WHAT DO WE HAVE?

STATE OF THE URBAN FOREST

To understand the forest of Fairfax today, it's important to consider the ecological and historical forces that shaped it. The landscape, climate, and patterns of human activity have influenced not only which trees grow here, but how they grow, where they thrive, and what challenges they face. Trees, and the ecosystems they support, are rooted in the region's climate and soils and are shaped by both natural and human disturbances, continuously evolving alongside the city itself.

NATURAL HISTORY OF THE FAIRFAX CITY REGION

The story of an urban forest begins long before the first streets were paved. The City of Fairfax lies close to Virginia's Fall Zone, a geological boundary where the rolling hills of the Piedmont region transition into the flatter, sandier soils of the Coastal Plain (Virginia Department of Conservation and Recreation, 2016), shaping the landscape with rocky stream valleys, such as the Potomac River tributary, Accotink Creek.

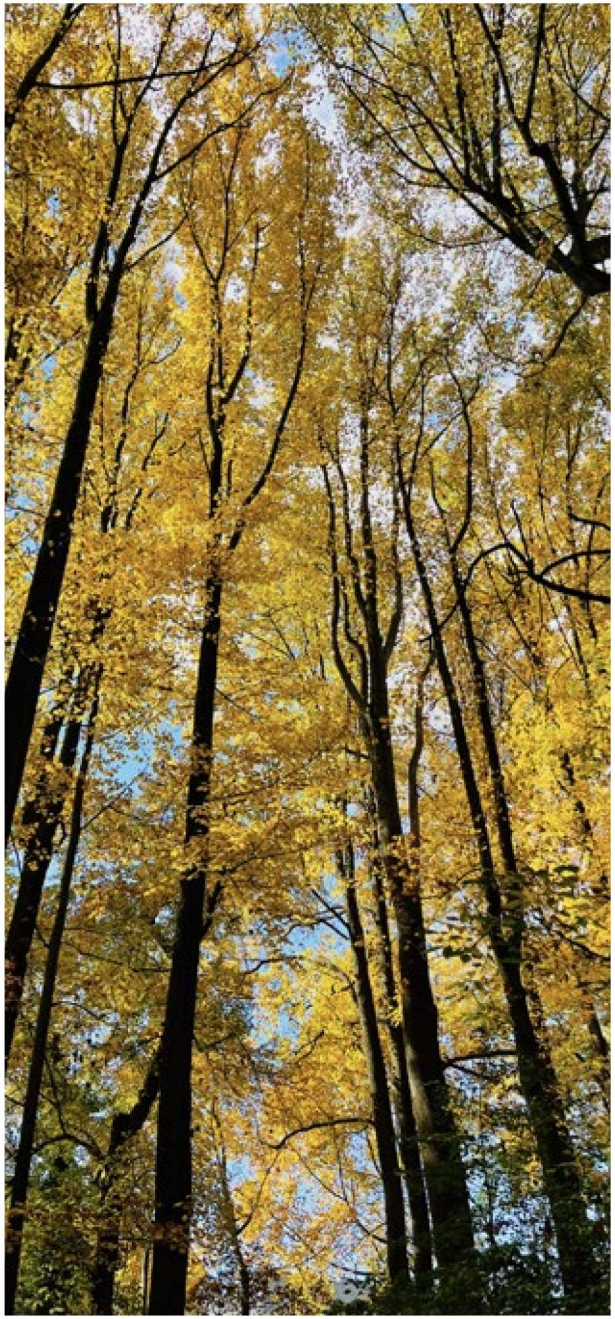
FOREST DISTURBANCES & CHANGE

The most common forest types historically present in Northern Virginia are mixed mesic-hardwood, oak-hickory in more upland areas, and oak-beech-heath forests in the areas with rockier, acidic soils. The area also has many stream corridors that support riparian species adapted to frequent flooding. However, between the Civil War and the Second World War, the region's forests have experienced continual disturbances, such as clear-cutting for agriculture and population growth, a common trend in the Washington D.C Metropolitan Area. As a result, the Fairfax region's forests today are comparatively young; predominantly composed of shade-tolerant climax trees, such as American beech (*Fagus grandifolia*) and pioneer, shade-intolerant, early-successional trees, such as red maple (*Acer rubrum*), tulip-poplar (*Liriodendron tulipifera*), and sweetgum (*Liquidambar styraciflua*) on forest edges (Northern Virginia Natural Resource Management Collaborative, n.d.). The City's least disturbed forests are found along the stream corridors of Accotink Creek and Daniels Run, though even these areas have been impacted by some disturbance and remain under continual pressure from surrounding urbanization.

> "Most Piedmont forests have a history of repeated cutting or have regenerated on former agricultural lands, some of which were abandoned more than 150 years ago (Virginia Department of Conservation and Recreation, 2016)."

THE CLIMATE OF FAIRFAX

The City of Fairfax exists in North America's Mid-Atlantic region, and is characterized by a temperate climate, commonly experiencing a variety of climate and weather conditions such as winter snow and ice, summer humidity and thunderstorms, and the occasional tropical storm or hurricane. According to the Resilient



▲ *Winner of the Urban Forest Photo Contest* ***Kerry Lister***

Fairfax Climate Projections Report (2022), which focused on Fairfax County, climate change is projected to impact the region's climate and weather conditions in several ways:

- The current average annual temperature is 58°F. The report predicts that by 2085 that the annual average temperature will increase between 4.4°F - 9°F, and that warmer "summer" temperatures will expand into the late spring and early fall months.
- The region experiences 28.7 days of extreme heat, defined as days where temperatures exceed 90°F, per year. By 2085, the number of extreme heat days could increase by an additional 32-41 days.
- The hottest spots in the region are densely urbanized areas with temperatures up to 47°F above the temperature of undeveloped forested areas (Holloway et al., 2021). Urban heat island effects are projected to intensify. Fairfax experiences 101 days of precipitation per year, with precipitation averaging at approximately 42 inches per year. Climate change is expected to bring wetter, more severe weather events.

Community Quote: "We need the trees, the trees don't need us. Stop carbon emissions. "

Fairfax's natural history, land use patterns, and changing climate continue to shape the city's urban forest today. Understanding these dimensions is necessary to make informed decisions about how Fairfax grows, manages, and cares for its trees. The following sections analyze the current state of Fairfax's urban forest, to assess how well it is supporting a healthy community, serving as a climate solution, and delivering value now and into the future.

THE BENEFITS OF FAIRFAX'S URBAN FOREST

Fairfax's tree canopy is more than just a backdrop to daily life—it is living infrastructure that makes neighborhoods healthier, cooler, safer, and more resilient. The city's trees clean the air, store carbon, capture stormwater, and make Fairfax a more comfortable and vibrant place to live. These benefits are not abstract; they can be measured in environmental impact, public health improvements, and even dollars saved for residents and the community.

