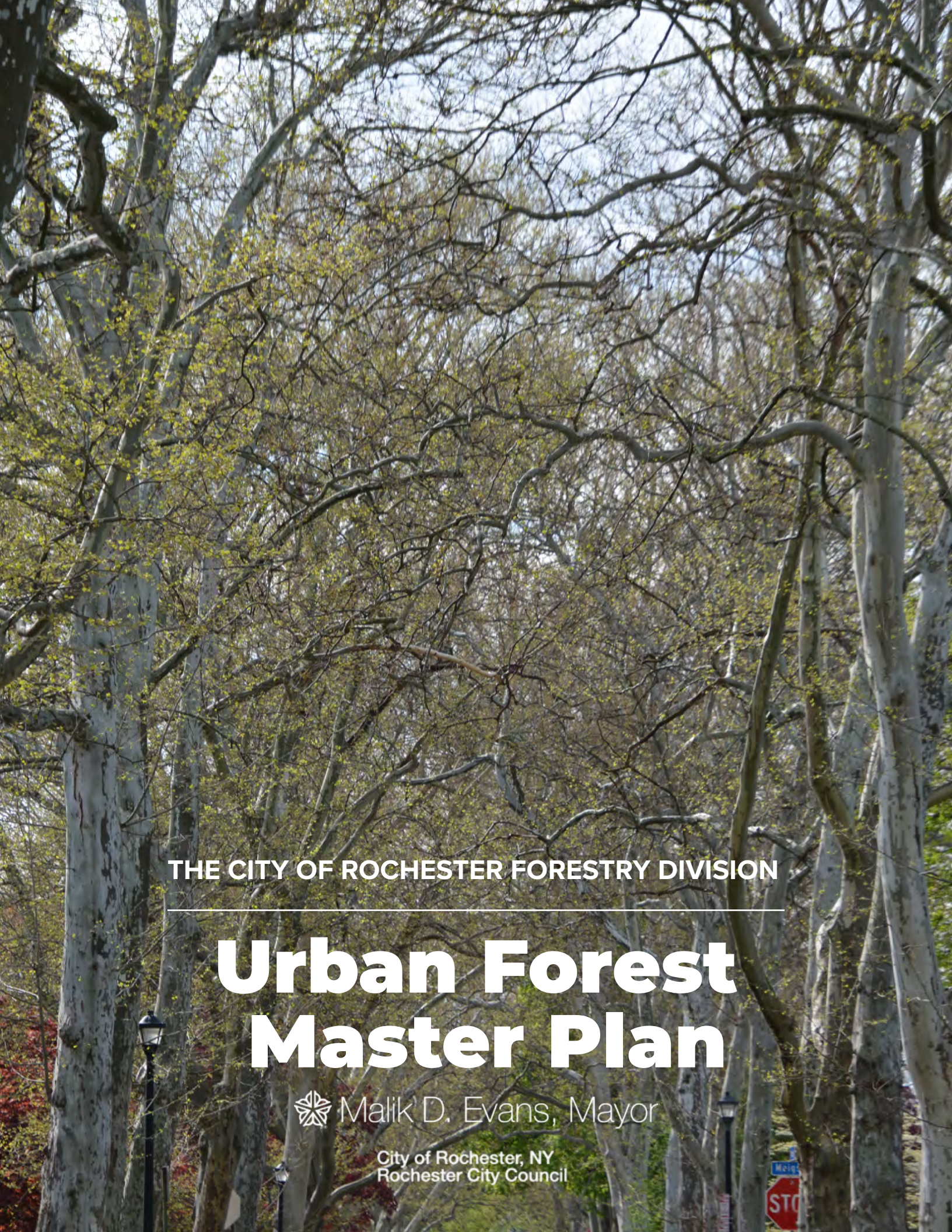

THE CITY OF ROCHESTER FORESTRY DIVISION

Urban Forest Master Plan

Malik D. Evans, Mayor

City of Rochester, NY
Rochester City Council

ACKNOWLEDGMENTS

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TABLE OF CONTENTS

INTRODUCTION

In 2024, the City of Rochester's Urban Forest Master Plan was updated for a fourth edition. This edition reviews the unique history of urban forestry in Rochester, examines the benefits of trees to the community, and assesses the current health and diversity of the urban forest.

Rochester's urban forest policy is discussed in detail, as well as the City's initiatives to address current issues such as environmental justice and climate change.

Finally, the plan poses a series of challenges and recommendations for the preservation and expansion of Rochester's urban forest, consistent with feedback from public engagement.

PREFACE

Executive Summary

PREFACE

Executive Summary

The Executive Summary provides a high-level overview of the findings and recommendations of the 2024 Urban Forest Master Plan.

LEGACY OF THE URBAN FOREST

Trees have been vitally important to Rochester since the city's founding. Charles Sprauge Sargent, the first director of Harvard University's Arnold Arboretum, called Rochester a "city in a forest". Almost as quickly as trees were cut to make room for roads and structures, they were replanted for shade and decoration in the early settlement.

The prominent flour miller, Hervey Ely, planted sugar maples along Washington Street in the 1830's; Josiah Bissel, a nursery owner, did the same along East Avenue in the 1840's. H. E. Hooker, owner of Hooker Brothers Nursery, recognized that street trees enhanced the value of residential properties when, as the developer of Oxford Street, he designed a mall and planted it with magnolias.

Many horticultural nurseries operated in Rochester in the 19th century. Ellwanger and Barry built the largest nursery in the world on 650 acres along Mount Hope Avenue.

The Rochester Parks Commission, at its first meeting in 1888, decided to hire Frederick Law Olmsted to design a park system for the city. His major efforts include Genesee Valley Park, Maplewood Park, Highland Park, and Seneca Park. In 1894, the Parks Commission was empowered to care for existing street trees, and shortly thereafter, began planting them as well. The commission evolved into the Department of Parks in 1915.

In the 1950's, the Forestry Division was mobilized to remove elm trees infected with Dutch elm disease. A second challenge for the Forestry Division occurred with the ice storm in 1991, which destroyed 14,000 public trees in the city.

Additional events, including the Labor Day windstorm of 1998, the April 2003 ice storm, the arrival of Emerald Ash Borer in 2011 and a windstorm in March 2017 have also impacted the urban forest.

In 2023, the Forestry Division embarked on a three year tree planting initiative with two main objectives:

1.) Increase the City tree inventory from 64,000 trees to 70,000 trees, and

2.) Address disparities in street tree stocking by allocating plantings in such a way to increase the tree stocking level to 85 percent across all City quadrants.

HEALTH AND DIVERSITY OF ROCHESTER'S URBAN FOREST

As of 2024, The City's managed urban forest includes over 67,000 trees along city streets and in parks and cemeteries:

- 40 percent are young (less than 12-inch diameter)
- 60 percent are mature (greater than 12-inch diameter)
- 13 percent are in excellent condition
- 41 percent are in good condition
- 46 percent are in fair to poor condition

Stocking is a measure of the number of existing trees as a percentage of sites available to plant trees. The current street tree stocking level is 81.9 percent citywide. There are 173 species with 12 tree genera in excess of 1 percent in the city-managed urban forest. Maples dominate the population at 29 percent. Honeylocusts are second at 10 percent. Oaks and lindens each constitute 7 percent, with ash at 5 percent. London planetree, cherry, and pear also constitute a larger than average share.

TREE BENEFITS, PUBLIC HEALTH, AND THE ENVIRONMENT

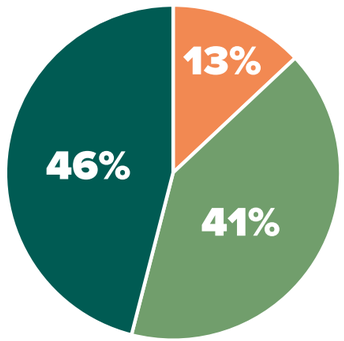
The immensity and beauty of Rochester's urban forest are visible every day, but the benefits are often overlooked. Trees filter toxic pollutants from the air and release life-giving oxygen. They intercept rainfall and slow erosion and storm water runoff.

Besides providing shade that cools people, streets and structures, trees demonstrably cool the air itself on hot summer days. Cooling and heating energy savings of as much as 25 percent result from properly positioned trees.

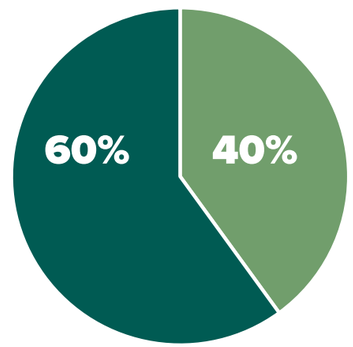
Trees enhance the attractiveness of streetscapes, which results in increased property values. Trees reduce urban noise by blocking, absorbing, and diffusing sound waves. And finally, trees soften the hard surfaces of a city and connect us with nature.

In 2023, to further explore and quantify the benefits of trees, the City commissioned Urban Design 4 Health, Inc. to study and provide an overview of the impacts of urban tree canopy on public health and the environment.

Tree Condition



Tree Age



ELEMENTS INFLUENCING

ROCHESTER'S URBAN FOREST

Rochester's average temperature is 49° Fahrenheit. With an annual rainfall of 34 inches and snowfall of 93 inches, there is generally ample moisture for tree growth. This combination of temperature and moisture allows for an extraordinarily broad range of tree species to grow here.

In 2012, Rochester was classified in USDA Plant Hardiness Zone 6A (-10°F to -5°F). At the time of this update, Rochester has moved to Zone 6B (-5°F to 0°F), an indicator of climate change with increasing annual temperatures.

Continued climate change and the resulting changes in hardiness zones may be considerations in species selection, allowing for increased diversity in our urban forest.

Trees have many pests, in most cases however, it is environmentally prudent to allow natural systems to manage pest populations. Some invasive pests, such as Emerald Ash Borer, pose a serious threat to the health of our urban forest and have such prompted a response from the City.

Construction is a major man-made influence affecting the urban forest. According to a publication from Mississippi State University[1], trees typically die from construction related stress slowly over 1 to 10 years. Vandalism and de-icing materials also profoundly affect tree establishment and longevity.

Funding and management practices, along with condition survey and data collection have the most direct man-made influence on our urban forest.

Without funding, trees do not get planted, pruned or removed. Planning and organizing workloads, driven by data analysis, provides the foundation for effective management of our forest resource.

PUBLIC ENGAGEMENT

Public engagement was a major component in the development of recommendations in this plan, highlighted by the formation of an Urban Forest Master Plan Advisory Committee. The committee, consisting of community stakeholders, provided vital insight and feedback to inform the plan. Public engagement also included in-person and virtual meetings, an online survey, pop-up and experiential events, and the formation of a Community Tree Ambassador Program.

ROCHESTER'S URBAN FOREST POLICY

Rochester's urban forest is healthy and growing in size and grandeur. Citizens and visitors recognize and appreciate the environmental, economic, and social benefits our forest provides for our community and are engaged in its care and renewal.

The predecessor to this plan, *Rochester, a City in a Forest*, is known throughout the country as a model in urban forestry stewardship and progressive management. The urban forest was considered an integral part of *Rochester 2010: The Renaissance Plan*, and impacted seven of the eleven campaigns.

More recently, the Rochester 2034 Comprehensive Plan recognizes the urban forest as an integral part of the City's infrastructure, essential for the well-being of residents. The Rochester 2034 plan recommends utilizing the Urban Forest Master Plan to guide efforts in protecting and expanding our urban forest.

Rochester 2034 MOVING FORWARD

It is the City's responsibility to protect, regulate, and fund the tree planting, maintenance, and removal on city-owned lands or within the public right-of-way in the most social, responsive, environmental and economic manner.

Mature trees receive periodic pruning to remove potential hazards and promote tree health and longevity. Annual inspections are performed to identify hazardous conditions. Ideally, one-sixth of the City's trees will be comprehensively inventoried each year. Tree removal will be completed to ensure public safety, urban forest health, and responsible fiscal management. Monetary fines will be imposed for destructive construction practices.

Renewal of our urban forest will be accomplished through annual tree planting. Tree species selected for planting will not exceed 10 percent of the tree population to ensure minimal impact from future events. In 2004, the City adopted a policy of not planting trees of the Fraxinus (ash) genus in response to the potential invasion by Emerald Ash Borer (Agrilus planipennis) (EAB).

Edible fruit tree plantings will be primarily restricted to parks, community gardens, and other open spaces. Fruit trees do not make ideal street trees in the urban environment due to poor soils, narrow tree lawns, and their low branching habit conflicting with clearances. Fruits such as apples, pears, and cherries become problematic with infrastructure and pose threats to public safety.

Pest control will only be considered when there is significant risk to a large population of trees, such as the case with the discovery of EAB in 2010. As a result, the Forestry Division has developed and implemented a successful, cost-effective EAB management program, allowing the City to maintain tree canopy and strategize a long-term plan for tree replacement.

CHALLENGES AND RECOMMENDATIONS

The Forestry Division, through public engagement and in partnership with the Urban Forest Master Plan Advisory Committee, identified current issues of importance which present challenges to sustaining the City's urban forest.

In response to these issues, recommendations were developed to be utilized in the development and implementation of fiscal and operational plans. Annual status reports should be made available. This master plan should be reviewed in five-year increments to evaluate its impact and to revise as appropriate.

1. Brady Self, "Preserving Trees in Construction Sites," Mississippi State University Extension Service, 2022, https://extension.msstate.edu/publications/publications/preserving-trees-construction-sites.

TREE STORIES

Rochester 2034

The Importance of Trees and the Urban Forest

From The Placemaking Plan Initiative Area (page 44 of Rochester 2034):

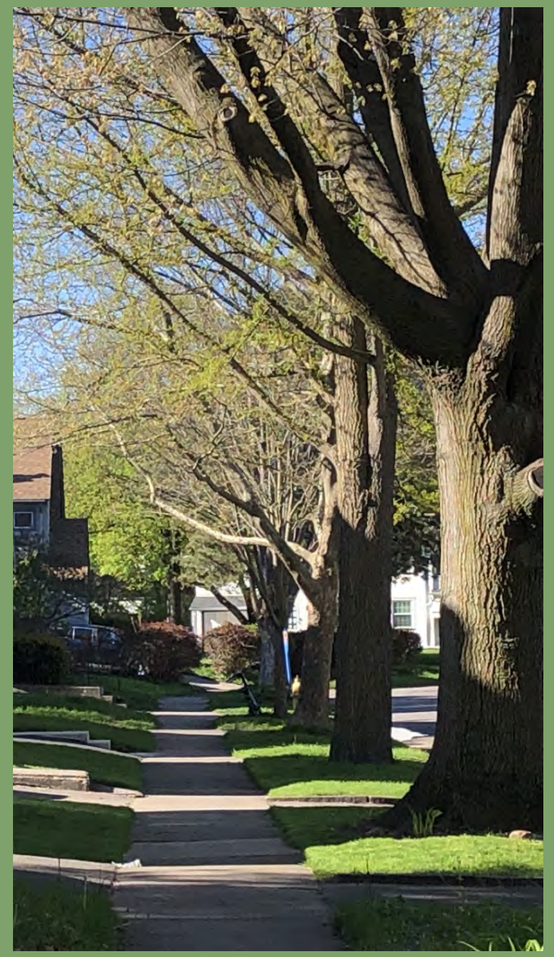
A Celebration of Sidewalks and Front Porches “A consistent five-foot wide walkway is found along nearly every residential street in the city, encouraging people to walk for leisure, social, and practical reasons. Sidewalks not only connect all houses to their neighbors on a block, but are a human-scale, elaborate transportation network that links to nearly every home and business in Rochester. The presence of that network, which is largely decorated with tree lawns and street trees, is a major point of pride and unity for residents.

