

TREES IN VIENNA: A REVIEW OF PROGRAMS TO HELP VIENNA PRESERVE AND MANAGE ITS TREE CANOPY

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Town of Vienna
Vienna, Virginia

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Vienna Town Green

CONTENTS

| | | |
|-----------|--|-----------|
| 1. | SUMMARY OF MAJOR RECOMMENDATIONS | 3 |
| 2. | INTRODUCTION | 7 |
| 2.1 | Objective | 7 |
| 2.2 | Scope of Work | 7 |
| 2.3 | Benefits of Trees | 11 |
| 3. | CURRENT TREE PROTECTION IN VIENNA | 13 |
| 3.1 | Current Tree Protection in Vienna | 13 |
| 3.2 | Vienna’s Tree Canopy Replacement Ordinance | 13 |
| 3.3 | Consideration of Trees During New Home Construction Process | 13 |
| 3.4 | Vienna’s Conservation and Sustainability Commission | 15 |
| 3.5 | Tree City USA Recognition | 16 |
| 4. | CURRENT DISINCENTIVES FOR TREE PRESERVATION IN VIENNA | 18 |
| 4.1 | Maximum Home Size | 18 |
| 4.2 | Trees Must Compete for Space | 18 |
| 5. | INCENTIVES THAT COULD BE OFFERED FOR TREE PRESERVATION | 20 |
| 5.1 | Setback Flexibility | 20 |
| 5.2 | Rezoning and Variance Requests | 20 |
| 5.3 | Expedited Permitting | 21 |
| 5.4 | Extra Canopy Credits for Conservation | 21 |
| 5.5 | Flexibility to Place a Construction Dumpster on the Street | 22 |
| 5.6 | Density Bonus | 22 |
| 6. | CHANGES TO IMPROVE TREE PLANTING AND TREE PRESERVATION | 23 |
| 6.1 | Update Tree Preservation and Planting Guide and Replacement Tree List | 23 |
| 6.2 | Improve Canopy Credit Allocation for Newly Planted Trees | 23 |
| 6.3 | Revise Town Code to Increase Tree Planting and Preservation | 24 |
| 6.3.1 | Continue to Request Authority to Adopt 10-Year Canopy Replacement Requirement | 25 |
| 6.3.2 | Incorporate Additional Tree Preservation Provisions Authorized Under Virginia Code Section 15.2-961.1 | 26 |
| 6.3.3 | Establish a Heritage Tree Ordinance or Program | 29 |
| 6.4 | Monitor Status of Virginia State Legislative Changes | 30 |
| 6.4.1 | Authority to Adopt Tree Conservation Ordinance and Increase Tree Canopy Replacement Requirements (HB 2042/SB 1393) | 30 |
| 6.4.2 | DEQ Adoption of Tree Canopy as Approved BMP (HB 520) | 31 |
| 6.4.3 | Tree Preservation and Planting in Chesapeake Bay Preservation Areas (HB 504) | 32 |
| 6.5 | Evaluate Town Practices Using Audit Tool | 32 |
| 6.6 | Inspect to Track if Tree Canopy Replacement is Effective | 32 |
| 6.7 | Improve Enforcement of Tree Laws in the Town | 32 |
| 6.8 | Strengthen Site Review Process | 33 |
| 6.9 | Recognize Link Between Trees and Stormwater Management | 35 |
| 6.10 | Plant More Street Trees and Maintain Street Trees | 38 |
| 6.11 | Compile and Analyze Data to Support Tree Policies | 39 |
| 6.11.1 | UTC Assessment with Ecosystem Benefits and Planting Map | 39 |

| | | |
|-----------|--|-----------|
| 6.11.2 | Commission a Street Tree Inventory | 40 |
| 6.12 | Gather Additional Useful Data | 41 |
| 6.13 | Encourage Voluntary Tree Planting | 41 |
| 6.14 | Incorporate Tree Planting in the Town's Planning | 42 |
| 6.15 | Increase Planting on Town Property: Street and Park Trees | 42 |
| 6.16 | Actions to Increase Tree Planting on Private Property | 44 |
| 6.16.1 | Establish a 501(c)(3) Non-profit or Tree Stewards Group in Vienna | 44 |
| 6.16.2 | Conduct Regular Tree/Seedling Giveaways | 45 |
| 6.17 | Require Bonding to Help Tree Survival | 45 |
| 6.18 | Maintain Vienna's Organizational Structure and Improve Communication to Ensure Effective Tree Management | 46 |
| 6.19 | Conduct Continuing Education, Outreach, and Communication About the Value of Trees | 47 |
| 7. | MODEL TREE CONSERVATION ORDINANCE | 49 |
| 8. | RECOMMENDATIONS IN TREE REPORTS PREPARED FOR OTHER COMMUNITIES | 68 |

1. SUMMARY OF MAJOR RECOMMENDATIONS

The following is a summary of our major recommendations to help Vienna preserve and manage its tree canopy, based on our interviews with stakeholders and tree experts, analysis of tree laws and programs, and review of tree reports and forestry plans prepared for neighboring jurisdictions. These and other recommendations are described in more detail in this report.

- 1.1 Prioritize Trees as Critical Community Infrastructure.** People traditionally have thought of trees as an amenity, that is, as simply being pleasant, attractive, and agreeable. More recently, however, trees are being recognized as critical community infrastructure. Much like buildings, streets, and sewer lines, trees are part of the infrastructure that improves quality of life. Trees provide communities like Vienna with significant environmental, health, safety, and economic benefits. Unlike man-made infrastructure that depreciates in value over time, trees actually appreciate in value and provide exponentially greater benefits as they mature. ***An urban tree canopy assessment published in fall 2022 calculated that the annual benefits Vienna receives from its tree cover are approximately \$4.3 million.*** Vienna will continue to benefit by residents, business owners, homebuilders, Town Council, and Town staff valuing and prioritizing trees as important infrastructure of the Town.
- 1.2 Strengthen and Consolidate Town Code Provisions Relating to Trees into a Comprehensive Tree Conservation Ordinance.** In 1991, Vienna enacted a tree replacement ordinance that applied only to subdivisions. Vienna revised the ordinance in 2014 to also apply to single lot developments. The ordinance requires builders or individuals who develop or redevelop subdivisions or lots in Vienna to plant trees to have a canopy that covers 20% of the lot at 20 years after the development. While Vienna's ordinance is helpful in tree replacement, Vienna could do more to protect and replace trees. Most notably, Vienna's ordinance does not require an effort to be made to preserve existing trees. As a result, rather than being preserved, mature trees in Vienna are frequently taken down and replaced with young trees. The benefit of preserving mature trees is that mature trees are more efficient at reducing air pollution, intercept more storm water runoff, remove more pollutants, and are more effective at reducing energy consumption compared to young trees. In contrast to Vienna, Fairfax County's tree ordinance emphasizes tree preservation where it is feasible. Fairfax County also sets tree replacement requirements that can be five percent greater than those in Vienna on some lots. To do this, Fairfax County adopted a tree conservation ordinance as authorized under Virginia Code Section 15.2-961.1, while Vienna adopted a tree replacement ordinance under Virginia Code Section 15.2-961. It is recommended that Vienna update and consolidate its tree ordinance by adopting the tree conservation ordinance provisions as authorized under Virginia Code Section 15.2-961.1. Section 7 of this report contains a proposed model tree ordinance that would consolidate all the Town code provisions relating to trees into a single ordinance and adopt the tree conservation ordinance and other tree provisions authorized by the Virginia Code similar to those already in place in Fairfax County.
- 1.3 Establish a Vienna Tree Commission.** Vienna maintains a Conservation and Sustainability Commission (CSC). The CSC has a broad mission and is charged with advising the Town and developing and recommending policies and programs relating to sustainability, including energy conservation, natural resource protection, recycling, sustainable development, and tree protection and replacement. The CSC also constitutes the Town's tree board. Given the additional responsibilities and challenges associated with conserving and caring for Vienna's urban forest, it is recommended that Vienna establish a separate commission that is solely

dedicated to trees. Nearby communities such as Fairfax County, Falls Church, and Arlington all have a dedicated tree board or commission (sometimes known as an urban forestry commission) that is focused solely on trees. Article 9 in the model tree ordinance in Section 7 of this report would establish a Vienna tree commission.

- 1.4** **Develop and Execute a Plan to Increase Tree Planting on Town Property.** Vienna will benefit by becoming more deliberate and intentional in tree planting. It should identify and prioritize areas of Town-owned land where trees need to be planted by making use of the recently completed urban tree canopy (UTC) assessment (an analysis of aerial imagery that depicts the extent of tree canopy) and by commissioning a street tree inventory (an on-the-ground inventory of street trees and available planting spaces). The Town should develop a multi-year planting plan and allocate annual budget money for tree planting. Priorities for planting are areas with less tree canopy and Town tree lawns without trees that are sufficiently wide and are not obstructed by utility lines. The Town could enter into a tree purchase contract with a tree nursery to reduce the Town's cost to purchase and plant trees. The Town should track and annually report on tree planting activities and apply for budget change requests as warranted. Vienna could also establish a tree canopy coverage goal (e.g. 40% coverage) and a stocking level goal for street trees (e.g. 90%). The Town should also implement an inspection and maintenance program for Town-owned trees.
- 1.5** **Establish a Budget Specifically for Tree Planting.** Vienna's Department of Parks and Recreation has generally been given an annual \$15,000 discretionary horticulture budget and two full-time staff dedicated to flower planting, equipment, and maintenance, as well as a budget for tree removal that has ranged from \$30,000 to \$50,000 over the past few years — with little or no budget money specifically allocated to tree planting and its associated maintenance costs (digging holes, watering, etc.). Town staff have needed to find money elsewhere or make specific requests to cover tree planting and maintenance needs. Currently, the Town does not maintain accurate numbers of the amount spent each year on tree acquisition and planting, or the number of trees the Town plants each year. Other governments we interviewed maintain and track these numbers as part of their urban forest plan. The Town should establish a line item in the Town's annual budget for tree purchases and tree planting and track and publish the number of trees it plants each year.
- 1.6** **Maintain Consolidated Authority Over Trees in Parks and Recreation and Improve Communication with Public Works.** The Department of Parks and Recreation plants and manages trees in Vienna's parks, as well as Vienna's street trees. The one exception is for street trees that are removed by the Department of Public Works to accommodate sidewalk installation. In those cases, Public Works plants the replacement street trees. Tree planting associated with new home development is part of the process overseen by the Departments of Planning and Zoning and Public Works, with a review by the Town's Urban Arborist in the Department of Parks and Recreation. Several interviewees recommended that the Town of Vienna ensure that its tree staff and responsibilities remain consolidated so that one Department is responsible for all trees — park trees, street trees, and trees planted as part of new home construction projects — and that communication is increased between Parks and Recreation and Public Works with regard to site plan review and street tree removal and replacement during sidewalk installation. Interviewees noted that when tree responsibilities and management are divided, information can be "siloeed" within departments and communication and effectiveness breaks down. This is true with regard to both tree removal

and replanting during lot redevelopment, as well as street tree removal during sidewalk installation.

- 1.7 **Conduct Early Arborist Review of New Construction Projects.** Several individuals interviewed recommended that the Town's Urban Arborist review of site plans should occur at the earliest possible point in the pre-construction process, so opportunities to preserve trees will not be lost. If the review comes too late in the process, significant money has been sunk into engineering costs related to the location of the home, driveway, grading, and other lot and design features, making it harder to incorporate preservation of trees into the site plan.
- 1.8 **Consider Incentives that Could be Offered for Tree Preservation.** Several ideas to provide incentives for homebuilders to preserve trees during the construction process include: flexibility in setback requirements in order to preserve trees; requiring trees to be preserved or planted in exchange for granting rezoning or variance requests; expedited permitting for tree preservation; extra canopy credits for tree preservation; and allowing a construction dumpster to be placed on the street when it will save a mature tree.
- 1.9 **Limit Paving of Front Yards to Allow Space for Trees.** When a new home in Vienna is constructed with a two- or three-car side-load garage in the front yard, the footprint of the garage, combined with the side-load driveway, typically takes up much of the front yard. As a result, there is little space in the front yard to plant a tree. From our interviews, we learned that Fairfax County's Zoning Ordinance provides that no more than 25 or 30 percent (depending upon the zoning district of the property) of a front yard of a residential property may be surfaced with a driveway. By incorporating a similar provision in the Town's code, the Town will allow space for trees in front yards.
- 1.10 **Establish a Nonprofit "Vienna Tree Foundation" That Can Receive Grants and Donations and Can Plant Trees on Private Property.** Many interviewees recommended the establishment of a 501(c)(3) non-profit Tree Foundation or tree steward organization. Several neighboring jurisdictions such as Falls Church, Fredericksburg, and Arlington have private non-profit organizations that partner with the town or city to plant and maintain tree canopy. The benefit of such foundations is that they can solicit grant money and donations that can be used to plant trees. Additionally, they are not restricted to planting trees on public property. To restore the Town's tree canopy, increased tree planting will be required on both public and private property.
- 1.11 **Increase Community Awareness of the Benefits of Trees and Make Use of Resident Volunteers to Nurture Newly Planted Town Trees.** To increase community awareness of trees, the Town could revamp and expand the description of the benefits of trees on the town's website. It could develop a public education and outreach campaign to help Town residents understand the importance of trees and the benefits they provide to Vienna. To increase resident connection to newly planted street trees, the Town could involve residents in the selection of tree species to be planted on streets where they live. Citizens can be trained as volunteer tree stewards who can then water and care for newly planted street trees.
- 1.12 **Expand Arbor Day into a Group Tree Planting Day Throughout the Town.** Currently, the Town plants a single tree each Arbor Day. The Town could increase the number of trees planted and increase awareness of the need to plant trees by asking groups within Town to

commit to planting trees on Arbor Day. Requests to plant can be made to schools, civic clubs, scouts, service organizations, and faith-based communities, as well as citizens. Each year, the goal should be to plant more trees than were planted on the prior Arbor Day.



Freeman Store and Museum, Vienna

2. INTRODUCTION

2.1 Objective

Our group undertook this volunteer effort to explore ways the Town of Vienna could enhance its ability to preserve and manage its tree canopy. We looked at how Vienna could retain, replace, and add trees, particularly in light of increasing teardown/new home development throughout the Town.

Teardowns in Vienna. Vienna, a town within Fairfax County, is about 4.4 square miles with a population of about 16,400. It is comprised of about 5,400 households. Vienna has experienced — and continues to experience — a steady flow of single-family home “teardown” projects. This is when an older home is demolished, and a new home is constructed on the same lot. For the past several years, about 100 homes per year have been torn down and a new home rebuilt on the same lot.

Loss of Mature Trees. When a new home is constructed in a teardown project, the new home typically is much larger than the older home that was demolished. The construction process and the larger home requirements have a significant impact on existing trees on the lot. The front yard portion of the lot is typically used during the construction process to store a construction waste roll-off container, a portable rest room, and construction materials. There is generally a concurrent need to upgrade and/or re-route the water, sewer, gas, and electric lines that will serve the new home, and to install stormwater management tools. Because these construction and management needs take up space and have harmful impacts on tree roots, there has been a loss of mature trees on the residential lots in many of the teardown projects. While Vienna does not track the number of trees that are taken down each year in connection with new home projects, our neighbor Falls Church has estimated that about five mature trees are lost on each teardown lot. Given that lot sizes are similar in both jurisdictions, one can extrapolate that about 100 teardowns per year in Vienna results in an estimated loss of 500 mature trees per year. ***The net result is a staggering loss of 5,000 mature trees on these lots in the past 10 years. An urban tree canopy assessment published in fall 2022 found that Vienna’s tree canopy cover decreased by approximately 163 acres between 2011 and 2021, a percent change loss of 13.0%.¹***

Project Study Group. In early 2021, the Town of Vienna retained a law firm (Kirkland & Ellis, LLP [Kirkland & Ellis]) and an environmental firm (Ramboll US Consulting, Inc. [Ramboll]) to undertake a pro bono project to research and identify policies and programs that could benefit Vienna in protecting and replacing trees in the community. Christina Caplan, Chair of the Town’s Conservation and Sustainability Commission, was also part of the group that conducted this project. The project included a mix of legal and policy research and interviews with stakeholders and experts in the field.

2.2 Scope of Work

Our group conducted the following tasks:

Task 1 - Interviews. A primary method to gather information for this study was through interviews. We interviewed 54 individuals and asked them to share their knowledge and expertise about tree science, management, and policy, with particular emphasis on individuals located in Virginia and Washington, DC. Individuals we interviewed consisted of:

- Academics
- Urban Forest Consultants
- State and Local Governmental Representatives
- Vienna Homebuilders
- Non-profit Representatives
- Utility Representatives
- Town of Vienna Staff and Councilmembers
- Tree Group Volunteers

¹ Vienna, Virginia Urban Tree Canopy Assessment Report, Davey Resource Group, Inc., October 2022.

The individuals we interviewed are listed in the following table.

| Table 1.1: Individuals Interviewed | |
|---|----------------|
| Name | Date |
| Academics | |
| 1. Eric Wiseman, Assoc. Prof. of Urban Forestry, Virginia Tech | March 5, 2021 |
| 2. Jarlath O'Neil-Dunne, Univ. of Vermont Spatial Analysis Lab | May 24, 2021 |
| Consultants | |
| 3. Karen Firehock, Director, Green Infrastructure Center | March 9, 2021 |
| 4. Ed Milhous, President, TreesPlease | April 14, 2021 |
| 5. Mike Galvin, Director of Consulting, SavaTree Consulting Group | April 21, 2021 |
| 6. Shirley Vaughn and William Ayersman, Davey Trees | May 5, 2021 |
| 7. Ian Hanou and Chris Peiffer, PlanIT-Geo | Nov. 29, 2021 |
| Government Representatives | |
| 8. James McGlone, Urban Forest Conservationist, Virginia Dept. of Forestry | March 5, 2021 |
| 9. John Dudzinsky, Urban Forester, Town of Herndon | March 9, 2021 |
| 10. Vincent Verweij, Urban Forester, Arlington County | March 30, 2021 |
| 11. Brian Keightley, Fairfax County | April 22, 2021 |
| 12. Chap Petersen, Virginia State Senator | April 28, 2021 |
| 13. Lara Johnson, Virginia Dept. of Forestry | April 28, 2021 |
| 14. Julia Flanagan, Prince William County | May 4, 2021 |
| 15. Kyle Dingus, Loudoun County Urban Forester | May 7, 2021 |
| 16. John Marlin, City of Alexandria | May 14, 2021 |
| 17. Julie Mawhorter, US Forest Service | June 1, 2021 |
| 18. Charles Prince, Acting Arborist, City of Falls Church | June 16, 2021 |
| 19. Kate Reich, Former Arborist, City of Falls Church | July 1, 2021 |
| 20. Earl Eutsler, DC Dept. of Transportation | Nov. 4, 2021 |
| Homebuilders | |
| 21. Rob Fisher, Fisher Custom Homes | June 18, 2021 |
| 22. Mark Stahl, Stahl Homes | Sept. 14, 2021 |
| 23. Patrick Ohlhorst, Cloud IX Homes | Sept. 16, 2021 |
| 24. Patrick Stack, Jefferson Homes | Sept. 16, 2021 |
| 25. Steve Jriege, Vienna Development Alliance | Sept. 29, 2021 |
| 26. Steve Bukont, Bukont Homes | Sept. 30, 2021 |
| 27. John Sekas, Sekas Homes | Oct. 6, 2021 |
| Nonprofit Organizations | |
| 28. Mark Buscaino, Executive Director, Casey Trees | April 6, 2021 |
| 29. Cindy Speas, Faith Alliance for Climate Solutions | April 17, 2021 |
| 30. Anne Little, Tree Fredericksburg | May 4, 2021 |
| 31. Jenny McGarvey, Alliance for the Chesapeake Bay | May 18, 2021 |
| Utilities | |
| 32. Cathy Vick, Manager, Electric Distribution Forestry, Dominion Energy | June 25, 2021 |
| Vienna | |
| 33. Maureen Alonso, Joanne Burke, and Susan Stillman, Past Members of the Vienna Conservation and Sustainability Commission | Feb. 3, 2021 |
| 34. John Jay Sergent, Public Works Engineer, Town of Vienna | Feb. 26, 2021 |
| 35. Cindy Petkac, Director of Planning & Zoning, Town of Vienna | March 13, 2021 |
| 36. Leslie Herman, Director of Parks & Recreation, Town of Vienna | March 19, 2021 |
| 37. Jeremy Edwards, Green Space Manager, City of Falls Church (now Park | April 8, 2021 |

| Table 1.1: Individuals Interviewed | |
|--|----------------|
| Name | Date |
| Maintenance Superintendent, Town of Vienna) | |
| 38. Gary Lawrence, Former Arborist, Town of Vienna | April 16, 2021 |
| 39. Scott Diffenderfer, Arborist, Town of Vienna | June 15, 2021 |
| 40. Laurie DiRocco, Former Mayor, Town of Vienna | June 29, 2021 |
| 41. Chuck Anderson, Vienna Town Council | Sept. 24, 2021 |
| 42. Steve Potter, Vienna Town Council | Oct. 13, 2021 |
| 43. Howard Springsteen, Vienna Town Council | Oct. 15, 2021 |
| 44. Linda Colbert, Vienna Mayor | Oct. 26, 2021 |
| 45. Nisha Patel, Vienna Town Council | Oct. 29, 2021 |
| 46. Steve Briglia, Vienna Town Attorney | Nov. 17, 2021 |
| Volunteers | |
| 47. Judy Fraser, City of Fairfax Environmental Sustainability Committee | May 5, 2021 |
| 48. Nora Palmatier, Tree Stewards of Arlington & Alexandria | May 11, 2021 |
| 49. Kathy Costa, Chair, Falls Church Urban Forestry Commission | June 23, 2021 |
| 50. Amy Crumpton, Falls Church Urban Forestry (formerly Tree) Commission | July 7, 2021 |

Task 2 - Review of Tree Laws. A second component of this study was a review of tree and other related laws and regulations at the federal, state, and local levels. Because Virginia is a “Dillon Rule” state, local governments in Virginia may only adopt ordinances where the General Assembly has expressly or implicitly granted them authority to do so. We reviewed the Code of Virginia to understand what authority the Virginia General Assembly has granted to local governments to enact tree ordinances. We reviewed tree ordinances that are currently in the Vienna Town Code, as well as in other Northern Virginia jurisdictions. We also reviewed tree requirements and policies contained in Vienna’s Tree Preservation and Planting Guide and in memoranda issued by Town Staff to the Vienna homebuilders.

| Table 1.2: Tree and Related Laws Reviewed | | |
|---|---|---|
| Jurisdiction | Law/Ordinance/Requirement | Citation |
| Town of Vienna | Encroachment of Certain Vegetation | Vienna Town Code Chapter 16, (Streets and Sidewalks), Article 4 |
| | Planting and Replacement of Trees; tree canopy replacement requirements | Vienna Town Code Chapter 17 (Subdivisions), 17-15, 17-15.1 |
| | Site Plan Specifications: tree canopy replacement requirements | Vienna Town Code Chapter 18 (Zoning), 18-251, 18-252 |
| | Conservation and Sustainability Commission | Vienna Town Code Chapter 27 |
| | Town of Vienna Tree Preservation and Planting Specifications | Tree Preservation and Planting Guide, updated 2/2021; Memoranda to Vienna Construction Industry from Vienna |
| | Stormwater Management | Vienna Town Code Chapter 23, Article 3 |
| Fairfax County | Heritage, Specimen, Memorial and Street Tree Ordinance | Vienna Town Code Chapter 17 (Subdivisions), 17-15, 17-26, 17-64.1; Chapter 18 (Zoning), Article 21.1 (Preservation Areas) |
| | Tree Conservation Ordinance | Fairfax County Code, Chapter 120 |
| | Public Facilities Manual | Fairfax County Code, Chapter 122 |
| City of Falls Church | Trees and Shrubs Ordinance | PFM, Chapter 12-Tree Conservation |
| | | Code of the City of Falls Church, Chapter 44, Article 2 |

| Table 1.2: Tree and Related Laws Reviewed | | |
|---|---|---|
| Jurisdiction | Law/Ordinance/Requirement | Citation |
| Arlington County | Chesapeake Bay Preservation Ordinance | Code of Arlington County, Chapter 61 |
| | Tree Preservation Ordinance; Trees and Shrubs on Public Property and Regulation of Heritage Trees, Memorial Trees, Specimen Trees, and Street Trees on Public or Private Property | Code of Arlington County, Chapter 67 |
| City of Alexandria | Trees, Shrubs, Plants and Vegetation Ordinance | City of Alexandria Code, Title 6, Chapter 2 |
| Town of Herndon | Tree Preservation Ordinance | Herndon Code of Ordinances, Sections 26-21-24; 7878-111 |
| City of Manassas | Vegetation and Tree Conservation | Manassas Code, Chapter 122 |
| | Tree Canopy and Landscaping Requirements | Manassas Code, Chapter 130, 216-218 |
| Code of Virginia | Replacement of Trees During Development Process in Certain Localities | Code of Virginia Section 15.2-961 |
| | Conservation of Trees During Land Development Process in Localities Belonging to a Nonattainment Area for Air Quality Standards | Code of Virginia Section 15.2-961.1 |
| | Heritage, Specimen, Memorial and Street Tree Preservation | Code of Virginia Section 10.1-1127.1 |
| | Crimes Against Property; Destruction of Trees and Shrubs | Code of Virginia Section 18.2-140 |
| | State Water Control Law | Code of Virginia Section 62.1-44.2 et seq. |
| | Virginia Stormwater Management Act | Code of Virginia Section 62.1-44.15:24 et seq. |
| Virginia Administrative Code | Chesapeake Bay Preservation Act | Code of Virginia Section 62.1-44.15:67 et seq. |
| | Virginia Stormwater Management Program (VSMP) Regulations | 9 VAC 25-870 |
| | Virginia Pollutant Discharge Elimination System (VPDES) Permit Regulations | 9 VAC 25-31 |
| | Chesapeake Bay Preservation Area Designation and Management Regs | 9 VAC 25-830 |
| Chesapeake Bay Watershed Agreement | General Permit | 9 VAC 890-40 |
| | https://www.chesapeakebay.net/ | June 16, 2014, amended Jan. 24, 2020 |

Task 3 - Review of Tree Reports Prepared for Other Communities. During the course of this project, we learned that many communities have commissioned urban forestry plans that contain recommendations for helping those communities manage their urban forests. We realized that these plans are a resource on which Vienna could also draw. We selected nine reports to review that contain recommendations useful to Vienna. Most of the reports we selected pertain to communities in Virginia, but we also included reports prepared for Washington, D.C.; and Cleveland, Ohio. The reports are listed below.

| Table 1.3: Tree Reports Reviewed | |
|----------------------------------|---|
| Community | Report |
| 1. Arlington, Va. | Urban Forest Master Plan, prepared by Dept. of Parks, Recreation and Cultural Resources (2004) |
| 2. Alexandria, Va. | Urban Forestry Master Plan, prepared by Davey Resource Group (2009) |
| 3. Washington, D.C. | Urban Tree Canopy Plan, prepared by City (2013) |
| 4. Leesburg, Va. | Urban Forestry Management Plan, prepared by Davey Resource Group (2006) |
| 5. Cleveland, Ohio | 2015 Tree Plan and 2020 Annual Report, prepared by Davey Resource Group |
| 6. Fairfax City, Va. | Urban Forestry Program Evaluation Report, prepared by Plan-It Geo (2021) |
| 7. Charlottesville, Va. | Urban Forest Management Plan (2009) |
| 8. Roanoke, Va. | Urban Forestry Plan, prepared by the Urban Forestry Task Force and the Roanoke Dept. of Parks and Recreation (2003) |
| 9. Woodstock, Va. | Urban Tree Canopy Plan, prepared by Woodstock Planning & Community Development and the Woodstock Tree Board (2011) |

Section 8 contains a table with hyperlinks to each of these reports and a summary of the actions recommended by each report. Vienna can review the recommendations and implement those that would be beneficial to Vienna.

2.3 Benefits of Trees

Why are trees important? By providing a multitude of benefits, at a relatively low cost, trees are the unsung heroes in any community. Studies show that trees provide numerous benefits, including:

Environmental Benefits

- Trees produce oxygen and remove air pollutants, including ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, and particulate matter.
- Trees store carbon and help mitigate climate change.
- Trees provide shade, lower air temperatures, and reduce cooling costs for homes and businesses.
- Trees reduce and filter stormwater runoff and reduce flooding and erosion.
- Trees provide habitat for wildlife.

Human Health and Safety Benefits

- Trees remove pollutants from the air we breathe, which reduces asthma and other diseases.
- Trees provide relief and reduce stress from high heat days.
- Trees improve mental health and encourage us to exercise, which reduces obesity, diabetes, and other health problems.
- Trees create safer spaces for the public by slowing traffic speeds, lowering stress, and providing buffers for pedestrians.
- Trees absorb and reduce traffic noise.

Economic Benefits

- Trees increase home and property values.
- Trees improve business districts by attracting more consumers who shop longer and spend more.
- Trees improve social connections and build a stronger sense of community.

People have traditionally thought of trees as an amenity, that is, as simply being pleasant, attractive, and agreeable. More recently, trees are being recognized as **critical community infrastructure**. Much like buildings, streets, and sewer lines, trees are part of the infrastructure that

improves our quality of life.² Unlike man-made infrastructure that depreciates in value over time, trees actually appreciate in value and provide exponentially greater benefits as they mature.



Church Street, Vienna
Photo by Doug Francis. Reprinted with permission.

² <https://www.pewtrusts.org/en/research-and-analysis/blogs/stateline/2021/07/06/tree-the-critical-infrastructure-low-income-neighborhoods-lack>; <https://www.climate-kic.org/opinion/trees-as-infrastructure-pt-1/>; <https://www.nytimes.com/interactive/2021/06/30/opinion/environmental-inequity-trees-critical-infrastructure.html>

3. CURRENT TREE PROTECTION IN VIENNA

3.1 Current Tree Protection in Vienna

Vienna's Town Code currently contains limited provisions aimed at protecting and replacing trees in Vienna. These provisions consist of a tree canopy replacement ordinance applicable to site development and designation of the Town's Conservation and Sustainability Commission to serve as the Town's Tree Board to advise on tree policy, programs, and management.