Credit to Norma Otter

While individual benefits are described below, it is important to recognize that trees provide these services collectively and simultaneously. For example, a single mature tree may reduce flooding, improve air quality, store carbon, and provide wildlife habitat—all at once. Fairfax's urban forest is therefore best understood as a holistic system that multiplies value across health, environment, economy, and infrastructure.

HEALTHY COMMUNITIES AND ECONOMIC VITALITY

Trees provide essential public health benefits by removing harmful air pollutants such as ozone, nitrogen dioxide, sulfur dioxide, carbon monoxide, and fine particulate matter. In one year, Fairfax's trees remove an estimated **31 tons of air pollutants (equivalent to three large dump trucks)**, improving local air quality and reducing respiratory illnesses, asthma triggers, and cardiovascular risks (Nowak et al., 2014; U.S. EPA, 2023). Shade from trees also reduces exposure to harmful UV rays, encourages outdoor activity, and has been linked to reduced stress and improved mental well-being (Wolf & Robbins, 2015).

Credit to City of Fairfax

Beyond human health, trees contribute to the resilience of other natural communities. Urban forests provide critical habitat and food sources for birds, pollinators, and other wildlife; stabilize soils and improve fertility through organic matter inputs; and enhance water quality by reducing erosion, filtering pollutants, and recharging groundwater. Together, these ecological functions strengthen the web of life that supports both people and the natural systems they depend on.

Trees also enhance the social and economic vitality of neighborhoods. Research shows that tree-lined streets and green public spaces promote social interaction, reduce crime, and boost property values (Sander et al., 2010). Commercial areas with more trees attract more visitors and foster stronger local businesses, adding long-term value to the community (Wolf, 2005).

CLIMATE SOLUTIONS WITH MEASURABLE SAVINGS

Urban forests play a crucial role in mitigating the impacts of climate change. Each year, Fairfax's trees **sequester over 1,826 tons of carbon**, removing carbon dioxide from the atmosphere and helping to offset greenhouse gas emissions. Across their lifetimes, these trees **store more than 66,478 tons of carbon**, equivalent to the annual emissions from nearly 13,000 cars (USDA Forest Service, 2018). This long-term carbon storage underscores trees as a natural climate solution that grows in value over time.

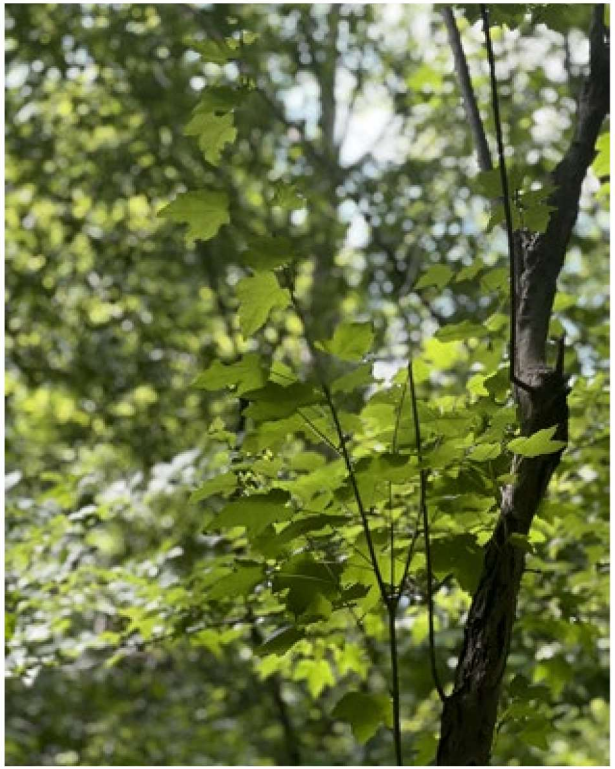
Credit to City of Fairfax

Tree canopy also cools the city by reducing the **urban heat island effect**, a phenomenon that occurs when developed areas with gray infrastructure like buildings and roads trap heat during the day, leading to higher temperatures. Compared to rural areas with more vegetation, these "heat islands" average 1–7°F higher temperatures during the day and 2–5°F higher temperatures at night (EPA, 2025). Shade from trees can reduce surface temperatures by up to 20–45°F, lowering energy demand for air conditioning and saving residents money on utility bills (EPA, 2023).

Community Quote: "Trees not only improve the air quality on hot days for our children, but also benefit their mental health."

STORMWATER MANAGEMENT AND INFRASTRUCTURE PROTECTION

Trees act as natural stormwater managers. Each year, **trees provide 20 million gallons of avoided stormwater runoff**. This prevents it from overwhelming storm drains, reduces flood risks, and filters pollutants before they reach local streams, protecting the health of watersheds like Accotink Creek. (i-Tree, 2023). Avoiding stormwater treatment costs saves the city **hundreds of thousands of dollars annually**, reducing taxpayer burden.



Credit to Demiana Georgy

Trees also protect streets and other public infrastructure. By shading pavement, trees **extend the life of asphalt by 40–60%**, reducing the frequency and cost of repaving (McPherson & Muchnick, 2005). Pavement shaded by trees is less prone to heat-related cracking and degradation, while reduced runoff lessens water damage to roadways and sidewalks. These avoided costs free up city budgets for other essential services.

QUANTIFYING THE BENEFITS

Using the U.S. Forest Service's i-Tree Landscape model with the 2023 tree canopy analysis, Fairfax's urban forest provides **$1,285,230 in measurable annual value** through:

- **$319,874** in air pollution removal
- **$175,365** in avoided stormwater management costs
- **$789,991** in carbon sequestration

Fairfax's urban forest stores carbon valued at **$28,766,822**, contributing significantly to long-term climate mitigation.

