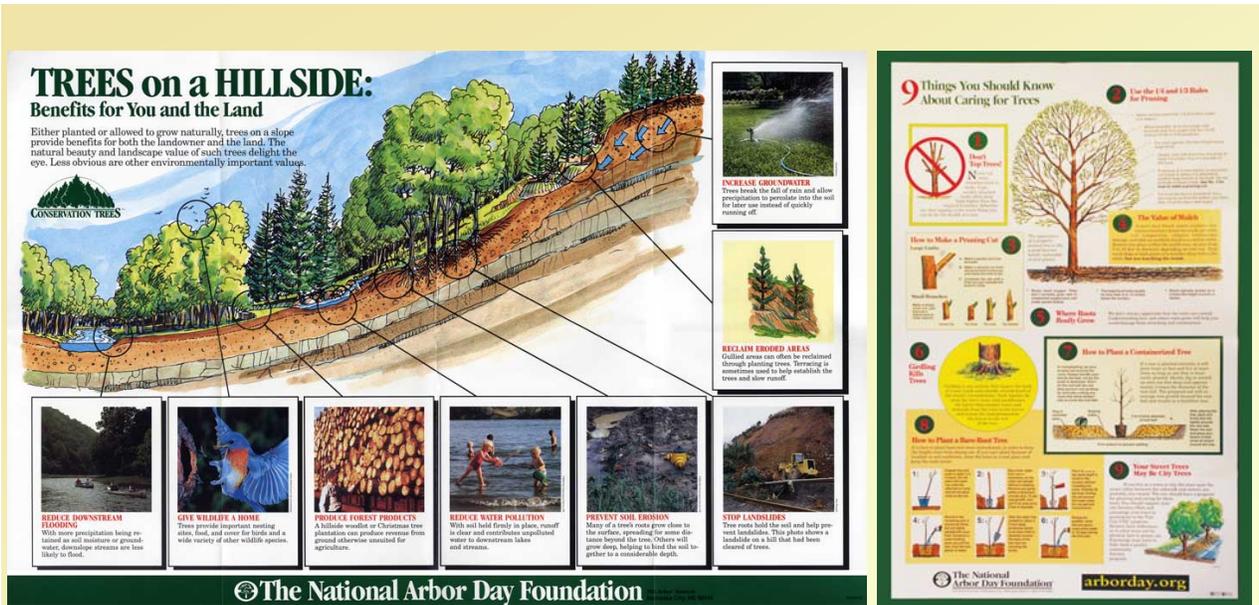
Potential Urban Tree Canopy Approaches

The following strategies, which are being practiced around the region and the nation, could also have potential use in the City of Cumberland. They have been grouped into the following four categories:

- Public Education Strategies
- Citizen Volunteer Strategies
- Regulatory Strategies
- City Action Strategies

A. Public Education Strategies to develop a marketing program to enhance and expand public knowledge of the need for, and practice of, tree preservation.

- ▶ Develop brochures describing the social, economic, and environmental benefits of trees.
- ▶ Develop a resource guidebook that will provide tree selection, planting, and proper maintenance guidance with illustrations.
- ▶ Make the resource guidebook and tree related information available online.
- ▶ Conduct community workshops to educate home owners, business owners, and the general public on the benefits of trees and how to plant and maintain them.
- ▶ Partner with local schools and colleges to educate school children and college students about the importance of trees and their conservation.
- ▶ Coordinate with citizen groups to raise awareness about urban tree canopy.
- ▶ Use all forms of media to keep the community informed on the tree issues and activities.
- ▶ Promote the notion of Green Infrastructure; educate the public about what Green Infrastructure is and how it works.



An example of public education materials prepared by the Arbor day Foundation.