3.2 Vienna's Tree Canopy Replacement Ordinance

Vienna's Town Code contains a minimum tree canopy replacement ordinance that was enacted in 1991. Initially, the ordinance only applied to subdivisions under Section 17-15.1. In 2014 the tree canopy ordinance was revised to also include single-lot redevelopments (i.e., infill lots) under Sections 18-251 and 18.252.E. Single-lot redevelopments include development of an undeveloped tract, redevelopment of an existing tract with a new dwelling, or additions that result in more than 2,500 square feet of disturbed soil. Vienna adopted its tree canopy replacement ordinance after the Virginia General Assembly allowed certain localities to require replacement of trees during redevelopment, as set forth in Virginia Code Section 15.2-961.

Under Vienna's tree canopy replacement ordinance, builders who develop and redevelop lots in Vienna must submit a plan for planting and replacement of trees on site during development so that, at maturity of 20 years, minimum tree canopies or covers will be as follows:

- 20% tree canopy in RS-16, RS-12.5, and RS-10 zones
- 15% tree canopy in RM-2 and RTH zones
- 10% tree canopy in T, C-1, C-1A, C-2, CMP, and CM zones

The ordinance requires that tree planting meet certain specifications outlined in the Town Code and the Town of Vienna Tree Preservation and Planting Specifications Manual <https://www.viennava.gov/home/showpublisheddocument/1506> [updated last in 2/2021 and currently called the Tree Preservation and Planting Guide]. There is no requirement to preserve or make an effort to preserve existing trees. However, existing trees may be preserved to meet all or part of the tree canopy requirements if the site plan identifies those trees and the trees meet standards of desirability and life expectancy established by the Town. Town staff are to perform at least two unannounced site inspections to determine compliance with tree protection and preservation regulations during construction.

Violations are a Class 3 misdemeanor punishable by fine of up to \$250 per day.

3.3 Consideration of Trees During New Home Construction Process

The process for protecting and replacing trees during the new home construction process is set forth in Vienna's Tree Preservation and Planting Guide (updated 2/2021) <https://www.viennava.gov/home/showpublisheddocument/1506/637499380678400000> and Vienna's Public Infrastructure Manual (revised Oct. 11, 2018) <https://www.viennava.gov/home/showpublisheddocument/3172/637541723047070000>.

Builders are required to inventory trees on a lot, submit a landscape plan, and adhere to tree protection standards during construction. Among other things, the landscape plan must identify all existing trees of 4-inch diameter at breast height (dbh) and all public right-of-way trees of 1.5-inch caliper and greater. The plan should show which trees are to be saved or preserved, and which trees will be removed. Trees to be preserved are to be tagged in the field. Tree protection areas on the building lot are to be protected with tree protection fencing.

In accordance with Vienna's tree canopy replacement ordinance described in section 3.2 above, a builder's landscape plan must provide for preservation and/or planting and replacement of trees on site during development so that, at a projected maturity of 20 years in the future, minimum tree canopies or covers will be 20% tree canopy in residential zones. In other words, after construction, any existing trees, combined with newly planted trees, should grow to provide a 20% tree canopy over the lot, when projected out 20 years in the future. The landscape plan should show the additional tree plantings that will take place to meet the post-construction 20-year, 20% tree canopy requirement.

Newly planted trees are to be a minimum of 2 - 2.5-inch caliper for deciduous trees and 6 - 8 feet in height for evergreens. New tree planting is to occur during two planting seasons: the spring planting season, March 15 - May 30, or the fall planting season, Sept. 15 - Nov. 30. If tree planting cannot occur during the planting season, the builder must post a bond that covers the tree plantings. Trees that are planted for canopy credit are to be trees specified on the Town's Vienna Approved Tree List, which is set forth in the Tree Preservation and Planting Guide.

Vienna's Urban Arborist is tasked with the responsibility of reviewing the landscape plan and making site visits to confirm that tree preservation and/or tree planting will meet the 20-year, 20% tree canopy requirement.

Vienna's Code does not contain a requirement to undertake efforts to meet the tree canopy requirements through the preservation of existing trees. In Vienna, a developer or property owner is free to choose which, if any, trees to preserve, and which to cut down. By contrast, Fairfax County's tree ordinance requires, where feasible, that preservation of trees be the first option. Fairfax County's ordinance contains the following provision: "When existing trees meet standards of health, condition, and suitability, and when it is feasible to preserve those trees within the framework of permissible uses, densities, design standards, and construction practices, all efforts shall first be made to meet the tree canopy requirement through the preservation of trees before tree planting is allowed to meet any portion of the tree canopy requirement." (Fairfax County Code of Ordinances, Section 122-2-2).

Vienna does not require that trees be maintained in place after a Certificate of Occupancy is issued and there is no bond requirement related to the survival of newly planted trees. At present, Vienna collects trees bonds only for Town street trees that may be impacted by construction. Parks and Recreation oversees the bond issuance process, which requires payment through the Town's Finance Department. The bonds are held as tree protection bonds until the Certificate of Occupancy (C.O.) is issued, then held as maintenance bonds for one year after issuance of the C.O.

Although current practice is to issue bonds only for street trees, Town Code appears to allow Vienna to collect Tree Protection Bonds to ensure that any trees designated to be preserved on a site plan actually are preserved. The Tree Protection and Planting Guide states: "The Town of Vienna may

collect Tree Protection Bonds in accordance with Sections 17-15T³ and 18-252E⁴ of the Town of Vienna Code.” Both of these sections of the Town Code on their face provide authority for the Town to collect bonds for *any* trees that are designated to be preserved and maintained through and after construction, not merely trees on Town property that could be impacted by construction activities. Tree Protection Bonds run for one year after the final Certificate of Occupancy is approved and released.

Bonds are currently issued for Town street trees regardless of whether they are preserved or removed. Vienna is considering following other jurisdictions like Falls Church in requiring one- or two-year bonds for new replacement trees. The Town Code technically would allow collection of bonds for preserved trees on a lot as well. Discussion is recommended to determine the effectiveness of using bonds to encourage tree preservation. The Town currently provides 25% more canopy credit for a preserved tree, so discussion is needed to determine if also requiring a bond for a preserved tree would facilitate preservation or actually be a deterrent and instead encourage removal and replanting.

3.4 Vienna’s Conservation and Sustainability Commission

Many northern Virginia counties and municipalities maintain a Tree Board or Tree Commission that is solely dedicated to advising and assisting on trees and tree policies. Vienna does not have a single dedicated Tree Board, but instead designates the Conservation and Sustainability Commission (CSC), acting with the cooperation and advice of the ISA certified Town’s Urban Arborist, as the Town tree board. The responsibilities of the Tree Board are set forth in Section 27-5 of the Town Code and include:

1. Planning and recommending the planting, maintenance, and removal of trees, shrubs, and other plants on public property within the Town
2. Ensuring that the planting, maintenance, pruning, and removal of trees and shrubs on public property within the Town are done in accordance with current accepted national standards
3. Developing, maintaining, and administering a written official public tree management plan for the Town, to be reviewed annually and updated as necessary

³ Section 17-15T, which applies to subdivisions, provides: “Certification that all trees designated to be maintained in subsection Q of this section will be maintained and, if destroyed or damaged beyond saving during construction, the same will be replaced in the same location by a tree of like species not less than four inches in diameter measured four feet from grade. Said certification will be accompanied by a cash or surety bond satisfactory to the Town to ensure such maintenance and replacement or specifically made a part of that performance bond required by section 17-65.” Section 17-15Q provides: “A tree protection plan specifically identifying by species, size and location all trees six inches in diameter measured four feet above grade which are to be preserved and maintained through and after construction and providing for the protection of same prior to grading or movement of heavy equipment and for the parking of construction vehicles outside the drip line of said trees.”

⁴ Section 18-252E.3, which applies to single lots, provides: “Existing trees which are to be preserved, and with no citations having been issued by the Town of Vienna throughout the duration of the project, may be included in the plan to meet all or part of the canopy requirements if the site plan identifies such trees and the trees meet standards of desirability and life expectancy established by the Town. Town of Vienna staff will perform a minimum of two unannounced site inspections to determine compliance with tree protection and preservation regulations during construction.”

4. Recommending adoption of rules, regulations, and policies needed to implement and enforce the public tree management plan and related ordinances
5. Undertaking public outreach and education to promote understanding and support of the Town's public tree management plan and to increase public awareness of the value and benefits of a diversified, sustainable community forest.

Other tree-related responsibilities of the CSC include:

- Developing and recommending policy initiatives and changes to the Mayor and Town Council regarding tree protection and replacement programs (Town Code Section 27-4.B(6))
- Celebrating Arbor Day by planning the annual Arbor Day tree planting (Town Code Section 27-4.D(7))
- Maintaining Tree City USA status for the Town (Town Code Section 27-4.D(10))

The CSC has been an active Town body dedicated to tree preservation and protection. Its ongoing work and accomplishments relating to trees include:

- Getting the Town to adopt the 2014 minimum tree canopy requirements applying to redeveloped lots as well as subdivisions;
- Helping to update the Tree Preservation and Planting Guide in 2017;
- Celebrating Arbor Day each year;
- Working to educate residents and Town Council about the benefits of a healthy tree canopy throughout Vienna via newsletter articles, social media posts, and workshops; and
- Holding biannual Native Plant Sales that include sales of native trees, as well as a Fall Native Tree Seedling giveaway.

3.5 Tree City USA Recognition

For the past 21 years, Vienna has been recognized as a Tree City USA through the Arbor Day Foundation. To be recognized as a Tree City USA, a community must meet four standards:

1. Maintaining a tree board or department;
2. Having a community tree ordinance;
3. Spending at least \$2 per capita toward the planting, care and removal of town trees; and
4. Celebrating Arbor Day with a tree planting event, tree care activities or an award ceremony.

As mentioned in section 3.4, Vienna's CSC is designated as the Town's tree board. Vienna maintains a tree canopy replacement ordinance, as discussed in section 3.2. Vienna's population is about 16,500, which means that Vienna's is required to spend at least \$33,000 toward tree planting care, and removal. At present, there is no annual Town budget money allocated specifically toward tree planting, so the designation is based primarily on money spent annually toward tree care and removal. Vienna celebrates Arbor Day each year by planting a tree in a park or on other Town property.

Interviewees described how the Town could go beyond the minimum Tree City USA requirements by planting more trees and raising awareness. Suggestions included:

- Get residents and groups involved to plant dozens or more trees on Arbor Day. The City of Fredericksburg, Virginia, has had more than 5,000 people plant trees, including members of churches, rotary and civic groups, city employees, the city manager, the city council, and even city staff.
- Plan big planting events. Fredericksburg had a planting event where it planted 50 trees in 2 hours. The event started in one spot, with each Tree Steward then taking smaller groups to plant 4 or 5 trees in other areas. Holes were pre-dug and mulch and stakes were provided.
- Use Arbor Day to hold special events and educational programs about Vienna's urban forestry on parks and school grounds.
- Select a "tree of the year" each Arbor Day to help raise awareness of heritage trees in the Town.



Tree Planting in Vienna

4. CURRENT DISINCENTIVES FOR TREE PRESERVATION IN VIENNA

Vienna's current tree replacement ordinance does not appear adequate to counter the canopy loss from the wave of new home construction that is taking place throughout the Town. Two factors in particular create significant disincentives for tree preservation. Both the large size of the new homes being built and the competition for space on a lot make it challenging to protect and replace trees during the development process.

4.1 Maximum Home Size

Several interviewees pointed out that the size of new homes being constructed in Vienna leads to increased tree loss. This appears to be a result of multiple factors, including homeowner demand, bank lending practices, and tax base incentives.

Current new homes in Vienna are being built to the maximum size allowed on the lot. Many builders noted that their clients want to maximize the size of their home in order to maximize the return on their investment. They build up to the 25% lot coverage limit to meet the client demand for large houses, three-car garages, patios, decks, and extra parking space in the driveway. They note that saving trees is secondary at best to homeowners.

Bank lending practices also encourage the building of larger, more expensive homes. Builders noted that it does not work economically for them to build a smaller home because that negatively impacts the value at appraisal. A larger home costs more money, but the increase in home value offsets that cost to justify the extra cost. The rare times a client wants a smaller home, the equation will not work out and the value of the smaller home will not be enough to justify the cost. There is pressure from the bank, from all fronts, to build bigger. One builder stated that only five or 10 out of 100 clients would build a smaller house; he personally has only had five clients come to him to ask for a 3000 sq ft house and the economics of building them did not work out. He doubted that he could talk clients into smaller homes, noting that homes already tend to be efficient in design — tall and not huge in the footprint — so he does not see the footprint getting smaller.

Finally, because the tax base is tied to the assessed value of a home, larger homes result in a larger the tax base. Property values go up, taxes go up, and the town and county benefit from the increased wealth.

Ironically, several interviewees noted that removing mature trees actually reduces the assessed value of a home. The presence of larger trees in yards and as street trees can add from 3% to 15% to home values throughout neighborhoods. While development costs can be greater for lots where trees were conserved (5.5% in one study), builders can recover extra costs of preserving homes through higher sales prices and faster sales for houses on wooded lots. https://depts.washington.edu/hhwb/Thm_Economics.html

Finally, those we interviewed noted that home buyers might not know that the lot previously had mature trees if they never saw the lot prior to development.

4.2 Trees Must Compete for Space

Many interviewees stressed that one of the biggest challenges to preserving trees is the competition for space on a lot. Similar to Arlington and Falls Church, many of the lots in Vienna are small (10,000-12,000 sf) and water, sewer, utilities, house, driveway, and backyard all have to fit. Homebuilders want to maximize the square footage of new construction homes on these smaller lots, while meeting grading and stormwater requirements and running utilities. In addition, lot space is required for construction equipment, including heavy dumpsters, that can damage or kill existing trees on site.

- **Grading** is hard on trees. Changing grading of a flat lot can impact trees that normally would have survived, but the grading may ultimately kill the tree.
- Trees are competing with **stormwater management** for space. This means that there is not much room left for trees.
- New **gas lines** must be run for new construction. The gas company disconnects at the right-of-way prior to demolition; the builder must then submit a request for new service. The builder does not get to decide the path of the gas line on the property.
- Most of the older electrical lines in Vienna run overhead from the street to the house. Vienna requires that **electrical lines** be installed below ground for new construction. The builder can request that the lines be placed in a particular location, but Dominion decides where they will go (and doesn't always comply with the builder's request).⁵
- The Town requires a 1-inch **water service line** to each new home. Existing water lines on older Vienna homes are ¾-inch service lines, so the water lines must be replaced.
- The existing **sewer line** is cut at the property line at the time of demolition. If it is in good condition, the builder may try to reconnect at the existing sewer line location, but this is not always possible.
- In some cases, the previously **existing utility lines** run beneath trees that have grown large on the site and necessitate that the new lines be installed in a different location.
- Homebuilders in Vienna stage **dumpsters and construction equipment** in the front yard on a lot because the Town does not allow dumpsters to be staged in the road due to concerns about restricting access to emergency vehicles. Several interviewees said that flexibility in staging, even for a short period of time, could result in fewer trees being removed or damaged from construction. For example, one idea would be to leave the dumpster on the street until utilities are installed and drywall is hung in the house (about 2½ months) so the drywall truck could use the driveway instead of needing to go onto the lawn near or on tree roots.

⁵ Dominion trims trees near its power lines. If someone is planting a tree near a power line, Dominion prefers that trees planted near/under power lines are low growing and slow growing species. Species growing no more than 15 feet are recommended (and must be less than 30 feet). Trees growing in excess of 15 feet high are subject to pruning or removal, as needed to maintain power lines. Dominion removes trees completely from time to time due to size of tree, age, or location, and works with property owners. Dominion publishes a list of preferred trees for planting near power lines. The list includes trees that are less than 30 feet tall and require little pruning. Dominion has a recommended distance of 45 feet from power lines for larger trees. See <https://cdn-dominionenergy-prd-001.azureedge.net/-/media/pdfs/global/safety/tree-trimming/shrub-species.pdf?la=en&rev=025007d4618442f0ba5e5594aa88ab2f&hash=1701D80CDE2EAFD89D8459C7377DC40F>

5. INCENTIVES THAT COULD BE OFFERED FOR TREE PRESERVATION

Interviewees offered several ideas to provide incentives for homebuilders to preserve trees during the construction process.

5.1 Setback Flexibility

Several interviewees recommended that localities allow flexibility in setback requirements in order to preserve trees. They stressed that local setback requirements affect tree canopy and impede the ability of developers to preserve trees on lots.

The interviewees noted that Vienna's current strict setback requirements reduce the ability of developers to preserve trees on lots and recommended that Vienna consider more flexible setback requirements to allow for more preservation. Altering setback in some cases (with adjacent landowner permission) would allow more room for trees, which are competing for space with other things.

One interviewee provided an example of a home in Vienna where trees could have been saved by moving the location of the pool being installed, but that could not be done because of the setback requirements. Obtaining a variance to allow for a setback change was a difficult and lengthy process, so the builder opted to simply take out the trees. Another interviewee asked for similar flexibility on driveway installation and house placement in order to protect trees in the front yard.

5.2 Rezoning and Variance Requests

One interviewee noted that localities have wide authority to place requirements on rezoning requests and recommended that Vienna require trees to be preserved or planted in exchange for granting rezoning requests. Currently, the standard for a rezoning request in Vienna is consistency with the comprehensive plan [Vienna Town Code, Chapter 18, Section 18.249]. Section 18.249.1 of the Town Code allows the Town Council to suggest "reasonable conditions" that the owner may then voluntarily proffer as a condition to rezoning. Voluntary proffers may include cash contributions to the Town for public improvements or cash payments for or construction of off-site improvements to address transportation and public facility needs and impacts in Town.

Similarly, another interviewee recommended that Vienna require tree preservation and planting when granting zoning variances. Section 18.233 allows the Board of Zoning Appeals to approve variances to avoid unreasonable restrictions on use of a property or to alleviate a hardship due to a physical condition relating to the property or improvements. The Board may impose conditions when authorizing the variance.

The interviewee noted that while Virginia does not allow municipalities to specifically ask for proffers from developers, developers may voluntarily offer them. The easiest way to do this is for the Town to publish its needs and goals, ideally on its website. Goals that could be utilized as proffers and conditions for rezoning and variance requests that meet all other requirements include nature trails, more of a certain type of tree being planted (e.g., native oaks), or leaving a percent of land left untouched.

Along these lines, several interviewees recommended that Vienna develop a tree planting campaign guide to incentivize developers to retain and plant trees. Payment into or participation in existing tree planting programs could be used as an incentive. If the Town goals are well publicized (e.g., on the Town's website), developers will easily understand Town goals and be able to work them into projects.

5.3 Expedited Permitting

Several interviewees recommended offering expedited permitting and/or an accelerated plan review process for projects that will preserve trees. They stressed that the time frame for approvals is extremely important to developers, given the associated costs with the process and delays. Expedited permitting for projects that propose preserving and retaining more tree canopy is one way to incentivize tree preservation, particularly for larger lots. This has worked well in Fairfax County.

5.4 Extra Canopy Credits for Conservation

Several interviewees recommended that Vienna revise its tree credit system and award builders additional canopy credit for preservation and conservation practices. They noted that canopy credits provide the greatest incentive for developers to preserve trees, particularly on small lots, and that conservation goals are being met in several neighboring jurisdictions by giving credits for conserving large canopy trees rather than planting. For instance, Arlington allows existing trees to receive two times the canopy credit of a newly planted tree. If Vienna revised its tree ordinance under the authority granted in Virginia Code Section 15.2-961.1, Vienna could offer a canopy credit of up to 1.25 times the actual canopy area for the preservation of individual trees, 1.5 times the actual canopy area for the preservation of forest communities, and 3 times the actual canopy area for preservation of heritage, specimen, memorial and street trees.⁶

Extra canopy credits were recommended for the following practices:

- **Tree preservation over replacement, and especially preservation of larger mature trees.** Interviewees recommended that the Town provide more credit for established trees than new trees. Preserving a middle-aged tree that can last another 40 to 80 years offers added benefits over newly planted small trees, including carbon absorption, energy savings, shade, and stormwater management. Interviewees noted there is a balance to be maintained to promote realistic conservation and ensure that trees that are preserved can make it through the construction process.
- **Leaving areas of the ground alone to ensure that trees have a place to grow.** Interviewees recommended that developers get canopy credit if they fence off areas on lots and leave them undisturbed. This practice of not turning over soil also helps with carbon sequestration and ensures that new trees have good soil to grow in.
- **Saving a potentially compromised tree.** One interviewee thought this could incentivize builders and arborists to keep borderline trees, noting that there is now no incentive to try to save trees that are on the margins. He cited one example of where the arborist in 2015 pushed for removal of trees that were borderline but he kept the trees and they survived construction and are healthy today.
- **Planting beneficial trees.** Interviewees said Vienna should have a well thought out list of trees that are acceptable as replacement trees. The list should provide additional canopy credit for highly beneficial trees, such as white oak, or black gum.
- **Saving a tree on a neighbor's property.** The critical root zone of a tree on an adjacent property can be negatively impacted by construction that goes up to the property line. An incentive to prevent this was recommended.

⁶ Section 6.3.2 of this report explains other aspects of tree protection under Virginia Code Section 15.2-961.1, including that all efforts shall first be made to meet the tree canopy requirement through the preservation of trees before replacement tree planting is allowed, and that there shall be an additional five percent of tree canopy replacement.

5.5 Flexibility to Place a Construction Dumpster on the Street

One interviewee proposed allowing homebuilders to place a dumpster in the street, rather in the front yard, in exchange for saving a front yard tree. He explained that homebuilders in Vienna have to stage and load materials on the front yard because the Town does not allow dumpsters to be stored on the street. Even when a dumpster is placed on a driveway, trucks with materials such as drywall often have to use the front yard where a tree might be. Allowing dumpsters to be put on plywood and staged on the street is one mechanism that might help save front yard trees during the construction process. Placing a dumpster in the street also results in less mud and less sediment, preventing the silt fence from getting knocked down and allowing for easy access. While the interviewee recognized the Town's concern that a dumpster might restrict access to emergency vehicles, this is likely only an issue on certain narrow streets and cul-de-sacs. If the Town revised its requirements to allow the flexibility for a dumpster to be placed on the street in exchange for saving a tree, this could lead to trees being saved.

5.6 Density Bonus

One interviewee proposed creating a density bonus for practices like bio swales, green roofs, or leaving clusters of trees. This would provide an incentive to developers, especially of town house and larger developments, to do more green things on developed lots.

6. CHANGES TO IMPROVE TREE PLANTING AND TREE PRESERVATION

Interviewees offered several recommendations to improve replacement tree planting and tree preservation in the Town.

6.1 Update Tree Preservation and Planting Guide and Replacement Tree List

The Town was encouraged to regularly review, revise, and update its Tree Preservation and Planting Guide and approved planting list. The Guide currently contains a Landscape Plan/Tree Protection Checklist; Tree Protection Standards; New Planting Standards; information on Tree Bonds; Approved Tree List; Tree Purchase, Planting, Watering and One-Year Warranty Fees; and Tree Pruning, Removal, Stump Grinding and Fencing Fees.

Interviewees recommended updating the Guide and list to ensure that replacement trees:

1. Are highly adaptable and resilient in the urban environment (i.e., long life and not succumb easily to pests).
2. Provide a high degree of ecosystem services (e.g., storm water capture, habitat, food source for wildlife).
3. Balance native versus non-native species.
4. Are not invasive species.
5. Are species that are readily available.

Replacement trees are categorized by the canopy credit that is granted based on square footage of canopy coverage: 100, 200, or 300 square feet. Trees are categorized in the current Town approved list as large shade and evergreen trees (300 square feet of canopy coverage); medium shade and evergreen trees (200 square feet of canopy credit); and small ornamental and evergreen trees (100 square feet of canopy coverage). For instance, an oak tree counts for 300 square feet of canopy credit, a river birch counts for 200 square feet, and a serviceberry counts for 100 square feet.

Interviewees noted that the current list may contain trees that are currently unavailable for purchase (e.g., hickory, sassafras). The current list also appears to encourage use of red maples and only a few other types of trees. Limiting the species of trees planted can cause one tree species to become a monoculture that can be rapidly destroyed by a pest and result in the devastation of a large proportion of the entire tree population in an area.

Interviewees also recommended that the Town ensure that replacement trees are chosen and planted on a lot such that they are able to survive at least 20 years.

6.2 Improve Canopy Credit Allocation for Newly Planted Trees

Several interviewees recommended that Vienna update its tree credit system along the lines of what Falls Church, Arlington, and Fairfax County have adopted. Different jurisdictions give different canopy credits. For example, the square footage of canopy coverage for a white oak may range from 100 to 300 square feet, depending on the jurisdiction. Interviewees recommended basing Vienna's canopy credit on Fairfax County's, which is the most recent and written by an arborist.

The following practices were uniformly recommended to ensure that trees are planted effectively rather than just to meet the numbers:

- **Shade:** Offer additional credit if the tree will be shading the house. Developers should be aware of the benefits associated with the tree aspect. Trees on the south side of the

home are more valuable because they shade the home and reduce the air conditioning load. Falls Church offers this credit.

- **Variety:** Offer additional credit for different types of trees. This both maximizes species diversity and allows homeowners/builders flexibility in the species of tree to be planted.
- **Quality:** Offer additional credit for better quality, highly beneficial trees that have long lives and large canopy. For example, allow twice the canopy credit for white oak, elm, hickory, or black gum trees instead of the Leland cypress and red maple trees that are so popular.
- **Natives:** Offer additional credit for planting native trees. Interviewees noted that there are too many crepe myrtles and Bradford pear trees. These trees are not native and they will never be over story or canopy trees. They should not be used as street trees and should not be allowed for tree credits.
- **Large:** Promote planting of large leaf-bearing trees instead of smaller ornamentals. Large leaf-bearing trees that encourage vertical structure and leaf area are needed to get an extensive canopy. Many interviewees stressed the need to encourage people to plant larger trees on residential lots as they contribute much more to the canopy than smaller decorative trees. Larger trees also deliver more environmental benefits, by absorbing carbon dioxide and reducing ozone, carbon monoxide, and sulfur dioxide. They also control stormwater runoff and filter noise. Possible means to encourage large tree planting are free tree planting programs, professional arborists meeting with residents, and community education events. One interviewee recommended a campaign using photos of some of Vienna's iconic large trees.
- **Placement:** Encourage planting closer to the road, in the back yard, or along lot lines to provide enough room for trees, desired yard space, and updated utilities. A 10,000 square foot lot has limited space to accommodate all these requirements, so planting 6 to 8 trees to meet the 20% canopy requirement can be a challenge. The majority of interviewees would like to save a tree in the front, but that tree needs at least 10-15 feet around it undisturbed, and utilities and the driveway often get in the way. Smart and flexible tree placement is needed to account for these factors.⁷
- **Replacement Trees:** Update the list of acceptable replacement trees to remove trees that you cannot buy (e.g., hickory, sassafras).
- **Upfront Review:** Have an upfront review with the builder and the Town's Urban Arborist instead of the civil engineer.

6.3 Revise Town Code to Increase Tree Planting and Preservation

Changes can be made to the Town Code to increase tree preservation, using existing authority under state law. Other changes may require Vienna to ask the Virginia General Assembly to provide

⁷ The builders interviewed invariably noted that tree removal is extremely expensive. Removing a mature tree can cost up to several thousand dollars while planting a tree can cost around \$350. Taking down at-risk trees is expensive but cheaper and easier to do before development than after construction.

localities the authority to adopt ordinances that would provide more tools to increase tree planting and preservation.

6.3.1 Continue to Request Authority to Adopt 10-Year Canopy Replacement Requirement

As noted above, the Town Code currently requires that tree canopy be replaced on developed and redeveloped lots in single family residential zones (RS-16, RS-12.5, and RS-10) such that the minimum tree canopy on the lot will be 20% in 20 years. A small number of jurisdictions in Virginia have adopted or have authority to adopt a tree canopy replacement timeframe of 10 years.⁸ For many years, Vienna has been asking the General Assembly for authority to impose a 10-year tree canopy replacement requirement.⁹ To date, the General Assembly has not provided Vienna with the authority to adopt a 10-year tree replacement timeframe.

Interviewees were divided on the benefits of adopting an ordinance that requires minimum canopy replacement to occur over 10 years instead of the current 20 years in the Town Code.

Many interviewees, including several builders, agreed that a 10-year canopy replacement requirement would result in more replanting because of the need for more trees to meet the canopy goal.

A 10-year replacement requirement would also create more incentive for builders to preserve trees and thus result in more retention of existing trees. To this point, one interviewee stated that the biggest issue regarding trees in single family lot development is that there currently is no incentive in Vienna for builders to save trees. If Vienna could move to a 20% tree canopy requirement in 10 years rather than 20 years, then the builders might preserve more trees. Interviewees noted that builders already have to comply with a 10-year canopy requirement in Falls Church and Fairfax County, so a 10-year tree canopy requirement for the Town of Vienna would not hurt the building community.

Similarly, another interviewee said that the current 20% tree canopy in 20 years requirement incentivizes arborists to remove trees because they have to project whether a tree is likely to survive 20 years. The Town's Urban Arborist may prefer that developers remove potentially compromised trees now and plant new trees as opposed to saving them and seeing what happens in 20-years. A

8 City of Falls Church has a 20% in 10 years tree canopy requirement in a legacy law that predated the state's adoption of Virginia Code Section 15.2-961 in 1990. Similarly, Prince William County established a 10-year tree canopy replacement requirement for all land development requiring site plan review and approval, based on a legacy law adopted prior to 1990. Sec. 32-250.40, 41, and 42. The City of Fairfax Zoning Ordinance contains a 10-year tree canopy replacement requirement. Chapter 110, Section 4.5.6. Section 15.2-961 expressly permits City of Williamsburg only to adopt the minimum tree canopy requirements outlined at 10 years instead of 20 years. Interestingly, Williamsburg has not made use of this authority. Fairfax County adopted its tree ordinance under Virginia Code Section 15.2-961.1 and requires developers to preserve or replace 30% of pre-existing tree canopy in 10 years.