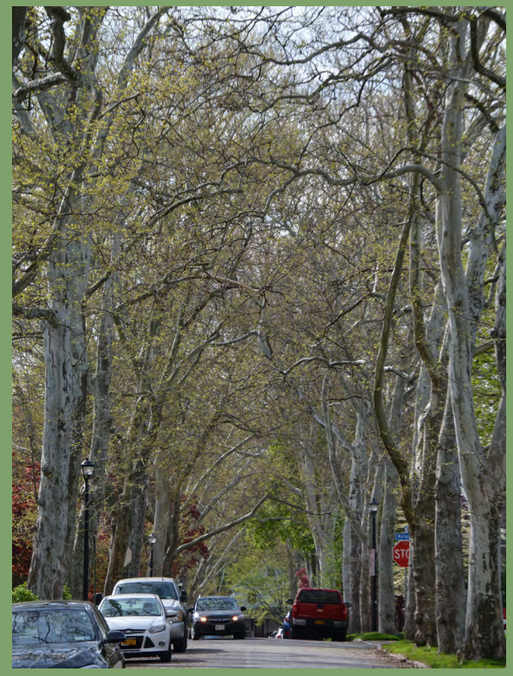
As well, the front porch serves as a transition zone between private and public space in support of the sidewalk commons. It is a design feature unique to North American residential architecture. It is so integral to urban and village living that the front porch is part of the Landmark Society of Western New York’s 2017 Five to Revive list, which celebrates and advocates for the preservation of key community assets.”

From the Natural Resources Section (page 271 of Rochester 2034):

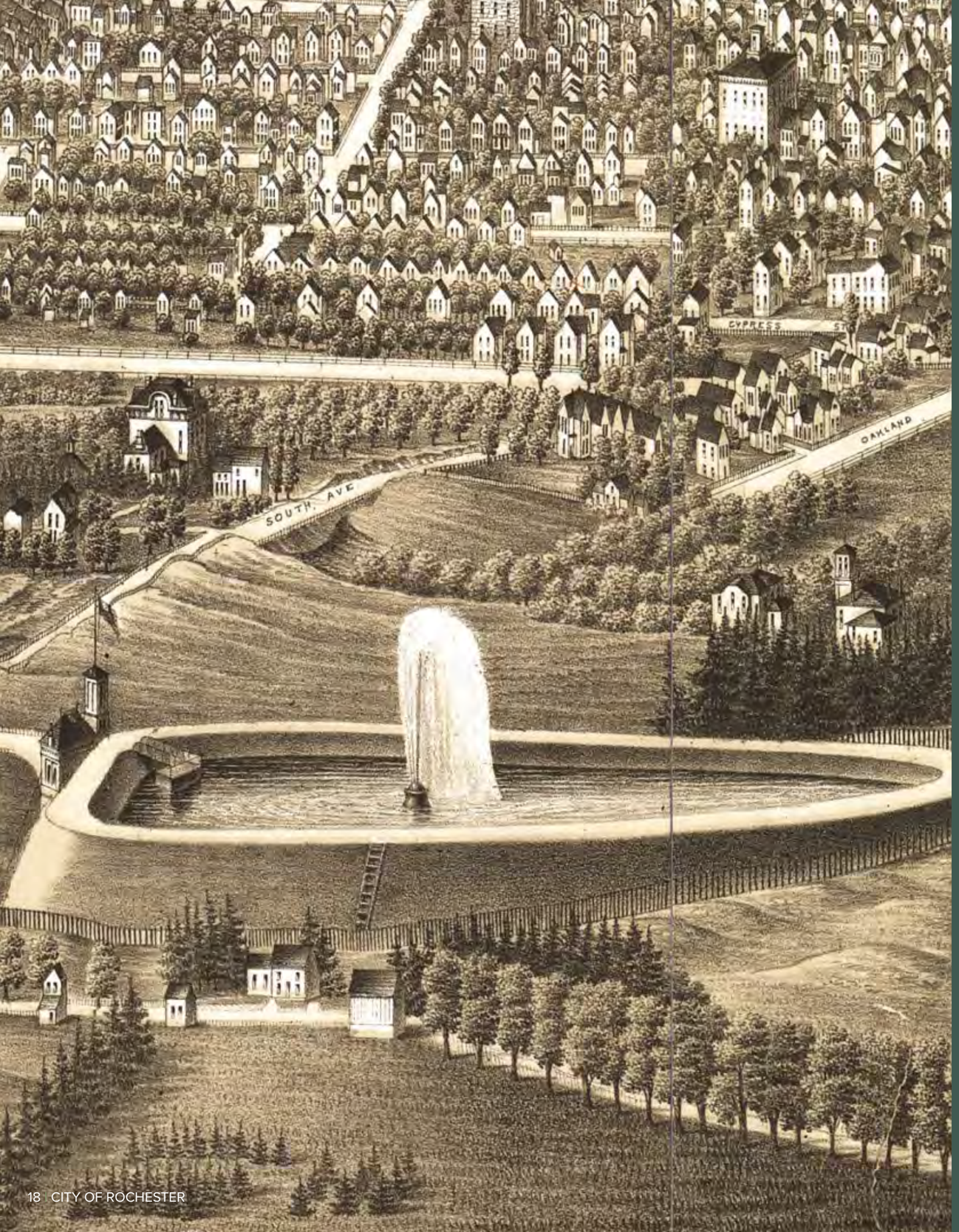
“Trees cool cities affected by the “heat island effect” and clean the air, which allows cities to be resilient against negative health effects brought on by climate change, including rising temperatures and air pollution. Trees also fight against noise pollution, increase the presence of wildlife, and allow people to connect with nature, all things that are linked to better mental health, as well as better productivity at school and work. Street trees create a buffer between walkers and drivers.

Urban neighborhoods are unique because of unifying elements that provide a sense that residents belong to something bigger than themselves and their property. These pedestrian-scale elements include sidewalks, street trees, tree lawns, streetlights, front porches, and a relatively consistent, shallow setback of homes from the street. A healthy urban forest is an important part of the City’s infrastructure and essential for the well-being of residents.”





The Rochester 2034 highlights the role of the urban forest in complementing sidewalk networks, mitigating the effects of climate change, and enhancing quality of life.



CHAPTER

1

The Legacy of Rochester's Trees

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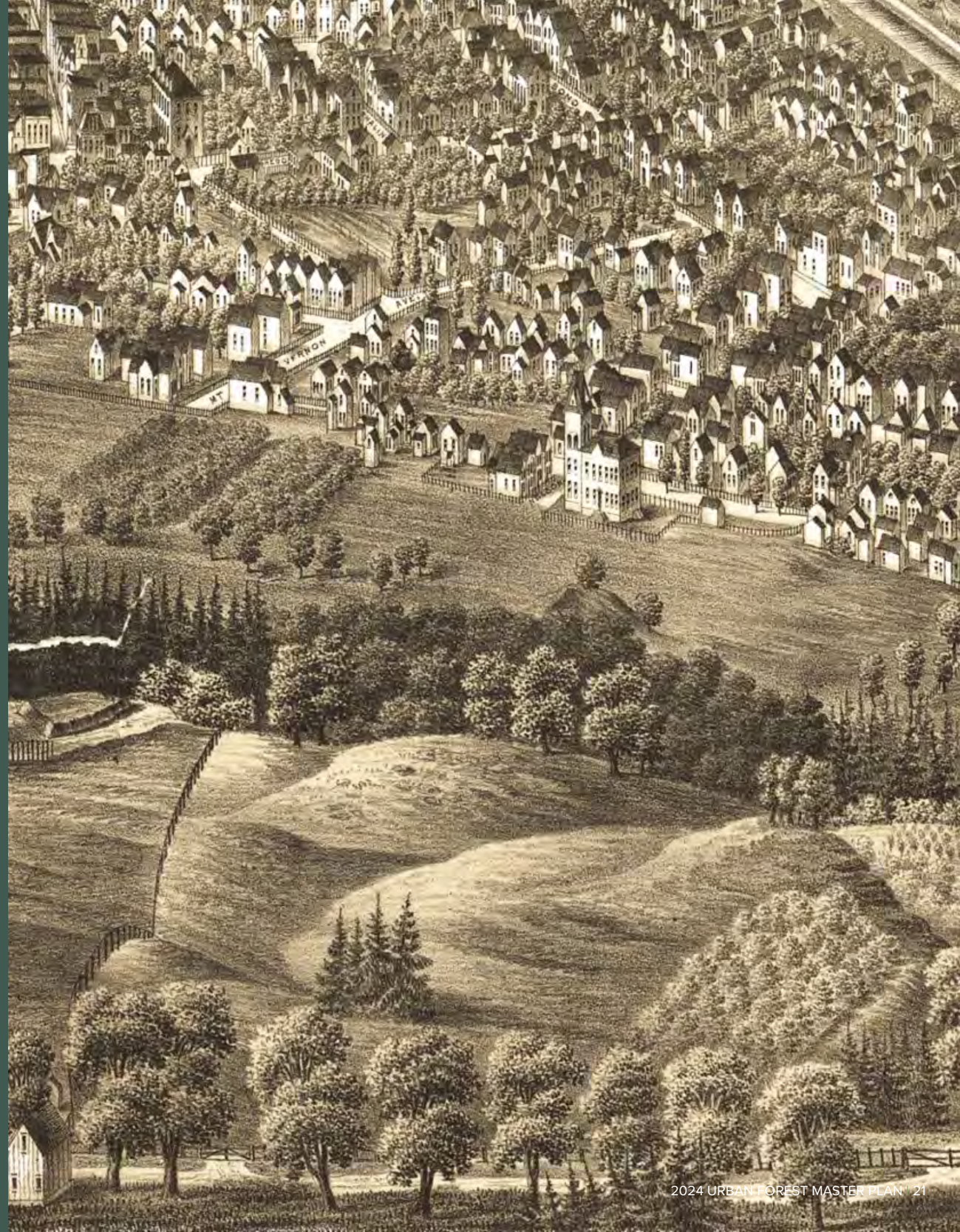
The Legacy of Rochester's Trees

Trees have been vital to Rochester since the city's founding. It was practically an impenetrable forest when the first non-indigenous humans arrived. The density of trees made the trip from Stone-Tolan House, now 2370 East Avenue, to the Genesee Falls a difficult, full-day's journey, even utilizing the trails created by the indigenous peoples of the area.

Today, that four-mile distance can be traversed by car in 10 minutes. Trees then were so plentiful that early settlers built roads from them. Plank Road, though smoothly paved today, bears the name of its original composition. Another wooden highway was what has become East Henrietta Road today.



1813

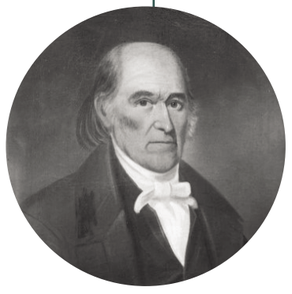
It was the forest that saved Rochester from invasion by the British in the War of 1812. The small village of Buffalo, vulnerably located on the flat sandy shores of Lake Erie, was pillaged and burned to the ground on December 30 and 31, 1813. Lewiston was similarly brutally attacked and burned. On May 14, 1814, the British fleet - consisting of eight large ships, several smaller ones, gunboats, and barges - anchored at Lake Ontario off the mouth of the Genesee River.

At the time, Rochesterville was a log cabin village of 300 people. With help from a few neighboring villages, Rochesterville mustered 33 men, 20 horses, and one cannon, and took the entire night to move this meager group to the area that is now Charlotte.

Reinforcements for the Americans arrived on the second day, but they were woefully inadequate to take on the British, so the Americans decided to trick the British by marching in circles in and out of the woods, with files of men passing a number of times through a clearing in sight of British troops. The British, not knowing how many troops they would face if they were to land, decided the gains were not worth the battle, and on the third day they departed. The forest had saved Rochester.

1812

When the first sawmills were established at the falls on the Genesee River, finished lumber became available, for the town's building boom. One of the early settlers, Hamlet Scrantom, wrote in 1812, "The country is very pleasant and fertile, timbered with oak, chestnut, hickory, black walnut, and whitewood, some of enormous size. I saw one whitewood log twelve feet long which produced 1000 feet of clapboards."



1830's

In the 1830's, the prominent flour miller Hervey Ely, planted sugar maples and other trees along the west side of Washington Street for shade and decoration. They were the first trees in Rochester set out for ornament.

1840's

Rochester truly awakened to its horticultural potential in the 1840s. After many trees were cut to clear land for building, replanting occurred to decorate and shade city streets and lawns. The many nurseries that developed here were influential in this effort. Josiah W. Bissel, a nursery owner, was responsible for planting horsechestnuts on both sides of East Avenue in the mid 1840's. The horsechestnuts were replaced with elms, which now, too, have been replaced.

1850's

George Ellwanger and Patrick Barry, who built the largest nursery in the world in the middle and late 1800s on 650 acres along Mount Hope Avenue, scoured Europe for fine trees that they could propagate in America. Their efforts can be seen throughout Rochester, particularly in the grand European beeches they developed. These include fern-leafed, copper, purple, and weeping beeches.

1880's

Many developers recognized that street trees enhanced the value of residential properties. H. E. Hooker, owner of Hooker Brothers Nursery, and developer of Oxford Street, designed the street in 1880 with a mall on which he planted a hybrid cross between Chinese white and Japanese purple magnolias, which are noted to this day for their delicate color.

Charles Sprague Sargent, the first director of Harvard University's Arnold Arboretum, called Rochester a "city in a forest." It is an apt description because the area was originally a forest composed mostly of oak, beech, maple, basswood, ash, and tuliptree. Settlers gathered butternuts for food from trees that grew along the river.

At its first organizational meeting on May 7, 1888, the Rochester Parks Commission decided to invite the great American landscape architect, Frederick Law Olmsted, to design a park system for the City. His major efforts included Genesee Valley Park, Highland Park, Seneca Park and Maplewood Park. Olmsted's concept was to reserve the natural landscape along the Genesee River as the scenic heart of the community. Today the original Olmsted parks are important components of the Genesee Riverway and Trail, extending from Lake Ontario to the Erie Canal Heritage Corridor.

Rochester was the last municipal park system designed by the renowned Olmsted. After he retired, his firm continued to do work in Rochester, designing Brown Square, Cobbs Hill Park, Jones Square, Susan B. Anthony Park, the University of Rochester quadrangle, and several smaller public spaces.

1880's

1890's

In its first annual report, the City's Parks Commission mentioned street trees and residents efforts to plant trees in front of their houses. By 1894, the Common Council empowered the Parks Commission to care for existing street trees.

Beginning in 1896, the commission's annual reports record areas which had street trees pruned. The reports also document an ongoing battle with tussok moths, commonly called tent caterpillars. Work requested by residents each year far exceeded the Parks Commission's ability to accomplish it.

In 1899, the Parks Commission began to plant trees along city streets. By 1915, the Parks Commission was abolished and its duties transferred to the newly organized Department of Parks.

1900's

In the early 1900s, the influence of Rochester's nurseries was apparent in the species selections made by the city or planted by developers and available to residents at low rates. The Ellwanger and Barry Nursery noted certain trees in its catalogs as suitable for parks, avenues, and streets. These included a wide variety of maples, elms, and poplars along with select species of linden, larch, horsechestnut, and locust.

1950's

In the 1950s, the Forestry Division was mobilized to remove elm trees infected by Dutch elm disease. An inventory was completed, a progressive management approach for the time. The common practice of planting a single type of tree, or monoculture, along a street or park unfortunately created favorable conditions for the spread of Dutch elm disease in the American elm. An estimated 20,000 American elms along numerous residential streets and grand boulevards in Rochester were lost to the disease over a 15-year period. As a result, subsequent planting included a diversity of tree species on a street. In the years to come, however, the practice varied depending on the decisions of the City Forester.

1990's

The ice storm of 1991 had a great impact on Rochester's urban forest. Approximately 14,000 public trees were removed and subsequently replaced over a four-year period. The ice storm shaped the future of Rochester's urban forest. A tree planting plan was developed to guide the replanting. Key to the plan was the integration of diverse tree species along a street to minimize the impact of future events. Planting plans were developed for every street with the selection of trees matching a desired visual image.