Source: <http://www.arborday.org/>

Following are the examples of public education strategies some of the other jurisdictions have followed:

Lexington-Fayette County, Kentucky has several tree related programs and informational brochures on the benefits of trees, street tree selection, and care. <http://www.lexingtonky.gov/index.aspx?page=538>

The Athens-Clark County, GA, Community Tree Program administered by Landscape Management Division publishes newsletters providing the general public with the information on the tree related activities and tree care advice. It also develops “Tree Conservation Notes” on specific tree related topics such as drought management, utility line clearance pruning, and trees and water quality that can be used as a resource guide. Link to the Tree Conservation Notes is provided here:

<http://www.athensclarkcounty.com/documents/>

Frederick County, Maryland updated their Comprehensive plan in September 2008 to include a Green Infrastructure Element. <http://www.co.frederick.md.us/index.asp?NID=170>

B. Citizen Volunteer Strategies to involve citizens and key community and social groups in the process of tree preservation, restoration, and planting.

- ▶ Partner with local schools and colleges; engage school children and college students in the conservation of tree canopy by promoting tree planting; encourage projects by providing credit to students for getting involved in tree conservation programs; and organize a program for students to gain volunteer hours through the tree canopy program.
- ▶ Promote and support local citizen organizations such as tree clubs or gardening clubs by inviting and engaging them in the tree canopy conservation activities.
- ▶ Organize Arbor Day celebrations and other similar events to attract volunteers.
- ▶ Attract homeowners, business owners, and the general public to volunteer to plant and maintain trees on their property by educating them about the benefits.
- ▶ Provide incentives for forest conservation and reforestation and provide stormwater credits and tax credits for tree conservation.
- ▶ Develop a program to provide free or low-cost trees to homeowners; a coupon program can be developed with the help of local nurseries.
- ▶ Promote a reward program to publicize correct tree planting and care practices.
- ▶ Support and encourage community programs that encourage a volunteer effort, material donation, etc.
- ▶ Develop a citizen stewardship program targeting large lot residential properties; offer tree planting in the underutilized or unutilized portion of the lot or design and installation of a riparian buffer along any stream or wetland throughout the property.



Participants planting trees after the Urban Tree Canopy Public Workshop organized by the City in October, 2008.

Following are the examples of citizen volunteer strategies that can be used in Cumberland:

Arbor Day Foundation's Tree Campus USA program recognizes colleges and university campuses that efficiently manage their campus trees and develop connectivity with the community beyond campus borders to foster healthy urban forest. The program strives to engage college students by providing service oriented learning opportunities on campus and communities outside campus through community forestry efforts.

<http://arborday.org/programs/treeCampusUSA/index.cfm>

"Reforest the Bluegrass" is an annual tree planting event for volunteers organized by Lexington- Fayetteville County and funded by public and private sponsors. It is a cooperative effort between the Lexington-Fayette Urban County Government's Water Quality, Urban Forestry, and Parks & Recreation management programs to restore streamside forests (riparian buffer). This is a good example of involving citizen volunteers in community forestry programs.

<http://www.lexingtonky.gov/index.aspx?page=542>

Lexington-Fayetteville has several tree related programs including public outreach and participation programs. The City has a tree planting program that accepts live Christmas trees from citizens, following the holidays and plants them in the public green spaces. There is another program that recognizes and rewards citizens for good tree care.

<http://www.lexingtonky.gov/index.aspx?page=543>

Baltimore County's Growing Home Campaign provides education and financial incentive for growing trees on private property. With partnership with the local nurseries, the County provides free or discounted rate trees to property owners.

<http://www.baltimorecountymd.gov/Agencies/environment/growinghome/index.html>

Baltimore County's Rural Residential Stewardship Initiative targets reforestation of excess lawns in large lot rural subdivisions where land owners typically actively use only a portion of lots larger than three acres.

Tree-Mendous is a Maryland Department of Natural Resources program that offers volunteer opportunities. It also provides trees for purchase that can be sent as gifts to friends and family.

<http://www.dnr.state.md.us/forests/treemendous/>

C. Regulatory Strategies to develop a Tree Canopy Ordinance and to make associated changes to the City's Zoning Ordinance and Subdivision Regulations in order to preserve existing tree canopy and increase future tree canopy.

- ▶ Revise Comprehensive Plan to
 - Introduce the concept of urban tree canopy as a Green Infrastructure component.