9 The most recent request was through a bill introduced by Delegate Mark Keam in the 2022 Virginia General Assembly legislative session. HB 706 (Trees during development process: conservation and replacement) would change the time for minimum canopy coverage for all localities from 20 years to 10 years and remove special provisions that had allowed for 10 years for the City of Williamsburg and local ordinances adopted pursuant to Section 15.2-961 prior to July 1, 1990. The bill would also provide an additional one-quarter times the canopy area credit for preservation of trees that are taller than 30 feet, thereby increasing the canopy area credit from one and one-quarter to one and one-half. HB 706 bill was left in committee.

shorter 10-year canopy timeframe might change this calculus and make arborists more willing to say that an existing tree might last 10 years and give credit for saving that tree.

On the other hand, interviewees recognized that the additional tree planting needed to meet a 10-year requirement is challenging on small lots. It can be hard to maintain certain distances when planting trees on a smaller lot and it is unclear if all the trees will survive to reach the 10-year mark. It was repeatedly noted that more than half of Vienna is ¼ acre lots, so it would be hard to find room on the lots to place trees and get proper spacing for the trees and for other requirements (house, driveway, grading, and stormwater management) if the Town moved to a 10-year requirement. Trees that are planted too closely together might end up crowded and not grow to their full potential or not survive at all. Despite these warnings, an analysis by Falls Church of the City's 10-year requirements indicates that the requirement was working.

Interviewees warned of other potential problems. Some homeowners do not want so many trees and may remove them after move-in and/or after a tree bond is returned (for those jurisdictions requiring such a bond). One interviewee stressed the need for common sense when adopting any requirement. He provided an example of a new homeowner who wanted to save an 8-foot tall hedge around his Fairfax County property. The County afforded no credit toward the canopy requirement for the hedge and further required planting of 23 new trees on the ¼-acre lot. The homeowner did not want so many new trees and indicated that they would just cut down the new trees to create more yard space. Another interviewee acknowledged that a 10-year requirement might be helpful in the Town of Vienna but warned that some builders will fight it tooth and nail.

Some interviewees recommended focusing on the quality of the trees rather than the quantity. One interviewee noted that whether you have a 10-year or a 20-year canopy requirement, it does not get to the issue of achieving a mature canopy. The mature canopy should be the goal, with recognition of the limits to what can be attained. For example, a 10,000 square foot lot might only be able to achieve a 50% canopy. Looking at long-term canopy replacement is hard. Canopy loss is quick, while it may take 100 years to replace or create a mature tree canopy.

Multiple factors must be weighed when considering whether to push for authority to adopt a 10-year tree canopy replacement requirement. A 10-year canopy goal leads to preserving and planting more trees, but there must be room for them. On smaller lots, a 20-year requirement might allow more space for the trees to grow and survive. On the other hand, the more trees that are planted, the more likely at least some will survive. If the 20-year requirement results in fewer trees being planted and they do not survive, you are left with nothing.

It should be noted that Vienna's most recent Comprehensive Plan, adopted in 2015, states: "The Town should consider codifying incentives for developers to preserve existing trees since, under the current ordinance, developers and landowners are allowed to clear mature trees that offer much more value than younger, newer trees. A Code amendment to require 20% tree canopy within 10 years, similar other local jurisdictions, should also be studied."¹⁰

6.3.2 Incorporate Additional Tree Preservation Provisions Authorized Under Virginia Code Section 15.2-961.1

As noted above, Virginia State Code authorizes adoption of local tree canopy replacement ordinances under two sections.

Virginia Code Section 15.2-961, on which Vienna's current ordinance is based, allows jurisdictions to adopt requirements for tree canopy replacement only; it does not authorize adoption of requirements to preserve canopy. This means decisions to preserve trees are at the discretion of the

¹⁰ <https://www.viennava.gov/home/showpublisheddocument/1358/637433006019870000>, page 144.

developer. Ordinances under this provision have only been adopted by about 18 communities in Virginia, mostly in Northern Virginia and the Hampton Roads area.

Virginia Code Section 15.2-961.1, on which Fairfax County's current ordinance is based, authorizes adoption of local tree ordinances that emphasize tree preservation where it is feasible. Ordinances adopted under Section 15.2-961.1 must require site plans to provide "for the preservation or replacement" of trees on subdivision or development sites to meet minimum 20-year tree canopy requirements, which range from 10% to 30% for residential zones depending on the number of units per acre. Importantly, ordinances adopted under Section 15.2-961.1 "shall first emphasize the preservation of existing tree canopy where that canopy meets local standards for health and structural condition, and where it is feasible to do so within the framework of design standards and densities allowed by the local zoning and other development ordinances." Where it is not feasible to preserve existing tree canopy, the ordinance shall then provide for the planting of new trees to meet tree canopy percentage requirements.

Section 15.2-961.1.C sets minimum tree canopy requirements that are five percent greater than the canopy requirements in Section 15.2-961 for certain residential zones. The minimum canopy requirement is 25 percent tree canopy for a residential site zoned more than two but not more than four units per acre and 30 percent tree canopy for a residential site zoned two or fewer units per acre. Section 15.2-961.1.I allows canopy credit bonuses to be given for certain categories of trees and to meet certain ecological objectives (e.g., native tree species that provide habitat, trees planted to absorb air pollutants or reduce greenhouse gas emissions, etc.). Applied to a site, a developer who plants enough mid-Atlantic native tree species to cover one acre will be given credit for one and a half acres.

To determine the amount of tree preservation required, Section 15.2-961.1.D requires calculation of a minimum "tree preservation target" which is equal to the percentage of the site covered by tree canopy at the time of plan submission. This target is essentially a percentage within a percentage and equates to the minimum portion of the applicable tree canopy requirement that must be met through tree preservation. A developer of a lot with a 50% tree canopy to start that is subject to a 20% minimum tree canopy requirement would thus need to set a target of meeting 50% of that applicable 20% canopy requirement through tree preservation.

Deviations from the tree preservation target are allowed under Section 15.2-961.1.E if: meeting the tree preservation target would prevent development of uses and densities otherwise allowed by the local zoning ordinance; the pre-development condition of the vegetation does not meet local standards for health and structural condition; or the trees are not expected to survive construction activities due to impact on health and structural condition.

Section 15.2-961.1.G further requires localities to establish a tree canopy bank or fund for developers who are unable to meet any portion of their minimum tree canopy requirements onsite due to unreasonable hardship or impracticality. A developer may instead meet any portion of its minimum tree canopy requirements through off-site tree banking or payment into a tree preservation and planting fund in the following circumstances: meeting the canopy requirements would cause irresolvable conflicts with other local site development requirements, standards, or comprehensive planning goals; sites or portions of sites lack sufficient space for future tree growth; planting spaces will not provide adequate space for healthy root development; trees will cause unavoidable conflicts with underground or overhead utilities; or trees are likely to cause damage to public infrastructure.

Fairfax County has established 10-year minimum tree canopy requirements that developers must initially try to meet through tree preservation, based on calculated tree preservation targets as established in the state statute.¹¹ Fairfax County has also adopted provisions allowing deviations from

¹¹ Fairfax County Code Sections 122-2-1, 122-2-2, and 122-2-3.

the tree preservation target¹² and has established a tree fund for developers who can demonstrate that they are unable to meet their 10-year minimum tree canopy requirements through preservation or planting on-site.¹³ Interviewees noted that Fairfax County Code allows for “tree banking” but the high cost of land does not lend itself to using this feature. Instead, the Fairfax County Board of Supervisors authorized the Tree Preservation and Planting Fund (TPPF) in 2005 to allow developers to contribute to a county-wide tree planting program through the use of cash proffers obtained during the land development process and for reparation for violations of tree preservation commitments. Builders who adequately demonstrate that applicable minimum tree canopy requirements cannot be met through preservation or onsite planting can be granted a waiver and allowed to contribute to the Tree Preservation and Planting Fund. According to Fairfax County staff, tree planting waivers are rare. Fairfax County granted only 41 tree planting waivers during the 10 years prior to September 2022. This is an extremely small number of exceptions to meeting on-site canopy requirements that are granted, given that Fairfax County reviews more than 1000 residential site plans per year.¹⁴ For comparison, about 100 residential site plans are reviewed each year in Vienna.

Fairfax County’s Tree Preservation and Planting Fund is used to support the preservation and management of existing forest tracts and for the planting of new trees by governmental and non-profit entities on both public properties and commonly owned open space.¹⁵ The Fairfax County Board of Supervisors amended the Fund in 2016 to allow staff to administratively distribute funds for tree planting without Board approval on each individual project. Organizations that may receive funding from the Fund include Fairfax County agencies, regional governmental agencies, and 501(c)(3) non-profit organizations. Private property owners may not apply directly for funds to plant trees on privately-owned parcels and lots but may receive trees and planting supplies for use on private property if they are made available free of charge through a governmental agency or 501(c)3 non-profit organization to the public at large as part of a community-wide educational program or an effort to increase community tree cover levels to provide specific environmental benefits to the community at large.¹⁶

Some interviewees commented that ordinances adopted pursuant to Section 15.2-961.1 are best suited to jurisdictions where there are larger residential lots, because applying it in areas with smaller lots could lead to requests for exceptions. For this reason, Arlington chose to base its tree canopy requirements on Section 15.2-961. Interviewees noted that there is an administrative aspect to consider: staff are needed to implement the ordinance. Interviewees also recommended that localities be sure to set fees at levels high enough to ensure so that it is not cheaper for a developer to pay into a fund rather than preserve or plant trees on-site.

On the other hand, many interviewees noted that Fairfax County provides a successful example of a tree canopy ordinance based on Section 15.2-961.1. Fairfax County has also successfully developed a system for evaluating deviation and waiver requests, as well as established a tree planting and preservation fund to meet exemption needs. It is thus feasible and recommended that Vienna also adopt a tree conservation ordinance pursuant to Section 15.2-961.1. Vienna could

¹² Fairfax County Code Section 122-2-3; Public Facilities Manual Section 12-0308. Fairfax County Land Development Services issued a Technical Bulletin requiring developers to justify in writing any decision to plant instead of preserve trees by providing a site-specific narrative explaining why a deviation from the tree preservation target should be considered.

<https://www.fairfaxcounty.gov/landdevelopment/sites/landdevelopment/files/assets/documents/21-01-tech-bulletin-tree-preservation-submission-deviations.pdf>

¹³ Fairfax County Code Section 122-2-5; Public Facilities Manual Section 12-0313.

¹⁴ Email correspondence from Fairfax County Department of Public Works and Environmental Services.

¹⁵ <https://www.fairfaxcounty.gov/publicworks/trees/tree-preservation-and-planting-fund>.

¹⁶ <https://www.fairfaxcounty.gov/publicworks/trees/tree-preservation-and-planting-fund>

establish a tree planting fund and enact other provisions similar to those established for Fairfax County.

6.3.3 Establish a Heritage Tree Ordinance or Program

Virginia Code Section 10.1-1127.1 authorizes local governments to enact a tree conservation ordinance that contains “reasonable provisions” to designate and regulate the preservation and removal of heritage, specimen, memorial and street trees. Such trees are defined in the State Code as follows:

- Heritage defined as having notable historic or cultural interest
- Memorial defined as a special commemorating memorial
- Specimen defined as notable due to outstanding size and quality for its species
- Street defined as growing in the street right-of-way or on private property as authorized by the owner and placed or planted there by the local government

Ordinances must consider planned land use by the property owner and may include reasonable fees for administration and enforcement. Property owners must be compensated by fee or other consideration if application of the ordinance results in any taking of private property for public purpose or use. Civil penalties up to \$2,500 per violation are authorized for violations of local heritage tree ordinances.

Only two jurisdictions — Arlington and Fairfax County — have adopted heritage tree ordinances, in part because of the State Code requirement to compensate landowners for any loss of development value and in part because implementation is difficult. Interviewees noted that the ordinances are not intended to address development but rather to protect high value “champion” trees. Only individual trees can be designated, not an area of trees. In Arlington, heritage tree designations are recorded with the deed and the County avoids designating trees on private property.¹⁷ Fairfax County requires a conservation easement for the entire critical root zone (adjacent property owner approval is needed if the critical root zone extends off-site). Most people do not want conservation easements in perpetuity and because of this, no trees are identified under the program in Fairfax County.

Falls Church has a provision in its Code allowing the City Council to designate historic or specimen trees. This Specimen Tree Program allows people to nominate a tree for Specimen Tree designation based on size, quality, species, age, or historical or memorial significance. The Urban Forestry Commission decides if to recommend designation by the City Council. Tree owners are responsible for tree care and have no additional tax burden. However, a permit is required before removal or destruction of a specimen tree, with a minimal penalty for noncompliance.

Arlington’s Notable Tree Program began in 1987 and allows people to nominate local trees for Notable Tree designation based on size, age, species or historical or community significance. Arlington’s Forestry and Natural Resources Commission (formerly the Urban Forestry Commission) evaluates applications using scoring criteria based on height, trunk diameter and canopy spread. A certificate or plaque is placed next to a designated Notable Tree and the tree is included in the Notable Trees registry. The program does not provide legal protection for the trees but instead raises

¹⁷ Under Arlington’s Specimen and Heritage Tree Program, people can designate trees on their own property for protection. They have to record the tree on the deed in order to protect it until it is deemed high-risk. The penalty for destroying a protected tree is a maximum of \$2500. Only 14 trees on private property are now designated under the program. Arlington County does not want to designate trees on private property, because it would be a taking that would require the County to compensate owners.

awareness and uses social pressure to preserve trees. Since its inception, more than 365 trees have been recognized under the Arlington program.¹⁸

A benefit of a heritage tree ordinance is its protection of street trees through civil penalties. Fairfax County's heritage tree ordinance provides that any person or entity that violates its ordinance "by causing, contributing to, or permitting injury to or removal or destruction of" a designated tree – which includes a heritage, memorial, specimen, or *street tree* – shall be subject to a civil penalty of \$2,500 for each violation. Currently, when a street tree in Vienna is cut down without permission, the only consequence is that the violator is asked to plant a new tree. A civil penalty would likely help deter unauthorized removal of street trees. Additionally, a civil penalty can be beneficial and more straightforward in enforcing illegal tree removals as compared to criminal prosecution.¹⁹

Although adopting a heritage tree ordinance in Vienna could bring a potential administrative cost, there is a significant benefit in terms of allowing for stronger civil penalties for removal or destruction of street trees. Adoption of a heritage tree ordinance could help protect Vienna's street trees. The Town could also consider a heritage or specimen tree program similar to those in Arlington and Falls Church. These programs are intended to use public education and outreach to preserve trees.

6.4 Monitor Status of Virginia State Legislative Changes

Bills have been introduced in the Virginia General Assembly over the past several years that would expand local authority to adopt stricter tree ordinances. Several interviewees recommended the Town of Vienna monitor the status of these bills and voice support for those that would authorize the Town to adopt a stricter framework for tree preservation. In addition to bills like HB 706 that would allow adoption of a 10-year minimum tree canopy replacement ordinance, the following legislation could increase Vienna's authority to preserve trees.

6.4.1 Authority to Adopt Tree Conservation Ordinance and Increase Tree Canopy Replacement Requirements (HB 2042/SB 1393)

Proposed legislation would expand what is currently available under Virginia Code Section 15.2-961.1 only in Planning District 8 (which includes Vienna) to the rest of the state and would remove the minimum tree canopy percentage caps, which could help Vienna. SB 1393 (Marsden) and HB 2042 (Guy) would allow communities to adopt higher general tree canopy replacement requirements and make use of trees to meet storm water management requirements.

The legislation also directs the Secretary of Natural Resources and the Secretary of Agriculture and Forestry to convene a stakeholder work group to provide recommendations to state and local governments about policies that encourage the conservation of mature trees and tree cover on sites being developed, increase tree canopy cover in communities, and encourage the planting of trees. It was intended that this stakeholder group reach out to towns like Vienna for input.

¹⁸ <https://www.arlingtonva.us/files/sharedassets/public/environment/documents/notable-tree-list-through-2022-common-name.pdf>

¹⁹ See the Staff Report, April 9, 2019, accompanying the proposed amendment to Chapter 122 (Tree Conservation Ordinance) of the Fairfax County Code. <https://www.fairfaxcounty.gov/landdevelopment/sites/landdevelopment/files/assets/documents/pdf/pfm/staff-report-civil-penalties.pdf> ("Under the Tree Conservation Ordinance, violations of the Ordinance are deemed misdemeanors, punishable by a fine only after conviction. However, criminal prosecution discourages enforcement because of the long-term impact of a criminal conviction on a person's record and the need, in some cases, to rely on the Commonwealth's Attorney to prosecute violations.")

The legislation was signed by the Governor in 2021, but the local ordinance provisions in the legislation will not become effective unless reenacted by the 2022 Session of the General Assembly. The stakeholder work group remained effective in due course and was due to deliver its report no later than October 1, 2021.

Several interviewees recommended that the Town of Vienna write a letter in support of the legislation. The legislation is supported by the Virginia Conservation and Network, Fairfax County Board of Supervisor, and environmental groups, but opposed by others including the Homebuilders Association, Solar Lobby, and Virginia Association for Commercial Real Estate.

The stakeholder working group issued a draft report on October 1, 2021, which covered a wide range of topics.²⁰ With regard to tree canopy, the working group outlined a new two-part statute to be proposed if, and only if, the conservation community and the development community are able to come to an agreement on expanding a locality's ability to increase the tree canopy limits currently set out in Virginia Code Sections 15.2-961 and 15.2-961.1.

Proposed Part 1 would grant all localities in Virginia the authority to enact a tree canopy ordinance that requires planting and replacement of trees during the development process using the canopy percentages established in Virginia Code Section 15.2-961. All existing ordinances would be grandfathered in. This would likely not impact the Town of Vienna.

Proposed Part 2 would give all localities in Virginia the authority to enact a tree canopy ordinance that requires preservation of trees during the development process using the canopy percentages established in Virginia Code Section 15.2-961.1 and subject to certain conditions. It is unclear if the conditions required by the development community in exchange for agreeing to this new legislation, if adopted, would impact the Town of Vienna's already existing ability to adopt tree preservation requirements and a higher tree canopy percentage under Section 15.2-961.1 by virtue of being in Planning District 8.

6.4.2 DEQ Adoption of Tree Canopy as Approved BMP (HB 520)

Legislation to authorize the use of trees for stormwater management (HB 520/Bulova) was enacted by the Virginia General Assembly and signed by the Governor in 2020.²¹ This legislation directs the Department of Environmental Quality (DEQ) to convene a stakeholder advisory group to study the planting or preservation of trees as an urban land cover type and as a stormwater best management practice (BMP). The legislation requires DEQ to publish a report by November 1, 2020, with a recommendation on whether tree planting or preservation can be deemed a creditable land type so that trees on individual parcels can be given stormwater credit and added to the list of state-approved BMPs. Several interviewees noted that this will be a significant change for developers and could help prevent lot clearing in towns like Vienna.

The DEQ issued its report in December 2021 entitled "Stakeholder Advisory Group: Study of Tree Canopy as a Land Cover Type and Stormwater Best Management Practice."²² The report was delayed due to the COVID-19 pandemic. The report recommends that DEQ develop a BMP called "New Trees." The BMP would be based on phosphorus reduction credit and on a percentage-basis tree canopy, because a new BMP could be very beneficial in urban and/or ultra-urban development scenarios. The report recommended that DEQ develop design specifications for the new BMP and publish design specifications and pollutant removal efficiencies on the Virginia Stormwater BMP

²⁰ <https://www.fairfaxcounty.gov/boardofsupervisors/sites/boardofsupervisors/files/assets/meeting-materials/2021/oct26-legislative-draft-tree-conservation-work-group-legislative-report.pdf>

²¹ The legislation is a 2020 Uncodified Act.
<https://law.lis.virginia.gov/uncodifiedactssub/2020/session1/chapter405/>

²² <https://www.deq.virginia.gov/home/showpublisheddocument/13086/637775278543000000>

Clearinghouse, a website established to share specifications, standards, and guidance for stormwater BMPs.²³

6.4.3 Tree Preservation and Planting in Chesapeake Bay Preservation Areas (HB 504)

Legislation aimed at increasing tree preservation and planting in Chesapeake Bay Preservation Areas (HB 504/Hope) was enacted by the General Assembly and signed by the Governor in 2020; it is now codified at Virginia Code Section 62.1-44.15:72.²⁴ The legislation added the preservation of mature trees or planting of trees to the list of factors the State Water Control Board must consider when it develops and amends the criteria local governments use when they regulate development in Chesapeake Bay Preservation Areas. The legislation also requires the State Water Control Board to develop regulations to implement its provisions.

6.5 Evaluate Town Practices Using Audit Tool

The Green Infrastructure Center, Inc. (GIC) helps local governments, communities, regional planning organizations, land trusts and developers evaluate their green infrastructure assets and make plans to conserve them. GIC provides tools – economic analysis, mapping, and land use planning and asset assessment – for communities to protect and restore their natural assets. GIC developed a Trees and Stormwater Code Audit tool to determine how well ordinances and practices can reduce impervious surfaces and assess whether a community is using effective tools to manage its urban forest. The audit tool considers a variety of factors, including trees in parking lots, planting specifications, and the existence of an inventory for trees. It is weighted and recognizes for improvement. It also identifies policies that might prompt a town to pave excessively (e.g., parking standards, excessive sidewalk width, planting trees in one area while massively clearing trees in another).²⁵ Vienna could make use of the tools offered by GIC to help with Vienna's green infrastructure planning.

6.6 Inspect to Track if Tree Canopy Replacement is Effective

Interviewees noted that although Vienna and other communities have adopted tree protection ordinances that are based on a tree canopy projection in 20 years, no follow-up inspections occur 20 years later. The Town's Urban Arborist inspects properties before a certificate of occupancy is issued but after that, homeowners have the right to remove any and all trees planted on the lot to meet the ordinance. Additionally, there is no tracking to determine whether the 20% canopy requirement is effective. A plan to review and track required tree plantings over time should be developed to determine the effectiveness of the ordinances.

6.7 Improve Enforcement of Tree Laws in the Town

Several interviewees recommended that Vienna ensure that any tree-related ordinances are enforced, noting that a tree law is useless if it is not enforced. They commented that because Virginia law allows only a small fine for tree canopy violations, developers often think the fine for taking down trees is part of the cost of doing business. This echoes a concern raised in the draft stakeholder working group report written to meet the requirements in HB 2042/SB 1393 (see section 6.4.1 above) that penalties for violations must be meaningful or else they will be nothing more than the "cost of doing business." The draft report recognized that some localities do not consistently or reliably respond to or impose penalties for violations of tree conservation, preservation, or canopy ordinance

²³ <https://swbmp.vwrrc.vt.edu/>

²⁴ <https://lis.virginia.gov/cgi-bin/legp604.exe?201+sum+HB504;>
<https://law.lis.virginia.gov/vacode/62.1-44.15:72/>

²⁵ <http://www.gicinc.org/resourcesonlinelit.htm>

requirements. The draft report also stated that without proper enforcement, the requirements are not effective and tree canopy goals are not achieved.

The Virginia Code provides for the following civil penalties for tree-related violations.

- Virginia Code Section 15.2-961.1 provides that the penalties applicable to violations of local zoning ordinances are to be applied for violations of tree ordinances. Section 15.2-2286 authorizes localities to impose penalties for any violation of a zoning ordinance and states that any such violations shall be a misdemeanor punishable by a fine of not more than \$1,000. Penalties for violations of local tree ordinances adopted under Virginia Code Section 15.2-961 and 15.2-961.1 are thus the same as penalties applicable to violations of the locality's zoning ordinances.
- Virginia Code Section 10.1-1127.1 provides that violations of tree conservation ordinances regulating the preservation and removal of heritage, specimen, memorial, and street trees (i.e., heritage tree ordinances) shall be punishable by civil penalties not to exceed \$2,500 for each violation. The draft stakeholder working group report noted that this provision only covers violations relating to designated specimen trees and thus would not apply to a tree canopy ordinance except where specimen trees result in extra credits. The draft report also commented that the fine ceiling of \$2,500 is not enough to disincentivize removal of a specimen tree. Despite raising these concerns, the draft report did not recommend any changes to the Virginia Code.

The Virginia Code also includes one criminal provision relating to tree violations.

- Virginia Code Section 18.2-140 makes it "unlawful for any person to pick, pull, pull up, tear, tear up, dig, dig up, cut, break, injure, burn or destroy, in whole or in part, any tree, shrub, vine, plant, flower or turf found, growing or being upon the land of another ... or upon any land reserved, set aside or maintained as a public park by a park authority...without having previously obtained permission in writing of such other or his agent..." Violations of this provision are designated a Class 3 criminal misdemeanor punishable by a fine of up to \$500.

Consistent with Virginia Code Section 15.2-2286, Vienna Town Code Section 18-281 provides that any person who violates any of the provisions in Chapter 18 (Zoning) shall be guilty of a misdemeanor, punishable by a minimum fine of \$10 and a maximum fine of \$1,000. Vienna Town Code further specifically provides in Section 18-252 that violations of that section's site plan provisions (which include the tree canopy requirements) are a Class 3 misdemeanor punishable by fine of up to \$250 per day, with each day of continuing violation constituting a separate violation.

Interviewees noted that consequences for tree violations in Vienna are minimal and appear to only be a requirement for replanting, rather than any imposition of fines. If a developer takes down a tree that was supposed to be saved, the only consequence is that the builder would need to replant a new tree that is suitable for the Town's Urban Arborist. If someone illegally cuts Town trees on Town property, the consequence is a request to replant new trees.

6.8 Strengthen Site Review Process

Interviewees described the process for submitting, reviewing, and approving site plans for redevelopments in Vienna. Arborists are brought in by both the developer and the Town to meet tree canopy replacement requirements, but the focus of the developer is rarely on trees. Developers have their arborists survey or "inventory" trees on the lot and write a tree plan describing how they will preserve or plant to reach 20 percent canopy coverage in 20 years. Developers are required to survey

every tree 4" or greater in the Town of Vienna (compared to 12" or greater in Fairfax County) that is within 10 feet of the clearing limit on the inside and 25 feet of the clearing limit on the outside. The developer's arborist completes these surveys and plans as part of the first submission to the Town. Before approval, the Town's Urban Arborist reviews the plan and the site to assess whether the trees that are proposed to meet the canopy requirements are viable in 20 years and calculates if the minimum canopy requirement will be met.²⁶ The Town's Urban Arborist raises any concerns and makes recommendations but cannot require builders to do anything except meet the canopy requirement. All site plans are public record.

Interviewees made several recommendations to strengthen the site review process.

- **Conduct site plan reviews earlier on:** Many interviewees noted that arborists are currently brought into the development process too late. They recommended that developers have an upfront grading plan review/meeting with the arborist and that arborists review site plans much earlier. Arborists should be brought on to look at trees on a site as the preliminary site plan is being developed, rather than after an engineering/grading plan has been written and approved. That way the arborist can review the site plan for tree preservation early on and can recommend measures to save trees and protect the critical root zone (e.g., root pruning, staying outside the drip line, putting down wood chips to protect trees during the building process, etc.) before too much money has been spent on other items. Developers and engineers are less inclined to make changes to protect trees if a plan is submitted for review after \$20,000 to \$25,000 has been spent. This is particularly true because trees are typically one of the last things considered in a development project. One interviewee highlighted the Evans Farms development in McLean as a tree success story because of this change in order of site plan review. The trees were inventoried before a plan was prepared at this project, which allowed the developer to save about 50% of the existing trees and to move and save about 10% to 15% more.
- **Site plans must be reviewed by a certified arborist:** A tree plan submitted in Vienna must be approved by a licensed ISA-certified arborist or a licensed landscape engineer or architect. Interviewees noted that arborists and landscape architects are different experts altogether and recommended that the ordinance be changed to specify that all tree plans must be submitted by a certified arborist and not a landscape architect. Interviewees commented that arborists are better able to critique site plans and tree protection zones, and that sometimes there is a conflict of interest if the landscape architects creating plans are employed by engineers/developers.
- **Ensure planning/site development training for arborists:** Interviewees noted that many arborists are not trained in planning/site development but rather in evaluating individual trees. Some communities have put their arborists through training to ensure that the broader skills necessary for site plan review are attained. Site plans have changed significantly in recent years and are now much longer and more detailed. Site plans that used to be 6-8 pages long are now 80 pages long and more complicated.
- **Broaden public participation in the site plan review:** Some interviewees recommended holding a public meeting or giving a local tree commission a role in site plan review,

²⁶ Arborists follow ANSI standards when reviewing site plans. Arborists rate trees both for suitability for preservation and for chances for survival. Trees are rated based on criteria including desirability of species, condition of the tree, and other considerations (e.g., is it impacting utilities/sidewalk?).

particularly if the development is over a certain size. They recommended creating a mechanism for more communication between the builder and the community, although by right development in Virginia makes this hard. For example, the Falls Church Urban Forestry Commission has site plan review rights and works closely with planning staff. This allows for earlier discussion with developers about potential problems and more willingness to try to save trees.

- **Consider outsourcing site plan review:** Some interviewees proposed that Vienna work with an outside arborist to review development plans or hire an individual in-house with skills particularly focused on development plan review. Alternatively, the Town could use a contract arborist to provide training in site plan review. Interviewees noted that finding someone with the right skill set could be challenging. Moreover, it is hard to outsource the review of site plans because the Town must eventually evaluate and approve the outsourced review.
- **Improve communication between arborists and engineers:** Another problem noted is the lack of communication between engineers in the Department of Public Works and arborists in the Department of Parks and Recreation. Interviewees recommended moving the arborists from Parks and Recreation to Public Works to ensure that arborists are in the same department that is doing site plan reviews. This allows for better communication and a better relationship. The City of Harrisonburg is an example of a community that has made that change and improved their site plan review process.
- **Consider collateral damage on neighboring lots:** Interviewees noted that the construction process frequently creates collateral damage to trees on adjacent lots. Construction can run right up to the property line and damage tree roots on the other side, leading to tree damage and loss on other people's lots. The Town should evaluate how to make developers responsible for ensuring the health of trees on adjacent properties, as well as how to give the Town's Urban Arborist some control over trees lost on properties next to those being developed.