Today

The City recognizes the value and importance of a healthy and vibrant urban forest, as well as disparities in tree canopy distribution in underserved communities. In 2023, the Forestry Division kicked off the Trees Expansion and Beautification Initiative to expand the urban forest and create an equitable distribution of street trees throughout Rochester.

Rochester's verdant environment of indigenous flora, extensive horticultural nurseries and masterfully designed parks, has had a profound effect on the "city in a forest" that we know today. The Forestry Division is committed to continuing this legacy of gracious, tree-lined streets and glorious parks.

CHAPTER

2

Transformation of Rochester's Urban Forest

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Transformation of Rochester's Urban Forest

It is the City's responsibility to manage the care of trees located within the city right-of-way and on city properties. This includes trees lining city streets, in our parks and cemeteries, in vacant lots and on other public properties.

As of 2024, the City's managed urban forest includes over 67,000 trees located along city streets and in parks and cemeteries.

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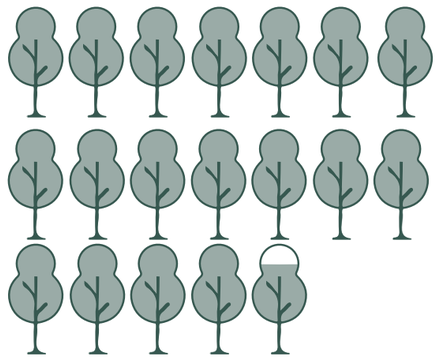
As of 2024, the city's managed urban forest includes over 67,000 trees located along city streets and in parks and cemeteries.

Urban Forest Breakdown

Each tree icon represents 3,000 trees



Street trees

Park and cemetery trees

Trees on vacant lots and other properties

Fig. 2.1: *The urban forest is predominantly composed of street trees.*

Included are approximately:

- 56,391 street trees
- 12,454 street sites available to plant trees
- 11,276 park and cemetery trees on 1,076 acres
- ~10,000 trees on vacant lots and other properties

The park tree inventory does not include Ontario Beach Park, Durand Eastman Park, Highland Park, Genesee Valley Park East, and Seneca Park. These five (5) parks are maintained by the County of Monroe under terms of the 1966 City / County Parks Agreement.

In 1998, the first 'Master Plan: A City in a Forest,' included detailed information on the city maintained urban forest. The data used in that information was generated in 1996. The original inventory data was collected in a DOS-based relational database. With the necessity in 1999 to prepare for the data conversion in anticipation of Y2K, the original provider, ACRT, Inc. was contracted to perform the task. In the migration process, the mapping sub-program of the database was rendered unusable. This led to the slow degradation of data related to park trees, specifically the ability to track work performed on specific trees.

Street trees in the database were associated with an address, making physical location relatively simple. Park trees lacked spatial information. In 2009, the Forestry Division set out to add Geographic Information Systems (GIS) data to the parks tree inventory. The previous parks inventory was contained in the ACRT Tree Manager database under an address location.

56,391
street trees

12,454
planting sites available

11,276
park and cemetery trees

10,000
trees on other properties

Each address location contained hundreds to thousands of sites referencing hand drawn and computer generated maps.

The maps were outdated, clustered and difficult to read. Many of the maps had not been updated since the mid 1990's. The need for updated spatial information for Parks trees resulted in the creation of a new GIS-based database.

The new parks tree database provided accurate location and information on each tree within City parks. Every park tree in the city has a digital point on an electronic map, each point containing the same information previously stored in ACRT Tree Manager. Points were collected with a handheld GPS and uploaded into GIS mapping software where they were connected to forms, requests, and records in a database.

Trees can now be added, deleted, and modified in the field keeping an up-to-date inventory that can be visually deciphered by crews and technicians.

In 2015, the entire city tree inventory (street trees and parks trees) was migrated to a new GIS database. The new database, modeled after the parks trees GIS database, is connected to a Microsoft Access database, titled Rochester Tree Manager. Tree Manager provides the ability to create and track work requests, work histories, and other critical records required of the operation of the Forestry Division.

CHAPTER

3

State of the Urban Forest

CHAPTER 3

State of the Urban Forest

Assessing the state of the urban forest is accomplished by an analysis of the age of the trees, their condition (health) and the stocking rate, which compares the number of existing trees to the number of available planting sites.

Analysis of the evolution of the forest over a decade provides a waypoint in the path laid out in the original master plan. That original document recommended the re-evaluation of the contents and condition of the urban forest on a regular basis.

The regular evaluation of benchmarks serves to map the path the urban forest has taken; it is a reflection of the maintenance efforts, it records the impact of natural events (ice, wind and drought) and serves as a guide post on the journey to maintain a healthy urban forest.

AGE

The age of Rochester's urban forest is gauged by summarizing the diameter of each tree in the inventory and grouping the summary into six-inch diameter classes (Figure 3.1). The assumption is that the larger the diameter, the older the tree.

The diameter distribution of an ideal urban forest should have a negatively skewed slope as diameter class increases, indicative of a larger percentage of young trees. The slope should then even out through the larger diameter classes – 31 to 36-inch and greater - indicating a stable middle-aged tree population. Finally, the slope should taper off, indicating the maturing of the urban forest.

In 2012, fifty-four percent of trees were 12" in diameter or less. In 2024, this figure has decreased to forty percent (Figure 3.2).

Fig. 3.1: *Tree diameter is used to determine the age of the urban forest. Diameter is measured at the breast height of an adult, approximately 4 feet and 6 inches above the ground.*

The decrease in the percentage of young trees, along with the increases evident in larger diameter classes, illustrate the aging of the urban forest. Increased tree planting is needed to maintain stocking levels. Although it is desirable for young trees to compose the highest percentage of the urban forest, it must be noted that increased plantings will require increased maintenance needs as trees age.

The importance of these large trees cannot be overlooked. They are a link to our past.

The number of mature trees, 31 inches and greater in diameter, tapers off as anticipated, mirroring percentages present in the 2012 data. The importance of these large trees cannot be overlooked. They are a link to our past, and provide proof that a species will perform well in similar conditions. These are the proven survivors, and warrant special care and recognition.

CONDITION

The number of trees within the forest is important, but the quality or condition of the trees is critical. The condition of a tree is determined using a tree condition evaluation chart. Points are awarded for factors in six (6) categories:

- Crown development
- Trunk condition
- Major branch structure
- Twig growth rate
- Insects and disease
- Roots

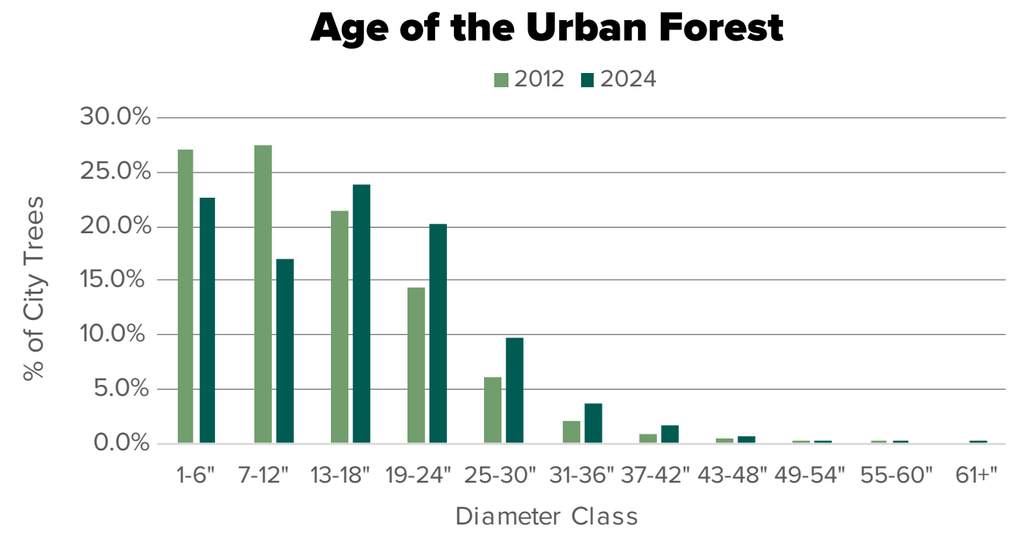


Fig. 3.2: *From 2012 to 2024, the number of trees 12" in diameter or less has decreased. This change in size illustrates the aging of the urban forest.*

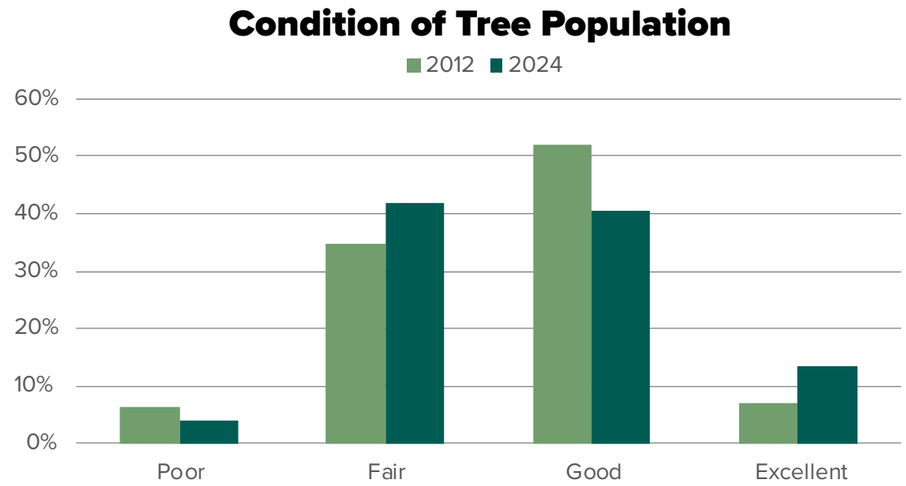


Fig. 3.3: *Tree evaluation charts are used to determine the condition of a tree. Proactive urban forest management has helped to grow the number of "Excellent" trees from 2012 to 2024.*

The points accumulate, generating a condition value for the tree. With the change in the number of trees, the percentage of trees within each condition class is compared. (Figure 3.3). Inventory data does not exist for trees on vacant lots, thus they are not included in the chart.

Trees determined to be in ‘Excellent’ condition exhibit a well-balanced crown, a sound and solid trunk, no defects in branching structure, and twig growth that is typical for the age and species of the tree. These trees show no signs of insect or disease problems, and have no root problems. To be considered ‘Excellent’ the tree must rate at the top of each variable: it must have a perfect score. Thus statistically, one should expect a very small percentage of trees to fall into this condition rating.

The majority of the urban forest is categorized in fair to good condition.

The period between 2012 and 2024, saw a ninety-three percent increase in trees deemed to be in ‘Excellent’ condition. This increase illustrates the effectiveness of proactive urban forest management - specifically the systematic pruning of street trees and new tree plantings.

Trees in poor condition are utilized as a key performance indicator (KPI) for the Forestry Division, with a goal of five percent of the population or less. In 2024, four percent of trees are deemed to be in poor condition. Annual tree plantings, coupled with removal of poor condition trees make this a realistic and sustainable goal for the future.

Overall, the majority of the urban forest is categorized in fair to good condition, consistent with historical trends. As tree plantings are increased and the forest becomes younger, the percentage of trees in good to excellent condition will increase.

STOCKING

Stocking is a measure of the number of existing trees as a percentage of available planting sites. Stocking provides a measure of the forest population stability, as well as canopy distribution. The figure is only calculated for street trees, as sites to plant trees in parks are not inventoried and are most appropriately evaluated using long-term data. In 2012, the stocking rate was 75.7 percent. In 2022, stocking remained consistent at 76 percent, with disparities recognized among City quadrants. In response, the Forestry Division embarked on the Trees Expansion and Beautification Initiative to address tree canopy disparities, setting a goal for an equitable stocking rate of 85 percent across all City quadrants. At the time of this update, the stocking level is 81.9 percent, with the completion of the initiative scheduled in 2025.

YOUNG TREE MORTALITY RATE

Beginning in 2001, the Forestry Division undertook the responsibility for planting trees in-house. Initially instituted in an effort to contain rising costs, the process has yielded a decrease in mortality rates. This is attributed to having direct control over tree stock selection and planting methods.

The average three-year mortality rate using contracted planting was 15 – 25 percent. Tree planting with City staff has seen a decrease in the mortality rate at 5-10 percent after three years. The mortality rate for the 2022 planting was 9 percent after two years.

SPECIES DIVERSITY

Diversity in the urban forest promotes overall health and longevity by providing protection from large scale pest and disease outbreaks. Dutch elm disease devastated American elm trees throughout eastern cities in the 1950’s because the elms were so numerous and lined many city streets. More recently, Emerald Ash Borer has threatened over 3,500 ash trees in our urban forest. As a result, current arboricultural standards recommend that a tree species not exceed ten percent of the forest population in order to minimize potential losses and to passively control pests attacking a specific species.

There are 173 species with 12 tree genera in excess of 1 percent in the city-managed urban forest (Figure 3.4). Maples dominate the population at 29 percent. Honeylocusts are second at 10 percent. Oaks and lindens each constitute 7 percent, with ash at 5 percent. The remaining tree genera constitute 10 percent or less of the total population.

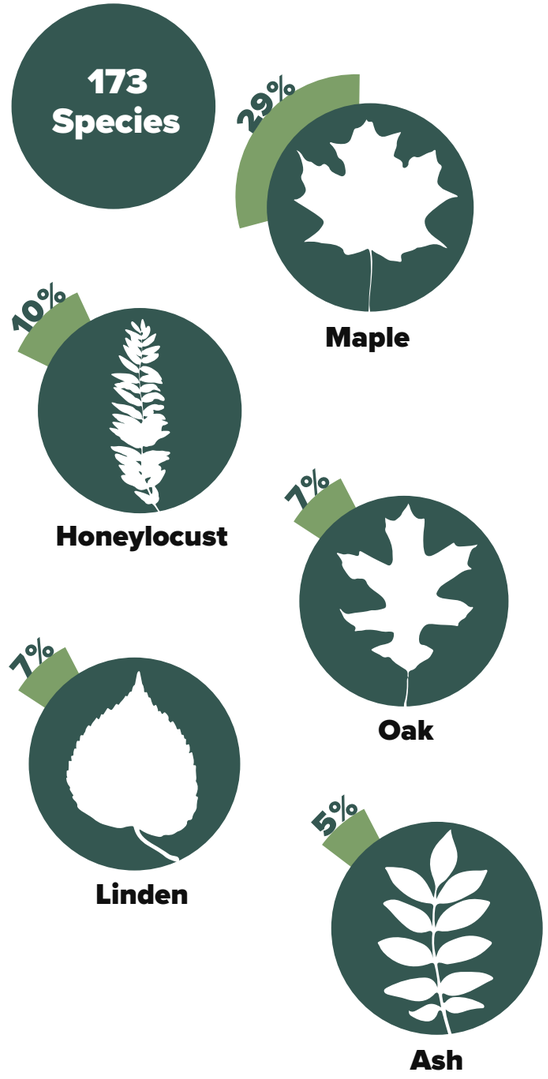


Fig. 3.4: *Of the 173 species found in the urban forest, the species listed above represent the largest proportion of tree genera.*

CHAPTER

4

Tree Benefits, Public Health, and the Environment

CHAPTER 4

Tree Benefits, Public Health, and the Environment

In 2023, to further explore and quantify the benefits of trees, the City commissioned Urban Design 4 Health, Inc. to study and provide an overview of the impacts of urban tree canopy on public health and the environment.

Focus areas of the study included public health benefits of trees, environmental benefits of trees, and equity and environmental justice.