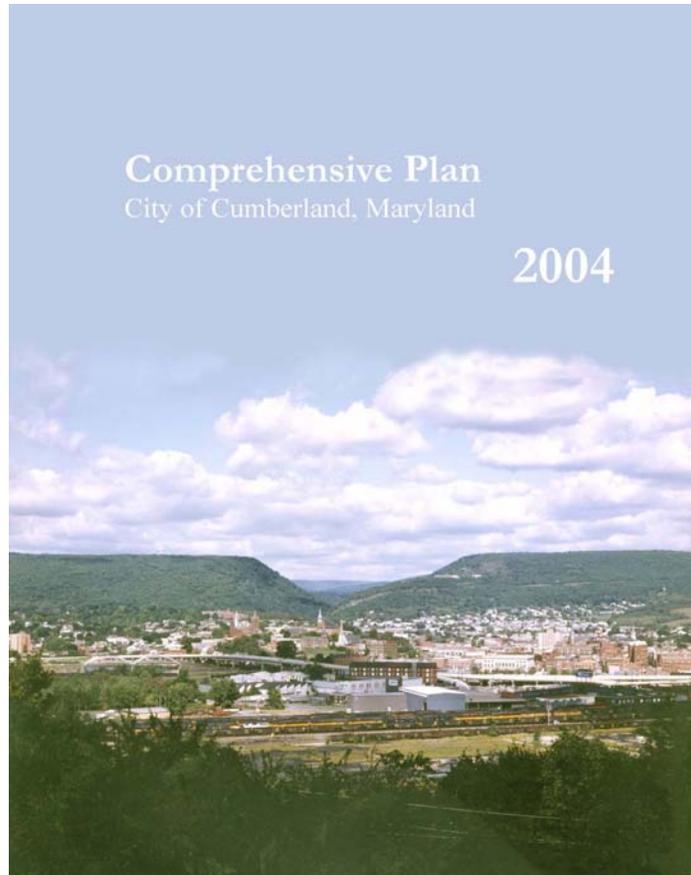
- ▶ Revise Community Forestry Plan to:
 - Formulate a management strategy.
 - Address the biological, community, and managerial needs.
 - Establish quantifiable goals to address the named needs.

- ▶ Amend tree ordinance to:
 - Incorporate the use of trees and shrubs for storm water management while providing for maintaining or improving existing tree canopy.

- ▶ Amend the zoning ordinance and regulations to:

Incorporate the use of trees for screens and for storm water management Establish appropriate requirements for using trees for storm water management on impervious surfaces such as parking lots. Establish appropriate requirements for timber harvesting within city jurisdiction.

- ▶ Amend subdivision ordinances and regulations to:
 - Require newly developed sites to set aside open space for storm water management and to support tree canopy.
 - Promote the use of trees in stormwater management practices by offering incentives for their use. Incentives may include smaller stormwater retention pond and treatment facilities. Develop street and sidewalk standards to ensure space required for tree planting.
 - Encourage alternative street design in order to accommodate a larger number of trees.
 - Encourage clustering by allowing a density bonus in order to preserve open space and existing tree canopy and increase potential tree canopy.
 - Include tree, landscaping, and vegetation buffering requirements in the checklist used for the final site plan approval process.
 - Require a tree protection management plan prior to preliminary plat approval that will include proper methods to protect and reduce impact on trees from site planning and construction.



The City of Cumberland Comprehensive Plan 2004 is currently being amended to address new planning requirements. Adding an amendment to the existing document is a cost-effective way to include new elements and concepts such as Green Infrastructure in the Comprehensive Plan.

Following are examples of regulatory strategies some other jurisdictions have adopted:

The Athens-Clarke County, GA Tree Ordinance sets tree canopy requirements by zoning district:

http://athenstrees.com/docs/ACC_Tree_Ord.pdf

City of Charlotte has developed a tree ordinance that deals with the tree issues of the City.

