Report of the Village of Martin's Additions Committee on Trees
(July 14, 2015)

Introduction: This report responds to a motion passed by the Council of the Village of Martin's Additions, "to create a committee to assess the state of the tree canopy in the Village, and if appropriate, propose policies to remedy identified deficiencies or to otherwise improve the state of the Village canopy." As stated in the "Scope of Work" establishing the committee: "Residents have voiced considerable concern over the apparent loss of canopy on private property and the possibly negative impacts on the community. Although this issue has been a long-standing one, the number and intensity of expressed concerns have risen in the past year." (The Scope of Work is in the Appendix to this report.)

The Committee first met in April 2014. Over the course of the following year, members evaluated available databases and other information on Village trees, interviewed officials from neighboring jurisdictions on their experiences, and sought the expertise of arborists and other specialists on possible policies. This report presents our findings and proposals.

The state of the tree population: We evaluated the current state of the Village's trees in two ways: comparisons with our own past and with neighboring areas. The primary source of information is the Tree Canopy Analysis tool provided by the Maryland-National Capital Park and Planning Commission using overhead photography.

Tree canopy trend: A comparison with earlier times shows some worrying trends. Overhead photography going back to the 1960s indicates considerable tree loss in the Village. Although not quantified, the reduction in the number of large trees became visibly noticeable in the 1980s, mainly driven by larger houses and increased paved areas in the form of driveways and patios. Overhead photography shows a reduction in canopy and simultaneous increase in paved surface areas. An analysis of 50 recent real estate transactions in Martin's Additions shows that the median size of houses rose from 2,000 square feet for houses built before 1980 to 3,500 square feet in the most recent period. Moreover, the upward trend is not slowing.

These trends were exacerbated by changes to the County code in 2012 that required more water retention on a property than previously. The principal method for accomplishing this is with dry wells, which reduces the area for large trees. These constraints are most binding on the many smaller lots in the Village.

The most recent data on tree canopy in 2013 became available to county analysts in January 2015. Losses are clearly visible and seem large, overall. However, the county analyst noted this important point: the community has not experienced a *net* loss in tree canopy as measured by covered area. "As an older subdivision, your neighborhood has an abundance of mature trees. These images show the capability of large trees to significantly increase the spread of their branches in a short amount of time, even to the point of compensating your significant losses due to new house building, power line clearing, and storms." Our proposals will address the significance of maintaining and adding to the existing canopy to help counter the inevitable losses.

Local comparisons: Numerical analysis of overhead photography for 2011 indicates that the current tree coverage in the Village is comparable to that in neighboring towns. Table 1 shows the percentage of a jurisdiction's area by types of coverage. However, a missing element is that the analysis cannot make a distinction between small, ornamental trees and large ones. As will be discussed later, larger trees generate considerably greater benefits than smaller ones.

Table 1: Comparisons of Martin's Additions Tree Coverage with Neighboring Jurisdictions in 2011

	Canopy (%)	Grass & shrubs (%)	Buildings (%)	Paved area (%)	Area (acres)	Zoning type
Martin's Additions	63	20	13	5	84	R-60, C-1
Section 3	55	23	15	7	74	R-60
Section 5	59	21	13	7	67	R-60
Town of Chevy Chase	63	17	13	7	309	R-60
Chevy Chase Village	61	20	13	6	252	R-60
Somerset	71	13	12	4	173	R-60
Chevy Chase View	63	20	8	8	174	R-90
North Chevy Chase	67	17	11	6	64	R-60, R-90

Source: Tree Canopy Analysis, Maryland-National Capital Park and Planning Commission (http://www.montgomeryplanning.org/environment/tree_canopy.shtm)

A few comments may be useful in interpreting the table. First, lot size matters. The larger the lot, the more area there is for trees. Martin's Additions has many small lots within its R-60 zoning designation (building lots must be greater than 6,000 square feet). The commercial area (C-1) contains no large-tree-plantable space. Chevy Chase View and North Chevy Chase are either R-90 (9,000 square feet) or mixed R-60 and R-90. Even though they have more potential space for trees, their coverage is similar to Martin's Additions. Somerset is notable because it possesses parks and unbuildable area, thereby possessing greater space for tree plantings.