In 2023, to further explore and quantify the benefits of trees, the City commissioned Urban Design 4 Health, Inc. to study and provide an overview of the impacts of urban tree canopy on public health and the environment. Focus areas of the study were:

Public Health Benefits of Trees

- Increased physical activity
- Decreased exposure to pollutants
- Reduced stress
- Improved attention
- Foster psychological well being
- Increased social interaction and cohesion

Environmental Benefits of Trees

- Mitigation of urban heat island
- Stormwater management
- Reduction of air and noise pollution

Equity and Environmental Justice

- Considering equity to ensure fair access to urban vegetation
- Setting goals for equitable tree distribution
- Acknowledging cultural differences in planning and engagement
- Community empowerment

Evidence Review: Health Benefits of the City of Rochester's Urban Reforestation and Tree Expansion can be found in its entirety in Appendix A.

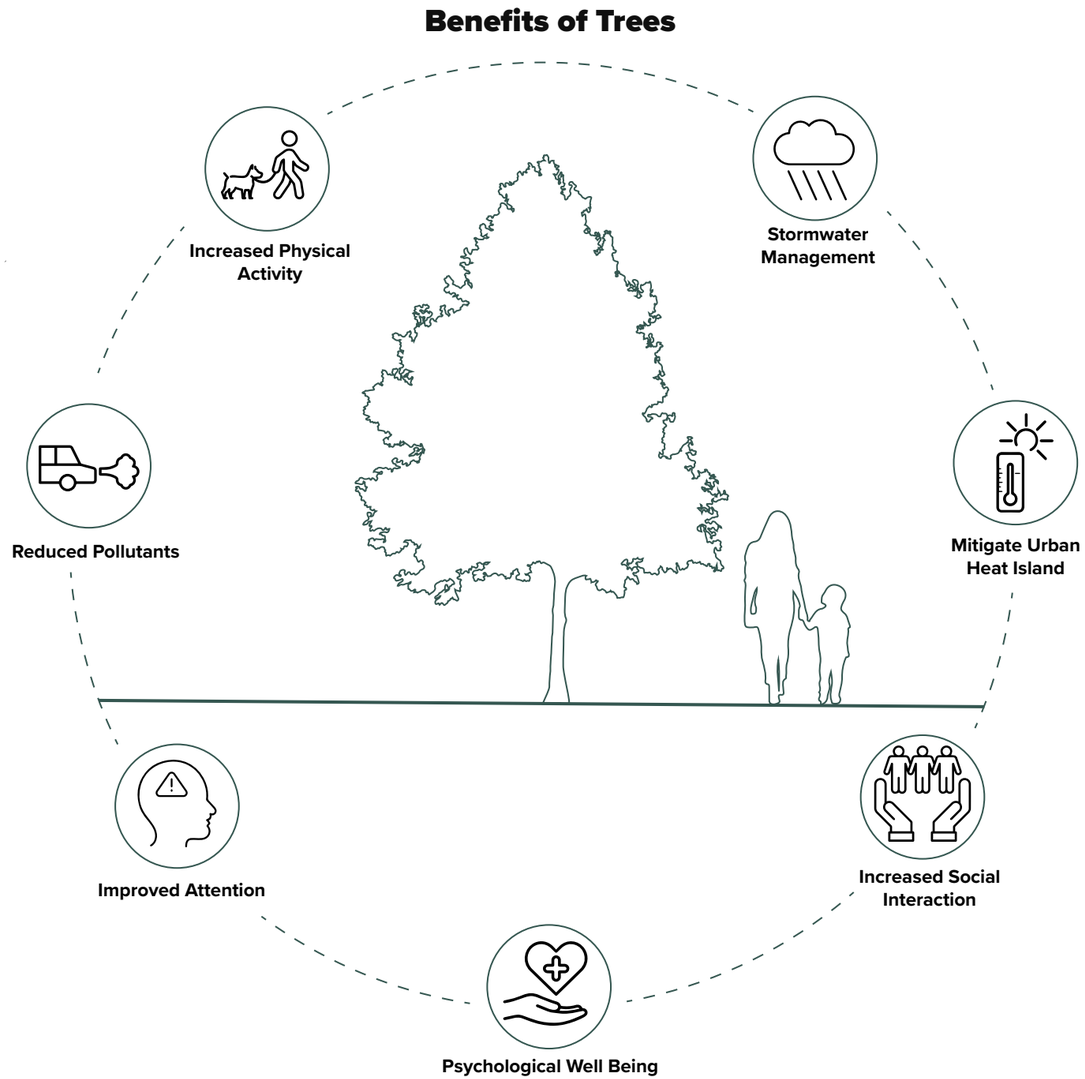


Fig. 4.1: *The Urban Design 4 Health study found numerous benefits of urban trees on public health.*

CHAPTER

5

Elements Influencing the Urban Forest

CHAPTER 5

Elements Influencing the Urban Forest

The urban forest is continuously subjected to elements of influence, both man-made and natural. This is no different than a natural forest system. Periodic natural events and urbanization cause tree mortality and create opportunities for rejuvenation.

In the urban environment, managing these elements can be accomplished provided the elements are identified, defined, and considered as tasks associated with managing our tree population.

The urban forest is continuously subjected to elements of influence, both man-made and natural. This is no different than a natural forest system. Periodic natural events and urbanization cause tree mortality and create opportunities for rejuvenation. In the urban environment, managing these elements can be accomplished provided the elements are identified, defined, and considered as tasks associated with managing our tree population.

NATURAL ELEMENTS OF INFLUENCE

Climate and Climate Change

Annual rainfall and temperature ranges of regional climates create environments for various tree species to thrive and others to fail. Rochester's temperate climate has an average rainfall of 34 inches per year and an average snowfall of 93 inches per year, which provides ample moisture for plant growth.

Moisture and temperature patterns allow the use of a broader range of tree species.

Rochester's average temperature is 49 degrees F.; its average high is 90 degrees F. and average low, 2 degrees F. This places our region in USDA hardiness zone 6B (Appendix B plant hardiness zone map). Interestingly, 30 miles south of Rochester is one hardiness zone colder. Typically, as you travel south climates get warmer and correspondingly so do hardiness zones; however, Lake Ontario moderates temperature extremes and dominates our weather patterns.

These moisture and temperature patterns allow the use of a broader range of tree species than regions with more extreme temperatures and less annual rainfall.

Climate change and the resulting changes in plant hardiness zones may be considerations in future species selection, allowing for increased diversity in our urban forest.

Storms

Rochester regularly experiences high wind events that damage trees. The region experiences an average of one 60 mph gust event per year and twelve events with wind gusts in excess of 25 mph. These wind storms may cause damage to trees by breaking limbs or uprooting trees.

The region experiences an ice storm on average once every seven years, and significant ice events once every 30 years. The City has had significant ice storms in 1927, two in the 1950s, another in 1991 and most recently in 2003. The 1991 storm was classified as a 100-year event and destroyed 14,000 publicly owned trees worth over $12 million. To remove, replace, and prune damaged trees cost approximately $4.8 million and this event continues to have a long-term impact on forest health. The frequency of these events dictates that tree selections should be made utilizing those with inherently strong branch structure.

After the 1991 ice storm, an Urban Forest Emergency Response Plan was developed to reduce the response time and impact of storm events.

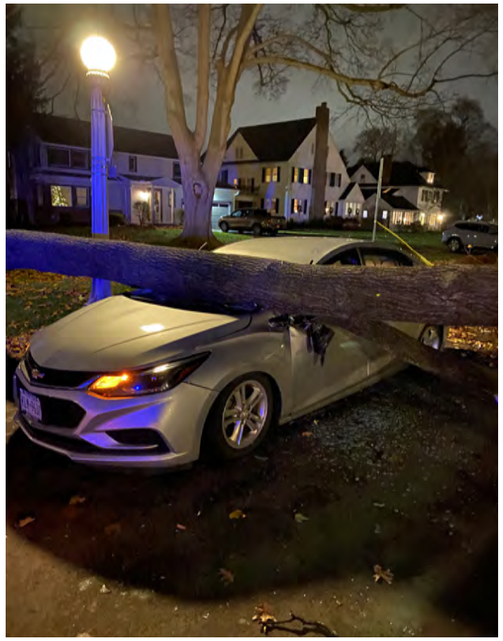


Fig 5.1-4: *Wind and ice storm events can cause damage to trees by breaking limbs or uprooting trees, and can have long-term impacts on forest health.*

The plan has demonstrated its strength on several occasions; most notably the Labor Day wind storm of 1998 and the ice storm of April 2003. More recently, a wind event in March 2017 produced winds in excess of 80 miles per hour, damaging over 300 City-owned trees.

Soils

Rochester soil is classified as urban; however, it is predominantly sand/clay in texture and alkaline in pH. Such composition dictates evaluation of the soil at a planting site, selection of trees that are tolerant of higher pH, and avoidance of trees that prefer acidic soils.

Insect and Disease Pests

Insect pest populations fluctuate annually, damaging city trees. In most cases, however, it is environmentally prudent to allow natural systems to control pest populations to varying degrees (Table 5.1). Some of these pests create nuisance problems for adjacent homeowners. Aphids drop sticky honeydew from trees on cars and property and attract bees.

Elm leaf beetles may enter homes to winter. Over time, high pest populations stress a tree and compromise tree health. Control measures may be warranted in these cases; however, current pesticide application laws limit applications along city streets. New reliable injection methods provide cost effective treatment with minimal tree and environmental side effects.

Common Diseases and Pests of Rochester's Urban Forest

Disease	Insect Pests
Verticillium Wilt	Aphids
Fire Blight	Adelgids
Dutch Elm Disease	Elm Leaf Beetle
Anthracnose	Emerald Ash Borer
Polyporous squamosus	Locust Plant Bug
Ganoderma applanatum	Bees
Ganoderma lucidum	Ants
Nectria	Eriphyd Mites
Eutypella	Viburnum Leaf Beetle
Sooty Mold	

Table 5.1: *The urban forest faces pressure from the insect pests and diseases listed above. A combination of natural systems and control measures are used to manage these stressors.*

The Forestry Division monitors insect pest populations and the presence of tree diseases. Targeted control measures are used as needed. Large-scale control measures are rarely required. An exception is Dutch elm disease (DED). DED devastated American elm populations throughout American cities including Rochester. An estimated 20,000 American elms were lost in Rochester from the late 1950s through the early 1970's. Large-scale chemical control measures were used in an attempt to control the spread of DED; however, they proved ineffective. Removal of infected trees ultimately proved to be the most effective control measure. This event changed urban tree management from a single-tree management approach to a forest-system approach, which considers the dynamics of influence and interaction within a group of trees and effects on the population as a whole.

The discovery of Asian Longhorned Beetle (Anoplophora glabripennis) (ALB) in New York City, Chicago, IL, Rahway, NJ, Worcester, MA, and Toronto, Ontario, Canada, and the potential for an infestation in Rochester led to the implementation of a proactive search for this invasive species in 2000.

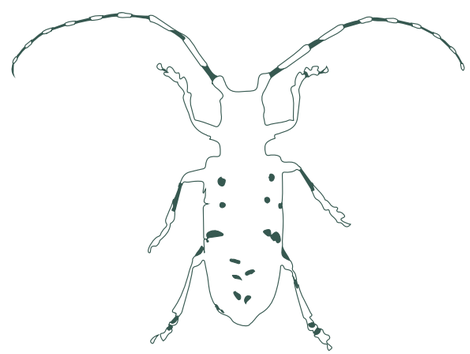


Fig. 5.5: *Asian Longhorned Beetle (Anoplophora glabripennis)*

Posing a greater threat to the urban forest is the discovery of Emerald Ash Borer (Agrilus planipennis) (EAB) in seventeen trees within the City of Rochester in 2011. Larvae feed in the phloem and outer sapwood of ash trees, producing galleries that eventually girdle and kill branches and entire trees within a few years. The aggressive invasive nature of this pest, coupled with the large percentage of ash in Rochester's urban forest, led to the prohibition of planting ash by the Forestry Division in 2004.

With the discovery of EAB in Cattaraugus County NY in 2009, the Forestry Division began formulating an EAB management plan. In 2010, 300 ash trees in poor condition were removed and replaced. Also in 2010, EAB was discovered in Chili, New York within Monroe County. With the discovery of EAB closer to the city limits, the Forestry Division changed direction for managing EAB and acquired additional funding to chemically treat ash trees that were in fair to excellent condition. An additional 400 poor condition or untreatable trees were removed and replaced in 2011.

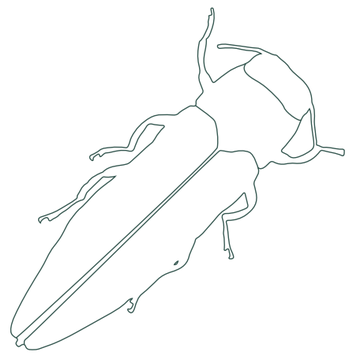


Fig. 5.6*: Emerald Ash Borer (Agrilus planipennis) (EAB)*

Beginning in the spring of 2011, Forestry Division staff chemically treated 4,000 ash trees using a trunk injection method and the pesticide TREE-äge® (Emamectin Benzoate). This treatment protects ash trees from EAB for three years, at which time the trees will need to be treated again. As of 2024, the Forestry Division has successfully implemented 5 cycles of treatment, maintaining tree canopy and the benefits which trees provide. The Forestry Division continues to treat and monitor ash trees and inspect for EAB presence. Research and information is continually updated as many different agencies battle this invasive pest.

MAN-MADE ELEMENTS OF INFLUENCE

In contrast to the tree-friendly environments of our parks and cemeteries, street tree sites present difficult conditions for tree survival.

Street trees must co-exist with utilities in the right-of-way. Underground utilities, overhead communication, and electrical distribution lines present potential conflicts. Motor vehicle traffic may cause direct damage by hitting trees, and exhaust fumes may create a stressful environment for tree health.

In contrast to the tree-friendly environments of our parks and cemeteries, street tree sites present difficult conditions for tree survival.

Motor vehicle safety and citizen expectations require the use of de-icing materials during the winter months. Soil compaction from pedestrian traffic and vehicles stresses root systems. Increased summer temperatures, created by heat held and radiated by pavement, increases moisture stress on trees.

Fig. 5.7: *The urban forest faces pressure from the insect pests and diseases listed above. A combination of natural systems and control measures are used to manage these stressors.*

These influences increase in intensity as the growing space for trees decreases. Tree lawn width is a measure that can indicate relative degrees of influence, potential management requirements, and restrictions for plant selection. The wider the tree lawn, the more potential growing space there is for trees; stress decreases, and tree health improves.

Recent street designs aim to decrease paved widths...providing increased growing space for trees to thrive to maturity.

Almost 36 percent of available street tree sites are located in tree lawns with widths of 5 feet or less (Figure 5.7). Narrower tree lawns and overhead utilities necessitate the use of smaller, shorter-lived trees in order to minimize potential conflicts. Smaller trees are also needed because their growing-space requirements are less than larger trees. Recent street designs aim to decrease paved widths, in turn providing wider tree lawns and increased growing space for trees to thrive to maturity.

Stresses increase along arterial streets. Ambient summer temperatures increase with wider street pavement; air pollution increases with increased traffic; and de-icing materials impact tree longevity. There are approximately 14,000 tree sites along arterial streets.

Tree pits are an additional site feature found along arterial streets. Tree pits are surrounded by concrete, which increases ambient temperatures and reduces usable soil for rooting space and moisture. Tree pits serve as drainage points for winter de-icing materials, greatly increasing the concentration of these salts in the soil.

Concrete surrounding trees leaches lime, further increasing the effect of our already high pH-soil. Tree pits in sidewalks constitute less than 3 percent of available street tree sites.

Construction

Construction is a major man-made influence affecting the urban forest. Tree damage and loss is the result of cumulative effects of construction practices. Root cutting, soil compaction, grade changes, stockpiling of soil, and construction debris (Figure 5.8-10) all profoundly affect tree health. Backfilling tree lawns with construction debris degrades soil quality, severely impacting tree health and survivability.