<http://www.charmeck.org/Departments/City+Engineering/Use+Our+Services/Land+Development/City+of+Charlotte+Tree+Ordinance.htm>

Frederick County, Maryland Forest Banking Program allows purchase of credit to meet afforestation requirements and reforestation requirements of the Forest Conservation Ordinance.

http://www.co.frederick.md.us/DevReview/FROUpdate/forest_banking_program.htm

City of Sacramento, CA Parking Lot Tree Shading Design and Maintenance Guidelines for planting, maintenance, protecting, removal and replacement of trees planted pursuant to parking lot and tree shading regulations as defined in the City Code.

http://www.cityofsacramento.org/planning/long-range/citywide-and-regional/documents/SHADING_GUIDELINES_06-17-03.pdf

The Center for Watershed Protection has produced a series of manuals on using trees to protect and restore urban watersheds.

Urban Watershed Forestry Manual; Part 1: Methods for Increasing Forest Cover in a Watershed

<http://www.na.fs.fed.us/watershed/pdf/Urban%20Watershed%20Forestry%20Manual%20Part%201.pdf>

Urban Watershed Forestry Manual; Part 2: Conserving and Planting Trees at Development Sites

http://www.na.fs.fed.us/pubs/uf/watershed2/urban_watershed_forestry_manual_part2.pdf

Urban Watershed Forestry Manual; Part 3: Urban Tree Planting Guide

<http://www.na.fs.fed.us/watershed/pdf/Urban%20Watershed%20Forestry%20Manual%20Part%203.pdf>

Maryland Department of Environment's landscaping guidance for stormwater BMPs provides general as well as specific guidance on landscaping criteria and plant selection for effective BMP type.

http://www.mde.state.md.us/assets/document/sedimentstormwater/Appnd_A.pdf

Upper Macungie Township zoning ordinance requires minimum of 30% to 40% of the tract area within the cluster development to be permanently reserved as open space.

http://www.uppermac.org/community_dev/zoning.html

City of Rockville, Maryland has the Forest and Tree Preservation chapter in their City code that refers to the tree ordinance. The purpose of the code is to enhance City's tree canopy.

<http://www.municode.com/resources/gateway.asp?pid=12111&sid=20>

Baltimore County developed a Land Preservation, Park and Recreation Plan that acts as a master plan for the Baltimore County Department of Parks and Recreation.

<http://www.baltimorecountymd.gov/Agencies/recreation/lpprp.html>

The Critical Root Zone (CRZ) of a tree is established on the basis of the trunk diameter. The CRZ is a circular area which has a radius of 12 inches to every inch diameter of trunk taken at 4.5 feet above grade. (Urban Forestry Service, Inc.)

D. City Action Strategies for specific activities and/or changes in current practices that the City can undertake to implement the program and better manage and expand its existing tree resources.

- ▶ Develop a Tree Ordinance for the City.
- ▶ Maintain a complete inventory of street and park trees.
- ▶ Identify and prioritize areas for tree planting and prepare a schedule
- ▶ Prioritize budgets not only for tree planting and maintenance but also for programs related to tree canopy, planning and implementation, staffing and ordinance enforcement.
- ▶ Establish a clear line of responsibility among different divisions for planting and maintaining trees; assign specific positions for specific tasks within each division; and appoint an individual to lead the group and perform oversight tasks.
- ▶ Provide technical assistance to home owners, community, and citizen groups pertaining to tree planting and care.
- ▶ Identify and coordinate with potential partners in urban tree programs.
- ▶ Coordinate the efforts to complement and coordinate with other existing plans such as the Cumberland Trails & Bike Master Plan and the Cumberland Park and Recreation Plan. Tie tree canopy goals with the goals of other existing plans.
- ▶ Encourage alternative street and parking lot design to increase canopy coverage (e.g. clustering of trees to take advantage of shared rooting space, use of pervious paving, shared parking space).
- ▶ Include a Green Infrastructure Component in the Comprehensive Plan.
- ▶ Coordinate with Allegany College to incorporate tree planting in their site planning and development strategies.
- ▶ Identify priority areas for tree planting and an annual schedule for parks, public lands, and right-of-ways.
- ▶ Facilitate tree establishment with the facility plan for each developed City park and recreation area.



Arbor Day Foundation organized poster contest. Over 70,000 fifth grade classrooms participated in the 2009 Arbor Day National Poster Contest “Trees are Terrific... in Cities and Towns!” This is an example of tree related activities that the City can Organize.