One other point is noteworthy. Section 3, Section 5, the Village of Chevy Chase, and the Town of Chevy Chase have ordinances and procedures that restrict the removal of trees on private property through an application and permission system. From the evidence in Table 1, these ordinances have not yet yielded a larger canopy than in other jurisdictions.

The Committee concludes that although the urban forest in the Village is not in crisis, the trends are worrying. Moreover, the replacement of smaller houses with larger ones means that tree loss, especially of larger specimens, is likely to continue for a while.

The value of the urban tree forest: In order to assess the value of trees, both to the community as a whole and to individual properties, we heard from experts and surveyed a large body of literature that has estimated such values. Ann Gallagher, an International Society of Arboriculture (ISA) certified arborist, made a presentation to the committee on the value of trees in the suburban setting. She described the many benefits of canopy trees in residents' yards, particularly when several large, mature trees grow close together to create a small forest. These large trees are often called canopy trees; at maturity, they can be over 60 feet tall, towering over other trees, with crowns and root systems exceeding 1,600 square feet. Among the many benefits of canopy trees in suburban yards are shade and cooler temperatures on hot summer days, reduced heating needs on cold ones, cleaner air when the trees remove particulate matter, less pollution as trees take in carbon dioxide and give off oxygen, absorption of storm water run-off, and buffering of strong winds. A single mature tuliptree or pin oak can absorb over 16,000 gallons of water run-off in a year. Two or more canopy trees in a group are even more effective at absorbing storm water and buffering strong winds. Additional benefits of large trees include their esthetic value, their attraction of native birds and other wild life, noise muffling qualities, and their positive influence on property values.

According to research sponsored by the Department of Agriculture's Forest Service, large trees provide the most benefits. Average annual benefits increase more than proportionately with

mature tree size. Because many of the benefits flow from temperature moderating effects on a home, they vary based on tree location: lowest values occur for yard trees on the southern side of houses and highest for those on the east or west sides. Table 2 shows estimates of annual benefits associated with reduced energy use from moderated temperatures, reduced stormwater runoff, improved esthetics, fewer air pollutants, and increased carbon dioxide retention.

Table 2: Annual Benefits per Tree

Large tree	$134 -$159
Medium tree	$39 -$50
Small tree	$18 -$24
Conifer	$63 -$78

Source: United States Department of Agriculture, Forest Service, *Coastal Plain Community Tree Guide: Benefits, Costs, and Strategic Planting*, November 2006, p. 7. (Published values updated to 2014 prices.)

Some of these monetary benefits such as reduced heating and cooling costs accrue directly to the property owner; others benefit the wider community. Reduced stormwater runoff, cleaner air, and the positive impacts of carbon dioxide sequestering have regional consequences. Higher market value from the presence of trees affects the owner most directly. Secondarily, similar benefits accrue to neighboring properties. Direct and spillover effects lead, over time, to increased property values and tax revenues. Several studies conclude that municipal expenditures on trees can yield eventual revenue growth as large as the original spending.

Statistical analyses of the value of trees: A large body of research literature, using a diverse array of methods, has estimated the effects of trees on property values. Many use actual market transactions to tease out the effects of trees on sales price. To accomplish this, the researchers first include the various features and characteristics of a property that are likely to influence prices such as lot and house size, number of rooms, and other amenities; they then introduce measures of tree presence to see if they make a difference. Invariably, they do. Here are a few examples. A study of Portland, Oregon, examined 2,608 real estate transactions in 2006.[1] A large tree in the front of the house added an estimated $7,130 to the value. The median sales price was $259,000. A single tree in this study also had an impact on neighboring lots. The authors figured that, on the average in the study area, seven neighbors were affected, for an additional neighborhood impact of a single tree that was 1.8 times the effect on the house with the tree. Thus, the spillovers were greater than the direct effects. The same authors looked at rental prices in a subsequent study and found similar effects; in this analysis, a public tree in front of a house had four times the effect on rental price as a private tree on the property.[2]