***Fig. 5.8-10**: The cumulative effects of construction can severely impact the health and longevity of trees in the urban forest.*

Utility Improvements

The Department of Environmental Services issues an average of 1,400 work permits annually to conduct work within the city right-of-way. This work includes repair and improvements to underground utilities and usually involves working adjacent to trees. Excavation equipment can damage root zones by severing roots when digging and compacting the soil.

Tree pruning to provide clearance for overhead utilities and street lights also creates additional stress on trees. It can be, and is, avoided by proper tree and site selection used today when planting.

Proper pruning and coordination of pruning activities between the city and utilities is needed to minimize the impact to existing trees. Suitable protection standards have been developed, and were published as 'Standards for Utility and Construction Work in the Right Of Way and on Public Property which Impacts Street and Public Trees.' Enforcement of these standards is required to prevent unnecessary damage and prolong tree longevity.

In some cases tree removal may be a more desirable management tool to eliminate these conflicts and reduce management costs over the long term.

Vandalism

Vandalism is a widespread problem and causes significant damage to Rochester's urban forest. Trees are damaged by motor vehicle accidents and others who don't have an understanding and appreciation of their importance and value. Education and public outreach may aid in curbing vandalism to City trees.

Pollution

Air pollution and de-icing materials have a profound effect on tree longevity. The City of Rochester applies an estimated 27,000 tons of deicing salts on arterial and collector street each year to control ice and snow. Since significant reductions of either of these materials is not yet practical, the use of tree species that are tolerant of these conditions limits the choice of trees that can be used along these streets.

FUNDING, MANAGEMENT AND CONDITION STUDIES

Funding, management practices, and periodic condition studies have a substantial direct man-made influence on our urban forest. Without funding, trees do not get planted, pruned or removed. Planning and organizing workloads and conducting condition studies provide the foundation for effective and efficient management of our forest resource.

Funding Allocations

The City of Rochester's primary sustained funding source for forestry operations is the operating budget. Allocations have averaged $1,076,380 over the last 10 fiscal years (Figure 5.11). Operating funds are allocated for personnel and materials.

Capital funds are allocated for Forestry Division operations including tree planting, tree removal, and pruning, and have averaged $730,000 over the last 10 fiscal years (Figure 5.12). In fiscal year 2024, additional capital in the amount of $1,650,000 was allocated to fund year one of the Trees Expansion and Beautification Initiative. Allocations have increased for tree planting and pruning over time.

Capital funding for heavy Forestry Division equipment is allocated to the Department of Environmental Services. This equipment is needed for in-house staff to complete the various management tasks required. Beginning in 2000, the Forestry Division undertook the responsibility for planting trees in-house. Initially instituted in an effort to contain rising costs, the process yielded additional benefits including improved survival rates and fiscal efficiency.

Outside Funding Sources

The Forestry Division has received funding from outside sources. When a 'disaster' is formally declared, the Federal Emergency Management Agency (FEMA) provides reimbursement for recovery activities; providing 75 percent of eligible costs. Funds are also made available from New York State by the State Emergency Management Organization (SEMO), providing 12.5 percent. The remaining 12.5 percent is the responsibility of the city. Beginning with the 2003 ice storm, the Federal Highway Administration (FHWA) also began providing 100 percent reimbursement for covered activities on specific streets in response to emergency events[1].

In 1996, FEMA awarded a grant for tree pruning under the Hazard Mitigation Grant Program, which involves equal amounts of federal and local funding. This program was designated to fund projects in disaster areas in order to minimize the impact of future natural events. The grant funded pruning of 6,000 street trees in fiscal year 1995-1996, and again in fiscal years 1996-1997 and 1997-1998.

The City received reimbursement in excess of $85,000 for Forestry Division-related expenses from FEMA for the 1998 Labor Day wind storm. The clean-up effort for the April 2003 ice storm resulted in FEMA, SEMO and FHWA reimbursements to the City of $116,000 for Forestry Division-related work.

In 1991, the Reforest Rochester Trust Fund was established to solicit private donations for tree planting, thereby assisting with the restoration from the ice storm. The fund, which has been utilized to plant upwards of 300 trees, is still in place and has received donations in excess of $50,000. The fund can be used as a vehicle to solicit additional private donations. Tree planting has historically been a popular project that spans economic, social, and political lines, creating unique opportunities. It also generates pressure to plant trees at the expense of maintenance, resulting in long-term management issues.

In 2024, the City received a grant from the USDA Forest Service under the Inflation Reduction Act. This grant, in the amount of $3,000,000, will fund the City's Trees Expansion and Beautification Initiative to expand the urban forest and create an equitable distribution of street tree canopy throughout Rochester.

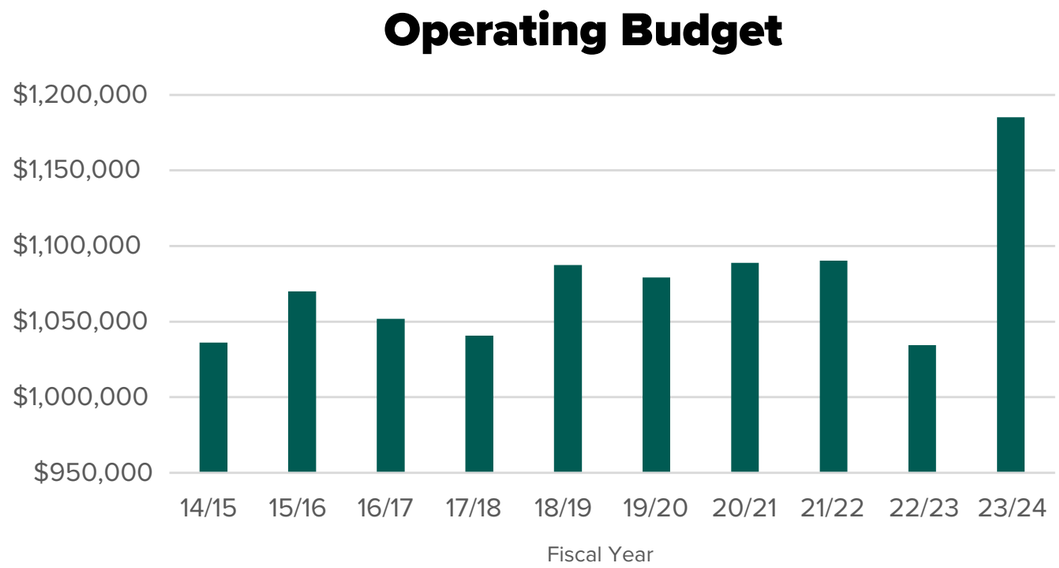


Fig. 5.11: *The City's primary funding source for forestry operations is the operating budget. Funds support equipment purchases and operations.*

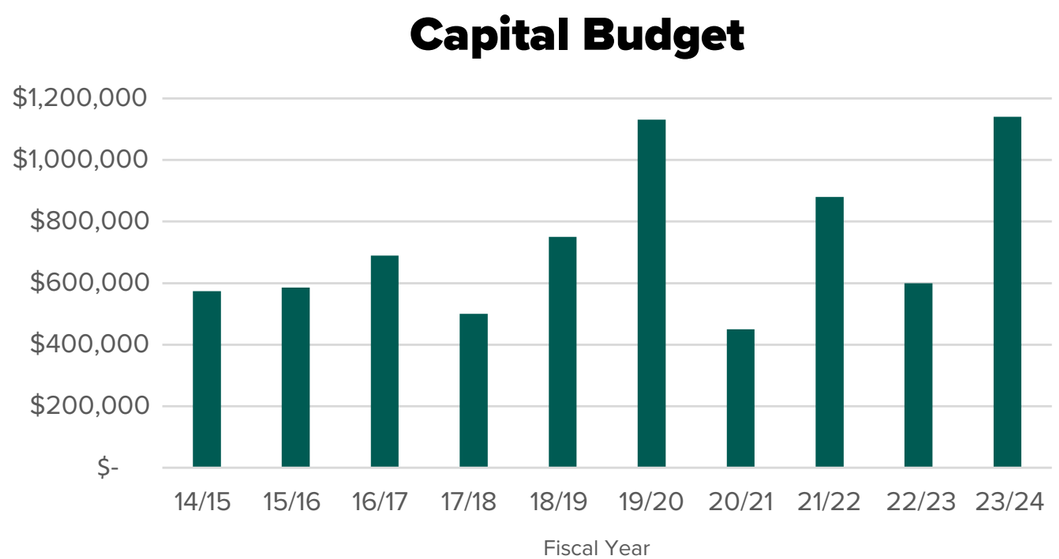


Fig. 5.12: *Capital funds support tree plantings, tree removal, pruning, and heavy equipment. In 2024, additional capital was allocated to fund one year of the Tree Expansion and Beautification Initiative.*

Management and Condition Studies

The Forestry Division divides Rochester into 39 Forestry Management Units (Figure 5.13). This standardization helps to coordinate planning and work activities. The Forestry Division maintains a GIS-based inventory of all street, park and cemetery trees. This inventory was first compiled in 1991, and presently one-sixth of the city's street trees are re-inventoried annually. Effective and efficient management requires knowledge of the pertinent variables of the resource.

The inventory identifies the following information for all trees in the City right-of way, parks, and city-owned cemeteries:

- Address
- Street and street block or park/ cemetery
- Management Unit
- Relative location on the site
- Tree species
- Tree diameter
- Maintenance need
- Condition of the tree
- Evaluation of the placement of the tree (good to bad)
- Presence of utilities-overhead electric, street lights
- Type of site-tree lawn, brick, grate, or open tree planter
- Width of tree lawn or dimensions of the tree pit
- Whether the site is suitable for a replacement when removed
- Inventory date
- Person conducting inventory

The database also tracks work completed for each tree and creates summarized management reports for planning, budgeting, and work scheduling.

An annual windshield survey is conducted to identify problem street trees for priority pruning or removal. This survey is completed by driving each street in a management area, identifying trees that require remedial pruning and a walk- around inspection of potential tree removals. All inventory information regarding these trees is collected using a mobile device. Additional surveys are done each year to facilitate work planning and operations. Dead trees are identified for removal.

Beginning in the 1990's, the Forestry Division initiated a program to improve the management of trees in tree pits along arterial streets. The goal was to eliminate poor sites, complete improvements to the pits to improve growing conditions, plant trees that have proven hardy in these sites, and provide an increased level of maintenance for these trees until they are fully established.

In 2003, an inventory of trees at a high risk for loss was completed on city-owned vacant lots. Remediation was performed by Forestry Division staff in collaboration with DES Special Services personnel. Due to staffing levels and prioritization of work, there is not an accurate inventory of trees on city-owned vacant lots at the time of this update. Formalization of an inventory of trees on these public properties is needed to develop a work plan that efficiently addresses the management needs of these trees.

1. Emergency Relief Team, "Emergency Relief Program," US Department of Transportation Federal Highway Administration 2024, https://www.fhwa.dot.gov/programadmin/erelief.cfm

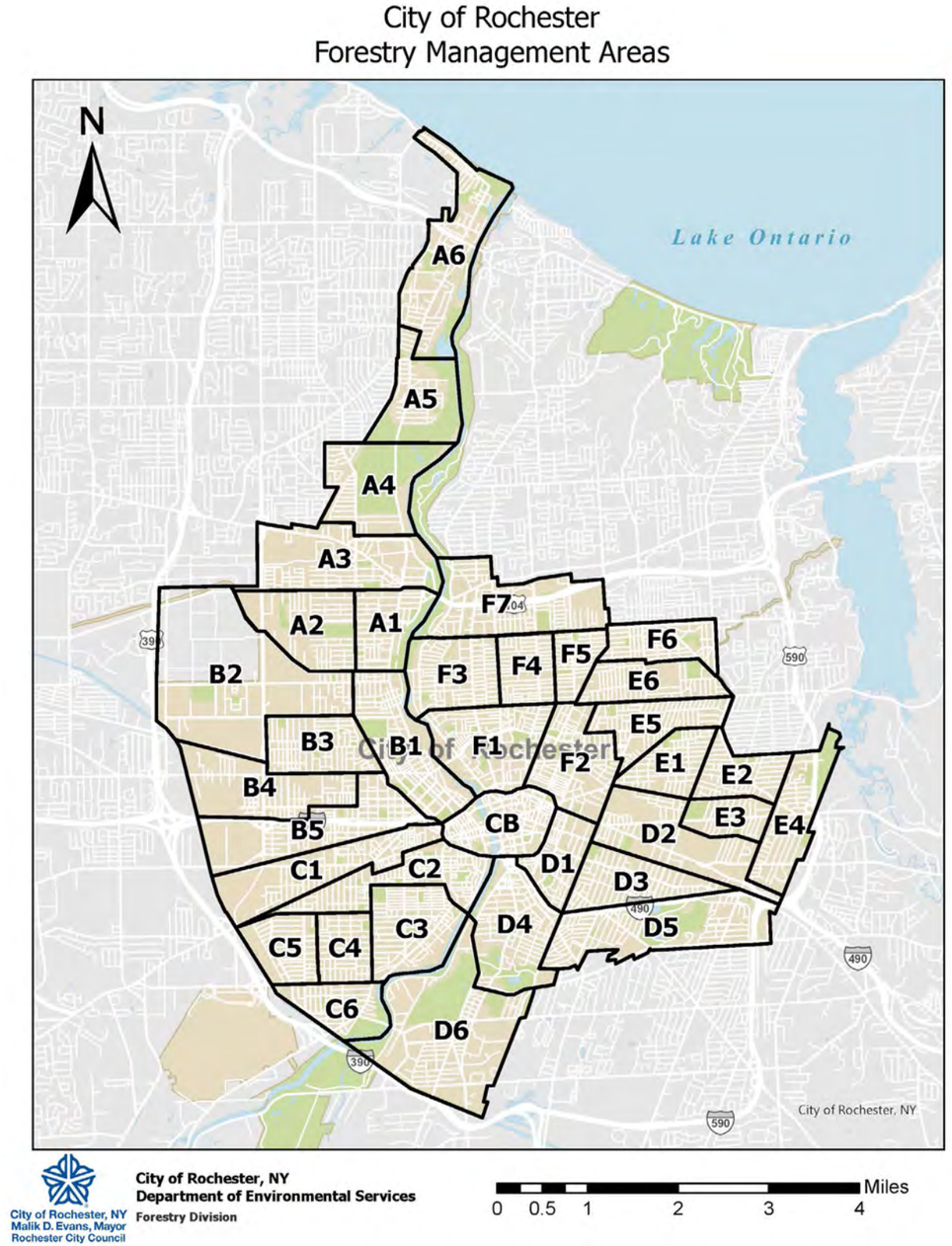


Fig. 5.13: *Rochester is divided into 39 Forestry Management Units to coordinate planning and work activities.*

CHAPTER

6

Public Engagement

CHAPTER 6

Public Engagement

The City recognizes public engagement as a necessary and critical component of the planning process. Public engagement included the formation of an Urban Forest Master Plan advisory committee, public meetings, an online survey, an update to the Forestry Division web page, pop up and experiential events, and the formation of a Community Tree Ambassador Program.

Engagement feedback was compiled and used to inform both near and long-term recommendations for the management of Rochester's urban forest.

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Engagement feedback was compiled and used to inform both near and long-term recommendations for the management of Rochester's urban forest. A detailed summary of the public engagement process can be found in Appendix C.

URBAN FOREST MASTER PLAN ADVISORY COMMITTEE

This newly formed committee, consisting of community stakeholders, provided vital insight and feedback to inform the plan. Six monthly meetings, held virtually, took place throughout the update process.

Discussion topics included updates on progress, public engagement feedback, and ideas for community involvement and education as it pertains to Rochester's urban forest.