6.9 Recognize Link Between Trees and Stormwater Management

Many interviewees commented on the need to retain and plant trees to improve stormwater management. Trees are not yet a recognized stormwater best management practice (BMP) in the state of Virginia, although that may change in the near future (see section 6.4.2 above).²⁷ However, urban tree canopy is a recognized credited BMP for stormwater management under the Chesapeake

²⁷ Popular BMPs include infiltration trenches, rain gardens, soil compost amendment, and planter boxes, which are rain gardens built inside a concrete space.

Bay Program, which was adopted in Virginia.²⁸ Under the Chesapeake Bay Program, BMP credits can be assigned for trees and jurisdictions can apply these credits toward their Bay Program goals.²⁹

While there was consensus that trees absorb water and pollutants, interviewees differed in their opinions on how to use trees for stormwater management.

One interviewee warned that trees on residential lots are not effective at capturing initial stormwater flow unless there are several trees that are situated together in a wooded area. The interviewee commented that one tree on a lawn, or even three trees in a yard that slopes to the road, has no impact on stormwater; only conserved open space in a wooded areas is effective because real undergrowth around the trees is needed to make trees an effective stormwater management tool.

Other interviewees disagreed, stating that in small storms, trees are very effective at capturing the first half inch of storm water on light rain days. The amount depends on what is under the tree, with mulch being better than grass and both being better than sidewalk. One interviewee noted that under the Chesapeake Bay Program, a tree over pavement should capture 10% of storm water; trees over turf should capture 30%; and trees over mulch bed should capture 80%. Another interviewee highlighted University of Maryland research showing that urban trees are a singular weapon in stormwater management. The study found that individually planted trees capture, store and release stormwater back into the atmosphere—a process called "transpiration"—at a rate three times that of trees in a forest.³⁰

Interviewees commented that builders see a disconnect between stormwater management and saving trees, and that the stormwater requirements do have an impact on tree preservation. Stormwater management requires builders to direct water to a certain area, but the grading required for that affects where trees can be put. Trees are often removed on sites that need to be elevated with additional soil for stormwater management to work. Healthy trees may be outside the impact zone of the house but are removed anyway to make room for a stormwater management system. One interviewee commented that trees closest to the perimeter of the house are automatically not going to survive construction, but stormwater management systems tend to be within that same perimeter, so

²⁸ The Chesapeake Bay Program is a regional partnership among the seven watershed jurisdictions aimed at reducing pollution and restoring the health of the Chesapeake Bay. The Chesapeake Bay Watershed Agreement is the most recent agreement signed by the jurisdictions (signed 2014, amended 2020) and sets out 10 goals and 31 outcomes to restore the Bay, its tributaries, and surrounding lands. The jurisdictions work to meet these goals, which include an EPA-established federal Total Maximum Daily Load (TMDL) that limits nitrogen, phosphorus, and sediment entering the Bay, through individual Watershed Implementation Plans (WIPs) and two-year milestones to track and assess their progress. The jurisdictions are currently in Phase III of the WIPs, with actions to implement between 2019 and 2025. The Chesapeake Bay Watershed Agreement includes a Tree Canopy Outcome intended to continually increase urban tree canopy capacity to improve air quality, water quality, and habitat throughout the watershed, and to expand urban tree canopy by 2,400 acres by 2025.

²⁹ One interviewee described working on a project to map and measure land cover in the Chesapeake Bay management area: 64,000 square miles at square meter accuracy. Each jurisdiction has a certain amount of land cover (agriculture, forest, etc.) with different loading rates under the TMDL, which are adjusted as land and pollution levels change over time. If a jurisdiction goes from 40% to 30% tree canopy cover, for instance, it will have to submit a plan to EPA to come up with TMDL compliance. For this reason, the interviewee recommended that communities protect trees now to avoid being caught by surprise. Jurisdictions need to take action now to protect forest land, increase tree canopy, and reduce pollutants so they so not eventually receive TMDL-related penalties.

³⁰ <https://phys.org/news/2021-11-urban-trees-singular-weapon-stormwater.html>

saving trees outside that perimeter is feasible. Another interviewee noted that front yard placement of equipment and machinery for demolition and construction makes it hard to preserve trees in a front yard unless they are in the corners. It is easier to keep trees in the back yard, since typically only those trees around the construction area need to be removed. If they are at least 20 to 30 feet from the rear of the house, they should not need to be removed.

Interviewees urged Vienna to encourage people to plant trees (or remove fewer trees) to control stormwater runoff. They noted that it is much cheaper to leave trees or plant trees than spend thousands of dollars to construct storm water management infrastructure. Some specific recommendations were made.

- **Give proper credit for the stormwater benefit of preserving trees on a site, especially large mature trees that absorb a lot of water.** If trees do become a BMP for a stormwater management tool, interviewees urged communication between the Town's Urban Arborist, the Department of Public Works, and developer engineers about the benefit of the tree with respect to stormwater. Builders would need a chart outlining how to calculate the stormwater management value based on the specific type, health, and size of a tree. Builders want to ensure that a preserved tree would fully offset the stormwater requirement. For example, if saving a tree allows for an infiltration trench to be smaller (but not eliminated), that might not be enough to meet the stormwater requirements. Case studies have been done and tools have been developed to help determine the benefit of tree canopy and individual trees on stormwater management.³¹ Interviewees recommended that Vienna review and monitor continuing research in this area.
- **Offer flexibility to builders to use a range of stormwater management tools, similar to what Fairfax County does and what DEQ allows.** Interviewees commented that the entire toolbox for stormwater management is not available to homebuilders in Vienna. For example, Vienna should consistently allow use of soil amendment, which is a low-cost stormwater management protocol where supplemental material is added to a portion of the site such that trenches or planter boxes are not needed. Similarly, Vienna should not limit builders to one of the three BMP options that can get to 100% stormwater management on their own, but rather allow builders to take 4 or 5 or 6 together to get to 100%.³² The repeated message was that if builders had more latitude for stormwater management, they might be able to save more trees.
- **Consider adopting a stormwater utility fee and credit system, similar to Arlington and City of Harrisonburg.** Fees and credits are based on the amount of impervious surface

³¹ For example, "Trees to Offset Stormwater: A Case Study of 12 Communities" by the Green Infrastructure Center, <http://www.gicinc.org/PDFs/TreesStormwaterSummaryReportJune2019.pdf>; "Urban Tree Canopy of Boynton Beach, FL: An Analysis of Forest Cover and Benefits" by the Green Infrastructure Center. <http://www.gicinc.org/PDFs/BoyntonBeachCanopy.pdf>

³² Builders currently have three main options for stormwater management: 1) infiltration trenches (if the soil allows for it), 2) bio-retention filters, or 3) planter boxes. The preference is in that order: infiltration trenches are the best because they are the smallest, work well, and require less maintenance; bio-retention filters are the next best; planter boxes are the least preferable because they are more expensive and dangerous to maintain since their proximity to the house increases the risk of flooding. Sometimes planter boxes are the only option because of the poor soil quality in Town.

on a lot (i.e., house, driveway, paved patios, sheds, etc.), and a charge for storm water management is levied (e.g., per 500 square feet). Credits can be issued against the stormwater utility fee to a property owner for keeping or planting a tree on the property. For example, a property owner with 2,000 square feet of impervious surface might be charged a specified amount per 500 square feet. One tree credit might be worth 500 square feet, thus planting one tree would reduce the storm water utility fee by 25%.

The City of Harrisonburg charges a stormwater utility fee based on the amount of impervious surface of a property but offers credits for reductions in runoff as follows:

- 10% credit for new trees or existing tree canopy. Minimum tree canopy coverage of 20% or more of the total parcel area is required. 10% is the maximum credit allowed.
- Owners may add or preserve existing trees on a property. Tree canopy cover is allowable for all tree canopies contributing within property boundaries.

Arlington County has structured its Municipal Separate Storm Sewer System (MS4) permit to require tree planting and to charge a stormwater utility fee on water bills. Fees go into a stormwater fund that is then used for infrastructure and for planting trees on County land. The fees raised from this are about \$200,000-\$300,000 per year and allow Arlington to plant between 800 and 900 trees per year.

6.10 Plant More Street Trees and Maintain Street Trees

Interviewees noted that maintaining and increasing street trees on Town property is one important way to increase tree canopy in Vienna. Although street tree planting typically comprises only 8% to 10% of a jurisdiction's overall tree canopy, they are loved by the public. The following recommendations were made:

- Ensure that street trees are planted with every development.³³ If they cannot be placed in a public tree lawn, street trees should be placed behind the right-of-way on private property in order to avoid any safety issues caused by impeding sight distance and to avoid impact on utilities such as gas lines and storm drains.
- Enforce the bonding requirements that apply if a developer impacts street trees.
- Provide funding for street trees through the budget or grants.
- Conduct a UTC analysis and a street tree inventory to determine where to plant street trees.
- Develop a policy to ensure the maintenance of street trees and park trees.
- Recognize that street trees often have a limited life span due to limited soil volume, traffic pollution, and inadequate water. Planting strips between sidewalk and curb are often referred to as "tree coffins" because they are not adequate for trees that get big. Structural soil cells can be installed to provide adequate soil volume to allow for planting

³³ The City of Falls Church requires developers to plant a street tree in the right-of-way next to the property when developing. Fall Church then maintains the tree and the homeowner gets credit toward the canopy requirement as if the tree were on their property. A tree compatible with overhead utility wires may be required, depending on the location.

urban trees in tight spaces, which gives a place for trees to grow and gives more rooting space, but this technology can be expensive.³⁴ If a planting strip is not wide enough, another solution is to put the tree on the homeowner's side of the sidewalk and have the Town maintain the tree.

- Ensure that a variety of different street trees are planted. Although people like the look of the same tree planted down a street, it is important to plant trees of different species so they are not wiped out in the event of disease or a pest.

6.11 Compile and Analyze Data to Support Tree Policies

Interviewees recommended that Vienna obtain data that can be used to understand, manage, and maintain its trees and to develop sound tree policies and ordinances. Understanding what the Town has is also essential in order to manage and to prioritize funding and budget. Two specific types of tree data are useful for these purposes:

1. An **urban tree canopy (UTC) assessment** that shows overall canopy coverage (i.e., bird's eye data)
2. A **street tree inventory** that plots out what is on the ground (i.e., worm's eye data)

Accurate UTC and inventory data will help Vienna develop a sound tree management plan and set realistic long- and short-term planting goals. Interviewees stressed the need for Vienna to develop an urban forest management plan, rather than simply set an arbitrary tree canopy goal. A tree management plan would allow the Town to know how many and what kind of trees it has, how many it plants and removes each year, and where and when maintenance is required.

Interviewees recommended that all UTC assessment and tree inventory data be easily accessible and extendable through an application programming interface (API) so that it can be used in other systems like mapping interfaces. The Town will want to be able to easily download the data and allow the data to interact with other programs.

6.11.1 UTC Assessment with Ecosystem Benefits and Planting Map

Interviewees recommended that Vienna obtain an up-to-date UTC assessment with a historical change analysis. A UTC assessment provides information on current and historical canopy coverage across a community in order to understand what has happened over time to its canopy and to set goals for future canopy coverage. A UTC assessment provides information to help a community understand the patterns, processes, and mechanisms behind changes in canopy cover. For instance, are certain parts of Vienna losing more tree canopy than others? What is the tree canopy change on private property and on public property? What areas of the Town are in the greatest need of tree planting?

UTC assessments are typically developed using high-resolution LiDAR data and leaf-on aerial imagery and comparing data from different years to identify gains and losses in canopy over time and how landscape is changing. Land use and other data can be overlaid to ascertain ecosystem benefits, from stormwater management to heat absorption, which is useful for policy making. Data on

³⁴ Generally, a private firm is required to install the soil cells, but the Town probably could learn and do it on its own. Put in a base layer, then landscape fabric, then backfill. Vienna already has one example of this at the plaza on Maple Ave near the W&OD Trail. The Town hired Elisabeth Lardner and Associates, Landscape Architects to create structural cells at the plaza

existing canopy coverage can be used together with estimates of currently available green space (exclusive of cemeteries, athletic fields, etc.) to set a feasible future target goal for tree canopy.

A UTC assessment for the Town of Vienna was completed in October 2022 under contract with Davey Resource Group. The UTC assessment was paid for in part by a matching grant from the Virginia Department of Forestry's Urban and Community Forestry Assistance Grant Program awarded in fall 2021. The UTC assessment Executive Summary states:

In comparison to 2011 imagery, Vienna's current tree canopy cover has been reduced by approximately 163 acres, **a percent change loss of 13.0%**. However, opportunities exist to mitigate this trend. Suitable areas were analyzed for future planting and ranked based on the benefits that additional canopy coverage would provide. Approximately 214 acres of planting areas were identified as *Very High* and *High* classifications of potential canopy. If these areas were to be planted, this would represent a percent change increase in canopy cover of 19.6%.

Tree canopy cover removes pollutants and carbon from the air and reduces peak stormwater flows, in part mitigating the effects of increased urbanization and development. The annual benefits Vienna receives from its tree cover **are approximately \$4.3 million**. These improvements to air quality, reductions in energy costs, and increased property values all contribute to the livability and sustainability of the Town.³⁵

Vienna will be able to use the UTC report to better understand the change in the Town's tree canopy over time, to identify which portions of Town are a priority for tree planting, and to set a tree canopy goal.

6.11.2 Commission a Street Tree Inventory

Street trees are trees that are located in the right of way next to a street, typically between the sidewalk and the curb (also called the "tree lawn"). While street trees typically comprise only 8% to 10% of a town's tree canopy, they provide many benefits. They provide pedestrians, bicyclists, and motorists shade from heat and relief from humidity, they make streets more walkable and bikeable, and they lower the average electricity bills of surrounding households. They also lower the average driving speed, making roadways safer for pedestrians and drivers alike. There is evidence that street trees improve the health of nearby residents, lower crime rates, and increase property values. Street trees also reduce urban heat, reduce stormwater runoff, clean the air, and help beautify the Town.

Interviewees stressed the value of conducting an accurate street tree inventory for Vienna and having a good tracking system that allows for inventory updates. The inventory would include location, size/diameter/height, species, and health of existing street trees, as well as location with respect to utilities and rights of way. An inventory complements a UTC assessment by identifying the health and size of trees on the ground, not just the overall canopy coverage. It is important to note that a street tree inventory cannot reach all trees, especially those on private property.

A street tree inventory is critical to manage and maintain trees in a community, which are expensive to install and must be maintained. An inventory allows for dynamic tree management, setting pruning, maintenance and planting schedules, and managing budgets. A street tree inventory would ideally identify available planting sites in the public right-of-way. This allows a "stocking rate" to be calculated, i.e., the percentage of available sites currently filled and the percentage available for planting. Vienna would then be able to identify and focus on areas that are priorities for the planting of street trees. The inventory should include information regarding the width of the tree lawns (i.e., the land between the street and the sidewalk) and the presence or absence of overhead utility lines that

³⁵ Executive Summary, Vienna, Virginia Urban Tree Canopy Assessment Report, Davey Resource Group, Inc., October 2022 (emphasis in original).

might limit tree height. The areas that are devoid of trees, the areas with wider trees lawns, and the areas are not obstructed with overhead or underground lines, can be identified as the first priority for street tree planting.

The Town of Vienna does not have an up-to-date inventory of its trees.³⁶

Several options exist for obtaining a street tree inventory for the Town:

- Contract out for an inventory by an experienced firm, similar to the way the UTC assessment was done for Vienna.
- Use citizens/tree stewards to collect basic data on street tree location, general size, and generalized species. Volunteers (students, scouts, residents) would need basic training to be able to identify trees and measure the diameter. Interviewees warned that although volunteers are helpful to get basic data, experts are needed to identify species and cultivar, determine tree condition, and understand maintenance needs.

6.12 Gather Additional Useful Data

Interviewees mentioned other tools and types of data that could be useful for Vienna.

- A tree benefit calculator calculates the benefit of an individual tree and can be used on an individual site for an individual tree or across the entire town. For example, a tree can manage 6,000 gallons of storm water per year, as well as provide air pollution reduction and carbon storage benefits. Tree benefit calculators are available on apps like I Tree Canopy and I Tree Landscape.³⁷ The Center for Watershed Protection also has a tree calculator to calculate the benefits of even just one tree.³⁸
- The Green Infrastructure Center has a tool to calculate the stormwater uptake benefits of a cluster of trees, designed for a larger area.³⁹ The tool identifies how much storm water trees are soaking up, how much more could be planted to soak up storm water, and how much standing water is occurring. It will also calculate loadings, as well as removal of water and pollutants for various sizes or magnitude storm events.
- One interviewee recommended that the Town collect its own data to determine how successful the minimum tree canopy replacement requirements have been. Town staff could look at what owners who have moved into new homes over the past 5-10 years have done in terms of tree planting and landscape improvements. The Town could compare this to the original site plan and see what has happened naturally over time.

6.13 Encourage Voluntary Tree Planting

A UTC assessment that measures Vienna's tree canopy and an inventory of street trees are essential to help the Town determine a tree canopy goal and identify tree planting locations. However, Vienna does not need to wait for this data to launch a tree planting campaign as soon as possible, particularly on private property.

³⁶ One interviewee noted that an inventory might have been done around 2000 but no one has been able to find it. The Town purchased inventory software years ago, but it has not been used because no one has been trained in how to use it.

³⁷ <https://www.itreetools.org/>

³⁸ <https://www.cwp.org/making-urban-trees-count/> <https://www.arboday.org/calculator/>

³⁹ http://www.gicinc.org/trees_stormwater.htm

Vienna could publish a tree planting campaign guide to incentivize developers and citizens to plant trees. For developers in particular, the Town could articulate specific goals, such as nature trails, more oak trees, or a percent of land left untouched. The Town could make use of the following publicly available resources and guides to prepare a guide:

- National Wildlife Federation Trees for Wildlife: https://www.nwf.org/~media/PDFs/Trees-for-Wildlife/NWF_Trees-for-Wildlife_Tree-planting-Group.ashx
- Project Learning Tree: <https://www.plt.org/educator-tips/tree-planting-tips/>
- The Green Infrastructure Center, Inc: https://gatrees.org/wp-content/uploads/2022/07/TreePlantingCampaignGuide_GIC_June2022.pdf

6.14 Incorporate Tree Planting in the Town’s Planning

Tree planting should be made consistent with the Town’s Comprehensive Plan, which is reviewed and updated every five years under Virginia state law. Vienna’s most recent Comprehensive Plan was adopted in 2015 and makes multiple references to the need to ensure a healthy tree canopy throughout the Town. The 2015 Plan contains specific praise for mature trees in several Town parks; notes that subdivision and zoning ordinances include tree protection criteria that preserve arboreal resources within the Town limits; states that street trees are a desired feature for all neighborhoods and should be provided to the extent possible considering available right-of-way and neighborhood interest; and calls for codifying incentives for preserving mature trees for redevelopment and infill development projects.

Interviewees recommended that Vienna’s Planning Commission and Town Council take into account the multiple benefits of trees and any tree goal set by the Town when planning, evaluating, and deciding on development, redevelopment, and rezoning projects. The Comprehensive Plan should also include references to the Town’s tree management plan or urban forestry plan, once it is developed.

6.15 Increase Planting on Town Property: Street and Park Trees

Interviewees noted that while Vienna is planting trees in parks and on municipal grounds, the Town cannot keep up with removing and replacing the street trees it loses. The main reason for this is inadequate staff and budget for tree planting. The Department of Parks and Recreation has an annual \$15,000 discretionary horticulture budget and two full-time staff, which is not enough to meet the Town’s needs for flower planting, equipment, and maintenance — plus tree planting and its associated maintenance costs (digging holes, watering, etc.). The allocated budget to the Department of Parks and Recreation for tree removal has fluctuated between \$30,000 and \$50,000 over the past several years. No annual budget money is specifically allocated to tree planting.

Interviewees repeatedly stressed that adding staff and allocating funds solely for purchasing, planting, watering, and maintaining trees—or for contracting out for these services—is essential. Recommendations to increase tree planting include:

- **Identify and prioritize areas of Town-owned land where trees need to be planted, making use of a tree canopy assessment and a street tree inventory.** Interviewees said the Town should identify locations where trees need to be planted. Priorities for planting are areas with less tree canopy and Town tree lawns that are sufficiently wide and are not obstructed by overhead or underground utility lines.
- **Develop a planting plan and a required budget.** The town should develop a multi-year planting plan and allocate annual budget money for tree planting and maintenance. A commitment to a tree planting may require a contractor to conduct the planning. The budget for trees would need to include the cost to do the planting by a contractor, as well

as the cost for additional needed maintenance staff in the Department of Parks and Recreation or by contractors.

- **Compile data to track annual expenditures for tree purchases and planting, as well as the number of trees actually planted each year.** Track and annually report on tree planting activities and apply for budget change requests as warranted.
- **Identify and make use of funding opportunities and grants for tree planting.** Several individuals recommended that Vienna explore the following funding opportunities:
 - **Virginia Department of Forestry’s Virginia Trees for Clean Water Grant Program.** The program covers trees planting and requires a 50/50 match on projects for materials, funding, or time.⁴⁰
 - **Virginia Department of Forestry’s Urban and Community Forestry Grant Program.** The program offers matching grants for a range of forestry projects, including tree planting.⁴¹ This grant program partially funded the Town of Vienna’s recent UTC assessment by Davey Resource.
 - **National Fish and Wildlife Foundation’s Small Watershed Grants Program.** The National Fish and Wildlife Foundation is a major funder for Chesapeake Bay restoration and gives out small watershed grant on an annual cycle.⁴²
- **Make use of existing tree planting contracts with neighboring jurisdictions to lower tree purchase costs.** Vienna should look into the contracts and programs that Arlington and Fairfax County have with organizations like Casey Trees and companies like Davey Trees to purchase and install trees at lower costs.
- **Review guide to financing urban tree canopy programs for local governments.** The Environmental Finance Center at the University of Maryland and the Alliance for the Chesapeake Bay published a “Financing Urban Tree Canopy Programs Guidance for Local Governments in the Chesapeake Bay Watershed” in March 2019.⁴³ The guide was funded by the National Fish and Wildlife Foundation and is based on a year-long collaboration with the USDA Forest Service, the Metropolitan Washington Council of Governments (MWCOC), and the Chesapeake Bay Program Forestry Workgroup. It includes case stories describing several jurisdictions with different approaches to funding tree canopy, including Arlington, Charlottesville, Fredericksburg, and Woodstock in Virginia.

⁴⁰ <https://dof.virginia.gov/urban-community-forestry/urban-forestry-community-assistance/virginia-trees-for-clean-water-grant-program/>

⁴¹ <https://dof.virginia.gov/urban-community-forestry/urban-forestry-community-assistance/urban-and-community-forestry-grant-program/>

⁴² [https://www.nfwf.org/programs/chesapeake-bay-stewardship-fund/small-watershed-grants#:~:text=The%20National%20Fish%20and%20Wildlife,Assistance%20\(SWG%2DPTA\).&text=SWG%2DI%20grants%20range%20from%20%2450%2C000%20to%20%24500%2C000](https://www.nfwf.org/programs/chesapeake-bay-stewardship-fund/small-watershed-grants#:~:text=The%20National%20Fish%20and%20Wildlife,Assistance%20(SWG%2DPTA).&text=SWG%2DI%20grants%20range%20from%20%2450%2C000%20to%20%24500%2C000)

⁴³

https://arch.umd.edu/sites/default/files/docs/publications/FinancingUrbanTreeCanopyPrograms_LowRes_040919.pdf

6.16 Actions to Increase Tree Planting on Private Property

Tree planting on private property is essential because street trees typically comprise only 8-10% of a community's canopy, with 75-80% of trees being on private property. Because the Town is limited to managing and planting trees on public property, other mechanisms are needed to accomplish planting on private property. Mechanisms to accomplish planting on private property in Vienna include the following:

6.16.1 Establish a 501(c)(3) Non-profit or Tree Stewards Group in Vienna

Many interviewees recommended the establishment of a private organization that can receive donations and funds to use to plant and maintain trees on private property in Vienna. Options include a 501(c)(3) non-profit, a private tree foundation, or a public/private partnership. Several neighboring jurisdictions have private non-profit organizations that partner with the town or city to plant and maintain tree canopy. Examples of robust, successful organizations include:

- City of Falls Church Village Preservation and Improvement Society (VPIS):⁴⁴ VPIS is a 501(c)(3) organization that has partnered with City of Falls Church through its Neighborhood Tree Program. While the City plants trees in the public right-of-way, VPIS pays for and plants trees on private property. Residents with room on their property or in the City right-of-way within 15 feet of the curb can request trees, which are planted and maintained by VPIS volunteers. The goal is to develop a wider canopy of shade trees.
- Tree Fredericksburg:⁴⁵ Tree Fredericksburg is a 501(c)(3) organization that has partnered with the City of Fredericksburg to plant trees on public and private property. Tree Fredericksburg has raised \$250,000 in grants for tree planting and maintenance, as well as giveaways. The organization also partners with Friends of the Rappahannock to plant trees in the Rappahannock watershed.
- EcoAction Arlington:⁴⁶ EcoAction Arlington is a 501(c)(3) organization that administers Arlington's Tree Canopy Fund, which was authorized by Arlington County Board in 2007. The Fund is supported by developers who pay \$2400 per tree to the County when they are unable to meet the tree canopy requirements. The Fund currently contains about \$600,000 and plants about 300 to 400 trees per year on private property through a resident application process. The County recently reviewed the program and determined there is an 80% survival rate in 10 years for the trees that have been planted through the program.
- Tree Steward Groups:⁴⁷ Trees Virginia has developed a Tree Stewards program that offers training, grants, and other assistance to community volunteer groups throughout the state. Current Tree Steward groups exist in Arlington/Alexandria, Charlottesville, Fairfax, Fredericksburg, Front Royal/Warren County, Greater Lynchburg, Harrisonburg, Loudon County, Richmond, Roanoke, Central Rappahannock area, and Virginia Beach.

⁴⁴ <https://www.vpis.org/>

⁴⁵ <https://treefredericksburg.org/>

⁴⁶ <https://www.ecoactionarlington.org/community-programs/trees/>

⁴⁷ <https://treesvirginia.org/outreach/tree-stewards>

6.16.2 Conduct Regular Tree/Seedling Giveaways

Interviewees stressed that tree giveaways are a cheap solution to a big problem. Several local jurisdictions offer tree and/or seedling sales and giveaways each year, including City of Alexandria, Arlington, Northern Virginia Soil and Water Conservation District, and Fredericksburg. The Town of Vienna's Conservation and Sustainability Commission (CSC) organized a seedling giveaway in Fall 2021 and will do the same in Fall 2022, as well as include a native tree giveaway during its annual Fall Native Plant sale. Participants can be asked to sign tree maintenance agreements, with the understanding that it is not possible to control what people do after they plant the trees.

- **Organize Big Planting Events.** Getting people involved is essential to accomplish tree planting on a larger scale. The Town could use its robust community of staff and volunteers, as well as schools, scouting groups, churches, and businesses. Planting events could be organized by the Town's Department of Parks and Recreation, the Conservation and Sustainability Commission, and/or a private nonprofit organization.
- **Increase Publicity for Vienna's Existing Tree Donation Program.** The Town of Vienna currently has a Heritage Donation Program that allows residents to donate money to fund planting of trees in public spaces.⁴⁸ Donations amounts include \$200 for a New Tree, \$450 for a New Tree with plaque and stand, or \$450 to adopt an Existing Tree with a plaque. The 2015 Comprehensive Plan recommended that the Town make use of this mechanism for individuals and organizations to contribute money to purchase trees to be planted within Town as another way to increase Vienna's tree canopy coverage.

6.17 Require Bonding to Help Tree Survival

Vienna currently requires developers to post Tree Protection Bonds only for trees on Town property that are being removed or might be damaged from construction. The bonds run for a period of one year from final inspection and issuance of the Certificate of Occupancy. Vienna does not have a requirement for bonding trees on private property.

As noted above in section 3.3, Vienna's Tree Protection and Planting Guide and the Town Code in Sections 17-15T, 17-15Q, and 18-252E appear to allow collection of Tree Protection Bonds to ensure that any trees designated to be preserved on a site plan actually are. These provisions on their face provide authority for the Town to collect bonds for *any* trees that are designated to be preserved and maintained through and after construction, not merely trees on Town property that could be impacted by construction activities. Vienna is considering following other jurisdictions like Falls Church in requiring one- or two-year bonds for new replacement trees. The Town Code technically would allow collection of bonds for preserved trees on a lot as well.

Discussion is recommended to determine the effectiveness of using bonds to encourage tree preservation. The Town currently provides 25% more canopy credit for a preserved tree, so discussion is needed to determine if bond for preserving a tree would be effective or conversely deter preservation and instead encourage removal and replanting.

Interviewees recommended other ways that Vienna could strengthen its tree bonding requirements.

- Require post-occupancy bonds for required replacement trees on private property. This would allow a homeowner to move in, then select the trees and location for planting, resulting in thoughtful installation of trees and less likelihood that a new homeowner will remove replacement trees installed by the developer immediately after moving in. Some interviewees

⁴⁸ <https://www.viennava.gov/doing-business/doing-business-with-the-town/make-a-donation>

warned that such a requirement could make developers unfairly responsible for ensuring that homeowners take appropriate care of newly planted trees.

- Extend Tree Protection Bonds to three years to ensure tree survival.
- Require bonds for trees on adjoining properties that are or could be damaged, particularly when developers dig right up to the base of a tree.

6.18 Maintain Vienna’s Organizational Structure and Improve Communication to Ensure Effective Tree Management

The Town of Vienna currently has two certified arborists on staff, both of whom are housed in the Department of Parks and Recreation. One arborist is currently the Superintendent of Parks; the second is an Urban Arborist responsible for site reviews for redevelopments. The Department of Parks and Recreation plants and manages Vienna’s park trees and street trees, with the exception of street trees removed during sidewalk projects. When the Department of Public Works removes street trees to accommodate sidewalk installation, Public Works also plants the replacement street trees. Tree planting associated with new home development is part of the process overseen by the Departments of Planning and Zoning Department and Public Works, with a review by the Town’s Urban Arborist in the Department of Parks and Recreation.