Recommended Strategies for the City

The previous section listed numerous strategies that could be implemented. This section lists those strategies that would be best suited for implementation in Cumberland.

Public Education Strategies

- ▶ Develop a resource guidebook and publish it online.

Develop a resource guidebook that will provide tree selection, planting, and proper maintenance guidance with illustrations and publish it online. The guidebook should include:

- Types of native species and their characteristics;
- Lists of invasive species in the area;
- Tree selections for specific areas;
- Tree canopy requirements from the Zoning Code and Subdivision Regulation, if applicable; where to plant and where not to. (*eg. at driveway/roads, within certain distance from road intersections, in front yards if above a certain height, within a certain distance of utilities*); and
- Guidance for strategic tree planting to provide energy savings, visual screening and to act as noise barriers.

- ▶ Partner with local schools and colleges to educate school children.

There are several ways to partner with the schools and colleges. One way is to recognize schools and colleges that effectively manage their trees and help the City of Cumberland to meet its urban tree canopy goals. An example of such an approach is the Arbor Day Foundation's Tree Campus USA program. This program recognizes colleges and university campuses that efficiently manage their campus trees to develop connectivity with the community beyond campus borders to foster a healthy urban forest. The program strives to engage college students by providing service oriented learning opportunities on campus and communities outside campus through community forestry efforts. Allegany College already has certificate and associate degrees in forestry and tree care. The City can establish a relationship with such programs at Allegany College to co-sponsor such activities and programs.

Another way is to directly involve students in tree related activities and recognize them. Engaging children in tree canopy activities increases their understanding of benefits of trees and helps them get involved in community tree programs. The potential partners are all the elementary, middle, and high schools in Cumberland.

- ▶ Promote the notion of green infrastructure.

Green Infrastructure is the interconnected network of green spaces that conserve natural ecosystem values and functions and provide associated benefits to human populations.⁶ The concept of green infrastructure is getting popular and many local and state governments have started acknowledging them in their comprehensive plans.

Such elements may have different titles such as natural resources, environment, or forestry depending on the organization of the particular comprehensive plan. Descriptions of existing conditions in such element should reflect an understanding of various benefits provided by the green infrastructure such as improved stormwater management and water quality.

It is also important to reflect those benefits through other elements of the comprehensive plan with appropriate links to the one element that ultimately pulls it all together (eg. roadside trees can be discussed in the transportation element with a link to the green infrastructure element). The City of Cumberland should include this component in the Sensitive Areas Element and link it to other elements such as land use, transportation, and energy conservation.

Citizen Volunteer Strategies

- ▶ Develop a program to provide free or low cost trees to home-owners.

As mentioned earlier, the majority of potential urban tree canopy increases are on residential properties. To include private home owners in the Urban Tree Canopy Program, the City should adopt an incentive oriented program like State of Maryland program Marylanders Plant Trees.

This program provides education and financial incentives for growing trees on private properties. The program emphasizes citizens participation as an important element of the program's success. It is a public-private partnership between the State, local nurseries and garden centers, and the local homeowners to encourage planting new trees on private residential land.

Partnerships with local nurseries have allowed the State to provide trees at a discounted rate to property owners. Participating nurseries and garden centers in each county provide point-of-purchase discounts of \$25 to homeowners who bring the coupons for the qualifying trees costing \$50 or more. The program reimburses retailers \$20 for each coupon submitted. In return, the program receives data on location, species, and cost of the tree purchased.

⁶ Benedict, Mark A. *Green Infrastructure: Smart Conservation for the 21st Century, Sprawl Watch Clearing House Monograph Series*

Cumberland Urban Tree Canopy

- ▶ Develop a citizens stewardship program targeting large lot residential properties.

Most of the residential tree canopy within the City of Cumberland is contained within a limited number of “estate” parcels. Approximately 50% of Cumberland’s residential properties have less than 20% of their area covered by tree canopy. A citizen’s stewardship program would be appropriate to seize the opportunity to increase tree canopy on these properties. Baltimore County’s Rural Residential Stewardship is an example of such program.