Members of the Project Advisory Committee included:

- Antonious "TeJay" Chess, Cornell Cooperative Extension of Monroe County
- Chris Widmaier, Rochester Ecology Partners
- JoAnn Beck, Olmsted Conservancy
- Jon Schull, EcoRestorationAlliance
- Kristy M. Liddell, Friends of Washington Grove
- Lorna Wright, Genesee Land Trust
- Pamela O'Connor-Chapman, Rochester Garden Club

PUBLIC MEETINGS

Two series of public meetings were held in each City quadrant, along with two virtual meetings. The first series of meetings introduced the Urban Forest Master Plan update to the public and provided an opportunity for input. Information from the meetings was compiled, reviewed, and recommendations were developed consistent with feedback.

The second series of meetings presented the draft Urban Forest Master Plan update and its recommendations to the public and provided a final opportunity for feedback prior to finalizing the updated plan. Please see Appendix C for meeting summaries documenting the feedback gathered during each series of public meetings.

Fig. 6.1-2: *Public engagement events enabled the public to provide input at multiple stages of the planning process, informing both near and long-term urban forest management recommendations.*

TREE STORIES

Community Tree Ambassadors

Syd Ferree
Syd Ferree is an 18-year-old artist and aspiring activist. With an interest in social justice and environmental science, Syd intends to use their knowledge to help uplift others and make the world a better place to live. In their spare time they enjoy playing videogames and creating art.

Kathryn Kelly
Kathryn Kelly grew up in the suburbs of Rochester and spent a few years in California after graduating from University. One of the things she missed most was Rochester's Urban Forest, one of our City's greatest assets. Since returning to Rochester, Kathryn has regularly volunteered with The Friends of Washington Grove and enjoys sharing her knowledge and curiosity about trees with friends and neighbors.

Evan Lowenstein
Evan Lowenstein is a 25-year Rochester resident. His work focuses on equitable community development, environmental education, positive youth development, and climate change solutions. Evan's primary hobby is photography--he especially loves to create postcards from his favorite local and travel photos.

Lydia Rivera
Lydia Rivera is a civically engaged City of Rochester resident, small business owner, facilitator, consultant, community advocate, and lifelong learner. Lydia's diverse skill set and lived experiences has led her into leadership roles in her local community. Participating in community driven initiatives like the Cornell Cooperative- Extension Blocks in Blooms Program and the City of Rochester Lyell Avenue Plan has given Lydia a greater understanding of how urban forestry can be used to help improve the quality of life in her neighborhood.

Frank Martin
Frank Martin is a warehouse associate, environmentalist, minimalist, and volunteer.

Michael Warren Thomas
Michael Warren Thomas hosted the Naturally Green gardening show on Rochester radio for 26 years. He has also taught numerous gardening classes at continuing education programs around Monroe County, and done presentations to garden clubs throughout the region. Michael graduated from the University of Rochester and began a career as an entrepreneur in the horticulture industry, working to reduce the use of pesticides and increase the planting of native species. He has also been a certified arborist and certified nursery professional.

Paul Tremblay
Paul Tremblay is a long-time urban forest dweller and one who finds solace in nature. He is a firm believer that trees move us to be better humans: wise, healthy, and kind.

E Turpin
Erin "E" Turpin is an urban gardener, artist, and a lover of Rochester. Holding a B.A. in Sustainability and Sociology, she enjoys connecting with people in her community around nature, community development, food access, and environmental justice. During the day she works for Rochester Ecology Partners, where she helps people in Greater Rochester find nature. When she's not working, you can find her hiking, crafting, grabbing a coffee at a local shop, or spending time with her turtle.

ONLINE SURVEY

An online Instant Input survey was posted through the duration of public engagement from the end of November 2023 through the end of March 2024. The survey gathered input on peoples' perception of the urban forest, where trees should be planted and what type, and challenges with the urban forest and the actions the City should take to address. The online survey was well-received with a total of 425 responses. A majority of respondents live in the City of Rochester (87 percent), and 75 percent of respondents had a positive or somewhat positive perception of the City's urban forest. The largest percentage of responses came from the 14620 zip code in the Southeast Quadrant.

Feedback garnered from the survey was considered in the development of recommendations (please see Appendix D for a detailed summary of all public feedback received through the online survey).

FORESTRY DIVISION WEB PAGE

The Forestry Division's web page was updated to a Geographic Information Systems-driven dashboard layout, featuring a user-friendly interface with tabs and maps to describe provided services and highlight current forestry initiatives. The page can be viewed on a mobile device, offering the user an opportunity to explore and identify trees on city streets and parks. The new Forestry Division web page can be viewed at: https://www.cityofrochester.gov/forestry-services/

The City's Communications team also established a web page for the Urban Forest Master Plan Update. This web page was updated on a regular basis and included information about the Master Plan Update, upcoming public events and other opportunities for public input, and links to draft documents and recorded webinars. The Urban Forest Master Plan Update can be accessed at: https://www.cityofrochester.gov/UrbanForestMasterPlan/

COMMUNITY TREE AMBASSADOR PROGRAM

The Community Tree Ambassador program provided the opportunity for door-to-door outreach to build awareness of the Urban Forest Master Plan update. Eight tree ambassadors were selected, with two assigned to each City quadrant. They were hired in February 2024 and assisted the Project Team with outreach from February through June 2024. In addition to door-to-door outreach, Tree Ambassadors were involved in the planning and implementation of pop-up events, tree plantings, and walking tours. Each of the Ambassador's targeted outreach helped to broaden public participation and ensure all communities had the opportunity participate in the project.

Fig. 6.3-5: *Public meetings, online surveys, websites, and community ambassadors all worked in tandem to reach community members in each quadrant of the city.*

TREE STORIES

One of the online survey questions asked: What actions could the City take to improve your perception of the urban forest?

Common themes in response to this question included:

Improved Maintenance and Management: There is a call for better maintenance of existing trees, including proactive trimming, especially for older trees. Additionally, there's a desire for more aggressive replanting of trees that are cut down or lost due to various reasons. Calls for better pruning and maintenance of existing trees, timely replacement of downed trees, disease management, proactive planning for replacing aging trees, and monitoring and controlling the replacement of nuisance trees.

Increased Tree Planting: Suggestions for additional tree plantings in areas lacking greenery, particularly in tree-scarce neighborhoods and along highways. This includes planting trees in vacant lots and infilling throughout the city where trees have died or been absent.

Emphasis on Native Species: The preference is for mostly native trees and plants, with calls for exclusive planting of native species to support regional wildlife and ecosystems. There's also a focus on planting fruiting trees like apples, mulberries, and cherries.

Equity and Accessibility: Efforts to ensure equitable distribution of trees throughout the city, particularly in low-income neighborhoods. Suggestions include using data on poverty levels to prioritize tree planting in areas needing utility assistance and energy cost reduction. Suggestions also include increasing tree diversity and including functional, medicinal, and edible species in food desert areas.

Community Engagement and Education: Suggestions for community involvement through neighborhood associations and educational initiatives like guided walks to raise awareness about the importance of trees and their ecological impact. Also, suggestions to involve residents in tree planting decisions and provide information about tree maintenance plans. Other ideas included providing information about the types of trees being planted and allowing homeowners to choose the trees planted in their easements.

Environmental Considerations: Concerns about ecological impact and biodiversity, with calls for diversifying tree types, planting more native plants to support pollinators, and creating complete ecosystems in micro-forests and pocket parks.

Aesthetic and Recreational Enhancements: Suggestions for creating more green spaces with amenities for recreational activities and events to draw attention to urban forestry initiatives.

Policy and Enforcement: Calls for stronger enforcement of littering fines to protect trees, as well as policies to prevent unnecessary tree removal and combat invasive species like the Trees of Heaven.

Diversity in Tree Types: Calls for diversifying tree types to improve resilience and aesthetics, including planting more tall varieties for adequate shade. Respondents advocate for increasing diversity in species selection and avoiding non-native ornamental trees.

Infrastructure Integration and Development: Incorporating urban forest considerations into city planning and development projects, such as avoiding unnecessary tree removal and preserving older trees. Suggestions to integrate into urban infrastructure, such as planting more trees along streets and highways and incorporating trees into urban housing developments.

Climate Adaptation: There's a call to adjust plantings to include warmer climate trees in preparation for global warming. This includes planting drought-tolerant and salt-tolerant species. Recommendations for planting trees that are resilient to climate change, as well as improving habitat connectivity for urban wildlife.

TREE STORIES

Door-to-Door Outreach Focus Areas

Door-to-door outreach lead by the Community Tree Ambassadors helped to promote the online survey and the spring public meetings.

This outreach also provided an opportunity for the public to talk with the Ambassadors about the urban forest and share any issues they experience with trees on their property or in their neighborhood as well as any ideas for improving the City's urban forest. Door-to-door outreach was conducted in each quadrant in March and May 2024, and targeted the same geographic areas where the City is also planning to increase tree canopy cover.

Key themes from conversations during door-to-door outreach included:

- A need for more trees on streets to provide shade for kids to play
- Concern for trees causing damages to power lines, sidewalks, and gutters in neighborhood areas
- Concern for the health of newly planted trees and dead trees that need removal
- Excitement for new tree plantings throughout the city
- Interest from many community members in becoming a part of the Tree Ambassador program
- A suggestion to offer a carbon offset program for locals to donate offsets to the Reforest Rochester Fund
- Continued interest in learning more about the Urban Forest
- A desire for more trees near apartment buildings
- Concern with responsibility of caring for trees including over-trimming and response time for when trees fall
- A desire for low-pollen trees, trees with shade, and fruit trees
- Appreciation for the City's efforts to make tree stocking rates more equitable specifically in neglected communities

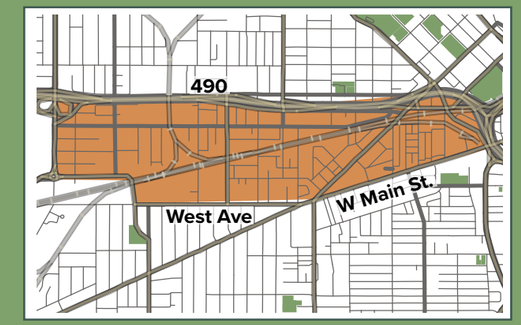
Locations shown on right from top to bottom:

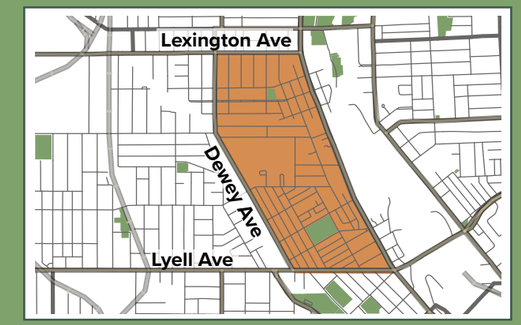
Southwest: The Maple Street corridor and the surrounding areas bound to the north by I-490 to the west of Mt Read Blvd to the east by NY-31, and to the south by W. Main Street/ West Ave/Buffalo Road.

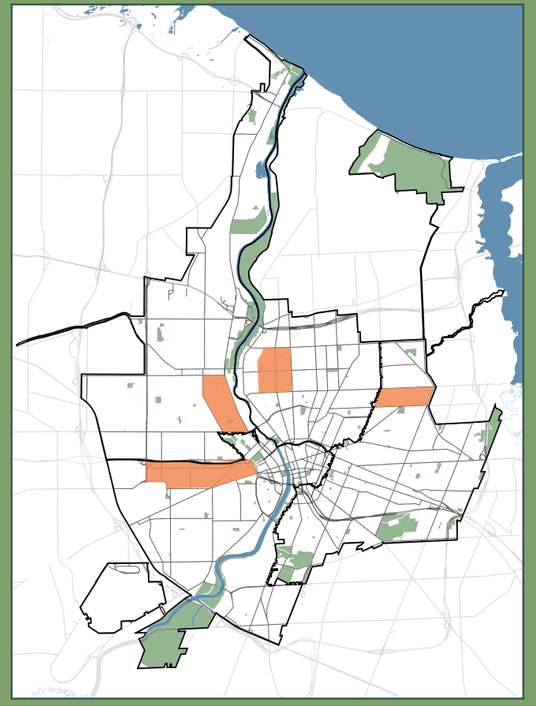
Northwest: The Jones Square neighborhood along Dewey Ave and Lake Ave and between Lexington Ave and Lyell Ave.

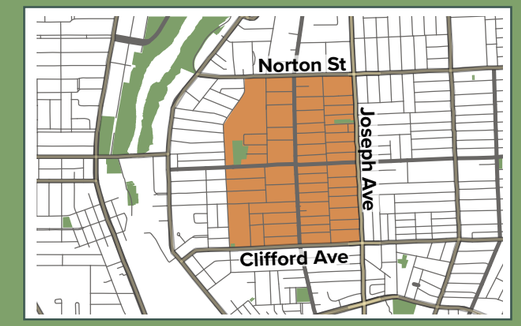
Northeast: The North Clinton Avenue corridor and its side streets from Clifford Avenue north to Norton Street

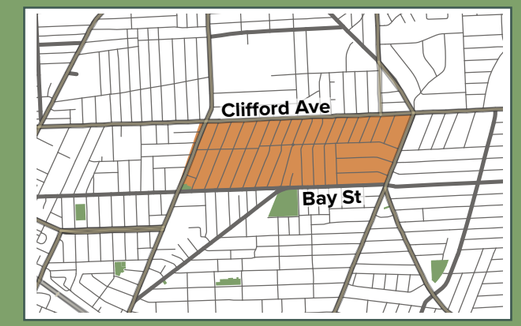
Southeast: The North Goodman Street corridor and east to Culver Road, between Bay Street and Clifford Avenue











POP-UP EVENTS

Six pop-up events were held in March at City libraries and Recreation Centers including Central Library, Sully Branch Library and R-Center, Lyell Branch Library, and Maplewood Library. The project team also participated in the third annual Roc City Seed Swap at the Edgerton R-Center. The events were attended by the project team as well as Community Tree Ambassadors. These events presented an opportunity for the public to engage with the Forestry Division and discuss provided services, tree benefits, and the Urban Forest Master Plan update. These events were also used to promote the online survey. Please see Appendix E for a summary of feedback gathered during these pop-up events.

At each of the six pop-up events, participants were encouraged to provide feedback to the following questions:

Fig. 6.6: *At each event, community members were encouraged to share their perspective on the urban forest.*

What current issues or challenges do you experience with the City's urban forest?

- Desire for More Trees
- Maintenance Concerns
- Biodiversity and Native Species
- Public Health and Safety
- Responsibility and Accountability
- Environmental Quality

What actions would you like to see the City take to resolve these issues?

- Mandated Tree Planting
- Promotion of Native Species
- Utilization of Programs
- Connectivity and Accessibility
- Tree Maintenance and Safety
- Youth Employment and Community Engagement

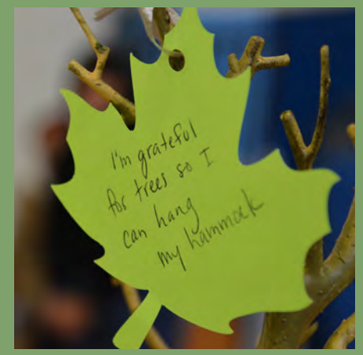
TREE STORIES

Love Letter to a Tree Activity

At every pop-up event, participants were encouraged to write a story about a local tree that was meaningful to them or simply a few words about why they love trees. These anecdotes were written on paper leaves that were then hung on the "community tree" and displayed on the table.

Below are themes from the love letters shared by Rochester residents:

- **Environmental Benefits:** Many comments highlight the importance of trees for clean air, oxygen production, and their role in combating CO2 levels.
- **Aesthetic Value:** Several remarks express admiration for the beauty of trees, including their color, foliage, and the way they change throughout the seasons.
- **Functional Advantages:** There's a frequent mention of practical benefits such as shade, cooling effects, and the provision of habitats for wildlife like birds, butterflies, and bees.
- **Emotional Attachment and Gratitude:** Many comments express love, appreciation, and gratitude towards trees for their various contributions to health, well-being, and the environment.
- **Memorial and Tribute:** Some messages honor the memory of individuals or express appreciation for trees in memory of loved ones.
- **Cultural References:** A few comments touch on cultural practices such as syrup production from trees or references to literary works ("O lofty tree, How I love thee!").