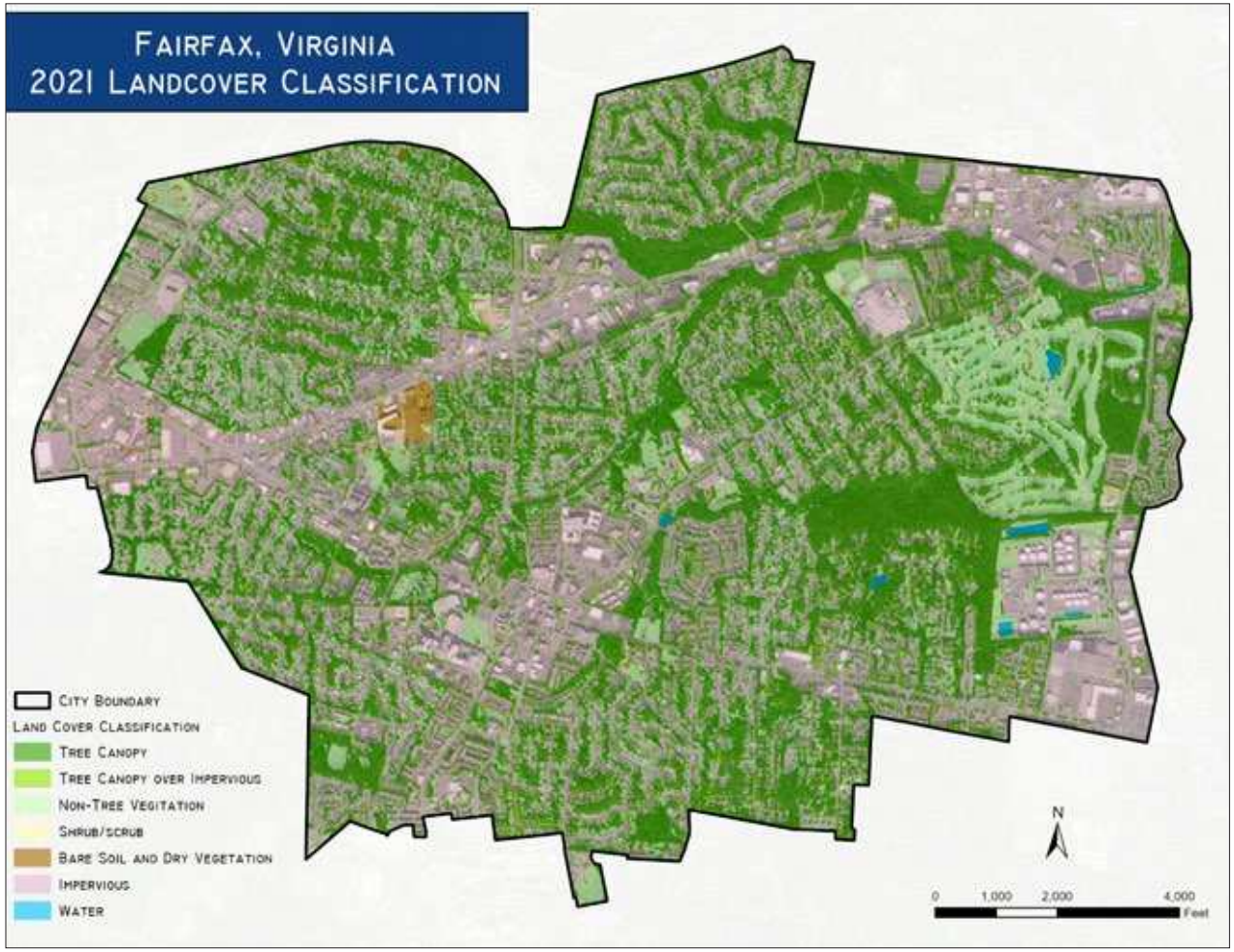


Figure 2: Land use type throughout Fairfax

TREES GROW IN VALUE OVER TIME

Unlike most forms of infrastructure, which decline in performance and require increasing maintenance as they age, trees appreciate in value. As trees mature, their canopy expands, and their ability to provide benefits grows significantly year after year. Research from the U.S. Forest Service has consistently shown that **the ecosystem service value of a tree can more than double or triple over its lifetime** as its size and leaf area increase (McPherson et al., 2005; Nowak & Greenfield, 2018; USDA Forest Service, 2016).

This means that investments in planting and maintaining trees are long-term, compounding investments for the community. A tree planted today may deliver modest benefits in its first few years, but over time it becomes a powerful natural asset. Protecting and nurturing Fairfax's existing tree canopy is just as important as planting new trees to ensure these growing benefits are realized for future generations.

FAIRFAX'S TREE CANOPY AND LAND COVER

An Urban Tree Canopy Assessment (UTC) was conducted in 2023 by PlanIt Geo to explore where the city's tree canopy is located on both **public and private property.** This GIS-based assessment utilized imagery from 2021 to analyze the city's existing tree canopy cover and areas that may be suitable for tree planting, as well as 2012 imagery to assess canopy change over a nine-year period.

KEY FINDINGS:

Tree canopy = 40% (1,618 acres) of Fairfax in 2021 — a 5% increase since 2012.

Land cover mix: 40% tree canopy, 40% impervious surfaces, 19% other vegetation, 1% soil/dry vegetation, 0.2% water (Table 1).

Residential areas: 60% of canopy is on residentially zoned land (48% of land area, including some parks/forested parcels).

Public ROW: 15% of land area, but only 7% of canopy.

Canopy distribution: ranges from 17% to 52% across census block groups.

Urban heat islands: strongest in areas with lowest canopy, overlapping with the five activity centers and Fairfax High School campus.

Community Quote: "Add calculations of canopy coverage to city maps, ARGIS tax maps, or stormwater bills."

Table 1: Distribution of land cover types in Fairfax

LAND COVER TYPE	PERCENT OF CITY
Impervious Surface	40%
Tree Canopy	**40%**
Shrubs	0.2%
Soil/Dry Vegetation	1%
Other Vegetation	19%
Water	0.2%

Canopy gains: all census block groups saw increases between 2012 and 2021 (+188 acres overall).

Future potential: 15% of the city is "possible planting area," about 70% on residential property.

Constraints: 40% of land is unsuitable without major modification, but canopy could expand through pavement removal and planting strip creation.

Additional information can be found in the 2023 Urban Tree Canopy Assessment.

FAIRFAX'S PUBLIC TREES

The previous section, "*Fairfax's Tree Canopy and Land Cover*", provides a useful birds-eye-view of the city's tree coverage (on both public and private property) that is primarily used for planning. A tree inventory, on the other hand, is a ground-based assessment that records data on individual public tree, stump, or planting site, necessary for making detailed management and planting decisions. Public trees include those found in the

Credit to City of Fairfax

Why This Plan Uses 2021 Tree Canopy Data

In 2025, Fairfax received updated aerial imagery and tree canopy data from 2023. While this new data was reviewed during the final stages of the Urban Forest Master Plan, the results were very similar to the 2021 assessment already used in the full analysis and engagement.

Because the 2021 dataset had undergone detailed review and was fully integrated into the planning process, it remains the primary source for canopy trends and recommendations in this plan. Future updates will build on this strong foundation.

Why are tree canopy assessments important?