Several interviewees recommended that the Town of Vienna ensure that tree staff and responsibilities are structured so that one Department is responsible for all trees — park trees, street trees, and trees planted as part of new home construction projects. Interviewees noted that spreading out tree staff and responsibilities leads to information being “siloed” within different departments and communication and effectiveness breaking down. Tree staff and responsibilities are currently placed in the Parks and Recreation, with the limited exception of planting of replacement street trees by Public Works for certain sidewalk projects. Communication between the two departments with regard to site plan review should be evaluated to ensure maximum effectiveness.

- **Maintain one department in charge of trees to ensure effective communication and information flow.** Interviewees repeatedly noted that when engineers are in Public Works and arborists are in Parks and Recreation, information is “siloed” within the departments and communication and effectiveness breaks down. Having one department in charge of trees was recommended as a way to eliminate this problem.
 - **Urban Arborist should reside in Public Works.** Several interviewees recommended that the Town’s Urban Arborist be in the Department of Public Works because he/she deals more with Public Works. The Urban Arborist conducts site reviews for redevelopments and works closely with the Public Works inspector who handles erosion and sediment control issues, as well as on other Public Works issues like sidewalks. It would be helpful and convenient for Public Works to have the immediate expertise of an Urban Arborist on its staff. The arborist would be in the same group that is doing site plan reviews, allowing for better communication and a better relationship. The City of Harrisonburg was cited as an example of a jurisdiction that successfully moved its arborists to Public Works and improved communication and the site review process.
 - **Keep the Park Authority department in charge of trees.** Other interviewees preferred that Parks and Recreation remain as the one Town department in charge of trees. Parks and Recreation currently maintains and manages Vienna’s park and street trees as well as oversees planting on redevelopment sites. One interviewee noted the

benefits of having a parks department in charge, citing the structure of Falls Church as an example. The interviewee noted that Public Works is in charge of green space in Falls Church, but that Public Works has a different mindset than Parks and Recreation. Having trees separate from Public Works is preferable because Public Works generally does not have the same level of care with respect to trees since it is also focused on sidewalks and roads. Having a Park Authority that is responsible for maintenance of all public parks and all public trees is preferable.

- **Improve communication and consultation between Parks and Recreation and Public Works on site plan reviews and tree removal for sidewalk installation.** Communication between the Departments of Public Works and Parks and Recreation should be evaluated to ensure that trees are adequately considered during site plan reviews. The Department of Parks and Recreation should also be consulted when the Department of Public Works removes and replants in the public rights-of-way as part of sidewalk installation projects. Several town residents cited examples and raised concerns over this lack of communication on tree removal for sidewalks.

6.19 Conduct Continuing Education, Outreach, and Communication About the Value of Trees

The Town of Vienna should focus efforts on education and outreach to residents, as well as on increasing communication between Town staff, residents, and developers about the value of trees and about tree and tree-related requirements in Town.

- **Develop a public education and outreach campaign to help Town residents understand the importance of trees and the benefits they provide to Vienna.** Trees do not come up as a specific pressing issue like taxes and most people do not understand what trees do for them on both a micro and macro scale: climate change mitigation, stormwater management, providing shade and energy savings, improved air quality and health benefits, and so much more. A public education and outreach campaign in Vienna should:
 - Update the Town's website with more information about trees, including canopy, root structure, survivability (i.e., trees eventually die), and the need for tree maintenance by homeowners;
 - Encourage people to plant larger trees on residential lots as they contribute much more to the canopy than smaller decorative trees;
 - Organize tree planting events and tree giveaway programs;
 - Organize events where professional arborists can meet with residents to answer questions and provide information and advice on tree planting and maintenance; and
 - Use photos of some of Vienna's iconic trees to promote the campaign.
- **Educate homeowners about Town tree canopy requirements, lot coverage restrictions, and stormwater management and inspection requirements.** Most homeowners and homebuyers do not know anything about tree canopy and lot coverage requirements, and most developers and real estate agents do not provide detailed

information, if any, to potential homebuyers about these requirements when selling or building on lots. The Town should focus on encouraging builders and realtors to communicate this information to clients and provide this information itself to residents and new homeowners. Specifically, Vienna should:

- Update the Town's website to provide clear, useful information about tree canopy requirements, lot coverage restrictions, and stormwater management and inspection requirements;
 - Develop and mail out a pamphlet with this information when new residents register for water or tax bills; and
 - Encourage developers and realtors to communicate this information to new clients.
- **Encourage communication between builders, engineers, arborists, and homeowners about trees on individual building sites.** Interviewees noted the frequent disconnect between the builders, engineers, arborists, and property owners throughout the entire construction process. At times the property owner is not involved in the development of the plan and generally has no input on tree preservation and replacement. This can result in a homeowner being surprised that a tree is being removed or not wanting so many new trees planted. Improved education and communication is needed to inform homeowners about the value of trees on a lot and how to incorporate tree requirements and benefits into site planning and development.
 - **Improve communication between builders and the public.** Invite the public to some of the monthly builder meetings organized by the Department of Planning and Zoning that take place once a month because of the tree process. These monthly builder meetings have resulted in changes to the tree identification and inventory requirements, among other things. The general public does not get a notice about the meetings and is thus not aware of issues being raised in not able to voice concerns or participate in discussions.
 - **Improve communication between builders.** One interviewee suggested that developers be encouraged to band together to preserve groups of trees if there are several adjacent lots undergoing redevelopment.

7. MODEL TREE CONSERVATION ORDINANCE

What follows is a Model Tree Ordinance for the Town of Vienna. There are several reasons the Town would want to enact the Ordinance. Among other things, the Ordinance would:

1. **Make the Town Code Easier to Understand by Placing Provisions Relating to Trees into A Single Chapter of the Town Code.** Currently, Vienna's Town Code provisions relating to trees are spread among several sections of the Code, including: Sections 16-25; 16-26; 16-27; 16-28; 17-15; 17-15.1; 18-251; 18-252; 27-4; and 27-5. Additionally, Vienna has published requirements relating to trees and tree planting that are in the form of guides and builder memos, which are not set forth in Vienna's Code but rather found by searching the Town's website. Consolidating all the provisions relating to trees in a single tree conservation ordinance will make the Code easier to follow, easier to understand, and will reduce the risk of inconsistencies and redundancies.
2. **Make Use of All the Tree Regulatory Authority Granted by the Virginia General Assembly.** Virginia is known as a "Dillon Rule" state. The Dillon Rule provides that local governing bodies, such as the Town of Vienna, have only those powers that are expressly granted by the Virginia General Assembly, necessarily or fairly implied from the expressly granted powers, or essential and indispensable. With regard to trees, Virginia allows local governing bodies to enact certain ordinances to protect trees and to require trees to be planted in connection with development. Vienna has adopted some, but not all, of the ordinances that are available to protect trees. This suggested ordinance would include additional provisions under authority that the Virginia General Assembly has granted to localities to protect and replace trees.
3. **Harmonize Vienna's Tree Ordinance with Tree Regulations Already in Place in Fairfax County.** Fairfax County has enacted all the tree protection and replacement ordinances authorized by the Virginia General Assembly. Individuals we interviewed explained that Fairfax County is regarded as a jurisdiction that is "***making use of all the tools available***" to protect its tree canopy. While Vienna is in Fairfax County, Vienna operates under its own Town Code. Currently, Vienna's tree ordinance differs from the ordinances in place in Fairfax County. The suggested Model Tree Ordinance would align Vienna's tree ordinance more closely with the tree regulations already in place in Fairfax County.
4. **Make Use of the Tree Conservation Authority That Is Currently Only Available to Certain Communities, Including Vienna.** Communities located in Virginia Planning District 8 (northern Virginia) with a population density of at least 75 persons per square mile that have not attained compliance with the eight-hour standard for ozone under the federal Clean Air Act are permitted to enact a more protective tree conservation ordinance under Virginia Code Section 15.2-961.1. Fairfax County has enacted an ordinance under this tree conservation provision, but the Town of Vienna has not. Enacting a similar tree conservation ordinance would allow Vienna to specify greater minimum tree canopies and require tree preservation before replanting where it is feasible to do so.
5. **Establish A Tree Commission.** Vienna maintains a Conservation and Sustainability Commission (CSC). The CSC has a broad mission and is charged with advising the Town and developing and recommending policies and programs relating to sustainability, including energy conservation, natural resource protection, recycling, sustainable development, and tree protection and replacement. The CSC also constitutes the Town's tree board. Given the responsibilities and challenges associated with conserving and caring for Vienna's urban forest,

it is sensible for Vienna to designate a commission that is *solely* dedicated to trees. Nearby communities, such as Fairfax County, Falls Church, and Arlington, have a dedicated tree board or commission (sometimes known as an urban forestry commission) that is focused solely on trees. The Model Tree Ordinance establishes and defines the mission of a Tree Commission in Vienna.

6. ***Allow Space for Trees in Front Yards of Homes.*** When a new home in Vienna is constructed with a two- or three-car side-load garage in the front yard, the footprint of the garage, combined with the side-load driveway, typically take up much of the front yard. As a result, there is little space in the front yard to plant a tree. From our interviews, we learned that Fairfax County's Zoning Ordinance provides that no more than 25 or 30 percent (depending upon the zoning district of the property) of a front yard of a residential property may be surfaced with a driveway. By incorporating a similar provision in the Town's code, the Town will allow space for trees in front yards.

To prepare this Vienna Tree Conservation Ordinance, we drew from the following tree ordinances and guidance documents ***that are already in place*** in the Town of Vienna or in Fairfax County. We compiled requirements in the code provisions and guidance documents listed below and consolidated them into a single tree ordinance. The one exception is the provision establishing a tree commission, which we drew from various sources. Because Fairfax County is permitted by the General Assembly to promulgate 10-year tree canopy requirements⁴⁹ while Vienna is permitted to promulgate a minimum of 20-year tree canopy requirements, wherever we drew from Fairfax County's 10-year tree canopy requirements, they were changed in this Ordinance to 20-year tree canopy requirements to comply with the authority currently granted by the General Assembly to Vienna.

1. Vienna Town Code, 17-15T.
https://library.municode.com/va/vienna/codes/code_of_ordinances?nodeId=PTIICOOR_CH17SU_ART2PRPL_S17-15CO
2. Vienna Town Code 17-15.1.
https://library.municode.com/va/vienna/codes/code_of_ordinances?nodeId=PTIICOOR_CH17SU_ART2PRPL_S17-15.1PLRETR
3. Vienna's Tree Preservation and Planting Guide.
<https://www.viennava.gov/home/showpublisheddocument/1506/637499380678400000>
4. Memorandum to Vienna Construction Industry from Alex Shy, Vienna Urban Arborist, Regarding Tree Protection, August 7, 2019.
<https://www.viennava.gov/home/showpublisheddocument/3362/637551350612830000>
5. Memorandum to Vienna Construction Industry from Gary Lawrence, December 9, 2015.
<https://www.viennava.gov/home/showpublisheddocument/1810>
6. Town of Vienna Public Infrastructure Manual, Sept. 28, 2015, rev. Oct. 11, 2018.
<https://www.viennava.gov/home/showpublisheddocument/3172/637541723047070000>
7. Fairfax County, Code of Ordinances, Chapters 120 (Heritage, Specimen, Memorial and Street Tree Ordinance) and 122 (Tree Conservation Ordinance), as amended.

⁴⁹ See Footnote 3.

https://library.municode.com/va/fairfax_county/codes/code_of_ordinances?nodeId=THCOCOFAVI1976_CH120HESPMESTTROR

8. Fairfax County, Land Development Services, Technical Bulletin 21-01, 1/8/21.
<https://www.fairfaxcounty.gov/landdevelopment/sites/landdevelopment/files/assets/documents/21-01-tech-bulletin-tree-preservation-submission-deviations.pdf>
9. Fairfax County, Land Development Services, Technical Bulletin 21-11, 12/9/21.
<https://www.fairfaxcounty.gov/landdevelopment/sites/landdevelopment/files/assets/documents/21-11-notification-of-proposed-removal-of-trees.pdf>
10. Fairfax County Public Facilities Manual, Section 12, Tree Conservation.
<https://online.encodeplus.com/regs/fairfaxcounty-va-pfm/doc-viewer.aspx#secid-564>
11. Fairfax County Zoning Code, Section 6100.2 Off-Street Parking Standards, Layout and Design. <https://online.encodeplus.com/regs/fairfaxcounty-va/doc-viewer.aspx?tocid=001.007.001.002#secid-572>

Vienna Model Tree Conservation Ordinance

CHAPTER 29 - TREE CONSERVATION⁵⁰

ARTICLE 1. GENERAL PROVISIONS

Sec. 29-1-1. Title.

This chapter shall be known as the “Vienna Tree Conservation Ordinance.”

Sec. 29-1-2. Authority.

This chapter is enacted pursuant to the authority of Va. Code Ann. §§ 10.1-1127.1⁵¹, 15.2-961⁵², and 15.2-961.1⁵³.

Sec. 29-1-3. Purpose and intent.

The purpose and intent of this chapter is to provide for the conservation of trees during the land development process. The conservation (i.e., preservation and planting) of trees during the land development process will protect, sustain, and enhance the Town’s⁵⁴ urban forest resources. These forest resources provide important aesthetic, social, and economic benefits and are indispensable to the conservation and management of vital atmospheric, water, soil, and ecological resources.

Sec. 29-1-4. Administration.

The Director of Parks and Recreation⁵⁵ shall be responsible for the administration and enforcement of this chapter.

Sec. 29-1-5. Severability.

If any of the articles, sections, paragraphs, sentences, clauses, or phrases of this chapter shall be declared unconstitutional or invalid by a valid judgment or decree of a court of competent jurisdiction, such unconstitutionality or invalidity shall not affect the validity of this chapter in its entirety or any of the remaining articles, sections, paragraphs, sentences, clauses, and phrases herein.

⁵⁰ Black text means the provision comes from the tree-related provisions in Chapters 120 and 122 of the Fairfax County Code or from tree provisions in Section 17-15 and 18-252 of the Town of Vienna Code (or changes that are only formatting-related).

Blue text means the provision comes from technical manuals (source is footnoted). Red text is new language.

⁵¹ Section 10.1-1127.1 of the Virginia Code permits localities to adopt a tree conservation ordinance regulating the preservation and removal of Heritage, Specimen, Memorial and Street Trees.

⁵² Section 15.2-961 of the Virginia Code permits certain localities to adopt an ordinance providing for the planting and replacement of trees during the development process.

⁵³ Section 15.2-961.1 of the Virginia code permits certain localities to adopt an ordinance that first emphasizes the preservation of existing tree canopy where that canopy meets local standards for health and structural condition, and where it is feasible to do so.

⁵⁴ All references to “County” in provisions adapted from the Fairfax County Code have been revised to “Town”.

⁵⁵ All references to “Director of Land Development Services in the Fairfax County Code” have been revised to “Director of Parks and Recreation”.

Vienna Model Tree Conservation Ordinance

ARTICLE 2. TREE CONSERVATION DURING LAND DEVELOPMENT

Sec. 29-2-1. Tree Canopy Requirements.

- (a) All land development requiring the submission of a site plan, preliminary subdivision plat, subdivision plan, conservation plan, grading plan, or a rough grading plan, shall provide for the conservation of trees on the site such that, after twenty (20) years⁵⁶, minimum tree canopy is projected to be as follows:

Table 1 - Tree Canopy Requirements as applied to Town of Vienna Zoning Districts

| Use or Zoning District | Percentage of Site to be Covered by Tree Canopy in 20 Years |
|--|---|
| RS-16 - Single Family Detached Residential | Twenty five percent (25%) ⁵⁷ |
| RS-12.5 - Single Family Detached Residential | Twenty five percent (25%) ⁵⁸ |
| RS-10 - Single Family Detached Residential | Twenty percent (20%) |
| RM-2 - Multifamily Low Density | Fifteen percent (15%) |
| RTH - Townhouse | |
| T - Transitional | Ten percent (10%) |
| C-1 - Local Commercial | |
| C-1A- Special Commercial | |
| C-1B - Pedestrian Commercial | |
| C-2 - General Commercial | |
| CMP - Industrial Park | |
| CM - Limited Industrial | |

- (b) For purposes of administering the above requirement, land development does not include: construction of additions to existing residential structures; construction of residential accessory structures; demolition of existing residential structures; reconstruction of residential structures on existing foundations; construction associated with minor site plans; construction of trails, sidewalks, sanitary sewers, storm sewers, and other public improvements of a linear nature not included as part of a larger common plan of

⁵⁶ Any locality with a local ordinance that was adopted prior to July 1, 1990, may adopt the tree conservation provisions of Virginia Code § 15.2-961 based on 10-year minimum tree canopy requirements (Virginia Code § 15.2-961.1 para. S). Fairfax County adopted its tree cover requirements based on a 10-year minimum tree canopy requirement on April 16, 1990, effective June 30, 1990 (08-90-101, 09-90-104, ZO-90-190, and 29-90-PFM). Because Vienna did not adopt tree cover requirements prior to July 1, 1990, Vienna’s tree ordinance must use a 20-year minimum tree canopy requirement, and where language in this ordinance is adapted from the Fairfax County Code, references to 10-year requirements have been revised to 20-year requirements.

⁵⁷ Section 15.2-961.1.C. of the Virginia Code permits certain localities belonging to a nonattainment area for air quality standards to specify a twenty-five percent tree canopy for a residential site zoned more than two but not more than four units per acre.

⁵⁸ See note 9, above.

Vienna Model Tree Conservation Ordinance

development; and, other land disturbing activities that present a minor threat to existing tree resources as determined by the Director of Parks and Recreation.

Sec. 29-2-2. Standards for Tree Canopy Requirements.

- (a) The Tree canopy requirements set forth in Table 1 above may be met through the preservation or planting of trees. However, when existing trees meet standards of health, condition, and suitability, and when it is feasible to preserve those trees within the framework of permissible uses, densities, design standards, and construction practices, all efforts shall first be made to meet the Tree canopy requirement through the preservation of trees before tree planting is allowed to meet any portion of the Tree canopy requirement.
- (b) Tree canopy credit shall be given to existing areas of trees and forested areas designated to be preserved on plans and comprised of self-supporting and woody plant material exceeding five feet in height at time of plan submission provided that the trees and forested areas meet standards for health, condition, and suitability.
- (c) Any portion of the Tree canopy requirement that cannot first be met through the preservation of trees as provided for in § 29-2-3 shall be provided through tree planting.
- (d) Tree canopy credits for trees and plant material used to satisfy 20-year Tree canopy requirements shall be determined in accordance with the provisions of Vienna's Tree Preservation and Planting Guide.⁵⁹

Sec. 29-2-3. Tree Preservation Requirements.

- (a) Except as provided for in § 29-2-3(b), the percentage of the development site covered by Tree canopy at the time of plan submission shall equate to the minimum portion of the total 20-year Tree canopy requirement of § 29-2-2(a) that should be met by means of tree preservation. This minimum portion shall be identified in plats and plans as the "tree preservation target."
- (b) Deviations, in whole or part, from the tree preservation target may be requested under the following conditions:
 - 1. Meeting the tree preservation target would prevent the development of uses or densities otherwise allowed by the Town Zoning Ordinance;
 - 2. Meeting the tree preservation target would require the preservation of trees and forested areas that do not meet standards for health, structural condition, and other vegetation and risk management requirements.
 - 3. Construction activities could be reasonably expected to impact existing trees or forested areas used to meet the tree preservation target to the extent they would not likely survive in a healthy and structurally sound manner for a minimum of twenty (20) years in accordance with the post-development standards for trees and forested areas.
- (c) Deviations from the Tree Preservation Target shall be granted for any of the justifications listed above provided that a written request is submitted and approved by the Director of Parks and Recreation. *If, in the opinion of the developer, a development site cannot meet the tree preservation target, a written request to deviate from the tree preservation target must be incorporated in the first submission of the site plan. The request must take the form of a letter addressed to the Director of Parks and Recreation that provides a site-specific narrative explaining why one or more of the conditions allowing a deviation set forth in (b) above should be considered. The narrative must also provide the basis for the deviation, a detailed description of how the deviation is the minimum necessary to afford relief, and describe how the balance of the 20-year Tree canopy requirements could otherwise be met by means of tree planting. Staff reviewers may recommend alternative site layout(s) or alternative engineering practices for consideration. If the developer rejects the recommended alternative site layout(s) or alternative*

⁵⁹ All references to "Fairfax County's Public Facilities Manual of PFM" have been revised to refer to "Vienna's Tree Preservation and Planting Guide."

Vienna Model Tree Conservation Ordinance

engineering practices, then the developer must provide the Director of Parks and Recreation with a letter of explanation which addresses why the alternatives are being rejected. The letter of explanation must be prepared and certified by a licensed professional. If arboricultural issues are part of the explanation, then the letter must also be signed by an International Society of Arboriculture Certified Arborist or by a Registered Consulting Arborist as designated by the American Society of Consulting Arborists. Letters of explanation, as well as the deviation request letter, must be incorporated into the plan. Only after all the above items have been fully addressed to the satisfaction of the Director of Parks and Recreation will the request be considered for approval.⁶⁰

- (d) The Director of Parks and Recreation may grant additional canopy credits in order to encourage the preservation of forest communities that provide valuable environmental, ecological, and wildlife conservation benefits.
- (e) The Director of Parks and Recreation may grant additional Tree canopy credits in order to encourage developers to preserve trees for official designation as heritage, memorial, specimen and street trees as provided in Article 9 (Heritage, Memorial, Specimen and Street Tree Ordinance).
- (f) All tree and forested areas designated to be preserved on plans shall be protected and managed during all phases of construction.
 - 1. Tree Protection fencing with a minimum fence height of 4 feet and a maximum distance between posts of 6 feet shall be erected as early as practicable, and in any event, prior to construction. The fencing shall be secured with anchor posts of a minimum 2-inch steel, with a U channel, that are 6 feet in length. Tree protection fencing shall be the last item to be removed from the site after construction is completed.
 - 2. Root pruning shall be performed if there will be grading, cutting or compaction disturbance underneath the drip line of a tree. Root pruning shall be performed so when tree roots are cleanly severed from the tree in order to prevent damage that would be caused by excavation.
 - 3. Tree protection fencing and root planning shall be consistent with ANSI A300 Tree Care Industry Standard of Care Standards.⁶¹
 - 4. The Town Arborist shall be notified prior to any work to be perform near any Town Tree. Care shall be taken to protect any Town Tree from damage as specified by the Town Arborist. At the direction of the Town Arborist, tree protection for Town Tree may be required.⁶²

Sec. 29-2-4. Tree Planting Requirements.

- (a) Tree canopy credit shall be given to areas of planted Tree canopy based on the projected 20-year Tree canopy calculation as set forth in the Vienna's Tree Preservation and Planting Guide, provided that the proposed tree species meets standards established to manage proper levels of biodiversity and the spread of invasive plants, pests, and diseases.
- (b) Tree canopy credits shall be given to tree seedlings, shrubs and woody seed mix planted in large open spaces, low-density residential settings, or in low-impact development projects.

⁶⁰ Source: Fairfax County, Land Development Services, Technical Bulletin 21-01, 1/8/21.
<https://www.fairfaxcounty.gov/landdevelopment/sites/landdevelopment/files/assets/documents/21-01-tech-bulletin-tree-preservation-submission-deviations.pdf>

⁶¹ Source: Memorandum to Vienna Construction Industry from Alex Shy, Vienna Urban Arborist, Regarding Tree Protection, August 7, 2019. <https://www.viennava.gov/home/showpublisheddocument/3362/637551350612830000>

⁶² Source: Town of Vienna Public Infrastructure Manual, Sept. 28, 2015, rev. Oct. 11, 2018, Sec. 3.15.B, pg. 6
<https://www.viennava.gov/home/showpublisheddocument/3172/637541723047070000>

Vienna Model Tree Conservation Ordinance

- (c) Additional Tree canopy credits shall be granted for the planting of trees that will provide air quality, energy conservation, water quality, wildlife conservation benefits.
- (d) Additional Tree canopy credits shall be granted for the use of native tree species, and the use of cultivars or varieties that develop desirable growth and structural patterns, resist decay organisms and the development of cavities, show high levels of resistance to disease or insect infestations, and, exhibit high survival rates in harsh urban environments.
- (e) In order to provide higher levels of biodiversity and to minimize the spread of pests and diseases, or to limit the use of species that cause negative impacts to native plant communities, cause damage to nearby structures, or possess inherent physiological traits that prone trees to structural failure, Vienna's Tree Preservation and Planting Guide may designate trees that cannot be planted to meet Tree canopy requirements or that shall only receive partial Tree canopy credits.
- (f) All plant materials used to satisfy 20-year Tree canopy requirements shall be selected, located, handled and installed in accordance with the Vienna's Tree Preservation and Planting Guide.

Sec. 29-2-5. Tree Planting Season.

- (a) Tree planting shall occur during a planting season. Planting seasons are March 15 – May 30 (Spring Planting Season) and September 15 - November 30 (Fall Planting Season). Any tree planted outside of these planting seasons will be rejected by the Town Arborist upon inspection.
- (b) An applicant may request approval of a planting season waiver. Approval of such a waiver shall be at the discretion of the Town. If a planting season waiver permit is granted, the applicant shall post a bond (cash or surety) covering any tree plantings required to meet canopy coverage for the site. To compute the bond for tree plantings the applicant shall use the latest version of Vienna's Tree Preservation and Planting Guide to compute cost for proposed trees for canopy coverage. If after the following planting season, required tree plantings are not provided, the owner / applicant will be notified and the entire bond will be forfeited to the Town and the Town will use the bond money to complete required tree plantings. Any additional charges for completing the plantings shall be borne by the applicant. The bond will be released upon a passing inspection by the Town Arborist, with such inspection to occur no sooner than six months and no later than 12 months after the tree plantings.⁶³

Sec. 29-2-6. Use of Tree Banking and Tree Preservation and Planting Fund.

- (a) Where it can be demonstrated to the satisfaction of the Director of Parks and Recreation that the Tree canopy requirements set forth in § 29-2-1 cannot be met on-site, the portion of the requirement that cannot be met on-site may be met through the use of off-site tree banking or through a pro rata payment into a Tree Preservation and Planting Fund.
- (b) Tree Banking. The Director of Parks and Recreation may allow an off-site Tree canopy bank established by means of tree preservation, reforestation or afforestation to meet on-site canopy requirements as follows.
 - 1. All off-site tree banking must provide canopy that is protected in perpetuity through a conservation easement, deed restriction, or a similar protective mechanism acceptable to the Director of Parks and Recreation.
 - 2. Existing Tree canopy preserved for off-site tree banking may not occur on property that is already protected by means of other conservation ordinances and regulations. However, off-site Tree

⁶³ Source: Town of Vienna Public Infrastructure Manual, Sept. 28, 2015, rev. Oct. 11, 2018, Sec. 3.15.A (pg. 6); 5.2 (pg. 8), <https://www.viennava.gov/home/showpublisheddocument/3172/637541723047070000>

Vienna Model Tree Conservation Ordinance

- canopy may be provided on property already protected by the means listed above if the canopy is newly-established through a reforestation or afforestation effort.
3. The Director of Parks and Recreation will require the submission and approval of a five-year Tree canopy establishment plan and the collection of funds sufficient to ensure the execution of maintenance and management obligations of such plans.
 4. All tree banking must be located within the Town of Vienna.
- (c) Tree Preservation and Planting Fund. The Director of Parks and Recreation may allow developers to contribute a pro-rated fee into Vienna's Tree Preservation and Planting Fund. The Town may use this fund directly to preserve or plant trees on public property or may elect to disburse these funds to community-based organizations exempt from taxation under § 501 (c) (3) of the Internal Revenue Code with tree planting or community beautification missions for the purpose of implementing tree planting projects or programs that benefit the community at large.
1. Fees collected for these purposes will be based on the cost to establish 20-year Tree Canopy Cover using 2-inch caliper nursery stock tree.
 2. Pro-rata Tree Canopy Cost. The cost to establish 200 square feet of 20-year Tree Canopy using 2-inch caliper landscape tree must be set at the unit cost for a 1.5-2.0-inch caliper deciduous tree as stated in the current Fairfax County Land Development Services' Comprehensive Unit Price Schedule.⁶⁴

Sec. 29-2-7. Exemptions and Modifications.

- (a) The following uses are exempt from the requirements of this chapter: bona fide silvicultural activity as defined by Va. Code Ann. § 10.1-1181.1 and the areas of sites included in lakes, ponds, and the normal water elevation area of stormwater retention facilities.
- (b) Deviations of the overall canopy requirements set forth in § 29-2-1 may be granted by the Director of Parks and Recreation as discussed in § 29-2-3.

ARTICLE 3. TREE CONSERVATION PLAN REQUIREMENTS

Sec. 29-3-1. Tree conservation plans.

- (a) Applicability.
 1. **Tree conservation plans shall be submitted for review and approval by the Director of Parks and Recreation as provided in this Chapter.** Tree conservation plans are required for any of the following located in the RS-16, RS-12.5, and RS-10 zones: the development of an undeveloped tract; the redevelopment of any existing tract by removal of a dwelling and replacement with a new dwelling; or the addition to an existing dwelling that results in an area of disturbed soil exceeding 2,500 square feet.