Another study considered 259 transactions in Los Angeles in 1999-2000. A revealing feature of this study is that the authors included median household income, block by block. A critique of earlier work is that trees may be standing in for other, unmeasured, attributes. For example, large trees may be associated with higher quality construction or better neighborhood amenities. Explicitly taking account of income reduced the size of such possible biases. In this analysis, doubling the tree canopy in a doughnut ring around a house increased sales price by about 7%, with the effect decaying gradually out to about 400 feet.[3]

---

[1] Geoffrey H. Donovan, David T. Butry, "Trees in the city: Valuing street trees in Portland, Oregon," *Landscape and Urban Planning*, 2010, p. 82.
[2] Geoffrey H. Donovan, David T. Butry, "The Effect of Urban Trees on the Rental Price of Single-Family Homes in Portland, Oregon," *Urban Forestry and Urban Greening* 10 (2011) p. 163.
[3] D. Conway et al, "A Spatial Autocorrelation Approach for Examining the Effects of Urban Greenspace on Residential Property Values," *Journal of Real Estate Financial Economics*, 2010, p. 161.

Closer to our area, a study conducted in Philadelphia sought to estimate the influence of newly planted public trees on properties within 50 feet of a new tree. In this case, property values rose 9%, based on a sample of 3,000 transaction prices.[4]

Costs and negative effects: Few things come without a cost. The Forest Service study mentioned above explicitly tried to account for the costs of tree maintenance. Pruning and planting were the major items, coming to about 15% of the annual benefits. Other costs not considered in that research include irrigation needs, pollen-induced allergies, and root damage to sidewalks, roads, and underground utilities. Trees also can damage above-ground utilities such as power and communications poles and lines. The possibility of property damage or injury from falling branches and toppled trees are ever-present hazards that cannot be ignored in a cost-benefit analysis. These hazards demonstrate the importance of regular maintenance.

Not everyone loves a tree, singularly or in groups. Some people value open space and sun or an unblocked view. Others fear the possible damage to body and property caused by falling trees and branches. The shade that creates positive benefits for some can produce negative value for someone else installing solar panels, an environmentally protective act.

Any proposed tree policy must acknowledge these findings: the generally positive impacts of trees across many dimensions; the creation of both private and public benefits; the possibility of damage and injury from trees; and the mixed esthetic values of the community.

Tree programs in neighboring jurisdictions: We interviewed officials from several municipalities neighboring Martin's Additions and collected information on the outcomes of their programs. The Town of Chevy Chase and Chevy Chase Village have similar programs that require permits to remove private trees that are larger than 24 inches in circumference 4.5 feet above ground level. In the Town of Chevy Chase, an application for a tree removal permit triggers a field visit by the Town arborist, who makes a recommendation to the Town manager. The tree may be removed only if the arborist determines that it is dying, dead, in danger of falling, constitutes a hazard, or is a nuisance tree as listed by the Town council. If the permit is denied, the applicant may appeal to the town's tree ordinance board, which holds a hearing and issues a written decision after considering nine factors, including: the reasons for the request; the applicant's plan for replacement trees; the desirability of preserving the canopy tree; and the extent to which no alternative to removal exists that would allow a project otherwise permitted under the town building code.

In the eight years since early 2006, 643 permit applications in the Town of Chevy Chase requested the removal of 1,117 trees. Of these requested removals, 1,030 were approved and 87 denied. In 55 cases of appeal over the denials, 40 additional removals were approved. Thus, the Town's process approved 96% of all requested removals (1,070/1,117). Despite this apparently low rate of preservation, the Town's tree board chair observed that builders often adjusted plans or agreed to plant replacement trees, which provided benefits that would not have been obtained without the permitting process.

An argument can be made that people may desire to remove trees, but do not do so because of the permit requirements. We cannot know how many of these there may be, but the fact that 96% of permit requests are eventually accepted suggests that the barriers imposed by the permitting process are not highly constraining.