Baltimore County’s Rural Residential Stewardship Initiative targets reforestation of excess lawns in large lots where land owners typically actively use only a portion of lots larger than three acres. The Department of Environmental Protection and Resources Management (DEPRM) provides design and installation of expanded riparian buffers in return for land-owner monitoring and maintenance of reforested areas.

- ▶ Promote a reward program to publicize correct tree planting and maintenance.

Rewarding property owners and businesses for the work well done is a popular incentive. The City of Cumberland should encourage and reward its citizens for good tree care through a program. An example of such program is Lexington-Fayette County, Kentucky’s Champion Tree Program which is designed to promote tree care by identifying and recognizing trees that are large for their species.

A tree’s score is based on the circumference, height, and crown spread. An applicant can determine the score him/herself based on the instructions provided. After determining the score, the Urban Forestry Program is contacted. If the tree is larger the average than the trees of the same species, it is registered as Champion Tree. Owners of the tree in the register are awarded with a certificate.

\$10 Coupon **The Growing Home Campaign Tree Coupon**
This coupon is worth \$10 toward the purchase of one qualifying tree with a retail value of at least \$25.
Coupon information must be completed for coupon to be valid.

Name of Purchaser: _____

Street Address (where tree will be planted) : _____

County / City: _____ Zip Code: _____

Name of Tree: _____ Size of Tree: _____

Tree Purchased from: _____ Retail Value: _____ Date Purchased: _____

Terms of Coupon Reimbursement: This coupon is worth \$10 off the purchase of one tree that qualifies under the Growing Home Campaign from your local participating nursery and garden center retailer. The tree must have a pre-discount retail price of at least \$25. The \$10 discount will be taken at the register at the time of sale. This is not a mail-in reimbursement. One coupon must be filled out for each tree purchased. If you are purchasing multiple trees, please download and print a coupon for each tree, available at www.growinghome.info. This coupon reimbursement is for retail sales, wholesale tree sales do not qualify. This offer of reimbursement is on a first-come-first-served basis. The reimbursement will be honored for up to a total of 10,000 trees. Reimbursement offer begins March 15, 2009 and expires December 31, 2009.



Baltimore County provides \$10 Growing Home Campaign Tree Coupon and receives valuable information on new trees on residential properties in return.

Regulatory Strategies

- ▶ Adopt an Urban Tree Canopy Ordinance to establish appropriate tree canopy requirements for parking lots.

The city should adopt a tree ordinance that will include the tree canopy requirements for parking lots. This requirement should be targeted towards large parking lots. Small parking lots may be exempted. A sliding scale should be used to require a higher percentage of shaded areas for larger lots.

- ▶ Amend the subdivision regulation to include forest and tree protection measures for new development on green fields when establishing areas for storm water management.

The city should require a certain percentage of the site to be set aside to be preserved as open space. These open spaces should also comply with the tree canopy requirements. The percentage of the site dedicated for open space should be determined on the basis of the zoning category of the site and the type of development proposed. The City should offer higher densities for clustering and preserving larger areas as open space.

- ▶ Amend subdivision regulations to include numeric tree canopy requirement for each type of street in new developments.

According to the report on the City of Cumberland Existing and Possible Tree Canopy, 28% of the land on public right-of-ways can support additional tree canopy. Rather than trying to get trees planted after the streets have been built, tree canopy should be planned early in the process for new streets.

Subdivision regulations should require a certain percent of tree canopy for each type of street in the new development. To support the tree canopy requirements, develop street standards accordingly to provide room for tree planting. Also, encourage alternative street design to accommodate more trees than required by the regulation.

City Action Strategies

- ▶ Identify and prioritize areas for tree planting and prepare a schedule.

The City should identify priority areas for tree planting so as to maximize benefits from the resources invested. The City should establish criteria for selecting those sites and indicators to measure their success. These criteria and indicators can be based on specific objectives such as environmental protection, economic development, aesthetic identity or social enhancement.