⁶⁴ Source: Fairfax County Public Facilities Manual, Section 12-0312, Providing 10-Year Tree Canopy Through Tree Banking and Tree Fund. <https://online.encodeplus.com/regs/fairfaxcounty-va-pfm/doc-viewer.aspx#secid-564> Because Fairfax County issues a unit price schedule each year, we suggest that this Vienna Tree Conservation Ordinance refer to the Fairfax County Unit Price Schedule for the unit cost per tree. See: <https://www.fairfaxcounty.gov/landdevelopment/sites/landdevelopment/files/assets/documents/pdf/publications/unit-price-schedule.pdf>

Vienna Model Tree Conservation Ordinance

2. Tree conservation plans shall be submitted for review and approval by the Director of Parks and Recreation as part of all preliminary subdivision plats, construction plans, and grading plans as required by this Code, and to the extent applicable, the Fairfax County Code.
 3. A site plan, preliminary subdivision plat, subdivision construction plan, conservation plan, grading plan, or rough grading plan approved by the Director of Parks and Recreation and meeting the requirements contained herein shall constitute an approved Tree conservation plan. Tree conservation plans and associated plans, narratives, calculations, deviations and modifications shall be prepared in accordance with Vienna's Tree Preservation and Planting Guide.
 4. If a Tree conservation plan proposes tree removal of off-site or jointly-owned trees because they have critical root zones that extend into the project site and will be encroached on by construction activities causing irreparable damage, a written notice must be sent to the affected adjacent landowner(s) notifying them that tree removal is proposed. The notice shall include a Tree conservation plan that shows which trees will be irreparably damaged by the proposed development, and a description of the size, species, and species common name and general location description of the trees and an explanation that the trees have critical root zones that extend into the project site and will be encroached on by construction activities causing irreparable damage. The letter shall explain that 1) the tree(s) are proposed for removal at the developer's expense as part of this proposed development, 2) the designated trees cannot be removed without the property owner's permission, and if the owner chooses to retain the tree(s) despite the severe impacts to the root system, the owner may be responsible for any future corrective measures, including removal.
 5. The letter must be sent from the U.S. Postal Service via certified/return receipt, or other service that provides proof of mailing, to all applicable property owners.
 6. A copy of the domestic return receipts from the U.S. Postal Service or other proof of mailing of the notification provided with the letters shall be provided with the Tree conservation plan submitted to the Town.
 7. In all cases, off-site trimming or cutting of trees requires permission of all involved landowners. Notice of intent to remove a tree does not replace a builder's responsibility to secure permission of adjacent landowners for that work.⁶⁵
- (b) Exceptions to Applicability. A Tree conservation plan is not required to be submitted under the following conditions:
1. For the removal of trees grown and intended to be sold as live trees in the course of business on nursery or dealer properties registered by the Virginia Commissioner of Agriculture and Immigration (Plant Pest Act of 1952). This provision does not supersede the requirement to obtain an approved conservation plan prior to engaging in any other land disturbing activity.
 2. A Tree conservation plan shall not be required to cut down any tree which has become, or threatens to become, a danger to human life or property due to accidental or natural causes or other emergency.
 3. A Tree conservation plan shall not be required for the harvesting of trees on commercial forest land if the operation is conducted in conformance with the Virginia Department of Forestry's Best Management Practices.

⁶⁵ Source: Fairfax County, Land Development Services, Technical Bulletin 21-11, 12/9/21.
<https://www.fairfaxcounty.gov/landdevelopment/sites/landdevelopment/files/assets/documents/21-11-notification-of-proposed-removal-of-trees.pdf>

Vienna Model Tree Conservation Ordinance

ARTICLE 4. MONITORING AND INSPECTIONS

Sec. 29-4-1. Monitoring and Inspections.

The Director of Parks and Recreation shall provide for periodic inspections of Tree conservation activities in accordance with this Article and Vienna's Tree Preservation and Planting Guide.

ARTICLE 5. VIOLATIONS AND PENALTIES

Sec. 29-5-1. Constitution and Processing of Violations.

- (a) Any land disturbing activity and any removal of vegetation contrary to any of the provisions of this chapter shall constitute a violation.
- (b) Any person, whether owner, lessee, principal, agent, employee or otherwise, who violates any of the provisions of this chapter, or permits any such violation, or fails to comply with any of the requirements hereof; or any professional, including a Certified Arborist or Registered Consulting Arborist, who directs or causes another person to violate any provision of this chapter, shall be subject to the enforcement provisions of this article.
- (c) Upon becoming aware of any violation of any provision of this chapter, the Director of Parks and Recreation shall serve a notice of violation on the property owner, professional, or any other person committing or permitting the violation, either in person or by registered or certified mail. Such notice shall specify the provisions of the chapter which have been violated, the measures needed to remedy the violation, and a reasonable time in which to remedy the violations. Failure to take steps to comply with such notice within the time provided for therein shall constitute a separate violation of this chapter.
- (d) The Director of Parks and Recreation, on behalf of Town Council, may apply to the District Court or Circuit Court for injunctive relief to enjoin a violation or a threatened violation of any provision of this chapter.

Sec. 29-5-2. Replacement Trees and/or Vegetation.

- (a) Land disturbing activities involving tree removal without an approved Tree conservation plan.
 1. A Tree conservation plan shall be submitted for approval by the Director of Parks and Recreation when a violation is issued for land disturbing activity involving tree Clearing without an approved erosion and sediment control plan.
 2. Replacement trees and/or other vegetation may be required by the Director of Parks and Recreation in accordance with the guidelines set forth in Vienna's Tree Preservation and Planting Guide.
- (b) Land disturbing activity conducted in violation of an approved Tree conservation plan.
 1. A revision to the approved Tree conservation plan may be required by the Director of Parks and Recreation when land disturbing activities are conducted, without prior approval of the Director of Parks and Recreation, in areas outside the limits of Clearing and grading shown on the approved plan resulting in the removal or damage to trees or forested areas designated to be preserved on such plan.
 2. Replacement trees and/or other vegetation may be required by the Director of Parks and Recreation according to the guidelines set forth in the Vienna's Tree Preservation and Planting Guide.

Sec. 29-5-3. Criminal Violations and Penalties.

- (a) Any violation of the provisions of this Ordinance shall be deemed a misdemeanor and, upon conviction thereof, shall be punishable by a fine of not less than \$10 and not more than \$1000. Failure to remove or abate a violation within the time period established by the Court shall constitute a separate misdemeanor offense punishable by a fine of not less than \$10 nor more than \$1000, and any such failure during any succeeding ten-day period shall constitute a separate misdemeanor offense for each ten-day period punishable by a fine of not less than \$100 nor more than \$1500.

Vienna Model Tree Conservation Ordinance

- (b) The remedy provided for in this section shall be in addition to any other remedies provided by law, however, the designation of a particular violation of this ordinance for a civil penalty precludes criminal prosecution or sanction, except for any infraction that results in civil penalties that total \$5,000 or more.

Sec. 29-5-4. Infractions and Civil Penalties.

- (a) Any person or entity that violates any provision of this article by causing, contributing to, or permitting injury to or removal or destruction of a heritage, memorial, specimen, or street tree as designated under § 29-7-2 shall be subject to a civil penalty of \$2,500 for each violation. **Any other** violation of any provision of this ordinance shall be deemed an infraction and shall be punishable by a civil penalty of \$200 for the first violation; and subsequent violations arising from the same set of operative facts shall be punishable by a civil penalty of \$500 for each separate offense.
- (b) Each day during which any violation is found to have existed shall constitute a separate offense. However, in no event shall any such violation arising from the same set of operative facts be charged more frequently than once in any ten-day period, nor shall a series of such violations arising from the same set of operative facts result in civil penalties which exceed a total of \$5,000.
- (c) The designation of a particular violation as an infraction pursuant to Paragraph (a) above shall be in lieu of criminal sanctions, and such designation shall preclude the prosecution of a violation as a criminal misdemeanor unless such violation results in injury to any person or persons or the civil penalties under Paragraph (a) above total \$5,000 or more for such violation. If the civil penalties for a violation under Paragraph (a) above total \$5,000 or more, the violation may be prosecuted as a criminal misdemeanor.
- (d) After a notice of violation has been served on any person who violates this Ordinance, if the violation has not ceased within the reasonable time specified in the notice, then, upon the approval of the Town Attorney, the Director of Parks and Recreation shall serve a summons upon such person.
- (e) Such summons shall contain the following information:
 - 1. The name and address of the person charged.
 - 2. The nature of the infraction and the Ordinance provision(s) being violated.
 - 3. The location, date and time that the infraction occurred or was observed.
 - 4. The amount of the civil penalty assessed for the infraction.
 - 5. The manner, location and time in which the civil penalty may be paid to the Town.
 - 6. The right of the recipient of the summons to elect to stand trial for the infraction and the date for such trial.
- (f) The summons shall provide that any person summoned for a violation may elect to pay the civil penalty by making an appearance in person or in writing by mail to the Director of Finance⁶⁶ at least 72 hours before the time and date fixed for trial and, by such appearance, may enter a waiver of trial, admit liability, and pay the civil penalty established for the offense charged. Such summons shall provide that a signature to an admission of liability shall have the same force and effect as a judgment of court; however, an admission shall not be deemed a criminal conviction for any purpose.
- (g) If a person charged with a violation does not elect to waive trial and admit liability, the violation shall be tried in the general district court in the same manner and with the same right of appeal as provided by law. A finding of liability shall not be deemed a criminal conviction for any purpose.
- (h) The remedies provided for in this section are cumulative and not exclusive and shall be in addition to any other remedies provided by law.

⁶⁶ All references to “Department of Finance” in the Fairfax County Code changed to “Director of Finance”.

Vienna Model Tree Conservation Ordinance

ARTICLE 6. SATISFYING TREE CONSERVATION REQUIREMENTS

Sec. 29-6-1. Satisfying Tree Conservation Requirements.

- (a) Approval of a Tree conservation plan meeting the requirements of this chapter and subsequent release of all agreements and securities related to the Tree conservation plan shall be deemed to satisfy Tree conservation requirements except those Tree conservation requirements stemming from proffered condition, development plan, conceptual/final development plan, special exception, special permit or variance approvals.
- (b) When required Tree canopy is located on individual residential lots, the property owner shall not be precluded from adding, removing, or relocating Tree canopy provided that the developer has been released from all agreements and securities related to the landscape plan and the landscaping is not required as part of proffered condition, development plan, conceptual/final development plan, special exception, special permit or variance approvals.

ARTICLE 7. HERITAGE, SPECIMEN, MEMORIAL AND STREET TREES

Sec. 29-7-1. Authority, Purpose, and Intent.

This article is enacted pursuant to the authority and mandates of Va. Code Ann. § 10.1-1127.1. This article regulates the preservation and removal of heritage, specimen, memorial, and street trees, as defined in Sec. 29-11-1, when such preservation and removal are not commercial, silvicultural, or horticultural activities, including but not limited to planting, managing, or harvesting forest or tree crops.

Sec. 29-7-2. Designation.

- (a) The Town Arborist, **the Tree Commission, a citizen, or a citizen's group or organization** may, in accordance with the provisions of this article, identify and recommend that certain trees located within the Town be officially designated by ordinance as heritage, memorial, specimen, or street trees. The designation of any tree described herein, to include the area encompassing the Critical root zone area, shall be subject to all **applicable** preservation and conservation standards and practices. The designation of certain trees pursuant to this article shall consider the land use planned by the property owner.
- (b) Prior to the hearing on the adoption of such ordinance, the property owner of such trees shall be notified by certified mail. At the public hearing, the Town Arborist or a professional arborist shall present his recommendation in writing to Town Council for adoption of the tree designation ordinance. **The recommendation must describe the tree in question, its location and the factors which support its designation as a heritage, memorial, specimen or street tree.**
- (c) **The Town Arborist, the Tree Commission, a citizen, or a citizen's group or organization that submits a recommendation for adoption of a tree designation ordinance** shall also submit the written consent of all owners of property on whose land trees are proposed for designation.
- (d) The written recommendation identifying trees for consideration and potential designation shall include the following information:
 - (1) the street address of the parcel and/or tax map reference number;
 - (2) the name, address and telephone number of a representative of the citizen, citizen's group, or organization requesting the evaluation;
 - (3) the written consent of all owners of the property on whose land trees are proposed for potential designation under this article; and
 - (4) the certification that a copy of the report has been provided to the owners of the property on whose land trees are proposed for potential designation under this article, including a statement that if the Town pursues designation of the trees described in the report, there will be a public hearing before

Vienna Model Tree Conservation Ordinance

Town Council and the owner(s) will be notified by certified mail of the date and time of the hearing.

- (e) Upon the recommendation of the Town Arborist, trees on private property may be designated pursuant to this article with the express written consent of the property owner without compensation.
- (f) In the event that the application of this ordinance regulating the removal or preservation of a heritage, memorial, specimen, or street trees results in any taking of private property for a public purpose or use, the Town shall compensate by fee or other consideration the property owner for such taking to the extent that such claim is recognized and compensable under state or federal law and in accordance with the provisions of Chapter 2 of Title 25.1 of the Code of Virginia. However, it is the intent of the Town that the application of this article not result in any taking of private property for public purposes without the express written consent of the owner. To the extent that the owner's express written consent grants the Town any rights, that grant of rights is a gift.
- (g) A property owner shall not destroy a tree proposed for designation pursuant to this article after submission of a recommendation to and/or a decision by Town Council.
- (h) Designation of a tree or trees under this article shall not obligate or preclude the Town from inspecting, maintaining, or taking any other action with regard to that tree. Prior to undertaking any maintenance, care, or treatment of any tree so designated pursuant to this article, the property owner shall notify and submit such plan of action to the Director of Parks and Recreation for review and approval of same.
- (i) Designation of a tree under this article may require all easements necessary to preserve and protect the tree, including the natural vegetation, topography, and other natural features within the Critical root zone.

Sec. 29-7-3. Preservation and Maintenance.

- (a) In the event that Town Council permits the removal of such trees designated under this article, Town Council may require replacement of trees in accordance with the recommendation of the Town Arborist.
- (b) A property owner shall undertake reasonable efforts to preserve and protect any trees designated pursuant to this article.
- (c) A property owner shall immediately contact the Town Arborist to report the condition of any trees designated pursuant to this article that appear to be damaged, diseased, or dying.

Sec. 29-7-4. Exemptions.

The provisions of this Chapter shall not apply to the following limited circumstances:

1. Work conducted on federal or state property;
2. Emergency work to protect life, limb, or property;
3. Routine installation, maintenance, and repair of cable and wires used to provide cable television, electric, gas or telephone service;
4. Maintenance and repair of water lines or sewer lines when no other reasonable options are available;
5. Activities with minor effects on trees, including but not limited to, home gardening and landscaping of individual homes; and
6. Commercial silvicultural or horticultural activities, including but not limited to planting, managing, or harvesting forest or tree crops.

Vienna Model Tree Conservation Ordinance

Sec. 29-7-5. Designation and Protection of Street Trees.

- (a) All trees located on Town property, including all street trees as defined in Sec. 29-11-1, all trees located in Town parks and recreation fields, and all trees located on the Town Hall, Community Center, and Police Station properties, are designated as street trees under this Chapter.
- (b) Street trees shall be protected and/or bonded throughout the development process. Applicants shall be required to submit a cash or surety bond satisfactory to the Town Arborist to ensure maintenance and replacement for any street trees that could reasonably be expected to be disturbed or harmed during the development process.⁶⁷
- (c) Whenever street trees are to be installed, they shall be installed in a location satisfactory to the Director of Parks and Recreation based on the criteria set forth in Vienna's Tree Preservation and Planting Guide. Street trees shall not be installed in a location that impairs intersection sight distance.⁶⁸

Sec. 29-7-6. Heritage, Specimen, Memorial, and Street Trees.

Ordinances designating specific trees as heritage, specimen, memorial, or street trees under this Chapter, in addition to the street trees designated in § 29-7-5, will be listed in Appendix A to this section.

ARTICLE 8. ENCROACHMENT OF CERTAIN VEGETATION

Sec. 29-8-1. Trees, shrubs, vines, hedges, etc.—Encroachment on sidewalks and rights-of-way prohibited.

It shall be unlawful for the owners of property within the Town to allow tree branches, shrubs, vines, or hedges to overhang sidewalks or other public rights-of-way in such a manner as to obstruct the free movement of, or endanger, pedestrians or bicyclists using such sidewalks.

Sec. 29-8-2. Same—Notice to cut.

(a) Where tree branches, shrubs, vines, or hedges on such property are found to so obstruct sidewalks or rights-of-way, the Director of Parks and Recreation shall immediately notify the owner of such property to cut such tree branches, shrubs, vines, or hedges so as to render any effected sidewalks or rights-of-way free of obstruction.

(b) Such notice shall be in writing and sent by certified mail to the occupant of such property or the owner thereof at his last known address as reflected on the real property tax records of the Town. If after diligent inquiry, no address can be found for such owner, the notice herein referred to shall be posted in a conspicuous place on the property.

Sec. 29-8-3. Same—Procedure for cutting by Town.

If such tree branches, shrubs, vines or hedges have not been cut as provided in § 29-8-2 within ten days from the date of mailing or posting of the notice provided for in § 29-8-2, the Director of Parks and Recreation shall cause the cutting down by the Town's agent such tree branches, shrubs, vines or hedges.

⁶⁷ Source: Vienna Town Code, 17-15T, adapted to expressly reference street trees
https://library.municode.com/va/vienna/codes/code_of_ordinances?nodeId=PTIICOOR_CH17SU_ART2PRPL_S17-15CO

⁶⁸ Source: Source: Town of Vienna Public Infrastructure Manual, Sept. 28, 2015, rev. Oct. 11, 2018, Sec. 3.15.A (pg. 6); 5.2 (pg. 8),
<https://www.viennava.gov/home/showpublisheddocument/3172/637541723047070000>

Vienna Model Tree Conservation Ordinance

Sec. 29-8-4. Same—Costs of cutting.

Where tree branches, shrubs, vines or hedges, have been cut down on property pursuant to the provisions of § 29-8-3, the cost of such cutting shall be billed to the owner of the property. If such bill is not paid prior to the issuance of the next real estate tax bill, it shall be added to that Town real estate tax bill on such property and shall be a lien on such property to the same extent and effect as the real estate tax.

ARTICLE 9. VIENNA TREE COMMISSION.

Sec. 29-9-1. Tree Commission Purpose.

There is hereby created and established a commission to be known as the Vienna Tree Commission, which shall advise and assist Town Council and Town Staff on matters relating to the conservation and management of the Town's Trees and Tree canopy and assist the Town in the development and maintenance of specifications and guidelines related to the same.⁶⁹

Sec. 29-9-2. Tree Commission Membership.

The commission shall consist of seven members, all of whom shall be appointed by the Town Council. At least one member shall be selected from the Conservation and Sustainability Commission. In addition, a Town representative(s) from the Departments of Parks and Recreation and/or Planning and Zoning shall serve as an ex-officio member(s) of the commission. Except for the Town representative(s), all appointees shall be either residents of the Town or representatives of businesses or professions located in and licensed by the Town. In making all appointments to the commission, the Town Council shall give consideration to persons who have evidenced an interest or expertise in Tree conservation and tree policy.

Sec. 29-9-3. Tree Commission Term of Members.

The term of all members shall be for two years. Initially, four members of the board shall be appointed for a term of one year and three members shall be appointed for a term of two years. Thereafter, all appointments to the commission, except for those to fill an unexpired term, shall be for a period of two years. All members shall serve without compensation. Vacancies occurring on the commission for reasons other than the expiration of terms shall be filled by the Town Council for the remainder of the unexpired term. Members shall be eligible for reappointment. Members may be removed from the commission by a majority vote of the Town Council.

Sec. 29-9-4. Tree Commission Powers and Duties.

- (a) The commission shall have the following powers and duties:
1. To recommend rules, regulations, policies and programs to the mayor, Town Council, and Town staff relating to tree conservation and management, the care and improvement of the Town's urban forest, and protecting and enhancing the Town's tree canopy.
 2. To advise and assist the mayor, Town Council, and Town staff regarding the planting, protection, maintenance, preservation, and removal of trees, shrubs, and other plants located on public property within the Town

⁶⁹ Adapted from the Town Code, Chapter 27, which established the Conservation and Sustainability Commission, and Fairfax County Code 122-9 of the Fairfax County Code, which established the Fairfax County Tree Commission, the Arbor Day Foundation Guidance on Tree Boards, <https://www.arborday.org/trees/bulletins/coordinators/resources/pdfs/054.pdf>, and the Urban Forestry Network Model Tree Commission Ordinance <http://urbanforestrynetwork.org/ordinances/model%20ordinance.htm#:~:text=AN%20ORDINANCE%20TO%20MANAGE%20CITY,ESTABLISHMENT%20OF%20A%20TREE%20COMMISSION.>

Vienna Model Tree Conservation Ordinance

3. To ensure that the planting, maintenance, pruning, and removal of trees and shrubs on public property within the Town are done in accordance with current accepted standards as established and set forth by the National Arborist Association and by the American Association of Nurserymen's Council American Standard for Nursery Stock.
 4. To develop, maintain, and administer a written plan for the care, preservation, pruning, planting, replanting, removal, or disposition of trees and shrubs in parks, along streets, and in other public areas. Such plan will be reviewed annually, updated as necessary, and presented to the Town Council; upon acceptance and approval by the Town Council, such plan shall constitute the official public tree management plan for the Town
 5. To assist the Town with compiling and analyzing data to measure the Town's progress in restoring the Town's tree canopy.
 6. To serve as the Town's representative at, and to attend and bring back knowledge and information from, area regional and interagency meetings, seminars, summits, and conferences concerning urban forestry programs and policies.
 7. To undertake an ongoing program of public outreach and education in order to promote public understanding and support of the Town's public tree management plan and to increase public awareness of the value and benefits of a diversified, sustainable community forest.
 8. To recommend to the Town Council and to the appropriate municipal department directors the adoption of such rules, regulations, and policies as may be necessary to implement and enforce the public tree management plan and related ordinances.
 9. To work with Town staff to compile, publish, and update annually information and statistics regarding the Town's efforts with regard to trees, including a) the amount spent each year by the Town for the purchase and planting of trees, b) the number of trees planted on Town property each year, c) any available data regarding the extent of the Town's tree canopy, and d) any available data regarding an inventory of the Town's street trees, such as the percentage of street tree planting sites that are filled, and priority street tree planting sites that are unfilled. The commission shall present a report to Town Council each year that includes a description of the commission's activities, key data and statistics, and ongoing and anticipated future activities.
- (b) The Town Council shall have the right to review the conduct, acts, and decisions of the Town tree commission. Further, the tree commission, when requested by the Town Council, shall consider, investigate, make findings, report on, and recommend any special matter or question coming within the scope of its work.

Vienna Model Tree Conservation Ordinance

ARTICLE 10. APPEALS

Sec. 29-10-1. Appeals.

Any applicant aggrieved by a decision of the Director of Parks and Recreation in the administration of this chapter has the right to petition the Director of Parks and Recreation for reconsideration of the decision, provided such request is made in writing within fifteen (15) days of the date of the Director of Parks and Recreation's written decision.

ARTICLE 11. DEFINITIONS

Sec. 29-11-1. Definitions

- (a) *Arborist*⁷⁰ means a person trained in arboriculture, forestry, landscape architecture, horticulture, or related fields and experienced in the conservation and preservation of native and ornamental trees.
- (b) *Clearing* means removing or causing to be removed the vegetation growing in the soil which protects and stabilizes the soil. Such removing or causing to be removed shall include any intentional or negligent act to: (1) cut down, (2) remove all or a substantial part of, or (3) damage a tree or other vegetation which will cause the tree or other vegetation to decline and/or die. Such acts shall include but not be limited to damage inflicted upon the root system of the vegetation by the application of toxic substances, by the operation of equipment and vehicles, by storage of materials, or by alteration of the natural grade due to unapproved excavation or filling; or damage caused by the unapproved alteration of natural physical conditions.
- (c) *Critical root zone* means the minimal surface area and associated underground root system and soil that must remain undisturbed in order for a tree to survive significant soil disturbing activities such as compaction, cutting, grading, or filling that will occur in close proximity to the tree. The Critical root zone is defined by a circle whose radius starts at the center of the tree's trunk and terminates in any direction at the outer boundary of the area that must be left undisturbed in order to ensure tree survival.
- (d) *Destroy* means to cut down a tree or to perpetrate any intentional or negligent act that will cause a tree to decline or die within two years. This shall include, but not be limited to, damage inflicted upon the root system of a tree by the application of toxic substances, by the operation of equipment or vehicles, or by the change of natural grade by unapproved excavation or filling within the Critical root zone of a tree, or damage caused by the unapproved alteration of natural physical conditions.
- (e) *Forested area* means areas comprised of self-supporting tree and woody plants that exceed five feet in height at time of plan submission and meet criteria for health, condition and suitability as further defined in this section. Areas that meet the administrative definition provided above usually represent native forest or woodland plant communities that occur in a range of successional stages from rapidly changing early successional pioneer woodlands (often described as "scrub") to stable long-term sub-climax and climax forests. During mid to late successional stages, these plant communities typically consist of multiple layers of vegetation and other natural features including: super- and sub-canopy tree species; woody shrubs, herbaceous plants, vines, non-vascular plants and epiphytes; decaying leaf litter, root mass, fungi, soil biota; and abiotic components which the vegetation is dependent upon such as: soils, hydrologic conditions, and underlying geomorphic features.
- (f) *Heritage tree* means any tree that has been individually designated by Town Council⁷¹ to have notable historic or cultural interest.

⁷⁰ Arborist is used in place of Urban Forester to be consistent with Vienna Code.

⁷¹ All references to "Board of Supervisors" in provisions adapted from the Fairfax County Code changed to "Town Council".

Vienna Model Tree Conservation Ordinance

- (g) *Memorial tree* means any tree that has been individually designated by Town Council to be a special commemorating memorial.
- (h) *Specimen tree* means any tree that has been individually designated by Town Council to be notable by virtue of its outstanding size and quality for its particular species.
- (i) *Street tree* means any tree that has been individually designated by Town Council and that grows in the street right-of-way or on private property as authorized by the owner and placed or planted there by the Town of Vienna.
- (j) *Tree* means any self-supporting woody plant which visually produces one main trunk and a more or less distinct and elevated head with many branches that typically reach at least 15 feet in height at maturity, and for purposes related to 20-year Tree canopy requirements exceeds five feet in height at time of plan submission.
- (k) *Tree canopy* means the land area directly beneath the crown and within the dripline of a tree, or in the case of a group of trees or a forested area, the coalesced area directly beneath the overlapping crowns of trees whose boundary is defined by the extents of its outermost driplines.
- (l) *Tree conservation*, as applied to trees and forested areas, incorporates both tree preservation and tree planting efforts.

Zoning Ordinance Provision in Place in Fairfax County That is Recommended for Vienna's Zoning Code in Order to Allow Space for Trees in Front Yards of Homes.

When a new home in Vienna is constructed with a two- or three-car side-load garage in the front yard, the footprint of the garage, combined with the side-load driveway, typically take up much of the front yard. As a result, there is little space in the front yard to plant a tree. From our interviews, we learned that Fairfax County's Zoning Ordinance provides that no more than 25 or 30 percent (depending upon the zoning district of the property) of a residential property may be surfaced with a driveway. The original intent of the Fairfax County ordinance was to manage front yard parking in residential districts. But individuals we interviewed explained that the Fairfax County ordinance also has the benefit of maintaining an unpaved portion of the front yard that can be used for tree planting. Accordingly, it is recommended that the following provision be added to Vienna's Zoning Code:

Sec. __-__-__. Front Yard Surfacing⁷²

In the **RS-16, RS-12.5, and RS-10** Districts, no more than 30 percent of any front yard may be surfaced area for a driveway or vehicle or trailer parking area. On a pipestem lot, the surfaced area within the pipestem driveway is not included in this limitation. In addition, these limitations may be exceeded for a surfaced area that is:

- (a) Limited to two side-by-side parking spaces if the surfaced area is not more than 25 feet long and 18 feet wide;
- (b) On a lot that has its primary access from a major thoroughfare and consists of two side-by-side parking spaces and a vehicular turn-around area as long as the surfaced area is not more than 25 feet long and 18 feet wide and the turn-around area does not exceed 150 square feet; or
- (c) Provided as an accessibility improvement as approved by the Zoning Administrator.

⁷² Source: Fairfax Zoning Code, Section 6100.2(B)(3) Off-Street Parking Standards, Layout and Design
<https://online.encodeplus.com/regs/fairfaxcounty-va/doc-viewer.aspx?tocid=001.007.001.002#secid-572>

8. RECOMMENDATIONS IN TREE REPORTS PREPARED FOR OTHER COMMUNITIES

What follows is a summary of tree recommendations prepared on behalf of other communities in the region. Vienna may be able to make use of and benefit from many of these recommendations.

TREE REPORTS

| | |
|---|----|
| 1. ARLINGTON COUNTY, VA – URBAN FOREST MASTER PLAN, PREPARED BY DEPT. OF PARKS, RECREATION AND CULTURAL RESOURCES (JULY 2004) | 69 |
| 2. ALEXANDRIA, VA – URBAN FORESTRY MASTER PLAN, PREPARED BY DAVEY RESOURCE GROUP (2009) | 71 |
| 3. WASHINGTON, DC – DISTRICT OF COLUMBIA URBAN TREE CANOPY PLAN, PREPARED BY CITY (JANUARY 2013) | 74 |
| 4. LEESBURG, VA – URBAN FORESTRY MANAGEMENT PLAN, PREPARED BY DAVEY RESOURCE GROUP (FEB. 2006) | 75 |
| 5. CLEVELAND, OH – 2015 CLEVELAND TREE PLAN AND 2020 ANNUAL REPORT, PREPARED BY DAVEY RESOURCE GROUP | 78 |
| 6. FAIRFAX, VA – URBAN FORESTRY PROGRAM EVALUATION REPORT, PREPARED BY PLAN-IT GEO (APRIL 2021) | 79 |
| 7. CHARLOTTESVILLE, VA – URBAN FOREST MANAGEMENT PLAN (MAY 2009) | 81 |
| 8. ROANOKE, VA – URBAN FORESTRY PLAN, PREPARED BY THE URBAN FORESTRY TASK FORCE AND THE ROANOKE DEPT. OF PARKS AND RECREATION (APRIL 2003) | 84 |
| 9. WOODSTOCK, VA – URBAN TREE CANOPY PLAN, PREPARED BY WOODSTOCK PLANNING & COMMUNITY DEVELOPMENT AND THE WOODSTOCK TREE BOARD (SEPTEMBER 2011) | 86 |

1. ARLINGTON COUNTY, VA – URBAN FOREST MASTER PLAN, PREPARED BY DEPT. OF PARKS, RECREATION AND CULTURAL RESOURCES (JULY 2004)

Report Link: <https://arlingtonva.s3.dualstack.us-east-1.amazonaws.com/wp-content/uploads/sites/31/2014/04/Urban-Forest-Master-Plan.pdf>

Goal: maintain 40% or more overall tree cover

Improve Arlington's urban forest canopy coverage.