Tree canopy assessments help communities:

- Identify where trees are and where they are lacking
- Prioritize areas for tree planting and preservation
- Understand environmental benefits, such as cooling, air quality improvement, and stormwater management
- Advance equity goals by targeting tree planting in under-served or hotter neighborhoods

Tree Species Selection in a Changing Climate

Fairfax's climate is changing - temperatures, precipitation, and extreme weather events are increasing - and with it, the length of the growing season, habitat for new pests, diseases, and non-native invasive species, and compounding stressors for trees. Urban trees are further challenged with impervious surfaces exacerbating the effects of heat and of heavy precipitation events.

Having a diverse tree population helps to build resilience in the face of these mounting pressures. This is because different tree species have different sets of strengths and weaknesses, including adaptability to drought and flooding. Some species are, or will become, hosts to pests and diseases that threaten their existence.

As Fairfax's climate changes, the types of trees that are planted in the city may need to change to ensure trees can survive. According to climate change models, drought intolerant northern species such as northern red oak, hemlock, American beech, and white pine, may become less suited to Fairfax's climate and should therefore be phased out of planting. Some native species are expected to gain suitability in the region, like red cedar, sweet gum, and pawpaw; however, site conditions must be assessed before selection (Fairfax County Office of Environmental and Energy Coordination 2022).

Table 2: Distribution of Fairfax's inventoried trees by site type

SITE TYPE	TREE COUNT	PERCENT OF INVENTORIED TREE POPULATION
City	786	6.9%
Park	1,357	12.0%
ROW	3,732	33.0%
Street	1,735	15.3%
Trail	3,704	32.7%
Total	**11,314**	**100%**

right-of-way, along sidewalks and trails, in public parks, and on other city-managed properties including school sites, City Hall, Historic Blenheim, and city cemeteries (Table 2).

KEY FINDINGS:

Inventory (2023): 11,314 publicly managed trees; excludes private trees and most forested public lands.

Location distribution: ROW 33.0%; Trails 32.7%; Streets 15.3%; Parks 12.0%; Other City properties 6.9%.

Potential planting sites: 1,955 total — Streets 1,479 (75.7%); Trails 236 (12.1%); Parks 169 (8.6%); ROW 54 (2.8%); City 17 (0.9%).

Diversity: 160 species; 50 genera. Top 5 species = 32% (Red maple 14%; Tulip tree 9%; Willow oak 3%; Crape myrtle 3%; Flowering dogwood 3%).

Guidelines check: Red maple exceeds the 10% species guideline at 14%; Maple genus makes up 18% just under the 20% genus guideline.

Pests/diseases: >60% susceptible to locally significant pest/disease (spotted lanternfly, fall cankerworm, spongy moth); 23% vulnerable if Asian longhorned beetle arrives.

Condition: ~94% fair–excellent; 6% critical/poor/dead.

Age: Higher proportion of young trees than older age classes.

Maintenance needs: 13,268 actions identified; >80% are pruning (priority/structural/routine); additional tasks include removals, stump removals, young tree maintenance, and planting.

Additional information can be found in the 2023 Tree Inventory Summary.

Credit to City of Fairfax

NON-NATIVE INVASIVE PLANTS

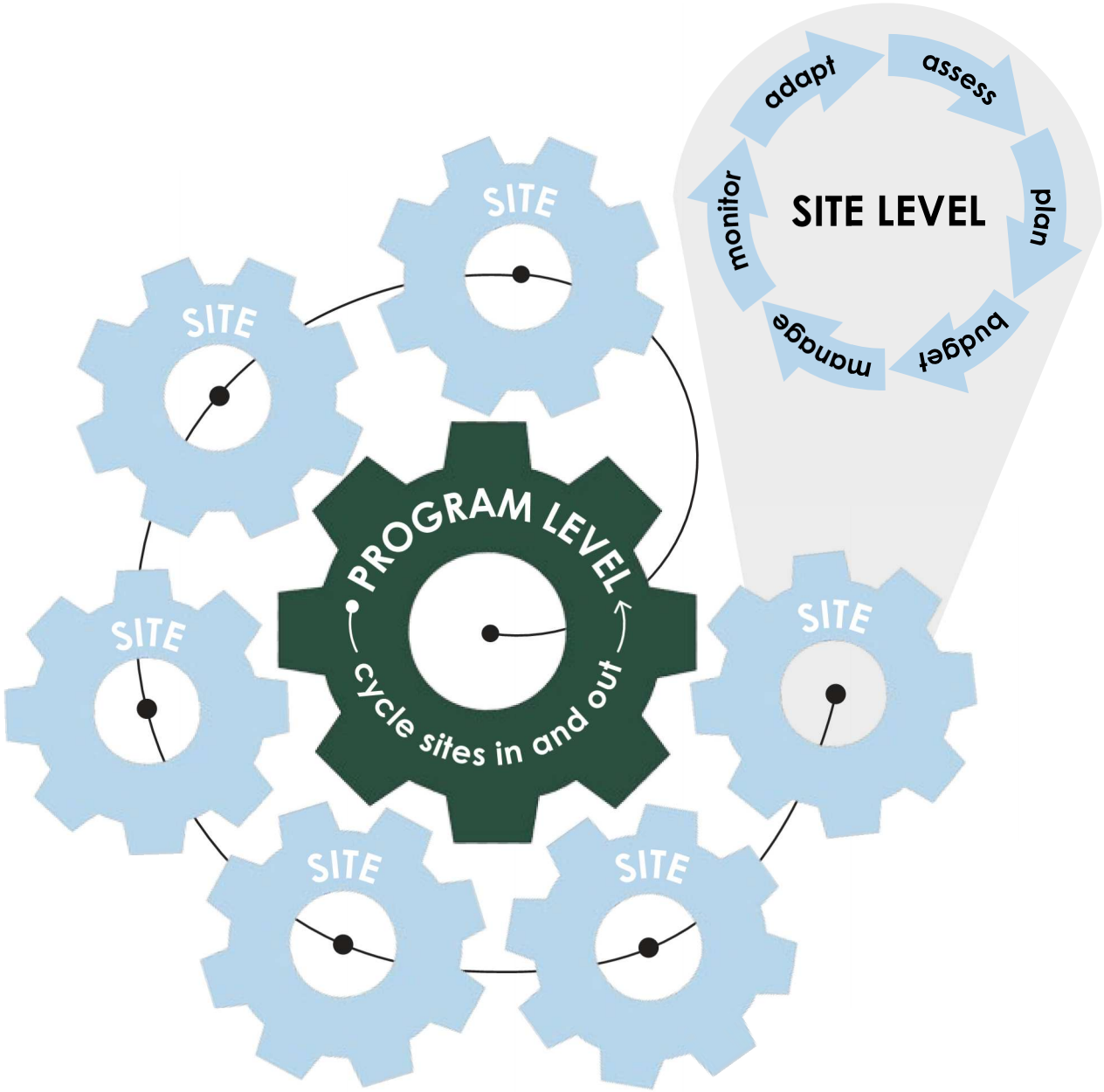
Integrating non-native invasive (NNI) species control into urban forestry planning is essential to preserving ecosystem function, supporting native plant communities, and ensuring the health, adaptability, and value of the urban forest in the face of climate change and ongoing urbanization. In the context of the city's *Urban Forest Master Plan*, the presence and proliferation of non-native invasive species represent a critical management challenge—as they are adept at invading across almost all land types, particularly within natural areas, forest edges, and disturbed urban sites. In Fairfax, the abundance of forest edge habitat and proximity to residential areas enable NNI species to thrive.