EXPERIENTIAL EVENTS

A series of events were held to build a deeper connection to and appreciation for the urban forest. These events were planned closely with the Project Team and Community Tree Ambassadors. The experiential events focused on providing a hands-on experience and inspire people to become a steward of the urban forest. All events were open to the public and promoted by the Project Team and Community Tree Ambassadors.

These events included:

- The City of Rochester's Arbor Day Tree Planting at the Trenton and Pamela Jackson R-Center on April 26, 2024
- Community Tree Planting at 1st Street Park on April 27, 2024
- A walking tour through Washington Grove on May 7th led by the Friends of the Grove and the Community Tree Ambassadors
- Urban forest walking tours in each of the City's quadrants led by Forestry Division staff and the Community Tree Ambassadors throughout June 2024

Fig. 6.7-8: *Community events were designed to be hands-on and to inspire stewardship of the urban forest.*

TREE STORIES

Other Events and Outreach Led by Community Tree Ambassadors

- **Genesee Community Charter School (GCCS) Meeting with 6th graders on April 23, 2024**
  The Community Tree Ambassadors attended a seminar hosted by 6th graders at GCCS to learn about the students' yearlong studies related to urban forestry and tree equity. During the event, the students shared stories from their experiences on their Four Cities trip where students traveled to Atlanta, Philadelphia, New Orleans, and Baltimore to learn more about how these cities are advancing equitable access to urban forests and trees. Tree Ambassadors also shared a bit about their role in helping to support and expand public engagement for the Urban Forest Master Plan Update.

- **School 17 Garden Club Festival of Trees on April 27, 2024 at Enrico Fermi School #17**
  This event celebrated the importance of trees to human health and launched the Rochester's youth tree planting weekend.

- **Urban Ag Conference on April 27, 2024**
  To promote upcoming public meetings, raise awareness about the Draft Urban Forest Master Plan, and to solicit feedback

- **Three pop-ups at the Rochester Public Market in May 2024**
  To promote upcoming public meetings and June walking tours, raise awareness about the Draft Urban Forest Master Plan, solicit feedback.

- **Four pop-up events at the Roc City Compost**
  To promote upcoming public meetings and June walking tours, raise awareness about the Draft Urban Forest Master Plan, solicit feedback.

- **One pop-up event at the International Plaza**
  To promote upcoming public meetings and June walking tours, raise awareness about the Draft Urban Forest Master Plan, solicit feedback.

CHAPTER

7

Rochester's Urban Forest Policy

CHAPTER 7

Rochester's Urban Forest Policy

The City of Rochester believes a healthy urban forest is an integral part of the city infrastructure and essential for the well- being of all area residents. It is the City's responsibility to protect, regulate, and fund planting, maintenance, and removal of trees on city owned lands or within the public right-of-way in the most responsive, environmental and economic manner.

Rochester's urban forest is healthy and growing in number of trees and grandeur. Citizens and visitors recognize and realize the environmental, economic, and social benefits our forest provides for our community and are engaged in its care and renewal. Rochester, a "city in a forest," is known throughout the country as a model of urban forestry stewardship and progressive management.

The City of Rochester believes a healthy urban forest is an integral part of the city infrastructure and essential for the well-being of all area residents. It is the City's responsibility to protect, regulate, and fund planting, maintenance, and removal of trees on city owned lands or within the public right-of-way in the most responsive, environmental and economic manner.

Italicized portions of this section designate City of Rochester Forestry Division policies.

MAINTENANCE AND MANAGEMENT

Forestry Service Delivery

Maintenance and management of our urban forest resource is accomplished by periodic tree pruning, watering, inspection and evaluation, integrated pest management, tree protection, tree removal, and planting.

Forestry Division Policy

> *Forestry maintenance practices and services will be delivered in an equitable and responsive manner to all areas of the city, regardless of social or economic status of the residents.*

Tree Maintenance

Trees require periodic care. Pruning, watering, and fertilization ensure long-term health, increase longevity, and limit storm damage.

As trees grow, limbs may block street lighting or traffic control devices. Providing adequate clearance over the street and sidewalks is necessary for pedestrian and vehicular traffic. These efforts maximize the benefits of trees while limiting the potential negative impacts of the activities and infrastructure in our city.

Young trees and mature trees have different maintenance needs. Young trees grow at a more accelerated rate compared to mature trees. As a result, young trees will receive more frequent care, including pruning to promote strong branching and watering to help them become established.

Forestry Division Policy

> *Mature trees will receive periodic pruning to remove potential hazards and promote tree health and longevity.*

The Forestry Division will strive to prune each mature street tree once every six years and young trees once every three years. Mature park trees will be pruned once every seven years. The schedule and standards for this work are detailed in annual work schedules and the "Forestry Standards and Specifications" document.

Assessing the condition and needs of city trees requires periodic inspection.

Forestry Division Policy

> *An annual windshield inspection of city trees will be completed to identify hazardous situations for pruning or removal if necessary. In addition, each year, one-sixth of the city's trees will be inventoried.*

All inventory information, including tree condition and maintenance needs, will be updated by a walk-around inspection of each tree. The information will be entered into the GIS inventory as detailed in the "Forestry Technical and Administrative Procedures Manual."

Insect pests and diseases can impact tree health. They are also part of our natural biological system providing ecological benefits.

Forestry Division Policy

> *Control measures will only be considered when a pest presents a significant risk to a large population of our city trees. When control measures are used, the methods will be biologically sensitive, limited in scope, in accordance with all state and federal laws, and the "Forestry Standards and Specifications."*

Tree Protection

Construction practices have significant impact on tree health. Physical damage to tree roots, soil compaction, and degradation of the soil cause a decline in tree health and can create a threat to public safety.

Forestry Division Policy

> *City trees shall be protected through on-site control measures, utilizing alternative construction practices, and stiff monetary fine for violations, as defined in "The Code of the City of Rochester, New York."*

Tree Removal

Tree removal is a necessary management practice to ensure public safety, urban forest health, and responsible fiscal management.

Forestry Division Policy

> *A city tree will only be removed under the following circumstances:*
>
> *Public Safety: When a hazard constitutes removal of more than 50 percent of the live crown or when the structural integrity of the tree is undermined to the point that it is susceptible to wind fall.*
>
> *Urban Forest Health: When tree disease significantly threatens the health of other city trees.*
>
> *Fiscal Management: When alternative tree management practices exceed the value of the tree or will not prolong the tree's life beyond five years.*

Trees considered for removal will be evaluated using the city's tree-removal evaluation as defined in the "Forestry Administrative and Technical Services Manual."

Forestry Division Policy

Trees that are located in preservation districts, that are of historical significance, or that are rare/large specimens will be given remedial treatments for preservation until such time as the tree presents an unacceptable threat to public safety.

The resident of the property adjacent to a city tree scheduled for removal will be notified in writing a minimum of two weeks prior to the scheduled removal. The resident will be notified by personal contact or door hanger in cases in which a tree must be removed immediately due to hazardous conditions.

Tree Planting

Renewal of our urban forest resource is accomplished through strategic tree planting.

Forestry Division Policy

Tree planting will occur in locations that have the least impact with other features in the right-of-way and in accordance with current urban forestry standards as defined by the "Forestry Standards and Specifications" document.

Trees planted on an annual basis will strive to exceed annual tree removals in number and will be completed in accordance with the City's Master Tree Planting Plan.

Master Tree Planting Plan

As history has demonstrated, storms and tree pest infestations are natural events that have an impact on tree health and generally cannot be controlled by human beings. The impact of such events, however, can be mitigated by planning for their occurrence and managing elements in the environment that we can control. Planting a diversity of tree species in our urban forest can help to mitigate the impact of these events by limiting the number of hosts for diseases or other specific events. A diversity of tree species on a street will help to limit the impact on a locality.

Forestry Division Policy

Tree species selected for planting will not exceed 10 percent of the city's current tree population to ensure minimum impact from future natural events.

Determination of the percentage will be completed prior to ordering trees for planting. The planting plan for a street will include three to seven species of tree. A focal tree will be selected which can constitute 40 percent of the tree species on the street. Complementary trees will be interspaced with the focal trees and constitute up to 30 percent of the trees along the street. Trees will be selected from the City of Rochester Street Tree List.

Trees grow to varying sizes and shapes (habit). They have various aesthetic characteristics such as showy flowers or fall leaf color. City streets and other potential tree planting locations have physical features above or below the ground that may limit tree selection. Overhead utilities, sidewalks, curbing, buildings, and street lighting may be adversely affected and maintenance costs increased if too large a tree is planted. Conversely, the architectural features on a street can be complemented by thoughtful landscaping. Soil conditions and the area available for root growth impact tree longevity and health as well. The street tree plan will consider these limitations and variables and suggest a selection of trees for a street that match the site limitations and are of the same size, shape, and branching characteristics.

The Street Tree List is comprised of trees that are hardy to the Rochester climate (USDA Zone 6B). Trees are categorized by size, shape, branching, and texture. Physiological limitations are noted for each tree.

Forestry Division Policy

This list will be reviewed by the City Forester each year and trees will be added or deleted from the list as the City Forester deems appropriate based on tree species performance.

The approved list of trees for a street will be used without exception when replanting unless approved by the City Forester. New species potentially suitable in our urban environment will be considered as they become available.

Certain species designated for a street may, over time, prove to perform poorly on these sites. Street reconstruction may significantly change site limitations along a street. Street tree plans will be reviewed for each construction project and changes will be made to the planting plan to accommodate changes in street features.

Native Tree Planting

The City recognizes the importance of using native tree species to promote biodiversity, while at the same time using a variety of species to promote diversity in our urban forest. The urban environment, with altered soils and restricted growing space, necessitates the use of a variety of native and non-native species. Species selection, a function of varying factors, is the first step towards ensuring species diversity in the urban forest.

Forestry Division Policy

A variety of species will continue to be utilized, with an emphasis on the selection of native species where applicable.

Edible Fruit Tree Planting

Fruit trees do not make ideal street trees in the urban environment due to poor soils, narrow tree lawns, and their low branching habit conflicting with clearances. Fruits such as apples, pears, and cherries become problematic with infrastructure and pose threats to public safety.

Forestry Division Policy

Edible fruit tree plantings will be primarily restricted to parks, community gardens, and other open spaces.

TREE STORIES

Specific Strategies Related to Trees and the Urban Forest in Rochester 2034

Natural Resources

NR-3a
Use the Forestry Master Plan to guide Rochester's efforts in protecting and expanding the urban forest and commission an update of the current Master Plan.

NR-3b
Continue to administer targeted control measures to protect the urban forest from invasive insects and diseases.

NR-3c
Identify a goal for the percentage of the city to be covered by tree canopy and set strategies for meeting that goal.

NR-3d
Provide information about species, planting techniques, placement guidelines, and underground utility location for private property owners interested in planting trees on their property.

NR-5b
Develop diverse and engaging environmental programming that instills a love of the natural world and cultivates an environmental stewardship in residents from a young age.

NR-5c
Encourage and support development of "sustainability curriculum" and environmental programming in schools, rec centers, and other community venues to educate students and adults about issues related to natural history, environmental stewardship, urban planning and ecology, sustainability, climate change, etc.

The Placemaking Plan

PMP-4b
Continue to protect and preserve the core unifying elements of a traditional pedestrian-scaled city streets, including sidewalks, street trees, tree lawns, streetlights, open front porches, unobstructed front yards, and a relatively consistent, shallow setback of structures from the street.

Climate Change and Adaptation

CC-3h
Encourage installation of landscaping (including planting trees), electric vehicle charging stations, bicycle parking, bikeshare, carshare, and emerging transportation alternatives on private property and in new development.

Transportation

TRN-2d
Improve the walking experience through improved streetscaping and beautification (street trees, improved pedestrian-scale lighting, benches and other street furniture, public art, etc.), particularly to offset the impacts of wide or heavy volume streets, large parking lots, or other conditions that could negatively impact the walking experience.

TREE EQUITY AND THE TREES EXPANSION AND BEAUTIFICATION INITIATIVE

Background

Disparities exist in Rochester's tree canopy. This is particularly acute in historically underserved communities where tree canopy coverage lags behind more affluent areas of the city. Stocking levels – the number of existing trees as a percentage of available planting sites– are lowest in the Northeast quadrant at 66 percent, and highest in the Southeast quadrant at 82 percent (Table 7.1).

Trees are considered a resource and an essential component of Rochester's infrastructure. Equitable tree distribution, or tree equity, is vital to the community to ensure equitable access to the myriad of benefits of which trees provide.

Objectives

The City of Rochester recognizes the need for an equitable distribution of resources. In 2023, the Forestry Division embarked on a three year tree planting initiative with two main objectives:

- Increase the City tree inventory from 64,000 trees to 70,000 trees
- Address disparities in street tree stocking by allocating plantings in such a way to increase the tree stocking level to 85 percent across all City quadrants.

The Trees Expansion and Beautification Initiative kicked off in 2023, with 2,000 trees planted over the spring and fall planting seasons.

Years 2024 and 2025 will see an additional 2,000 trees planted each year, for a total of 6,000 new street trees planted.

Initiative Funding

Total costs for the 3-year initiative are estimated at $4.2 million. City funding in the amount of $1.65 million was allocated to fund year one of the project in 2023. In 2024, the Forestry Division obtained grant funding from the USDA Forest Service under the Inflation Reduction Act. This grant, in the amount of $3 million, will fund the remaining two years of the project.

Forestry Division Policy

> *The City will ensure an equitable stocking rate following the completion of this initiative to ensure the benefits of trees are the same across all four quadrants of the city.*

STORM READINESS

Severe weather events require the Forestry Division to be prepared to respond to emergencies 24 hours a day, 7 days a week. The City Forester has the discretion to require staff be placed on standby in the event of a forecasted storm.

Forestry Division Policy

> *The City has implemented an emergency contract to provide assistance in more severe events to ensure emergencies are addressed in a timely manner.*

Fig 7.1: *Efforts to ensure equitable tree distribution across each quadrant of the city has resulted in additional tree plantings to meet stocking levels.*

Rochester Street Tree Stocking

Quadrant	Number of Street Trees (2022)	Total Available Planting Sites	Street Tree Stocking (2022)	Initiative Plantings	New Street Tree Total (2025)	Street Tree Stocking (2025)
NE	9,157	13,948	66%	**2,699**	**11,856**	**85%**
NW	12,650	16,483	77%	**1,361**	**14,011**	**85%**
SE	18,828	23,008	82%	**721**	**19,549**	**85%**
SW	12,699	16,374	78%	**1,219**	**13,918**	**85%**

Table 7.1: *Capital funds support tree plantings, tree removal, pruning, and heavy equipment. In 2024, additional capital was allocated to fund one year of the Tree Expansion and Beautification Initiative.*

CHAPTER

8

Challenges and Recommendations

CHAPTER 8

Challenges and Recommendations

The Forestry Division, through public engagement and in partnership with the Urban Forest Master Plan Advisory Committee, identified current issues of importance which present challenges to sustaining the City's urban forest. In response to these issues, recommendations were developed to be utilized in the development and implementation of fiscal and operational plans.

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COMMUNITY ENGAGEMENT, OUTREACH AND EDUCATION

The Forestry Division and our community are the stewards of our urban forest. Urban trees provide a sense of place and link our children and residents to the natural environment. Original street tree plantings were initiated by volunteers, and the City continues to support those efforts today.

Near Term

Aim to continue the newly formed Tree Ambassador Program to engage and educate the community on the benefits and value of the urban forest.

Long Term

Increase community involvement with urban forest planning through the promotion of volunteer and educational opportunities.