The City should also be careful about planting the right trees in the right place to optimize their prospect of success. The wrong tree in the wrong place is almost a guaranteed failure. Trees species should be selected on the basis of the nature of the site, the area available, the intended use and the intensity of the use. Cost issues are equally important while selecting the appropriate species. Both onetime costs of planting trees

and long term maintenance costs should be considered while making such decisions. Since the success of these programs largely depends on the maintenance of trees after they are planted, the City should prepare a schedule for planting as well as regular maintenance of trees.

▶ **Prioritize budget**

An Urban Tree Canopy Program makes economic sense and should have a strong financial footing. Traditionally it was viewed as a cost center and very limited budgets would be available for such programs. With the ability to quantify the environmental, social and economic benefits and the ability to express those benefits in dollar amounts, it is easier to compare the benefits of urban trees against cost. With increasing use of green infrastructure concepts it is easier to view the investment on an urban tree program as an investment to any other infrastructure investment such as roads and waste water facilities.

The City should prioritize the budget for the Urban Tree Canopy Program. The City can use the above arguments to secure more funds. An Urban Tree Canopy program will probably always rely on the general funds; however there are other options available that can provide additional revenue streams. For example a tree related fee can be established under development fees to support tree programs in newly developing areas of the city.

▶ **Establish clear line of responsibilities**

A successful Urban Tree Canopy Program requires coordination between different departments. Trees planted today will continue to grow for years to come and probably outlive the people who planted them. For the program to really work, a clear line of responsibility should be established among departments and among positions within a department for planting, caring and ongoing maintenance of trees. While assigning responsibilities, it is important to ensure that the office has qualified personnel and adequate resources to carry out assigned functions. Since it requires the involvement of many departments, one department can lead the program and coordinate with all the supporting departments.

Funding

The Urban Tree Canopy Program should be financially sustainable. In the past, Urban Tree Canopy was viewed as a cost intensive program. Now with the technologies to quantify social, economic, health, and environmental benefits of Urban Tree Canopy and the ability to translate this into monetary value, urban tree programs are considered as a wise public investment and urban trees are seen as public infrastructure.

The concept of Green Infrastructure makes it easy to argue that the investment in Urban Tree Canopy is the same as the investment in any other public infrastructure, such as roads, stormwater management, etc. With this argument the Urban Tree Canopy Program can use a variety of other funds besides general funds set aside for this specific program. The City can also use several other methods to raise money for the Urban Tree Canopy Program.

Funding Strategies:

- ▶ Seek Additional Sources of funding besides General Funds such as taxes, fines, donations, fees, etc.
- ▶ Seek funding from capital improvement funds for Green Infrastructure.
- ▶ Establish a yard waste recycling center; offer free trimming and pruning of trees and pick up of organic yard waste; and sell back the compost, mulch, and woodchips to the home owners.
- ▶ Coordinate Urban Tree Canopy efforts with other plans such as Park and Recreation Plan and Trails and Bikeways Master Plan and seek funding from them.

Examples of funding strategies:

Olympia, Washington uses a capital improvement plan fund derived from real estate excise taxes to fund its urban tree program.

Salem, Oregon funds its care of street trees through the municipal portion of the State motor fuel tax, while funding some tree prevention through fines and donations.

Urbana, Illinois has established a self supporting yard waste recycling center. It collects waste from the property owners and sells back the soil amendments and composite it produces from the waste to them.

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- Zoning Practice, Issue Number Six, Practice Urban Forestry, American Planning Association, June 2008.
- Zoning Practice, Issue Number Seven, Practice Tree Preservation, American Planning Association, July 2006.

City Documents:

- Comprehensive Plan, City of Cumberland, Maryland, 2004
- City of Cumberland Zoning Code
- City of Cumberland Subdivision Regulations

Websites:

- The Arbor Day Foundation; <http://www.arborday.org/>
- United States Department of Agriculture Forest Service, Northeastern Area; <http://www.na.fs.fed.us/>
- Maryland Department of Natural Resources, Forest Service; <http://www.dnr.state.md.us/Forests/>

Sponsors:

Mayor and City Council of the City of Cumberland
Cumberland Shade Tree Commission
Maryland Department of Natural Resources
Chesapeake NEMO





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