In Virginia, 606 non-native plant species have been identified as naturalized (Weakley et al. 2012). Of these, 103 species, or 15 percent of naturalized species (3 percent of the total Virginia flora), have been assessed as invasive in natural communities (Heffernan et al. 2015).

BACKGROUND ON NON-NATIVE INVASIVE SPECIES

NNI species are those that pose an economic or ecological threat beyond their native range. Without the natural predation pressure that would occur in their native range, NNI's can quickly and successfully colonize new areas, often leading to the decline of native plant species. Non-

Figure 3: The non-native invasive plant management cycle

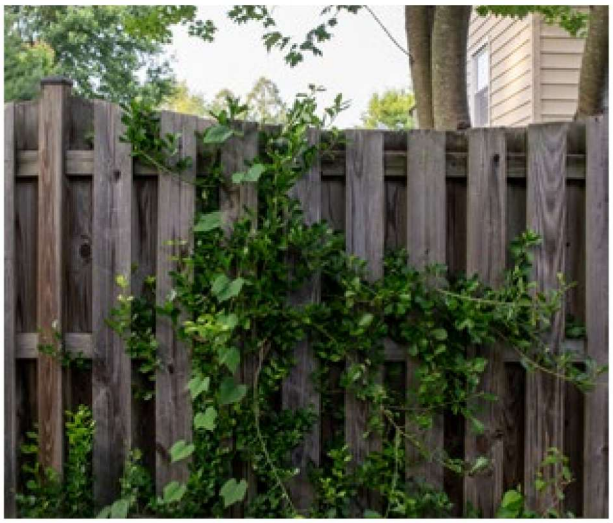


native invasive vines, such as porcelain-berry (*Ampelopsis brevipedunculata*) can cover trees leading to tree decline, while aggressive competition from non-native invasive shrubs, such as Amur honeysuckle (*Lonicera maackii*) can displace native plants and dominate the understory.

NNI SPECIES MANAGEMENT

In practice, NNI species control may not be feasible or effective in all areas for many reasons, including:

- the traits of each species
- the density and distribution of each population
- the location and surrounding vegetation of each population
- proximity to sensitive areas within each site, (e.g. wetlands, streams, and vernal pools)
- and who is executing the treatment (e.g. licensed professionals or volunteers).



Credit to City of Fairfax

In cases where complete eradication is not feasible, the objective may be to prevent the introduction or spread of existing NNI species into new areas.

The Non-Native Invasive Plant Management Cycle (Figure 3) outlines a structured, adaptive approach to controlling non-native invasive species as part of the city's broader urban forestry strategy. Management occurs at both the *program level* and the *site level*. While the steps at each level may not be identical and often overlap, they work together to ensure coordinated action. The six core steps—Assess, Plan, Budget, Manage, Monitor, and Adapt—provide a framework for both scales. At the program level, the cycle also includes phasing new sites into the site-level cycle as resources allow, while gradually phasing out sites that have completed active management.

1. **Assess**. The 2024 assessment established baseline conditions, species presence, and site-specific rankings across 25 public sites.

2. **Plan**. Plan out objectives, priority areas and treatment zones informed by assessment results, species behavior, site sensitivity, and staff/ volunteer capacity.

3. **Budget**. Sustained funding is essential. The species ranking system supports targeted resource allocation and enables pursuit of grants or partnerships. Embedding NNI work in broader urban forestry operations increases efficiency.

4. **Manage**. Control strategies are tailored to species and site conditions. Techniques may include:
   - Manual/mechanical removal
   - Targeted herbicide application by licensed applicators
   - Restoration planting with native species

5. **Monitor**. Treatment effectiveness and species recovery are evaluated through annual monitoring. The assessment can be updated on a yearly basis or less frequently, such as every 3-5 years.

6. **Adapt**. Strategies must remain flexible to respond to new data, species spread, or treatment outcomes.

Multiple techniques and treatments are recommended for NNI species control. These techniques can be used as a single method of treatment or in conjunction with each other depending on site conditions. List of examples:

1. Mechanical Removal
2. Cultural Control
3. Foliar Treatments
4. Cut Stem Treatments

URBAN FORESTRY OPERATIONS

The City of Fairfax's day-to-day care and long-term stewardship of the urban forest are spread across three city departments: Community Development & Planning, Public Works, and Parks & Recreation (Table 3). While dedicated staff across these departments deliver essential services, this decentralized model creates operational inefficiencies, limits proactive care, and makes it difficult for residents to navigate tree-related issues.

CURRENT STRUCTURE & STAFFING

- Estimated 2.9 FTE staff time is currently dedicated to direct urban forestry activities citywide. The Urban Forest Manager role is primarily focused on trees on private property and is not included in this figure.
- Fairfax employs 3 ISA Certified Arborists and 1 TRAQ-qualified staff member.
- Tree work is generally limited to ground-level tasks due to the absence of a chip truck and aerial lift equipment.
- Cross-departmental coordination is currently informal and reliant on individual initiative.

TREE CARE ACTIVITIES

Between 2018 and 2024, the City of Fairfax's multiple departments responsible for tree management collectively planted 797 trees, pruned 4,371 trees, and removed 1,155 trees (Figure 4). These statistics reflect regular operations and do not include tree work associated with capital improvement projects.