1. Determine the best methodology for refining our GIS analysis of the tree canopy. The most appropriate imagery should also be determined. New higher resolution satellite imagery is becoming increasingly available for analysis of tree canopy coverage.
2. Establish realistic tree cover goals for different land use categories using American Forest benchmarks of 40% overall, 50% for suburban residential, 25% for urban residential and 15% for central business districts. Based on the proportions of the different land use categories, achieving the goals for each would result in meeting the overall canopy cover goal.
3. Implement the planting plan (Appendix II) and its recommendations.

Encourage the preservation and planting of trees on private property.

4. Establish a tree fund that is dedicated to planting trees on private property and educating citizens about the value and stewardship of trees. The tree fund could be established through contributions for special exception projects that cannot meet planting requirements on-site.
5. Establish a program working with Civic Associations, in cooperation with volunteers, to plant trees on private property.
6. Explore options for establishing a funded County program to plant trees on private properties that abut street ROW.
7. Explore the options to offer incentives to preserve canopy and encourage planting on private property.
8. Explore reviewing the Tree Replacement Guidelines to ensure that the tree replacement formula better reflects an equitable calculation for the value of trees lost. This should take into consideration the weight of alternative valuation methods such as the landscape appraised value of the tree and the monetary value of the benefits the tree provides.

Ensure through education and outreach efforts that all stakeholders appreciate the value of Arlington's trees and what is necessary for their stewardship.

9. Continue to pursue outside training and certification opportunities for staff including the most up to date training in hazard tree identification, tree preservation and plant appraisal.
10. Develop a "one-stop shopping" comprehensive web site for trees. Property owners, developer and citizens could use the site to find out how trees affect them (and how they affect trees). Access to important information regarding County regulations and programs should be available as well as read only access to the GIS tree inventory data.
11. Maintain a public presence at fairs, the Farmer's Markets and continue to hold events such as panel discussions and informational presentations for the community.
12. Continue to partner with the Urban Forestry Commission, Arlington ReLeaf and Tree Stewards and Cooperative Extension in education and outreach efforts.
13. Expand upon and increase the availability of our urban forestry related literature.

Improve coordination and communication regarding County tree regulations, policies and planting and preservation standards and guidelines.

14. Develop or use existing networks (Metropolitan Washington Council of Government Community Forestry Network and National Capital Society of American Foresters Urban Forestry Workgroup) to share our program objectives with potential partners in the region.
15. Continue to refine partnerships with Dominion Virginia Power, Northern Virginia Regional Parks Authority and Virginia Department of Transportation and expand these partnerships to other entities.
16. Proactively share our data, standards, regulations and policies with other stewards of our urban forest such as property owners and the development community.
17. Engage other property owners in Arlington County as well as surrounding urban forest managers in a cooperative effort to better steward the regions urban forest.
18. Coordinate, with other County departments and other entities, planting, planning and maintenance activities where appropriate to optimize our stewardship.
19. Ensure early review of development plans during the design process to promote tree preservation as opposed to tree replacement, when feasible.

1. ARLINGTON COUNTY, VA – URBAN FOREST MASTER PLAN, PREPARED BY DEPT. OF PARKS, RECREATION AND CULTURAL RESOURCES (JULY 2004)

Ensure that tree planting and preservation are important elements of our streetscapes.

20. Ensure that there are liaisons for each department and/or division that has any effect on our stewardship of the urban forest.
21. Create more opportunities for tree planting in the public ROW such as: tree nubs; street narrowing; larger planting strips; curb, gutter and sidewalk design and material innovations.
22. Optimize communication between County departments and divisions so that redeveloped County ROW is planted as soon as possible.
23. Work with streetscape designers and planners to ensure tree species diversity.
24. Implement a street tree planting plan (see Appendix II).

Preserve existing wooded parks and natural areas, and plant trees in parks, natural areas and other public open spaces to improve Arlington's overall tree canopy.

25. Continue to monitor tree health, forest structure and the occurrence of invasives in Parks and naturally forested areas throughout the County.
26. Begin to inventory trees in parks, natural areas and other public facilities.
27. Wherever possible manage forested areas on public lands so that there is adequate species diversity and size class distribution to maintain a sustainable urban forest.
28. Control and manage invasive plant species and tree pests and diseases in an environmentally responsible manner.
29. Manage and enhance areas adjacent to existing streams as riparian forest buffers wherever possible and appropriate.
30. Continue the partnership between DPRCR and DES as well as local environmental groups to ensure that the best management practices (BMPs) are used to maximize the habitat benefits the urban forest provides.

Ensure that urban forest maintenance practices continue to improve the quality of tree canopy in Arlington so that potential benefits are maximized for the community.

31. Ensure that best management practices (BMPs) are used when providing tree maintenance in critical areas such as riparian stream buffers.
32. Use the street tree inventory to determine conflicts with the built environment (sidewalks and tree grates) and prioritize their mitigation.
33. Update the GIS street tree inventory with tree maintenance and removal data.
34. Continue to systematically review potential tree hazards using the tree inventory. Consider the development of a Tree Risk Management Plan.
35. Using the tree inventory, develop a realistic plan for a five-year pruning cycle of the trees in the street ROW.
36. Create a GIS mapping program for invasives to track progress and assist with management.

Planting Plan

37. Use the GIS street tree inventory to target available planting spaces in the County streets ROW. Planting levels for the ROW are based on a goal of having a full stocking level for public street trees in three years.
38. Plant Parks and other County facilities at the optimal level. Passive open space will be forested wherever appropriate.
39. Use the GIS to evaluate the overall urban forest canopy to determine where planting opportunities exist on public property.
40. Continue to work with Schools to plant and maintain trees on their grounds.
41. Establish a tree fund (funds from special exception projects that cannot plant required replacements on-site) that will be dedicated to planting on public and private properties.
42. Develop opportunities and partnerships with environmental organizations such as Arlington ReLeaf, American Forests, and the Potomac Conservancy to plant more trees with volunteers.

2. ALEXANDRIA, VA – URBAN FORESTRY MASTER PLAN, PREPARED BY DAVEY RESOURCE GROUP (2009)

Report Link: <https://www.alexandriava.gov/uploadedFiles/planning/info/masterplan/UrbanForestryMasterPlanFinal2009.pdf>

Goal: Increase Alexandria's tree canopy.

1. Adopt American Forests' recommended tree canopy coverage goal of 40% and develop a citywide strategy to meet this goal.
2. Perform tree canopy coverage analysis every five years using City Green or other comparable programs to determine changes in canopy cover and impervious surfaces.
3. Sustain Alexandria's existing tree canopy through a comprehensive tree replacement and maintenance program for trees on public property and by developing new and promoting existing educational resources for the public.
4. Plant 400 more trees per year above what is currently being planted annually on public properties, including City rights-of-way, schools, libraries and other public facilities.
5. Actively seek ways to increase Alexandria's tree canopy on private property.
6. Establish a tree bank to plant trees on both public and private properties. The bank would be funded through various sources such as development-related activities, property damage reimbursements, and other sources.
7. Create a grant program to permit the use of City funds to subsidize all or a portion of the cost for planting trees on private property.
8. Continue the City's spring and fall tree sales program (established in 2005 under the auspices of the Urban Forestry Steering Committee).
9. Achieve and maintain a species diversity where no single genus comprises 15% and no single species comprises 5% of the total population.
10. Work with local civic and business groups to identify opportunities to plant additional trees on public and private lands.
11. Take steps to incorporate the use of more sustainable approaches to environmental design, such as rooftop gardens, to provide additional benefits for the City's overall canopy on private as well as public properties. Green roofs can provide some of the functions of forested areas including carbon fixation, shading, cooling, and watershed protection. Green roofs on underground parking structures can provide ground-level open space that is important to the continuous open space network

Goal: Develop comprehensive management plans for all trees on public lands including a street tree inventory and inventories of trees located in public parks, schools, and facilities.

12. Conduct an inventory of all trees located in the public rights-of-way, in parks, on school properties, and at all other public properties and facilities. The inventory should be completed and reviewed on a continuous five-year schedule or as changes occur.
13. Develop and implement master landscaping, planting, and maintenance plans for all public properties, including City rights-of-way, schools, libraries, stream corridors, and open spaces, and implement one to two of these plans each year. These plans should provide maintenance rotations and establish level-of-service standards for each land use type. Plans should also include strategies for regular inspections of trees, criteria for treatment, and practical methods to maintain current information on all trees subject to treatment. Coordinate with the Departments of Transportation and Environmental Services and Planning and Zoning to ensure plans are consistent with existing transportation and small area plans.
14. Develop quantitative methods to evaluate the overall health of Alexandria's street trees and trees on public properties.

Goal: Improve the health and diversity of street trees, reduce the potential safety risks of trees to the public, and maximize planting sites along major thoroughfares and all public rights-of-way.

15. Plant and establish additional trees to achieve a 100% stocking level of available planting sites.
16. Actively seek opportunities to establish tree-lined medians along rights-of-way that are wide enough to create boulevards. Develop an urban forestry enhancement program specifically for Alexandria's unique boulevards and other significant transportation corridors.
17. Establish criteria to identify sites that will permit the expansion of tree planting strips and tree wells to provide more suitable growing conditions for street trees, decrease conflicts between tree roots and urban infrastructure, and meet all Americans with Disabilities Act requirements for adequate clearance and passage.
18. Work with the Departments of Transportation and Environmental Services, and Planning and Zoning to develop standards for, and require, innovative planting techniques and products to facilitate tree planting in restricted, high-use, difficult, and special needs areas.

2. ALEXANDRIA, VA – URBAN FORESTRY MASTER PLAN, PREPARED BY DAVEY RESOURCE GROUP (2009)

19. Employ planting techniques that will promote the healthy growth of trees within an urban setting, such as alternative soil mixtures, extended tree wells, and systems to direct and manage root growth and limit conflicts between roots and urban infrastructure. Develop standards for planting in areas where space is too restricted or soil, aeration, drainage, or other conditions preclude providing adequate space and a satisfactory environment for trees to survive and thrive.
20. Explore opportunities to protect existing trees by using alternative paving materials and methods to correct conflicts between tree roots and sidewalks, such as rubber sidewalks, stone dust, permeable paving, and alternative pavement profiles.
21. Seek to relocate all overhead wires underground to avoid conflicts with trees and provide increased opportunities to plant large shade trees with an emphasis on major corridors.

Goal: Improve the health and diversity of public trees located in City parks, schools, and open spaces, reduce the potential safety risks of these trees to the public, and maximize canopy cover.

22. Establish and implement comprehensive planting and maintenance plans for trees located in public parks, on school and other public properties and open spaces. These plans should be developed in conjunction with park landscape master/management plans, which include both development and rotational maintenance costs.
23. Build on the Alexandria Open Space Plan's recommendation to seek innovative ways of creating more open space by developing and implementing pilot projects such as Green Streets (see Appendix F), which are aimed at redesigning streets to reduce impervious surface, thus freeing up land for tree planting and helping to meet other environmental goals, such as reducing the impact of storm water runoff.
24. Rededicate Fort Ward Park as the City's Arboretum and develop and adopt a master plan for the park. Create a collection of trees and other woody plants that will serve as an educational resource for City residents and visitors.
25. Promote the value of tree donations and other support programs, such as the Living Landscape Program, as a source of trees to be planted in parks and other public open spaces. Park master plans should be developed with tree locations that are ear-marked for living landscape trees.
26. Continue to celebrate Arbor Day and hold other special events and educational programs about urban forestry on parks and school grounds.

Goal: Improve stream corridors and other natural areas through urban forest management.

27. Encourage the establishment and healthy growth of native tree species through planting and maintenance.
28. Control invasive plant species.
29. Improve the maintenance of overgrown and currently inaccessible and under-used stream valleys and natural public open space.

Goal: Establish a strategy for working collaboratively with institutions, such as hospitals, religious facilities, and private schools, to establish an appropriate approach to open space preservation and tree planting to benefit the public.

30. Provide and promote incentives to plant trees and implement projects to preserve and enhance the tree canopy on institutional and semi-public sites, such as INOVA Alexandria Hospital and Episcopal Seminary and High School.
31. Encourage the establishment and dedication of open space, tree canopy conservation, scenic, and historic easements on institutional and private properties.

Goal: As the largest property owner in the City, owners of industrial, commercial, and residential properties should preserve, plant, and maintain trees.

32. Develop guidelines for, and privately fund, a City grant program to support tree planting on private property. Grants should be made available to qualified homeowners, civic organizations, places of worship, religious institutions, and other not-for-profit organizations.
33. Educate private property owners about the benefits of trees and proper planting and maintenance strategies.
34. Encourage homeowners and civic associations to create tree or beautification boards with which the City Arborist can communicate and provide information about tree planting and maintenance on this type of property.
35. For commercial and industrial properties, enforce site plan and special use permit landscape requirements and conditions for new and existing development sites. Perform site inspections to ensure compliance.

Goal: Strengthen Alexandria's ability to protect and increase its tree canopy as permitted by State and local regulation.

36. Evaluate, update, and enforce the City's existing rules and regulations.
37. Increase and maximize the amount of tree canopy coverage required for Development Special Use Permits.

2. ALEXANDRIA, VA – URBAN FORESTRY MASTER PLAN, PREPARED BY DAVEY RESOURCE GROUP (2009)

Goal: Improve the health, appearance, and longevity of all street trees and trees planted in parks, at schools, and on all public properties through regular maintenance.

38. Plan, fund, and implement a five-year pruning cycle for all established trees and a three-year establishment program for new trees planted along City streets, in parks, and on school and other public properties.

Goal: Reorganize and support the urban forestry program to achieve the goals and implement the recommendations of the Urban Forestry Master Plan.

39. Transform the City Arborist Office and Tree Maintenance Section into a proactive Urban Forestry Section with a systematic and strategic focus on the urban forest system as a whole. Develop a management plan and provide resources needed to effectively manage the plan. Optimize personnel allocations and create efficiencies by combining the City's urban forestry and horticulture programs under one Natural Resources Section.

40. Create a new Urban Forest Specialist position that would be dedicated to activities aimed at preserving and enhancing the City's urban forest.

41. Fund requests for additional tree trimmers and horticulture staff necessary to successfully meet the goals of the Urban Forestry Master Plan.

42. Establish benchmarks and report progress in an annual State of the Urban Forest Report to the City Manager and City Council.

Goal: Actively engage the citizens of Alexandria to be involved in the care, protection, and planting of the urban forest.

43. Develop and implement an effective public outreach and education strategy and pursue it actively and consistently. Volunteers are a greatly untapped resource in this regard and should be a core part of this strategy.

44. Create a series of Public Service Announcements on various urban forestry topics for radio, cable access television, and print news media outlets.

45. Develop and distribute information about the proper care for trees after they are planted.

46. Promote the preservation and expansion of Alexandria's tree canopy with programs, such as seminars and neighborhood tree walks.

Goal: Expand educational opportunities regarding the urban forest for the citizens for Alexandria.

47. Increase support for, and promote the expanded use of, existing public resources, such as the Cooperative Extension Service, the Tree Stewards, and Master Gardeners of Arlington and Alexandria, to provide assistance, advice, and educational opportunities and materials to the citizens of Alexandria.

48. Fund an additional extension agent at Virginia Cooperative Extension who would provide vital volunteer programming services for Alexandria's residents. This person would, among other tasks, work to expand Alexandria's role in the Tree Stewards of Arlington and Alexandria program, a group of volunteers trained by the extension service to educate and assist citizens on proper tree planting and care.

49. Promote the availability and distribution of information to the public about the selection, planting and care of trees through the development of an effective website www.alexandriava.gov/trees, and the publication of handbooks, fliers and other publications.

50. Encourage collaborative efforts with local schools of landscape architecture to study opportunities to improve streetscape, public open space, park, school, and facility designs.

51. Create partnerships with allied businesses and organizations to share in the distribution of timely urban forestry information; partnerships could include: local realtors, utility companies, nursery and landscape companies, and tree services contractors.

52. Actively promote the existing Tree Stewards program and engage other citizens by creating opportunities to become program volunteers to assist in completing the vital maintenance tasks proposed in the Urban Forestry Master Plan that are currently not funded or inadequately funded for completion by City staff. These tasks might include: conducting tree inventories, small tree maintenance, tree planting, pruning teaching, grant writing, and marketing and public relations.

3. WASHINGTON, DC – DISTRICT OF COLUMBIA URBAN TREE CANOPY PLAN, PREPARED BY CITY (JANUARY 2013)

Report Link: https://doee.dc.gov/sites/default/files/dc/sites/ddoe/page_content/attachments/Draft_Urban_Tree_Canopy_Plan_Final.pdf

Goal: 40% canopy by 2032

Approach to increasing canopy cover:

1. Maintain existing tree canopy cover. This is crucial because existing small trees will become the future canopy. This approach will be the focus where canopy cover is already greater than 40%.
2. Focus new planting in priority planting areas. These are areas where an urban canopy analysis has ranked parcels from highest potential to increase canopy to lowest potential (highest existing canopy cover).
3. Strengthen District tree policies and regulations. Strengthening laws and regulations will both help protect existing canopy but also potentially provide additional funding to increase planting in priority areas.

Potential Actions to Achieve the Urban Tree Canopy Goal

1. Expand funding for the RiverSmart Homes tree planting program
2. Expand the District tree rebate Program
3. Reduce the stormwater fee and/or property tax for properties that plant and maintain trees
4. Institute a competitive tree planting grant program aimed at Advisory Neighborhood Commissions (ANCs), Civic & Citizens Associations, and Wards
5. Pay hydrant converter fees for groups maintaining trees
6. Encourage the federal government to adopt riparian buffer policies
7. Undertake social marketing research and launch a tree planting outreach Initiative
8. Continue planting street trees through UFA contracts
9. Task District Agencies to Develop Site Specific Tree Planting Plans for District-owned Properties
10. Craft a large property canopy plan grant program
11. Create a citywide contest/award for best canopy plan/action
12. Offer grants for property owners to plant large trees safely back from overhead wires and/or adjacent to impervious areas
13. Fund targeted upland tree planting and non-recreational space planting efforts
14. Create a large property tree planting grant program
15. Encourage the Army Corps of Engineers to reexamine the Anacostia and Potomac flood walls for conversion to riparian flood zone forests
16. Cull the deer population through work in coordination with NPS
17. Create a weed warrior program
18. Remove invasive tree species through a coordinated inter-agency effort
19. Subsidize invasive species removal
20. Expand and advertise the District Department of Public Works free mulch for District residents Develop outreach materials on: Tree-related laws and policies; Invasive species identification and control; How to choose an arborist; and specific outreach to landowners adjacent to forested areas
21. Institute a unified tree maintenance and tree planting contract for the District
22. Expand the number and role of city arborists at landholding agencies
23. Provide professional development courses
24. Offer scholarships for arboriculture training
25. Create a Canopy Keepers on Public Lands program
26. Integrate the District summer jobs program into tree maintenance programming
27. Amend DDOT's regulations and standards and specifications to where possible adopt larger tree box volumes
28. Maintain all open soil tree boxes and retrofit tree boxes to meet Tree Space Design Manual sizing

3. WASHINGTON, DC – DISTRICT OF COLUMBIA URBAN TREE CANOPY PLAN, PREPARED BY CITY (JANUARY 2013)

29. Perform a city-wide tree box analysis to find areas where tree boxes can be expanded and fund the removal of these impervious surfaces
30. Study the potential to adopt more street tree friendly de-icing measures
31. Expand Urban Forestry Administration's Canopy Keeper program including: An online database; Expanding the program to include outside public right of way (PROW) and additional outreach and advertising
32. Expand large tree preservation efforts
33. Expand efforts to recruit and train BIDs and Federal Agencies for tree maintenance
34. Develop and maintain a tree planting database
35. Perform a tree mortality study
36. Perform a District canopy analysis every 5 years

4. LEESBURG, VA – URBAN FORESTRY MANAGEMENT PLAN, PREPARED BY DAVEY RESOURCE GROUP (FEB. 2006)

Report Link: <https://www.leesburgva.gov/home/showdocument?id=1003>

1. Tree Planting and Increased Forest Canopy Cover

- 1A. Achieve an overall tree canopy cover of 40% in the Town of Leesburg.
 - 1A.i. Set minimum percent canopy cover per land use.
 - 1A.ii. Achieve at least a 90% stocking level for street trees.
 - 1A.iii. Perform periodic canopy analyses.
- 1B. Create a Town *Master Tree Planting*
 - 1B.i. Create a plan with optimum number of trees per area or land use.
 - 1B.ii. Review and update the master recommended tree list.
- 1C. Revise current legislation, enact new legislation, and/or create incentives for tree planting on private property.
 - 1C.i. Consider strengthening Town ordinances to require greater tree planting and long-term accountability on private property
 - 1C.ii. Consider density bonuses, tax abatements, and other incentives to plant and maintain tree cover on private property.
- 1D. Ensure a high level of overall species diversity.
 - 1D.i. Achieve a species mix where no single genus or species comprises more than 20% and 10%, respectively, of the total tree population.
 - 1D.ii. Favor large canopy tree species.
 - 1D.iii. Plant urban-tolerant species.
- 1E. Perform tree planting using current arboricultural and horticultural standards
 - 1E.i. Planting operations should be revised to incorporate ANSI standards.
 - 1E.ii. Achieve an urban forest that has a 20:60:20 mix of small, medium, and large mature trees.
- 1F. Establish adequate funding for tree planting
 - 1F.i. Establish a minimum level of service for tree planting of \$95,000 annually.
- 1G. Plant public trees only if there is a maintenance program.
 - 1G.i. Establish a small tree maintenance program.

2. Improved Tree Planting/Protection Legislation and Policies

- 2A. Review and revise the Zoning Ordinance
 - 2A.i. Revise Article 12.2 to include the Urban Forester as the primary, or one of the primary, Town review and enforcement officials.
 - 2A.ii. Reconcile the 20-year tree canopy requirements in Section 12.3 with the Tree Commission goals and current urban forest management standards

4. LEESBURG, VA – URBAN FORESTRY MANAGEMENT PLAN, PREPARED BY DAVEY RESOURCE GROUP (FEB. 2006)

- 2A.iii. Research and implement the long-term inspection and enforcement of the tree canopy requirements.
- 2A.iv. Revise and replace the schematics and specifications for planting trees in the right-of-way in Section 12.4.5.A and B with currently approved methods for planting trees in streetscape and roadside situations.
- 2A.v. Amend Section 12.9 to reference specific current, nationally accepted professional arboricultural and horticultural standards
- 2A.vi. Create a special purpose district for the tree canopy in Leesburg
- 2B. Review and revise the Subdivision and Land Development Regulations
 - 2B.i. Restructure Section 13.45 to include charges for inspection of tree preservation areas and new tree plantings
 - 2B.ii. Designate the Urban Forester as a reviewer throughout the entire subdivision approval process.
 - 2B.iii. Review and amend Section 13.86 to address tree loss during development and require a no net tree loss policy for private property development
 - 2B.iv. Add the *Urban Forestry Management Plan* to the 11 required specifications of Section 13.99.
- 2C. Review and revise Article 8 of the Design and Construction Standards Manual
 - 2C.i. State that all fieldwork shall be done in accordance to ANSI horticultural and arboricultural standards
 - 2C.ii. Improve Section 8-310 by referencing ANSI A300 Part 5 standards, and review the replacement policy for retained trees that are damaged.
 - 2C.iii. Improve Section 8-400 with ANSI standard references, and designate the Urban Forester as an approval source.
 - 2C.iv. Section 8-500 Tree and Plant Selection should refer to the updated lists and guidelines in the Zoning Ordinance.
 - 2C.v. Improve Section 8-600 with ANSI Standards as well as other national, state, and local standards
- 2D. Create a Public Tree Ordinance.
 - 2D.i. Urban Forester, Town Attorney, and Town Manager creates the ordinance and Council adopts it.
 - 2D.ii. Implement a public tree work permit system.
- 2E. Increase and improve tree preservation efforts
 - 2E.i. Increase inspection and enforcement of Town regulations on private property.
 - 2E.ii. Use most currently accepted BMPs for preserving trees on construction sites and develop Tree Preservation Plans for construction projects.
 - 2E.iii. Encourage land donations and conservation easements to protect remaining forest tracts.
- 2F. *2005 Town Plan.*
 - 2F.ii. Assist the Town with implementation of the Action Program in the *2005 Town Plan.*
 - 2F.i. Document Leesburg's *Urban Forestry Management Plan* in the *2005 Town Plan.*
 - 2F.iii. As existing tasks in the Action Program are accomplished, develop additional tasks to implement and meet the goals of the *2005 Town Plan.*
- 2G. *Business Development Strategy Plan.*
 - 2G.i. Support the business community's effort to create Tax Increment Districts in Leesburg that will support and enhance urban forest services
 - 2G.ii. Support the business community's efforts to create a grant program for tree and landscape planting on private property.
 - 2G.iii. Support the Economic Development Commission's goal to create a 501(c) (3) nonprofit development organization to hold land and take donations
- 2H. *Residential Traffic Management Plan.*
 - 2H.i. Implement the recommendations to incorporate trees and landscaping in each improvement project as appropriate
 - 2H.ii. Promote the Adopt-A-Street program
 - 2H.iii. Develop standards, specifications, and/or policies for appropriate sight distance requirements for tree planting in the right-of-way.
- 2I. *Comprehensive 20-Year Parks, Recreation, Open Space, Trails, and Greenways Master Tree Planting Plan*
 - 2I.i. Coordinate tree planting and fund raising goals.
 - 2I.ii. Increase communication between staff and Commissions.
- 2J. *Tree Commission Strategic Plan*
 - 2J.i. The Commission members' duties and responsibilities should be formalized by including such descriptions in an ordinance of the Town Code

4. LEESBURG, VA – URBAN FORESTRY MANAGEMENT PLAN, PREPARED BY DAVEY RESOURCE GROUP (FEB. 2006)

- 2J.ii. Commission should prioritize their efforts to focus on seeking additional funding and support from the Council, and educating and organizing citizens to support urban forest management
- 2J.iii. Review the Strategic Plan and annually report accomplishments and amendments to the Town Council and the citizens.

2K. *Urban Forestry Management Plan*

- 2K.i. Review Plan and program accomplishments annually and report findings to Town Council and citizens.
- 2K.ii. Consider major updating and revisions

2L. *Tree Removal and Replacement Guidelines.*

- 2L.i. Review and update guidelines considering current industry standards and local empirical success/failure

2M. *Tree Planting Specifications*

- 2M.i. Review and update specifications considering current industry standards and local empirical success/failure

2N. *Tree Protection Specifications*

- 2N.i. Review and update specifications considering current industry standards and local empirical success/failure

3. Expanded Education and Public Relations

3A. Continue public and citizen urban forestry outreach efforts

- 3A.i. Arrange or participate in local events to promote trees and the urban forestry program.
- 3A.ii. Encourage individual citizen interactions with the Urban Forester and Tree Commission members.
- 3A.iii. Establish a printed or electronic urban forestry newsletter

3B. Create an educational program for elected public officials.

- 3B.i. The Tree Commission and Urban Forester should inform and educate elected Town leaders

3C. Promote internal educational opportunities.

- 3C.i. The Urban Forester should regularly host tree benefits and planting and maintenance education sessions with Town staff.
- 3C.ii. Daily, routine interaction of the Urban Forester and other Town staff should be viewed as educational opportunities

3D. Market the urban forestry program

- 3D.i. Seek regional and national conference presentations and publication of articles.
- 3D.ii. Urban Forester should work with the business and tourism communities to include the benefits of trees into their outreach efforts and projects

4. Improved Organizational Structure and Funding

4A. Centralize urban forest management

- 4A.i. Reorganize major urban forestry tasks and duties into one department.
- 4A.ii. Urban Forester should be designated as the key decision-maker in all tree-related matters

4B. Increase staff and resources

- 4B.i. Perform a job analysis to determine optimum staffing levels.
- 4B.ii. Perform an operational review to determine workloads, equipment needs, and training needs.

4C. Encourage interdepartmental coordination.

- 4C.i. The Urban Forester becomes more involved in public project planning and review.
- 4C.ii. The Town Manager provides leadership to ensure efficient communication, coordination, and cooperation.

4D. Seek new and reallocated public and private funding sources

- 4D.i. Perform a budget analysis on current Town operational and capital budgets related to urban forest management.
- 4D.ii. Create a Tree Bank to collect, manage, and disperse monies from various sources
- 4D.iii. Increase and/or reallocate General Fund support of urban forestry program.

4. LEESBURG, VA – URBAN FORESTRY MANAGEMENT PLAN, PREPARED BY DAVEY RESOURCE GROUP (FEB. 2006)

- 4D.iv. Seek corporate and private grants.
- 4D.v. Use tax incentives to increase citizen and business participation in the urban forestry program.
- 4D.vi. Authorize the collection of compensatory payments for public tree damage.

5. Improved Urban Forest Maintenance

- 5A. Implement various tree maintenance programs for all public trees
 - 5A.i. Establish a preventive maintenance program
 - 5A.ii. Implement an insect and disease monitoring program
 - 5A.iii. Establish a routine, mature tree care program.
 - 5A.iv. Establish a new or small tree maintenance program
 - 5A.v. Establish an emergency response and risk tree management program.
 - 5A.vi. Create and properly equip a Town tree maintenance crew(s), or contract for the service.
- 5B. Conduct a complete public tree inventory.
 - 5B.i. Perform a complete public tree inventory
 - 5B.ii. Commit to regular, routine inventory data entry and updating.
 - 5B.iii. Use GPS and GIS technologies to help manage the urban forest
- 5C. Use current and accepted best management practices and arboricultural work standards
 - 5C.i. Use all appropriate and current versions of the ANSI standards in tree maintenance operations
- 5D. Train Town employees.
 - 5D.i. Use all best management practices promoted by arboricultural industry leaders.
 - 5D.ii. Review Urban Forester's tree planting, protection, and removal and replacement specifications annually and revise as needed.
 - 5D.iii. Encourage key staff to become Certified Arborists and/or Certified Tree Workers.
 - 5D.iv. Provide frequent in-house and professional training for all tree planting and maintenance tasks, safety, and equipment and tool use.