Explore partnership opportunities with community-based organizations for educational projects, such as Miyawaki forests, and support efforts for establishment, with agreements for long-term maintenance.

Hold annual quadrant meetings to educate the community on Forestry Division services, proper tree care practices related to young trees, and provide opportunities for input on tree planting.

Develop a guidebook for public engagement and volunteer opportunities, in partnership with Neighborhood Service Centers.

FUNDING

The City has made significant increases in funding for tree maintenance and planting needs in recent years. The capital budget plan also projects incremental funding increases in future fiscal years, representing a strong commitment to these efforts.

Expansion of Rochester's urban forest will come with increased funding requirements for tree maintenance and potential incremental staffing increases. Wages, equipment, and contracted maintenance costs are on the rise, further adding to the need for increased Forestry Division budget allocations.

Near Term

Utilize recent grant funding to complete the Trees Expansion and Beautification Initiative.

Long Term

Evaluate costs and benefits of contractual tree maintenance versus in-house operations to determine annual budget requests.

CASE STUDIES

The Miyawaki Method

Using Tiny Forests to Restore Ecosystems

Created by the Japanese botanist Akira Miyawaki, the Miyawaki method is a technique used to create biodiverse, dense, and sustainable forests on small parcels of land. By planting 30 times more dense than traditional forestry techniques, Miyawaki forests are quicker to establish and therefore require less maintenance after the first three years. Over 3,000 forests have been planted worldwide using the Miyawaki method, creating viable opportunities for cities to jump start climate resilient forests. Core techniques of the Miyawaki method include:

Use Potential Natural Vegetation: Identifying native vegetation is central to the process to ensure that the forest reflects the local ecosystem. Canopy trees, understory trees, and shrubs are all combined to create opportunities for plant species to interact.

Prepare the Soil: Sites that have degraded, compacted, or poor soils can be regenerated through restoration processes that produce fertile and oxygenated soils.

Plant Density: Seedlings are planted in a dense and randomized arrangement to mimic mature native forests. Highly dense plantings enable pollinators and fungi to facilitate forest growth, increasing biodiversity.

Mulch and Maintain: After planting, sites should receive compost and mulch to retain moisture and protect from extreme temperatures. The mulch layer helps to mimic leaves on a forest floor until trees are large enough to shade out weeds. Until the forest is established, plants may need occasional watering and weeding in the first few years.

Engage Community: The Miyawaki method is notable for engaging local communities to help plan and plant forests.

https://www.sugiproject.com/blog/the-miyawaki-method-for-creating-forests

Community planting of a Miyawaki forest at Danehy Park in Cambridge, MA. Photo Credit: Sugi Project

Demonstrate the need and advocate for increased annual Forestry Division budget allocations as the urban forest continues expansion.

Continue to seek grant opportunities to secure funding for tree maintenance costs, workforce development, and future Forestry Division initiatives.

Promote and utilize the Reforest Rochester Fund to supplement tree planting efforts.

PROTECTION AND HEALTH

Periodic tree pruning decreases the exposure of the urban forest to weather damage and is the most arboriculturally and fiscally effective method to improve overall tree health. Vandalism, pests, and disease pose threats to the establishment and longevity of urban trees. Consequently, mitigation of such threats is essential to the health and expansion of the urban forest.

Near Term

Monitor for hazardous conditions, pests and disease, and recommend removal of trees that pose a threat to the public or health of the urban forest.

Long Term

Continue annual rotational tree pruning to minimize storm impacts, mitigate hazards, and promote overall urban forest health.

Explore the use of volunteers, seasonal staff, school interns, and youth workers to complete the pruning tasks of young trees.

Implement pest and disease management plans when there is significant risk to a large population of trees, and management is economically feasible and sustainable.

Continue to explore educational opportunities pertaining to tree benefits, threats to urban forest health, and the effects of vandalism on young trees.

Promote urban forest health through species diversity, emphasizing the selection of native species where applicable.

Review the Forestry Standards and Specifications document and revise as necessary.

STORM EVENTS

Storm events have had and will continue to have a significant impact on the health of the urban forest. Recent trends have shown an increase in the occurrence of damaging wind events, contributing to tree loss and increased demands on Forestry Division staff.

Near Term

Continued Forestry Division response to storm events, utilizing an emergency contract as needed to support in-house efforts.

Long Term

Review and update the Urban Forest Emergency Response Plan to guide response, recovery, and minimize the impact of events.

CASE STUDIES

Bosk: A “Walking” Forest

Leeuwarden, *The Netherlands*

In the summer of 2022, over 1,200 trees were moved through the city center of Leeuwarden, the Netherlands, as part of a public art installation in the form of a “walking” forest. For one hundred days, over 4,000 volunteers and project organizers moved 800 wooden containers along a 2 mile route in the city. The containers featured more than 60 native species, including alder, ash, elm, maple, oak, and willow, and functioned to temporarily green, calm, and cool the urban sites along the route. Project organizers also hosted educational and artistic events throughout the city, encouraging participants to reflect on the question, “What can we learn from trees?”

The project was designed with the following objectives in mind:

Greening: In addition to the temporary benefits of greening sites around the city, each tree in the installation was planted elsewhere in the city following the conclusion of the project.

Awareness & Behavior Change: To encourage citizens to form a new relationship with nature and live more sustainably.

Driver of Public Debate: Start conversations about policy decisions related to heat stress, water runoff, and CO2 emissions.

Community Driven: Through citizen participation and interaction with companies and institutions, the walking forest created new connections.

Economic Impact: Attract visitors with programming and cooperating with local businesses.

Strengthening the Arts: Create a space for artists to host a major event in an urban center, and respond to the themes of the project.

Experience Beauty: The project inspired visitors to imagine and reflect.

https://arcadia.frl/en/projecten/bosk/

The plan should categorize storm events by magnitude of impact, as well as identify the types of damage and prioritization of mitigation.

Documentation of major storm events in a manner suitable for federal reimbursement requirements.

CONSTRUCTION

Construction practices and utility improvements pose a threat to urban trees, increasing the potential for tree failure due to root and trunk damage. While ordinances and citations for violations are deterrents, they are not sufficient to prevent construction practices that destroy city trees. Clear lines of communication are needed between the Forestry Division, contractors, and City departments to implement tree protection standards that preserve and protect the health of the urban forest.

Near Term

Review plans and enforce current tree protection standards and ordinances to ensure compliance and minimize tree damage and loss during construction activities. This includes work conducted on utilities by the owner and on their behalf.

Long Term

Improved communication with City departments to increase enforcement of tree protection standards, ordinances, and issuance of citations.

Explore educational opportunities to increase tree protection awareness and enforcement to protect, preserve, and expand the urban forest.

PERPETUATION AND EXPANSION

Declining stocking rates make tree planting a vital component in the perpetuation and expansion of the urban forest. Historically, street widening and development have resulted in the loss of mature trees, diminishing the visual impact and the environmental benefits provided by the urban forest resource. Recent street designs aim to decrease paved widths, in turn providing wider tree lawns and increased growing space for trees to thrive to maturity. Considerations in street design, coupled with continued tree planting initiatives, will increase stocking rates and expand the urban forest.

It is estimated that 90 percent of urban trees are located on private property. Maintenance and care of trees on private property are not in the City's purview, and there is currently no inventory of these trees. Tree inventory on private property, combined with City tree inventory, could provide a better measure of urban tree canopy, tree benefits provided, and mitigation of potentially hazardous conditions.

Near Term

Strive for "one-for-one" replacement plantings at a minimum as trees are lost to pests and disease, storms, and construction projects.

Continue the Trees Expansion and Beautification Initiative, along with volunteer planting opportunities, to increase street stocking and address disparities.

CASE STUDIES

The Neighborhood Forestry Initiative

Baltimore, MD

Since 2008, the Baltimore Tree Trust has been working to restore Baltimore's urban forest through increased tree planting, community engagement, and advocacy. The Tree Trust spearheads efforts to achieve Baltimore's 40% urban tree canopy goal by methodically planting up neighborhoods that have few existing trees, while engaging community leaders and stakeholders in the planting and sustainable maintenance of trees. Since 2008, they have planted 10,000 trees on private property and in disadvantaged neighborhoods throughout Baltimore City.

Through their Neighborhood Forestry Initiative career pathways development program, the Baltimore Tree Trust empowers local community members to become stewards of their urban environment and to receive paid hands-on training to pursue careers in urban forestry.

The Initiative employs Neighborhood Forestry Technicians to receive training related to tree planting and maintenance, and learn how to safely operate tools and heavy equipment. Participants also receive individualized mentorship, workplace training, and opportunities to grow their professional skills. Additional opportunities for professional development are encouraged, such as assistance to apply for a Driver's License, to obtain an ISA Certified Arborist certification, or to become certified through the TreeBaltimore TreeKeepers program.

The Baltimore Tree Trust identifies city residents with disadvantaged or economically marginalized circumstances and works with each crew member to increase their employability. Rather than a typical workforce development program, the Neighborhood Forestry Initiative is designed to be a career pathway that allows for sustained growth for each individual, focusing on long-term development rather then the immediate job placement following a training period.

https://www.baltimoretreetrust.org/our-work/neighborhood-foresters/

CASE STUDIES

Genesee County Charter School (GCCS)

Key Takeaways and Recommendations from the Four Cities Trip

The 6th graders from GCCS traveled to Philadelphia, Baltimore, New Orleans, and Atlanta to learn more what other cities are doing to create an equitable and sustainable urban forest. During each trip, students learned about each city's urban forest master plan along with the education and community engagement methods to ensure all neighborhoods have access to the benefits of trees.

GCCS Recommendations for Rochester's Urban Forest:

- Empower communities impacted by tree inequity with knowledge, voice, and agency.
- Recruit volunteers! Build upon the success of Tree Ambassador program.
- Organize free events- cookouts, block parties, native tree/plant giveaways to create awareness buy-in, and community between residents and Rochester.
- Plant and promote native trees, plants, grasses!
- Transform vacant lots into mini-parks/forests, community gardens, and urban orchards. Empower people in those neighborhoods to plan, plant, and maintain them.
- Build trust through building authentic relationships and meeting people where they are.
- Adopt the 3-30-300 and 10-20-30 rules!
    - The 3-30-300 rule offers benchmarks for cities to promote equitable nature access. It dictates that individuals should see three trees from their dwelling, have 30 % tree canopy in their neighborhood, and live within 300 m of a high-quality green space.
    - 10-20-30 for tree planting states that an urban forest population should include no more than 10% of any one species, 20% of any one genus, or 30% of any family.
- Get youth involved and provide experiences to cultivate a love of the natural world. Create interest in jobs associated with forestry and urban agriculture along with partnering with schools and non-profit organizations already doing the work.

Non-profit organizations GCCS students talked with in each city that Rochester can learn from:

Philadelphia

- **Deeply Rooted:** A community academic collaborative that partners with community groups and leaders to promote the healing power of nature and wellbeing in Black and other minority Philadelphia neighborhoods. Their work includes planting trees in vacant lots, cultivating community gardens in food desert neighborhoods, and advocating for environmental and climate justice.
- **Philadelphia Orchard Project:** Works with community-based groups and organizations to plan and plant orchards with edible plants across Philadelphia. Orchards are planted in low-wealth neighborhoods where people experience limited access to fruit.
- **Tree Philly:** A community organization that strives for 30% tree canopy coverage in every Philadelphia neighborhood by helping residents connect with the resources they need to plant and care for the urban forest.

Baltimore

- **Tree Baltimore:** Serves as the umbrella organization for all City agencies, private organizations and individuals in their effort to increase the tree canopy of Baltimore.

Atlanta

- **Trees Atlanta:** Protects and improves Atlanta's urban forest by planting, conserving, and educating. With a community of volunteers, they work to mitigate Atlanta's tree loss, protect its forests, and increase its tree canopy.
- **International Society of Arboriculture (ISA):** Promotes the professional practice of arboriculture and fosters a greater worldwide awareness about the benefits of trees.

New Orleans

- **SOUL NOLA (Sustaining Our Urban Landscape):** Their mission is to create a resilient and environmentally equitable New Orleans by reforesting the urban landscape. Soul Nola is also helping to develop New Orleans forestry plan which includes a goal of planting 40,000 trees by 2030.
- **The Water Collaborative:** Is a grassroots movement created by leaders in the water management sector. Their mission is to build a diverse network for all impacted by flood risk by focusing on equitable practices to sustainably live and thrive with water.
- **LOOP NOLA:** A nonprofit organization that works to provide positive, life-changing outdoor experiences for children and youth in Greater New Orleans. Their work includes offering outdoor programs that provide opportunities for historically marginalized youth to experience the outdoors.
- **SMM Design Studio:** This design studio has a role in helping to create the New Orleans Reforestation Plan by providing a list of citywide goals and a phased pilot plan approach to equitable comprehensive reforestation. Their job includes figuring out which parts of the city need trees planted.

Long Term

Explore partnership opportunities with community-based organizations for tree planting projects and initiatives.

Implementation of tree planting requirements for new projects and development in partnership with City Zoning.

Prioritize opportunities for shade tree plantings along pedestrian routes identified in the City's Active Transportation Plan.

Identify opportunities for vacant lot tree inventorying and planting in consultation with Neighborhood and Business Development.

Identify opportunities for edible fruit tree plantings in parks, trails, community gardens, and other open spaces to promote urban foraging initiatives.

Ascertain tree data on private property through the development of a web-based application for public use.

Review zoning ordinances to evaluate impacts of large trees on private property. Develop guidelines for tree preservation, and provide replacement plantings in the event preservation is not feasible.

TREE EQUITY

The City recognizes the value and importance of a healthy and vibrant urban forest, as well as disparities in street tree distribution in underserved communities. Equitable distribution of street trees ensures all residents enjoy the myriad of benefits which trees provide.

Near Term

Continue the Trees Expansion and Beautification Initiative, along with volunteer planting opportunities, to increase tree stocking and address disparities.

Allocate tree plantings with a goal to establish equitable tree stocking levels across City quadrants.

Long Term

Aim to increase overall tree stocking levels through tree planting initiatives and partnerships with community-based organizations.

Examine and compare other municipalities' policies and initiatives to address tree equity.

Continue to seek educational opportunities that promote the value and importance of a healthy and expansive urban forest.

PARKS AND CEMETERIES

The Forestry Division is tasked with the care and maintenance of over 11,000 trees in city parks and city-owned cemeteries. Management has become remedial in these areas due to a lack of funding, specifically at Mount Hope and Riverside cemeteries, resulting in a decline in tree health. Increased funding would allow for a proactive management approach, improve overall tree health, and allow for the expansion of the urban forest in our parks and cemeteries.

Near Term

Continue to prioritize public safety in parks and cemeteries, mitigating tree concerns as they arise.

Replace trees lost and add new plantings as funding allows.

Long Term

Develop tree management and planting plans for parks and cemeteries, and submit annual budget requests for funding of such.

Identify grant opportunities to supplement City funding in support of management plans.

Consider volunteer and partnership opportunities with community-based organizations to implement management plans, planting initiatives, and educational programs.

PROMOTION OF THE URBAN FOREST

Rochester's rich history of urban forest management is under-recognized in promoting visitation and residence in the city. Our trees are an indispensable part our horticultural legacy and deserve recognition as such.

In 2023, Rochester was designated a "Tree City USA" for its 43rd consecutive year by the National Arbor Day Foundation and the National Association of State Foresters. This longstanding designation is a product of the City's commitment to the management and perpetuation of its expansive urban forest.

Near Term

Continue "Tree City USA" designation to embody the City's commitment to urban forest management.

Long Term

Pursue the "Tree City USA" Growth Award, recognizing increased investments in tree care and community engagement, solidifying the desire to build a sustainable community forestry program over the long term.

Identify opportunities to expand the annual Arbor Day celebration, to include events such as festivals, community tree planting, and tree tours.