Table 3: City of Fairfax staff involved in urban forest planning and operations

DEPARTMENT	STAFF	FTES	ROLES
Community Development & Planning	Urban Forest Manager	2	100% time dedicated to trees; oversees development plan review and enforcement; inspects nuisance trees based on resident requests; develops policy and planning guidance; supports city capital improvement projects; reviews private property tree permits and inquiries; oversees contractors for non-native invasive control on city property; Coordinates urban forest management between departments.
	Stewardship Coordinator		100% time dedicated to trees; Coordinates public education/outreach and community forestry volunteer programs
Public Works – Streets Division (partial UF role)*	Right of Way (ROW) Supervisor/City Arborist	8	5-10% of time dedicated to street, city facility, and other city ROW trees. Inspects trees & create work orders from 311 requests; oversee tree maintenance contractors working in ROW; inspects trees conflicting with public/private utilities & sidewalk/ tree root conflicts; oversees street and city facility tree plantings
	Right of Way Maintenance Workers		10% of time dedicated to trees which includes only ground level tree work, ADA compliance of sidewalks, tree planting, pruning, mulching.
Parks & Recreation (partial UF role)*	Parks Manager/ City Arborist	11	5-10% of time dedicated to park/trail trees. Inspects trees & create work orders from 311 requests; oversee tree maintenance contractors in city parks; oversees tree plantings in city parks; oversees City Jobs Program
	Parks Maintenance Workers		5-10 % of time dedicated to trees which includes only ground level tree work, tree planting, pruning, mulching.

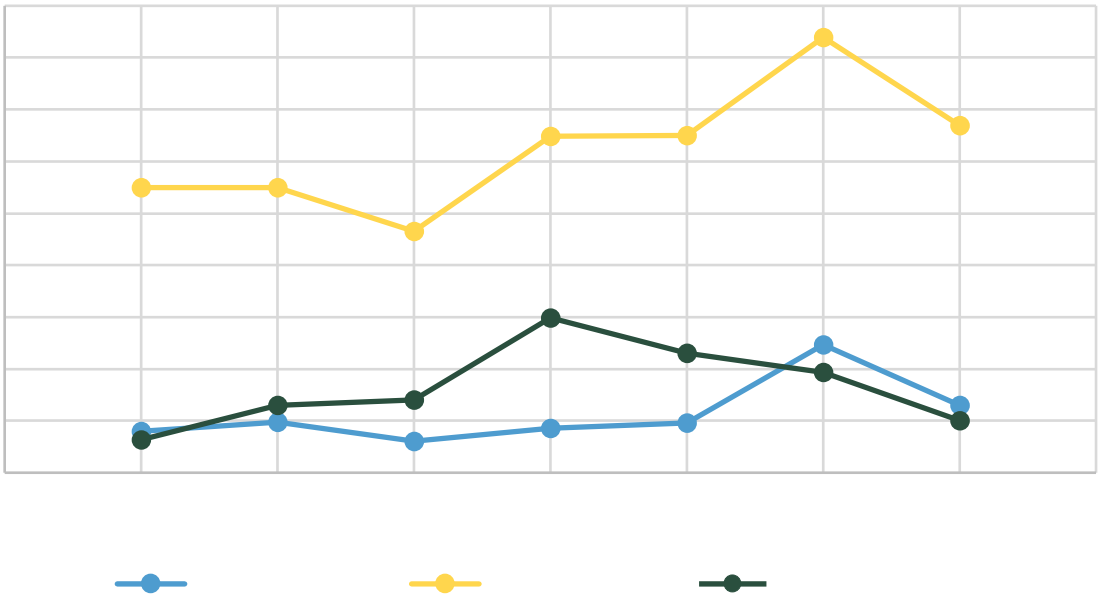
*Using a rough estimate that 10% of the time of 19 staff members is dedicated to tree-related work, this equates to approximately 1.9 full-time employees (FTEs) managing the public urban forest.

Fairfax's current approach to tree care is primarily reactive driven by resident service requests or observations made during staff windshield surveys. Pruning activity has averaged 624 trees per year. At this pace, it would take approximately 18 years to complete a single pruning cycle for the roughly 11,000 publicly managed trees inventoried across the city. In contrast, industry best practices recommend a 5- to 7-year pruning cycle, which would require pruning at least 1,500 to 2,200 trees annually—about two to three times the current output (International Society of Arboriculture 2019).

Proactive maintenance, including a structured pruning cycle with regular structural pruning, can significantly extend tree lifespan, reduce tree-related risks, and increase the long-term delivery of ecosystem services. Routine structural pruning—especially during a tree's formative years—promotes stronger branch attachments, reduces the likelihood of structural failure, improves public safety, and improves resilience to environmental stressors. When incorporated into a scheduled pruning cycle, these practices help sustain tree health and function over decades (Costello and Jones 2015, *Arboriculture & Urban Forestry*).

Credit to City of Fairfax

Figure 4: City of Fairfax tree care activities 2018-2024



While tree planting on public property has increased in recent years, the total number of trees planted still lags behind the number of trees removed on city-managed properties. Achieving a proactive and sustainable tree care program will require scaling up pruning and planting efforts to sustain Fairfax's tree canopy.

INDICATORS OF A SUSTAINABLE URBAN FOREST

The *Indicators of a Sustainable Urban Forest* framework, originally developed by Clark et al. (1997), provides a comprehensive set of criteria for evaluating the ecological health, community value, and effective management of urban forest systems. These indicators span key dimensions such as canopy cover, species diversity, community engagement, staffing, funding, interdepartmental coordination, and long-term planning.

This framework was customized and used to assess Fairfax's current urban forest conditions and program infrastructure (Table 4). It helped identify strengths—

Table 4: The Indicators of a Sustainable Urban Forest assessment of City of Fairfax

INDICATORS OF A SUSTAINABLE URBAN FOREST		ASSESSED PERFORMANCE LEVEL		
		LOW	MODERATE	HIGH
The Trees	Urban Tree Canopy		■	
	Equitable Distribution		■	
	Size/Age Distribution		■	
	Condition of Public Trees - Streets, Parks		■	
	Condition of Public Trees - Natural Areas		■	
	Trees on Private Property			■
	Species Diversity		■	
	Suitability		■	
The Players	Neighborhood Action		■	
	City Department/Agency Coordination		■	
	Funder Engagement		■	
	Utility Engagement		■	
	Developer Engagement		■	
	Public Awareness		■	
	Regional Collaboration		■	
The Management Approach	Tree Inventory		■	
	Canopy Assessment			■
	Management Plan	■		
	Risk Management Program		■	
	Maintenance of Publicly-Owned Trees (ROW)	■		
	Maintenance Program of Public Natural Areas		■	
	Planting Program	■		
	Tree Protection Policy		■	
	City Staffing and Equipment		■	
	Funding	■		
	Disaster Preparedness and Response	■		
	Communications		■	

such as high canopy coverage and recent organizational investment—as well as opportunities to improve in areas like staffing, maintenance, planning, and funding.

While the "Trees and Players" category scored a solid Moderate, reflecting the value the city and community place on the urban forest, the Management Approach category scored only Low to Moderate. This lower score is largely due to limited staffing and resources, which constrain the city's ability to manage the urban forest proactively and effectively.