---

[4] Susan Wachter, *The Determinants of Neighborhood Transformations in Philadelphia*, Wharton School, University of Pennsylvania, July 12, 2004, p.p. 18-19.

The costs involved in the process include a permit fee of $85, administrative time and arborist fees for each permit (which we assume to be offset by the permit fee), and approximately $600 for the arborist and town attorney when there is an appeal. The total cost to the community (not just the budgetary cost) since 2006 is close to $88,000 ($11,000 per year). Looked at another way, the cost of saving one tree is $1,872 ($88,000 divided by 47, the number of trees preserved). For comparison, the cost of removal of a canopy tree exceeds $3,000.

As noted, Chevy Chase Village's ordinances and procedures (enacted originally in 1988) are similar to the Town's. The Village created a Tree Ordinance Board in 2012 to consider appeals. One reason for creating the board was the rising costs to the Village from its attorney's involvement in the appeal process. Another was that the council as a whole tended to operate under the philosophy that development trumped trees. About six cases since 2012 have been referred to the Tree Ordinance Board; the Board has approved all but a single request for removal. Approvals followed a negotiated replanting plan.

Chevy Chase Section 5 follows a different approach. Those wishing to remove a tree must submit a request for a permit; in the case of construction projects, the property owner must submit a Tree Protection Plan for review and approval before a building permit will be approved. In both cases, requests are routinely approved with the requirement that, at a minimum, replacement trees be planted on a mandatory basis of one replacement tree for each tree removed. The Section 5 manager noted that lot sizes in the municipality tend to be small, but that there have been no appeals to the replacement requirement.

Another program implemented by Section 5 since around 1989 plants oak or maple trees on private property at the request of residents, completely at Village expense. In the first year of the program, roughly 100 residents requested plantings. In subsequent years, requests averaged about 10 per year. Before planting, an arborist from the nursery responsible for supplying the trees and their planting examines the property to assess suitability. Depending on the species, the trees are 2-4 inches in diameter and 8-14 feet tall. The average cost per tree in 2013 for both tree and planting was about $475.

Policy Proposals

Several considerations motivate our proposals. First, the urban tree population incurs constant losses through age, disease, weather, construction, and other hazards. The long-term health of the tree population requires constant renewal. Second, the committee noted the long-term downward trend in the Village's urban forest. Our proposals should help to ameliorate this trend. Third, we note the many positive attributes of a healthy tree population. Of particular interest is that trees on private property increase not only a given lot's monetary value, but also that of its neighbors. More broadly, the entire Village benefits, both monetarily and through the many other values generated by the presence of trees. We therefore propose that the Village take steps to maintain and enlarge the tree population on private property.

In evaluating the following proposals, we considered three criteria: (1) maximize the yield in terms of preserved or new trees; (2) hold down administrative costs to Martin's Additions; (3) minimize compliance costs and other burdens on property owners.

Proposal 1: The Village should subsidize and help implement the purchase and installation of native canopy trees from a specified list of desirable species.[5]

Discussions with Village residents suggest that there exists a desire to plant and maintain private trees, but that often residents do not have the necessary information on sources, species, and service providers. Section 5's experience of a large positive response to its initial offer to provide trees suggests the scale of the latent demand. The Village Council in its regular budget process would establish the amounts. Adding a private tree program to the Village's ongoing public right-of-way plantings could take advantage of scale economies. However, we do not think that the Village should bear the entire cost of such a program, but that property owners also should contribute an amount, perhaps $100, for each tree; this involvement would create an incentive for the residents to provide for the newly planted specimens by appropriate watering and care.

Subsidies from this program should not be available to meet the requirements of tree replacement recommended in Proposal 3. However, the subsidy should be available to meet the requirement to add a canopy tree as recommended in Proposal 4.