5. CLEVELAND, OH – 2015 CLEVELAND TREE PLAN AND 2020 ANNUAL REPORT, PREPARED BY DAVEY RESOURCE GROUP

Report Links: 2015 plan (<http://www.clevelandtrees.org/wp-content/uploads/2018/02/ClevelandTreePlan.pdf>); 2020 annual report (<http://www.clevelandtrees.org/wp-content/uploads/Cleveland-Tree-Plan-2020-Tree-Canopy-Progress-Report.pdf>)

Goal: 30% canopy cover by 2040

Goal One: Recognize trees as critical community infrastructure

- Action 1: Establish a unified voice, formalize partnerships
- Action 2: Develop an outreach and engagement strategy
- Action 3: Develop and implement a funding plan

2020 Recommendation:

Communicate & Share Cleveland Tree Data.

Goal Two: Reverse the trend of canopy loss

- Action 7: Establish a canopy goal, plan for canopy updates

5. CLEVELAND, OH – 2015 CLEVELAND TREE PLAN AND 2020 ANNUAL REPORT, PREPARED BY DAVEY RESOURCE GROUP

Action 8: Institute policy changes supportive of urban forestry

Action 9: Plant with a purpose: trees for neighborhood equity

2020 Recommendations:

- Reframe the canopy goal. Explore opportunities to reframe and refine Cleveland's canopy goal to better engage, build support and set achievable targets (see p. 26 - Reframing the Canopy Goal)
- Plan for successful tree establishment. Develop an establishment plan for each tree planting project. The plan should identify the tasks required for successful tree establishment (e.g. watering, mulching), resources required to accomplish tasks, length of establishment period and parties responsible for implementing tasks.
- Establish guidelines and processes for the Tree Preservation Fund.
 - Develop processes and guidelines for assessing, accepting and utilizing fines and penalties that are collected in the City of Cleveland Tree Preservation Fund (Ordinance 1121 -18; Chapters 341 and 509 of City of Cleveland's Code of Ordinances).
 - Review fines and penalties in Chapter 509 of Cleveland City Code to ensure penalties align with other city ordinances.
- Understand tree planting refusals. Prioritizing tree planting in neighborhoods with low tree canopy cover helps towards achieving an equitable distribution of canopy across the city, however, not all residents want trees. Identify why residents may refuse to have a new street tree planted and develop strategies/solutions to address concerns.
- Focus on Private Property. Focusing efforts on tree planting and maintenance on private property can provide easier opportunities for growing Cleveland's tree canopy.

Goal Three: Assume full stewardship for the tree infrastructure

Action 4: Complete a comprehensive inventory

Action 5: Develop and implement a management plan for city-owned trees

Action 6: Undergo an operational review of city

2020 Recommendations:

- Conduct a comprehensive street tree and planting site inventory. Secure funding; and release bid/request for proposal for City street tree and planting site inventory.
- Expand partnerships around public tree stewardship. Deepen relationships and expand partnerships by sharing information about the needs of Cleveland's public trees. Identify opportunities where other organizations and CTC members can assist the City of Cleveland in meeting tree management and planting needs.

6. FAIRFAX, VA – URBAN FORESTRY PROGRAM EVALUATION REPORT, PREPARED BY PLAN-IT GEO (APRIL 2021)

Report Link: <https://www.fairfaxva.gov/home/showpublisheddocument/17685/637562580276070000>

Tree Management Policy (MP)

1. Collaborate with City staff to develop the documents and information necessary for amendments to tree-related City Code and ordinances. Use Appendix H in the Report as guidance
2. Update tree-related manuals, standards, and best practices based on recommendations in Appendix H of the Report. Align amendments with the timing of changes to the Urban Forestry Program structure
3. Update tree-related policies and procedures (SOPs) based on recommendations in Appendix H of the Report. Align amendments with the timing of changes to the Urban Forestry Program structure. Action supports action CT.6.
4. Update tree-related code and ordinances based on recommendations in Appendix H of the Report. Align amendments with the timing of changes to the Urban Forestry Program structure.

Capacity, Training and Authority (CT)

6. FAIRFAX, VA – URBAN FORESTRY PROGRAM EVALUATION REPORT, PREPARED BY PLAN-IT GEO (APRIL 2021)

5. Develop a business case that describes the program structure, staffing structure, budget, and necessary policy changes.
6. Determine the necessary staff required to maintain the public tree population on a 7-year pruning rotation.
7. Evaluate and make a decision on the program structure provided in the Report based on City staff input and available resources.
8. Evaluate the roles and responsibilities of the Environmental Sustainability Committee as it relates to urban forestry. Include considerations for a separate Tree Board, Commission, or Advisory Council.
9. Provide or support training to departments involved in the tree permitting processes, plan reviews, and tree inspections.
10. Strengthen Standard Operating Procedures (SOPs), protocols, and communications as they relate to tree management activities among City department, partners, and contractors. Action supports action MP.3.
11. Maintain International Society of Arboriculture (ISA) Certified Arborist certifications and other credentials such as TRAQ.
12. Evaluate staffing resources required to effectively plant trees aligned with canopy goals and provide post-planting care.

Budget and Funding (BF)

13. Develop a business case to propose at future budget cycles for the new Urban Forestry Program structure and resource needs.
14. Determine and prepare a business case for budgeting tree inventory collection and data management equipment needs for the upcoming budget planning sessions.
15. Use the data from the Assessments and Plans actions (i.e., tree maintenance needs, tree planting needs, ecosystem services) to support budget and funding increases.
16. Use the guidance provided in the Report to build a business case for the funding required to manage 36,000+ street and park trees.

Assessments and Plans (AP)

17. Establish an urban forestry working group with regular meetings to monitor progress of implementing actions. Finalize lead implementers. This team will also evaluate recommended actions for the Urban Forest Management Plan as well as actions to implement in a "no change scenario".
18. To inform the development of an Urban Forestry Program, complete a comprehensive inventory of public trees in streetscapes. Use industry recommendations to establish protocols for data collection, management, and updates.
19. To inform the development of an Urban Forestry Program, complete a comprehensive inventory of public trees in maintained areas of parks and open space. Consider including trees within fall distance of public trails. Use industry recommendations to establish protocols for data collection, management, and updates.
20. Quantify the ecosystem benefits and appropriate appraisal values of public trees to conduct a cost-benefit analyses of public trees. This informs maintenance recommendations, program structure, and raises public awareness of the urban forest benefits.
21. Conduct inventories and assessments for tree risk in priority areas based on service requests, tree age, road corridor, neighborhood, and capital projects.
22. Complete a comprehensive high-resolution urban tree canopy (UTC) assessment using industry recommended protocols.
23. Begin to complete an urban forest management plan (UFMP) to provide structure and guidance for a new Urban Forestry Program. Use Appendix I in the Report as guidance.

Community Engagement (CE)

24. Gather feedback from the public regarding the structure of the Urban Forestry Program.
25. Update the City's website and materials based on information from the Report.
26. Continue to track and annually report urban forestry activities of all partners to apply to budget change requests and continue to maintain Arbor Day Tree City USA designation.
27. Continue to strengthen partnerships with civic groups, Homeowners' Associations, volunteers, military, internal, City Council, neighborhoods, and improvement districts.
28. Develop strategies to remove barriers to participation for all community members. Barriers to address include ADA communications compliance, internet availability, language, cultures, location, transportation, etc.
29. Prioritize citizen service requests and update the City website with frequently asked questions and resources.

Green Asset Management (GA)

6. FAIRFAX, VA – URBAN FORESTRY PROGRAM EVALUATION REPORT, PREPARED BY PLAN-IT GEO (APRIL 2021)

30. Maintain the current maintenance regimen by conducting annual large tree clearance pruning (~550 trees annually, reported to Tree City USA), young tree training, and other tree maintenance activities based on available resources
31. Annually revisit contract specifications and in-house policies and directives to ensure that tree care operations adhere to current industry standards, including ANSI A300 Standards for Tree Care Operations, ANSI Z133.1-2012 for Arboricultural Operations Safety Requirements, and ISA Series Best Management Practices (BMPs)
32. Educate and train City staff to adhere to Best Management Practices for the maintenance of all diseased/infested City trees. Provide education to the public for the proper care of trees on property
33. Coordinate with other City departments to maximize the number of trees planted through Capital Improvement Program and stormwater management projects. Establish procedures for replacing damaged trees during infrastructure replacement projects.
34. Update maintenance regimen (number of park and street trees pruned annually) by evaluating inventory data, program structure, available resources, and demands. Utilize outcomes of action CT.2.

7. CHARLOTTESVILLE, VA – URBAN FOREST MANAGEMENT PLAN (MAY 2009)

Report Link: <https://www.charlottesville.gov/DocumentCenter/View/897/2009-May-Urban-Forest-Management-Plan-PDF>

Goal: 40% tree canopy cover

Element 1 – Urban Forest Protection and Preservation

- 1.1 Investigate and establish Conservation Easements or other legal protections on existing and future City-owned lands to preserve lands in perpetuity.
- 1.2 Incorporate vacant City lots and/or other City lands that are unplanned for development into park system.
- 1.3 Pursue additional protection for park and school lands that requires either a unanimous City Council vote or public referendum before park or school lands are sold.
- 1.4 Pursue land acquisition funding to purchase forested lands, especially for greenway development and to address existing riparian buffer gaps.
- 1.5 Determine private properties that can be placed under conservation easement.
- 1.6 Coordinate with Charlottesville City Schools to develop a strategy for management of large forest stands on school property.
- 1.7 Ensure implementation of existing stream buffer requirements (Chapter 10 of City Code, Article IV, Stream Buffers), including the provision that requires the restoration or evolution by natural succession of vegetation within 25 feet of the top of protected stream banks.
- 1.8 Explore expansion of stream buffer protections for all other streams in the City, beyond Moores Creek, Meadow Creek, and the Rivanna River.
- 1.9 Establish grading and compaction guidelines that do not alter drainage and natural moisture patterns to preserve healthy trees and incorporate these standards into the Design Manual (e.g. site plan review).
- 1.10 Create tree protection guidebook for developers and private landowners that summarizes codes, laws, BMPs and goals for projects in the City.
- 1.11 Investigate the presence of champion, heritage and specimen trees. Identify, label, and preserve them. Work to improve legal protections for these trees.
- 1.12 Adopt a Tree Protection Ordinance that includes a method to establish penalties if trees are lost.
- 1.13 Establish a City-wide Stream Management Strategy and Maintenance Standards.
- 1.14 Conduct a thorough review of the current Code of Virginia, City Code, Chesapeake Bay Protection Ordinances, and the ordinances of other jurisdictions to ensure that the City is doing all it can to protect trees and natural resources.
- 1.15 Pursue desired state legislative changes through the General Assembly. Involve the Thomas Jefferson Planning District Commission legislative liaison in discussions regarding the General Assembly.

7. CHARLOTTESVILLE, VA – URBAN FOREST MANAGEMENT PLAN (MAY 2009)

1.16 Establish Construction Performance and Maintenance bonds during redevelopment for tree and landscape work and ensure enforcement of bonding requirements. Utilize City Code to require this is done through ISA Certified Arborists and to ensure the bonding requirements are sufficient to maintain the sustainability of a riparian buffer or tree screen.

1.17 Analyze City by entry corridor, parks and schools, zoning categories, and sub-watersheds to determine existing canopy coverage to compare with target canopy coverage goals.

Element 2 – Urban Forest Enhancement and Restoration

2.1 Implement the recommendations of the Invasive Species Management Plan.

2.2 Ensure adequate planning, staff and budget to manage trees on acquisitions that bring forested lands into public management.

2.3 Work with utilities on planning and design to get the right tree in the right place, use directional boring rather than trenching where possible, and to end tree topping and tunneling or convert to rubber coated wires.

5.4 Enhance and restore healthy forest canopy on vacant City lots and/or other City lands that are unplanned for development.

5.5 Establish a riparian buffer restoration program on private property.

5.6 Encourage forest species diversity to increase resistance to disease and pests, especially in development and redevelopment scenarios.

5.7 Plant native species where possible and use site adaptable trees otherwise.

Element 3 – Expansion

3.1 Establish tree canopy goals for entry corridors, parks and schools, appropriate zoning categories, and watersheds.

3.2 Plant trees in appropriate public locations, including those identified in the 2008 Urban Forest Assessment.

3.3 Encourage plantings of new trees on private property through educational efforts and programs. Identify potential planting locations using City GIS and other data.

3.4 Continue tree planting programs in riparian areas for stream corridor management and health.

3.5 Establish City BMPs in line with industry BMPs for arboriculture. Ensure that these standards are required of developers during the site plan review process and construction.

3.6 Expand trail standard to include vegetative plans for areas within and adjacent to trail corridors.

3.7 Co-locate trails and utilities where appropriate to limit creation of multiple cleared corridors in forested areas.

3.8 Work with utilities on identifying good locations for tree planting near utility corridors.

3.9 Plant a tree on public property every Arbor Day as part of annual celebration.

Element 4 – Monitoring Forests and Plan Progress

4.1 Establish a methodology to track and maintain targeted healthy canopy coverage over time.

4.2 Load all relevant data into the City's GIS database for Citywide access.

4.3 Perform an assessment similar to the Forest Assessment every five years.

4.4 Acquire leaf-on aerial or satellite photography and perform an urban tree canopy calculation every five years.

4.5 Compare 5-year data with canopy goals set for various sub areas in the Comprehensive Plan.

4.6 Create and publish a report on the State of the Urban Forest every five years after new data collection and analysis is complete.

4.7 Include latest tree canopy information in City Comprehensive Plan updates.

4.8 Provide greater public access to forested areas to put more "eyes on the woods" to report possible concerns or changes.

4.9 Utilize a Risk Rating Index to rank tree risks.

4.10 Calculate and forecast carbon sequestration levels in the urban tree canopy as part of the climate protection agreement requirements.

4.11 Establish a Tree Commission or Board – consider using existing group, such as Parks and Recreation Advisory Board.

4.12 Track invasive species containment and removal efforts using GIS mapping.

4.13 Maintain GIS layer to include new and remove cut trees to keep inventory up to date.

4.14 Maintain records of utility work events that impact public forests (clearing land around lines).

7. CHARLOTTESVILLE, VA – URBAN FOREST MANAGEMENT PLAN (MAY 2009)

4.15 Update GIS layers such that parcels, planning neighborhoods, and City boundary all encompass the same amount of land area.

4.16 Include tree and forest components and threat of loss in future build-out studies.

Element 5 – Education & Outreach and Partnerships

5.1 Create, fund, and staff a City Environmental Educator position to coordinate efforts.

5.2 Develop and implement a comprehensive City staff education program. Consider using the City EMS as the tool for implementing this program.

5.3 Develop a public outreach strategy that will advance City staff and policy credibility, educate the public, and create documents for distribution.

5.4 Incorporate environmental interpretation into public education efforts in parks.

5.5 Create a public education campaign to share information on forestry and tree best management practices for public and private properties.

5.6 Develop a strategy to educate City decision makers on urban forestry BMPs.

5.7 Enhance partnership with local advocates, e.g. Tree Stewards, Neighborhood Associations, Master Naturalists & Gardeners, Native Plant Society.

5.8 Work directly with Charlottesville City Schools to enhance school curriculum on natural resources for SOL requirements.

5.9 Pursue programs for the planting of new trees on private property.

5.10 Explore options for establishing a botanical garden and/or arboretum on public lands.

5.11 Pursue funding and land to create an environmental education center.

5.12 Use the Annual Arbor Day celebration as an educational opportunity and to highlight partnerships.

5.13 Complete and utilize the planned and existing greenway system to educate trail users and park visitors about trees.

5.14 Utilize the upcoming Meadow Creek Stream Restoration project as an educational opportunity about forest management.

5.15 Promote the “Funds for the Forest” program as a means to collect donations to help implement the goals of this plan.

5.16 Inform the public about tree plantings on public lands.

Element 6 – Sustainability, Management and Maintenance Methods

6.1 Prepare annual implementation plan to define scope of work for urban forest management.

6.2 Continue to manage Invasive Species, using recommendations contained in the Invasive Species Assessment and Management Plan.

6.3 Continue to integrate sustainable maintenance methods through the EMS for tracking and management purposes.

6.4 Adopt industry BMPs as part of the Parks and Recreation Departmental Maintenance Standards and all City landscaping decisions and new City projects.

6.5 Adopt a Wildlife Management Policy to guide staff actions when conflicts occur (e.g. with beaver, deer, Canada geese, rodents).

6.6 Expand No-Mow Zones to other areas of parks and schools, convert appropriate locations to interpretive educational areas such as meadows and rain gardens to advance educational opportunities.

6.7 Share BMPs with private landowners as information to consider in management of their tree and forest resources.

6.8 Encourage local utilities to become Tree Line USA certified through the Arbor Day Foundation.

6.9 Continue to review & update City Vegetative Debris Management Plan (See Appendix 6).

6.10 Update development codes to help ensure adequate forest canopy is preserved or replanted according to performance-based standards.

6.11 Continue commitment that the City will pursue only green building practices for the development and redevelopment of all City lands, to include tree preservation tactics.

6.12 Promote urban forest tree species diversity through planting recommended site adaptable trees and encouraging (but not limiting to) use of native tree species.

6.13 Clarify property ownership of paper streets and alleys for future maintenance responsibility and planting opportunities.

6.14 Determine sustainable funding sources for urban forest activities including: Annual Operating Budget, the CIP, development proffers, non-profits, private contributions – “Funds for the Forest”, grants, and the use of volunteers

6.15 Implement a stormwater utility to provide a dedicated funding stream to support a Water Resources Protection Program (WRPP) that will include stormwater management.

8. ROANOKE, VA – URBAN FORESTRY PLAN, PREPARED BY THE URBAN FORESTRY TASK FORCE AND THE ROANOKE DEPT. OF PARKS AND RECREATION (APRIL 2003)

Report Link: <http://www.playroanoke.com/wp-content/uploads/2017/02/Urban-Forestry-Plan.pdf>

Tree Canopy Goal: Roanoke will take action in order to achieve an average tree canopy of 40% within ten years.

TC A1. Increase the number of trees in Roanoke by 188,488* over the next 10 years through implementation of the actions recommended in this study. (*These would be shade trees, each of which will have at least a 30 foot wide canopy at maturity. The number of trees would be adjusted when larger or smaller trees are planted instead. The 188,488 figure includes 6,250 recommended street and park trees.)

TC A2. Because the **Urban Forestry Plan** has been adopted as an Element of **Vision 2001-2020**, each City department will use the urban forestry recommendations in its project design plans, NPDES, work plans, business plans, and all other plans/reports as applicable (including, but not limited to, stormwater management, neighborhood plans, road plans, road widening plans, and plans for placing utility lines underground).

Tree Planting on Public Land: Parks and Recreation will utilize a variety of funding sources to plant an additional 6,250 shade trees (above and beyond the 2,000 usually planted) on City streets and in City parks over the next ten years as its share of the tree planting effort needed to increase Roanoke's tree canopy from 32% to 40%. Other City departments and public entities will be encouraged to make tree planting a budgetary priority also.

Other City departments and public entities will be encouraged to make tree planting a budgetary priority also.

TP A1. Identify and prioritize areas of City-owned land where trees need to be planted.

TP A2. Meet with other elements of government, including the Roanoke Redevelopment and Housing Authority, Roanoke Regional Airport, School Board, Public Works, Utilities and the like, along with elements of the state and federal government who likewise control lands with the City limits, to determine tree planting opportunities and to prioritize identified areas, considering cost and resulting impact. See Appendix D for list of parties contacted. The impact on alternative transportation will be considered in prioritizing streets and corridors on which street trees are planted.

TP A3. Prepare detailed tree planting plans for priority areas, including tree distribution issues.

TP A4. Should VDOT propose the use of sound barriers along existing or future highways in the City, the City will encourage VDOT to use appropriate trees instead.

TP A5. Utilize a standing volunteer committee to advise staff on a continuing basis (3 to 5 people meeting twice a year).

TP A6. Involve the community through neighborhood planting and other activities.

TP A7. Utilize grassroots support to gain higher funding (at local and state levels).

TP A8. Encourage community groups such as Valley Beautiful to support the plan and set implementation of it as their first priority. Consider asking volunteer groups to monitor the health of significant forested areas.

TP A9. Obtain additional tree planting funds in City's general budget.

TP A10. Solicit supplemental funding sources (example – Lynchburg used sponsors to landscape a major traffic corridor).

TP A11. Be proactive in searching out and developing relationships with potential sources of funding.

TP A12. Obtain grants (work with Roanoke Valley Urban Forestry Council, Valley Beautiful, and other groups).

TP A13. Include tree planting in Community Development Block Grant-funded projects such as neighborhood revitalization.

TP A14. Establish a system for individuals to donate funds to plant trees on public land in honor or memory of loved ones. Develop additional avenues for community donations.

Public Tree Management: Roanoke will protect trees on public land through continued effective management, interdepartmental and interagency cooperation, revisions to the public tree ordinance, and strategies to identify and protect key forested areas.

PT A1. Provide input and assist in the development of the Streetscape Design Plan.

PT A2. Participate in the City's Project Tracking System and obtain sign-off authority. Coordinate with other City departments regarding any project that might affect trees.

PT A3. Develop Construction/Tree Protection Standards.

PT A4. Develop and implement written tree trimming agreements with utility companies.

8. ROANOKE, VA – URBAN FORESTRY PLAN, PREPARED BY THE URBAN FORESTRY TASK FORCE AND THE ROANOKE DEPT. OF PARKS AND RECREATION (APRIL 2003)

- PT A5.** Provide arboricultural guidance to local government agencies (including the School Board, Roanoke Regional Airport, and Roanoke Redevelopment and Housing Authority).
- PT A6.** Require that City projects follow river/stream overlay requirements when adopted (see PL A17).
- PT A7.** Maintain City shade and ornamental trees on a routine basis using a cyclical maintenance schedule.
- PT A8.** Conduct all arboricultural operations in compliance with the standards of the American National Standards Institute.
- PT A9.** Determine relocation potential of trees on developed City sites.
- PT A10.** Identify and prioritize significant undisturbed forested areas on public land. Devise and implement strategies for preservation of the priority areas, including conservation easements.
- PT A11.** Establish a process for determining where new trees should be located in relation to sidewalks.
- PT A12.** Endeavor to get the Corps of Engineers to approve the planting of trees along the Roanoke River.
- PT A13.** Develop a public tree ordinance using the International Society for Arboriculture model and with consideration of costs associated with the ordinance.
- PT A14.** Revise title of current ordinance ("*Vegetation and Trash*") to more accurately reflect the subject.
- PT A15.** Include a comprehensive policy statement with goals.
- PT A16.** Meet with the Roanoke Redevelopment and Housing Authority, the Roanoke Regional Airport and the School Board to determine how best to extend the City's public tree ordinance to include those properties.
- PT A17.** Prohibit or limit use of invasive species.
- PT A18.** Ensure that utility tree trimming guidelines include compliance with standards of American National Standards Institute. These are technical standards prepared by the National Arborist Association and approved by ANSI for use by the industry.
- PT A19.** Review the VDOT Trimming Standards and include applicable items.
- PT A20.** Establish street tree/sidewalk conflict reduction procedures.
- PT A21.** Specify development/construction/excavation standards.
- PT A22.** Regulate insect and disease control on private land to protect public good.

Trees on Private Land: Using community-based incentives, the City will achieve the goal of having one new tree planted on private land within ten years for every Roanoke resident (94,911 citizens and 94,911 trees). In addition, new zoning ordinance revisions will increase the number of trees preserved and the number of trees planted during the development process.

- PL A1.** Provide homeowner education on tree preservation, planting, and maintenance (use videos, City Magazine, RVTV, website, etc.)
- PL A2.** Educate students about trees. This could include free seedlings to plant at home, peat pots give -a-ways, "My Family Planted A Tree" static car decals, teacher training, inclusion of tree issues in the SOLs, etc. Tie this in with existing annual Arbor Day ceremonies at schools.
- PL A3.** Provide list of certified arborists to the public on website and/or by request.
- PL A4.** Encourage uncertified tree workers to take advantage of training opportunities.
- PL A5.** Include tree topics in "Citizen University."
- PL A6.** Network with major private property owners in the City, including but not limited to Norfolk Southern, Carillion, and Downtown Roanoke, Inc. (as a representative of downtown business owners) to share information and collaborate in an effort to ultimately improve tree maintenance practices and procedures.
- PL A7.** Give those who complete homeowner education certificates for reduced-price trees. Establish other incentives such as tax credits for tree planting.
- PL A8.** Encourage nurseries to reduce the price of trees on a City list of "best trees to plant" and include maintenance information with these trees.
- PL A9.** Obtain grant funding for a wide scale publicity/education effort. Consider giving a "Shining Star" or other award for significant tree planting achievements.
- PL A10.** Evaluate the feasibility of adopting land use value taxation for agriculture, horticulture, forest use, and open space as described in section 58.1-3230 of the Code of Virginia. Coordinate with existing agricultural/forestal districts.

8. ROANOKE, VA – URBAN FORESTRY PLAN, PREPARED BY THE URBAN FORESTRY TASK FORCE AND THE ROANOKE DEPT. OF PARKS AND RECREATION (APRIL 2003)

- PL A11.** Have City staff person available to meet private developers on-site to identify trees that should be preserved (and provide written information on how to preserve them). All comprehensive site development plan applicants will receive a list of trees most appropriate for the area.
- PL A12.** Identify and prioritize significant undisturbed forested areas on private land. Use strategies (conservation easements, zoning ordinance revisions, etc.) for preservation of key parcels.
- PL A13.** During zoning ordinance revision, compare existing regulations to those of other localities in the Roanoke Valley and to the list of benchmark communities.
- PL A14.** Include provisions in the revised zoning ordinance to help preserve trees during development.
- PL A15.** Include stronger tree canopy requirements for parking lots (such as a 40% minimum tree canopy at maturity) in the zoning ordinance revision.
- PL A16.** In the zoning ordinance revision, evaluate the potential use of tree canopy banks and minimum tree canopy regulations allowed by the state enabling legislation.
- PL A17.** Adopt a zoning ordinance overlay requiring riparian buffers along streams and the Roanoke River to protect water quality and the fish/wildlife habitat.
- PL A18.** Include provisions in the revised zoning ordinance to require use of native species trees where possible and appropriate.
- PL A19.** Evaluate need for and feasibility of adopting a heritage tree ordinance (includes identifying significant individual trees for protection).
- PL A20.** Include specific requirements in the zoning ordinance for reforestation on denuded slopes.

9. WOODSTOCK, VA – URBAN TREE CANOPY PLAN, PREPARED BY WOODSTOCK PLANNING & COMMUNITY DEVELOPMENT AND THE WOODSTOCK TREE BOARD (SEPTEMBER 2011)

Report Link: <https://www.townofwoodstockva.com/DocumentCenter/View/551/Tree-Canopy-Plan-8-2011?bidId=>

Recommendation: 30% canopy

GOAL 1: Facilitate tree planting in residential and commercial districts (private properties) to assist with the attainment of the 8.3 percent increase in overall tree canopy. Increase community awareness regarding the benefits of tree plantings.

- Use the tree canopy assessment for the identification of priority sites for additional tree canopy (additional tree plantings on residential and commercial properties)
Continue Tree Board activities, which raises awareness among citizens and property owners of the benefits of tree canopy
- Tree Board to conduct community education through the following:
- Continue Arbor Day events
 - Involve the school system through Arbor Day events, consultation with the administration and educators, and requests for collaboration on the development of educational materials (consistent with Standards of Learning and beyond)
 - Continue public park development activities and Tree Board involvement on green space development at the Town's parks
 - Develop an "approved" street tree/public tree list
 - Develop educational materials on native trees
 - Develop a "Tree Voucher Program" for residential property owners and citizens that promotes tree affordability (developed in conjunction and in compatibility with area retail establishments)
 - Tree planting and tree care guidelines brochure development by Staff and the Tree Board for public dissemination
 - Public presentations (annual or bi-annual) on tree planting and tree care

GOAL 2: Review and revise development requirements in relation to parking (impervious area), tree preservation, tree replacement, landscaping, and green infrastructure to be compatible with, encourage and incentivize an increase in tree canopy on individual and adjoining parcels.

9. WOODSTOCK, VA – URBAN TREE CANOPY PLAN, PREPARED BY WOODSTOCK PLANNING & COMMUNITY DEVELOPMENT AND THE WOODSTOCK TREE BOARD (SEPTEMBER 2011)

- Review landscaping requirements and recommendations implemented by other communities to compare
- Revise landscaping requirements within the zoning ordinance (while remaining cognizant of affordable housing)
- Develop a landscaping/tree planting specification manual for engineers and/or developers Landscaping maintenance ordinance to be developed and agreements to be executed
- Work with consultant on the Comprehensive Plan Amendment (for the Urban Development Area) for increased tree preservation and/or planting requirements in the resulting UDA zoning ordinance
- Work with the Tree Board, Planning Commission and Staff to review and revise/update Comprehensive Plan - Environmental Section (with Town Council approval)
- Develop public tree removal guidelines/permission forms that are compatible with the Town's Urban Tree ordinance.
- Identify and evaluate the waterways (streams) within the Town limits and the potential for partnerships with the private property owners for the development of riparian buffers (for lowered stream temperatures and increased water quality)

GOAL 3: Make provisions for street tree plantings in the Urban Development Areas, consistent with Traditional Neighborhood Design components.

- Work with consultant on the Comprehensive Plan Amendment (for the Urban Development Area) for increased tree preservation and/or planting requirements in the resulting UDA zoning ordinance

GOAL 4: Implement a Tree Inventory Plan for existing and future tree plantings and Maintenance Plan for existing trees.

- Collaborate with the Public Works Department regarding tree maintenance, problem trees and potential tree locations
- Appropriation of funds for a tree inventory program design (electronic) to be requested during the budget process
- Dialogue with the power company and other utility providers regarding utility conflicts and compatibility with street trees, other public trees and private trees