BENCHMARKING: WHERE FAIRFAX STANDS

According to the 2016 Municipal Tree Care and Management in the United States (for cities with populations between 25,000–49,999):

- The average number of full-time staff dedicated to urban forestry was 5.0. Fairfax currently operates with 58% of that capacity.
- 60% of peer communities had at least one ISA Certified Arborist on staff—Fairfax exceeds this with three.
- 50% of cities had an adopted urban forest or green infrastructure plan—Fairfax is now developing its first.
- Only 55% of cities had a proactive maintenance program where ≥40% of work was scheduled; Fairfax's model remains largely reactive.
- 53% of communities conducted routine risk inspections; Fairfax responds to hazards based on resident reports or visual drive-by assessments.

KEY ACCOMPLISHMENTS

Tree Inventory: In 2023, a GIS-based inventory of 11,314 public trees across streets, parks, and public facilities was completed.

Canopy Analysis: A high-resolution assessment using 2021 imagery confirmed a 40% citywide tree canopy, an increase from 35% in 2012.

Public Engagement: Federal funding through the SPROUT grant helped launch dedicated community outreach, volunteer, non-native invasive species management, and public/private tree planting programs. These efforts laid the groundwork for the permanent Stewardship Coordinator position.

Interdepartmental Projects: The simultaneous development of the *Urban Forest Master Plan* and *Parks & Recreation Master Plan* has created a unique opportunity for alignment.

ONGOING CHALLENGES

Reactive Operations: Most tree care is driven by resident requests and windshield surveys. There is no regular pruning cycle and limited proactive risk inspections.

Data Gaps: Maintenance activities are not logged in the tree inventory platform (TreePlotter), and resident requests are not fully integrated into work tracking systems.

Natural Area Oversight: An estimated 25,000–30,000 trees in natural areas remain uninventoried and unmanaged except for risk abatement and volunteer non-native invasive management activities.

Funding Constraints: Maintenance budgets are regularly exceeded. No dedicated tree fund exists for planting or other urban forestry activities.

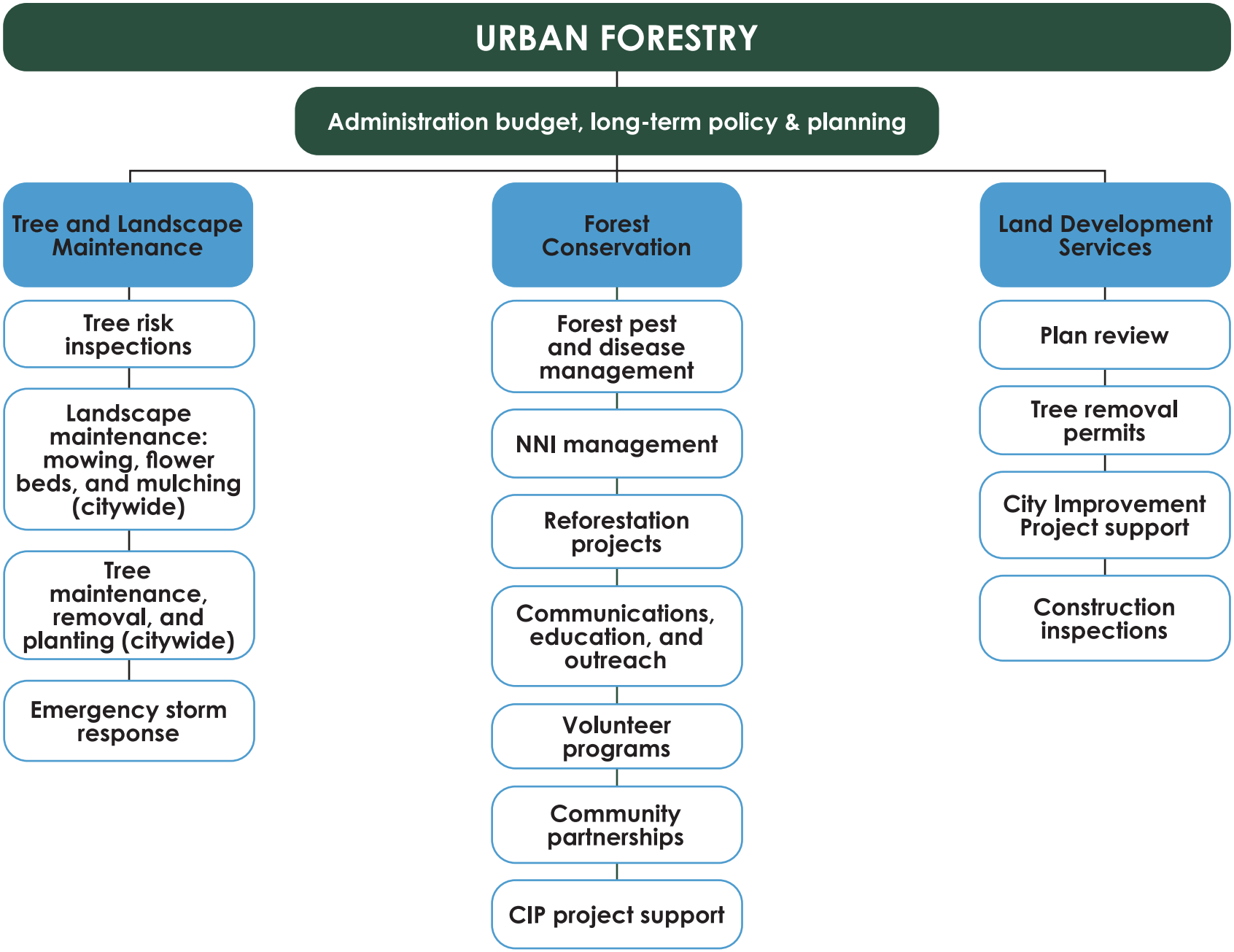
See "Appendix E: Operations Review" for the Operations Review.

CREATING A CENTRALIZED URBAN FORESTRY DIVISION

To build a more resilient and high-performing urban forestry program, the city should transition from its current decentralized model to a consolidated **Urban Forestry Division.** Centralizing operations would unify long-term planning, tree planting, maintenance, risk inspections, natural area

Credit to City of Fairfax

Figure 5: Proposed responsibilities of the urban forestry division



management, and public engagement under one coordinated structure (see Figure 5 for an overview of proposed responsibilities). This structure would streamline decision-making, improve coordination across work streams, and create a single point of accountability for all urban forestry activities.

Similar models in nearby Alexandria and Arlington where all tree care operations are centralized for efficiency and accountability. For Fairfax, this approach would also better align staffing, equipment, and funding with program needs, enabling more proactive maintenance cycles, stronger data integration, and enhanced community outreach.

Community Quote: "Make urban forestry its own department."