Proposal 2: Building permit applications for new residential construction or exterior alterations or modifications involving a total floor area larger than 250 square feet should include a site plan specifying the location, size, species, and general condition of all trees on the property having a circumference of 24 inches or greater 4.5 feet above ground, and indicating whether the tree will be removed in the course of the project. Trees meeting the specified criteria that were removed less than 12 months prior to the filing of the application should be included on the site plan to the extent that the required information is available. The site plan should also depict the location and species of trees to be planted. A list of such trees (existing, recently removed, and to be newly planted) showing the required information should also be submitted as a separate document.

This proposal is intended to help identify trends in the tree population. Montgomery County does not require the listing of canopy trees on site plans, although many builders include such information. While the current Village Building Permit Application specifies that the locations of all private and public trees shall be shown on a site plan, that information is not always accurately

[5] This proposal complements a new Montgomery County program, Tree Montgomery, which is "targeting areas where there is a lot of development, little tree canopy, or a real need for shade." Martin's Additions is unlikely to qualify.

provided. In reviewing site plans for several recent construction projects, Committee members were often unable to determine whether healthy canopy-sized trees of desirable species had been removed. The proposal requires that specific information about larger trees, both depiction on a site plan and a separate listing, be provided for significant construction projects. This proposal would not apply to smaller projects categorized on the current building permit application, i.e., sheds, decks, smaller alterations, demolitions, curb cuts, fence and wall erections, driveways, and PODs. Whether the current requirement to show all trees on a site plan should be retained, or whether additional information should be required for other trees, is not addressed.

Proposal 3: The issuance of a Village building permit for a project that will entail the removal of one or more trees having a circumference of 24 inches or greater 4.5 feet above ground should be conditioned on replacement of each such tree. Replacement should also be required for any such trees removed from the property less than 12 months prior to the filing of the application.

This proposal requires that large canopy trees that are removed in conjunction with a building project be replaced with trees of a desirable species. The loss of older canopy trees is inevitable for a variety of reasons. Renewal of the Village's tree canopy, through the planting of young desirable trees, replacing those lost due to a building project, is a highly desirable goal. The three neighboring jurisdictions that were consulted noted that a requirement to replace a removed healthy tree with a new one was rarely, if ever, disputed. A policy requiring replacement from an approved list has the advantage of renewing the tree canopy with minimum administrative and budgetary costs. Moreover, it provides flexibility to property owners and builders in selecting the species and location while also encouraging the positioning of buildings and impermeable surfaces in a manner that would allow for replacement tree plantings. As noted above, replacement trees required under this proposal should not be eligible for any Proposal 1 subsidy.

Proposal 4: The issuance of a Village building permit for a project involving new construction or the addition of more than 300 square feet to the footprint of a structure, on a property that has no trees of a species listed on a Village list of "Canopy Trees Recommended for Martin's Additions" having a circumference of 24 inches or greater 4.5 feet above ground, should be conditioned on the planting of at least one tree of a species listed on "Canopy Trees Recommended for Martins Additions" (Appendix).

This proposal requires a net new canopy tree when significant construction is undertaken on a property that has no canopy tree of a desirable species and significant size, thereby enhancing renewal of the Village tree canopy. Under most circumstances such a requirement should present minimal impacts on such projects. Neighboring communities have found that having clear guidelines at the beginning of development planning helps focus attention on tree preservation and planting. As noted above, a new tree required under this proposal should be eligible for a Proposal 1 subsidy.

In Proposal 3 and Proposal 4, which require new or replacement trees, an appeals process should be available to allow exemption from the requirements when they are deemed unfeasible or inadvisable. Whether such an exception should be part of the variance process already in place or a less onerous and costly one remains to be determined.

Appendix

Canopy Trees Recommended for Martins Additions

The tree species listed below are recommended for adding to or replacing trees in Martin's Additions. These species will grow into large canopy trees providing shade, water absorption, and many other benefits. All trees listed below are native to our region of Maryland, grow in our nearby parks and woodlands, and are adapted to our local weather and climate. These trees are available from several local nurseries. However, it is important to obtain plants that are the native species as listed below and not commercial varieties or hybrids that are sold by many nurseries. Only the native species provide food and nesting sites for our local birds, mammals and beneficial insects.