FUNDING

CURRENT CONDITIONS

Fairfax's urban forestry program is constrained by limited funding, affecting its capacity for proactive maintenance and long-term canopy management. While staff respond to service requests and storm damage, contracted pruning and removal budgets are often exceeded. Tree maintenance and planting by Public Works and Parks & Recreation rely solely on the city's General Fund, limiting program growth.

A comparative analysis of Fairfax's urban forestry spending, using data from the 2016 Municipal Tree Census (Hauer 2016), found that the **city's forestry budget was 76% lower than the national average for communities of similar size when measured as a percentage of the total municipal budget** (Figure 6). This funding gap highlights the need for increased investment to meet service demands and sustain a healthy, resilient urban forest.

URBAN FORESTRY FUNDING OPPORTUNITIES

A successful urban forestry program—regardless of community size—depends on diverse and adaptive funding strategies. While many programs rely heavily on general fund resources, this often limits their ability to expand or sustain core activities. To grow and manage a healthy, resilient urban forest, communities must think creatively and pursue a range of funding opportunities that align with environmental, public health, and infrastructure goals.

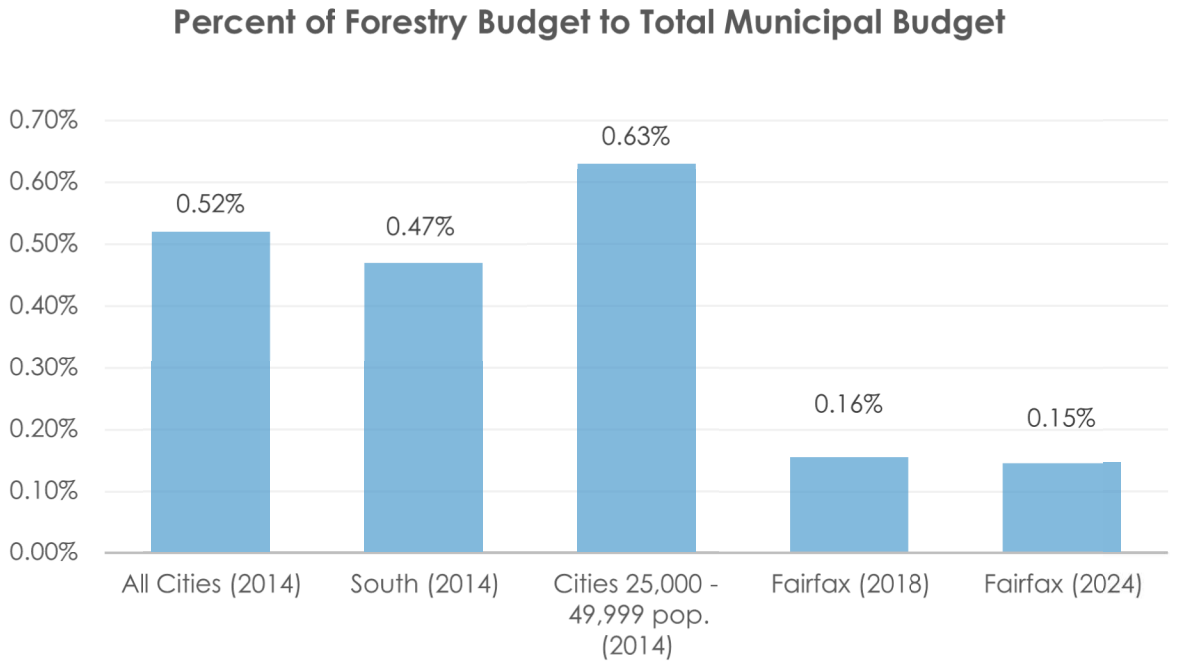
LOCAL FUNDING MECHANISMS

Localities in Virginia can take advantage of several state-allowed mechanisms that provide stable, scalable funding for urban forestry operations and canopy expansion:

STORMWATER UTILITY FEES

Urban forestry activities—such as tree planting, canopy preservation, and maintenance—can significantly reduce runoff and improve water quality.

Figure 6: Percent of forestry budget to total



Communities with stormwater utilities can dedicate a portion of fee revenues to green infrastructure, including tree-related projects.

SPECIAL SERVICE DISTRICTS (SSDS) AND COMMUNITY DEVELOPMENT AUTHORITIES (CDAS)

These districts allow for the collection of additional taxes or fees within defined geographic areas to fund enhancements like streetscaping, tree planting, and maintenance. SSDs are particularly effective in commercial corridors, downtowns, or redevelopment zones where enhanced landscaping is a shared goal.

CAPITAL IMPROVEMENT PROGRAMS (CIPS)

Tree planting and large-scale forestry initiatives can be incorporated into a locality's long-range CIP. This approach provides consistent, predictable funding for urban forest growth, especially when tied to transportation projects, park development, or stormwater retrofits.

LOCAL GENERAL OBLIGATION BONDS

Bonds can be issued to finance capital projects that include green infrastructure, such as large-scale tree planting or forestry equipment upgrades. These typically require voter approval and must be tied to specific capital needs (e.g., downtown revitalization, stormwater infrastructure).

TREE MITIGATION FUNDS

Through the development review process, localities can collect mitigation payments when canopy is lost, or tree preservation requirements are not met. These funds can be reinvested in public tree planting, maintenance, or restoration efforts—often in areas impacted by development.

STATE AND REGIONAL GRANT OPPORTUNITIES

Virginia also offers several targeted programs to support local urban forestry efforts:

Virginia Trees for Clean Water Grant supports tree planting projects that improve water quality, expand public green spaces, and enhance riparian areas.

Virginia Department of Forestry offers grants to support the following; government programs, tree maintenance and invasive plant removal, workforce development programs, demonstration projects, extreme heat mitigation, nonprofit organization support, and planning and education.

Stormwater Local Assistance Fund (SLAF) provides matching funds for stormwater infrastructure projects that incorporate green solutions like urban trees.

Chesapeake Bay Stewardship Fund – Small Watershed Grants support canopy expansion and runoff reduction in Bay watershed communities.

These programs advance both forestry and water quality goals, especially when local match funding is available.

FEDERAL FUNDING SOURCES

Federal programs provide substantial resources for communities that frame urban forestry as part of climate adaptation, hazard mitigation, or water management:

EPA Clean Water State Revolving Fund (CWSRF) offers low-interest loans and grants for projects that improve water quality through habitat restoration and green infrastructure.

FEMA's Building Resilient Infrastructure and Communities (BRIC) program funds nature-based hazard mitigation strategies, including tree planting and urban green stormwater systems.

National Fish and Wildlife Foundation's Five Star and Urban Waters Restoration Grant supports community-led restoration projects that combine native planting, public engagement, and watershed health.

Credit to Nabila Sheikh