Red maple	*Acer rubrum*
Sugar maple	*Acer saccharum*
Silver maple	*Acer saccharinum*
American Beech	*Fagus grandifolia*
White ash	*Fraxinus americana*
Bitternut hickory	*Carya cordiformus*
Pignut hickory	*Carya glabra*
Black walnut	*Juglans nigra*
Tulip poplar (Tuliptree)	*Liriodendron tulipifera*
Black gum	*Nyssa sylvatica*
Sycamore	*Platanus occidentalis*
White Oak	*Quercus alba*
Swamp white Oak	*Querus bicolor*
Scarlet Oak	*Quercus coccinea*
Southern red oak	*Quercus falcata*
Shingle oak	*Quercus imbricaria*
Pin oak	*Quercus palustris*
Willow Oak	*Quercus phellos*
Northern Red Oak	*Quercus rubra*

Undesirable tree species

Mulberry
Boxelder
Black locust
Black cherry
Bradford pear
Tree of heaven
Leyland cypress
False cypress
Arborvitae
Canadian hemlock

Village of Martin's Additions
Tree Committee Scope of Work
January 16, 2014

Preamble: The Village's Code of Ordinances, Chapter 9, states: "The tree canopy is an attractive, distinctive feature of the Village. ... It is therefore in the interest of the Village, its residents, and its property owners to protect, preserve, and enhance the tree canopy."

Moreover, the Maryland Code notes: "Trees are an important and necessary part of the urban and community environment and the retention, enhancement, and management of these forests and trees by local governments is in the best interest of the citizens of this State."

The Village ordinance refers mainly to trees on the Village right of way. Residents have voiced considerable concern over the apparent loss of canopy on private property and the possibly negative impacts on the community. Although this issue has been a long-standing one, the number and intensity of expressed concerns have risen in the past year.

Therefore, the Village Council now moves to create a committee to assess the state of the tree canopy in the Village, and if appropriate, propose policies to remedy identified deficiencies or to otherwise improve the state of the Village canopy.

1. Mission Statement:
A. Assess the state of the tree population in the Village, including so-called canopy trees as well as other types.
B. Identify benefits and costs of a healthy tree population; for example, esthetics, water drainage control, cooling, shade, danger to individuals from falling trees or limbs, damage to private property or utilities from trees, limbs, or roots.
C. Investigate the following points, but not to the exclusion of others that may arise in subsequent discussions:
(1) How does the Village compare to neighboring jurisdiction, including those with and without private tree policies?
(2) Has there been a change in the Village over time?
(3) What may account for such changes?
(4) What has been the experience of other jurisdictions, positive and negative, in their ability to achieve their tree canopy goals and at what cost?
(5) What are the preferences of Village residents with respect to policies affecting the tree canopy?
D. Propose policies to remedy identified deficiencies or to otherwise improve the state of the Village's trees, paying attention to likely benefits and costs, to the experiences of other jurisdictions, and to the preferences of Village residents.

2. Tasks:
A. Evaluate available databases and other information on Village trees.
B. Interview officials from neighboring jurisdictions on their experiences.
C. Seek the expertise of arborists, builders, lawyers, conservationists, and other specialists on possible policies.

3. Operations:
A. Hold regularly scheduled meetings in the Village office with appropriate public disclosure. Invite experts and others to these meetings to inform and educate Committee members.
B. As necessary, meet elsewhere with experts and others with appropriate public disclosure.

C. Report progress to the full Council at monthly meetings.
D. Submit a written report to the full Council within one year of Committee formation.

4. Committee Composition:
A. At least one member shall be a member of the Village Council.
B. The Committee will be chaired by a Council member.
C. Other members shall include up to six residents, broadly chosen for their knowledge and interests, representing various views.

Members of the Village of Martin's Additions Tree Committee

Josh Bowers
Cris Fleming
Paula Goldberg
Ed Novak
Mike Zielinski (Secretary)
Arthur Alexander (Chair)