COMMUNITY FORESTRY MANAGEMENT PLAN EXECUTIVE SUMMARY

JULY 2022

A Plan for the Community Forest

Defining the Community Forest

Any inhabited area that has trees and vegetation is considered a community forest though more urbanized communities often refer to this resource as an urban forest. Based on Schenectady's population density, tree population, and the public interaction with and received benefits from trees, Schenectady's resource is referred interchangeably as an urban and community forest in this Plan. The Community Forest Management Plan focuses on the City-owned trees in public rights-of-way and parks, but also has implications for the private trees and attention to these are addressed through community outreach and education efforts.


Source: Schenectady Community Facebook

The concept of urban and community forest management developed in the 1960s out of the death and devastation of the elm tree population throughout the United States due to Dutch Elm disease. The discipline of community forestry strongly advocates for species and age diversity in a city's tree population so that the elm tree devastation of the 1960s does not happen again. Unfortunately, native and invasive pests and diseases continue to spread.

During the last three decades, community forestry has evolved as researchers and practitioners learn more about the structure and function of trees and their unique role in providing environmental, economic, and social benefits to urban areas. Community forestry provides each of these benefits in differing circumstances—as infrastructure, as part of design and development, and as efficient and productive providers of economic development.

Residents traditionally have indicated that they consider the trees in the community a priority. In urban environments, the community forest is sometimes the only day-to-day interaction with nature that many residents enjoy.

As Schenectady continues to grow, the community forest needs a strong advocate. This will happen with the education and support of the City's constituency, staff, and elected officials via an approved community forest management plan. The community forest is unique in the array of benefits it provides to the community, and a management plan will effectively collect and showcase these values.

While a management plan is useful in helping educate and ensure future viability, it also will set up useful parameters for the daily operations and care of the community forest. A fresh look at all of the policies currently in place will bring into focus what is necessary for day-to-day activities to ensure long-term viability and safety of the community forest.

Benefits Provided by the Community Forest

The quality of life of the citizens in any community depends on the community forest, as trees make a vital and affordable contribution to the sense of community, pedestrian-friendly neighborhoods, energy savings, and air quality. Community forest management is critical to meeting the City's commitment to climate change, stormwater reduction and improved water quality, carbon sequestration, wildlife habitat enhancement, and water conservation. Trees are one of the few infrastructure investments that grow in value over time. The following data was derived from Alliance for Community Trees.[1]

Reduce Stormwater, Conserve Water and Soil

A tree's fibrous roots, extending into the soil, are premier pollution and soil erosion prevention systems. Intensely urbanized areas are covered with many impermeable surfaces. In contrast to an impervious hardscape, a healthy urban forest can reduce annual storm water runoff up to 7 percent. Highly efficient trees also absorb toxic substances such as lead, zinc, copper, and biological contaminants. Trees reduce the need for additional local stormwater filtration systems.

Reduce Stress and Improve the Quality of Life

Neighborhoods with generous canopies of trees are uplifting and good for public health. Greater contact with natural environments correlates with lower levels of stress, improving performance. Students' concentration levels go up when they are able to look out onto a green landscape. Studies show that children with attention deficit disorder function better after activities in green settings. A green environment also improves worker productivity.

Build Safe Communities and Decrease Crime

Police and crime prevention experts agree that trees and landscaping cut the incidence of theft, vandalism, and violence by enhancing neighborhoods. Thriving trees on well-maintained streets indicate pride of ownership. Public housing residents with nearby trees and natural landscapes reported 25 percent fewer acts of domestic aggression and violence. Apartment buildings with high levels of greenery had 52 percent fewer crimes than those without any trees. Buildings with medium amounts of greenery had 42 percent fewer crimes.

[1] Alliance for Community Trees. 2011. Benefits of trees and urban forests: A research list. http://actrees.org/files/Research/benefits_of_trees.pdf

Positively Influence Climate to Ensure Sustainability

Trees absorb carbon dioxide and store carbon in wood, which helps to reduce greenhouse gases. Carbon emissions from vehicles, industries, and power plants are a primary contributor to increased air temperatures in metropolitan areas. Trees in the United States store 700 million tons of carbon valued at $14 billion with an annual carbon sequestration rate of 22.8 million tons per year valued at $460 million annually.

Clean the Air and Breathe Easier

Shade trees reduce pollution and return oxygen to the atmosphere. In addition to carbon dioxide, trees' leaves or needles absorb pollutants, such as ozone, nitrogen dioxide, sulfur dioxide, and some particulate matter.

Save Energy and Lower Energy Costs for Buildings

As natural screens, trees can insulate homes and businesses from extreme temperatures, keep properties cool, and reduce air conditioning utility bills. A 20 percent canopy of deciduous trees over a house results in annual cooling savings of 8 to 18 percent and annual heating savings of 2 to 8 percent. By planting shade trees on sunny exposures, residents and businesses can save up to 50 percent on hot-day energy bills.

Reduce the Need for Street Maintenance

Shaded streets last longer and require far less pavement maintenance, reducing long- term costs. Canopy diminishes pavement fatigue, cracking, rutting, and other damage. A study from University of California at Davis found that 20 percent shade cover on a street improves pavement condition by 11 percent, which is a 60 percent savings for resurfacing over 30 years.

Raise Property Values

Trees are sound investments, for businesses and residents alike, and their value increases as they grow. Sustainable landscapes can increase property values up to 37 percent. The value of trees appreciates over time because the benefits grow as they do. For businesses, trees have added value, including higher revenues. Shoppers seek out leafy promenades that frame storefronts. Research shows that shoppers spend more—between 9 and 12 percent more—on products in tree-lined business districts.

Cooler Pavement Diminishes Urban Heat Islands

Broad canopy trees lower temperatures by shading buildings, asphalt, and concrete. They deflect radiation from the sun and release moisture into the air. The urban heat island effect is the resulting higher temperature of areas dominated by buildings, roads, and sidewalks. Cities are often 5° to 10°F hotter than undeveloped areas, because hot pavement and buildings have replaced cool vegetated land. In addition, high temperatures increase the volatility of automobile oil and oil within the asphalt itself, releasing the fumes into the atmosphere. Shade trees can reduce asphalt temperatures by as much as 36°F, which diminishes the fumes and improves air quality.

Protect Wildlife and Restore Ecosystems

Planting and protecting trees can provide habitat for hundreds of birds and small animals. Urbanization and the destruction of valuable ecosystems have led to the decline of many of species. Adding trees, particularly native trees, provides valuable habitat for wildlife.

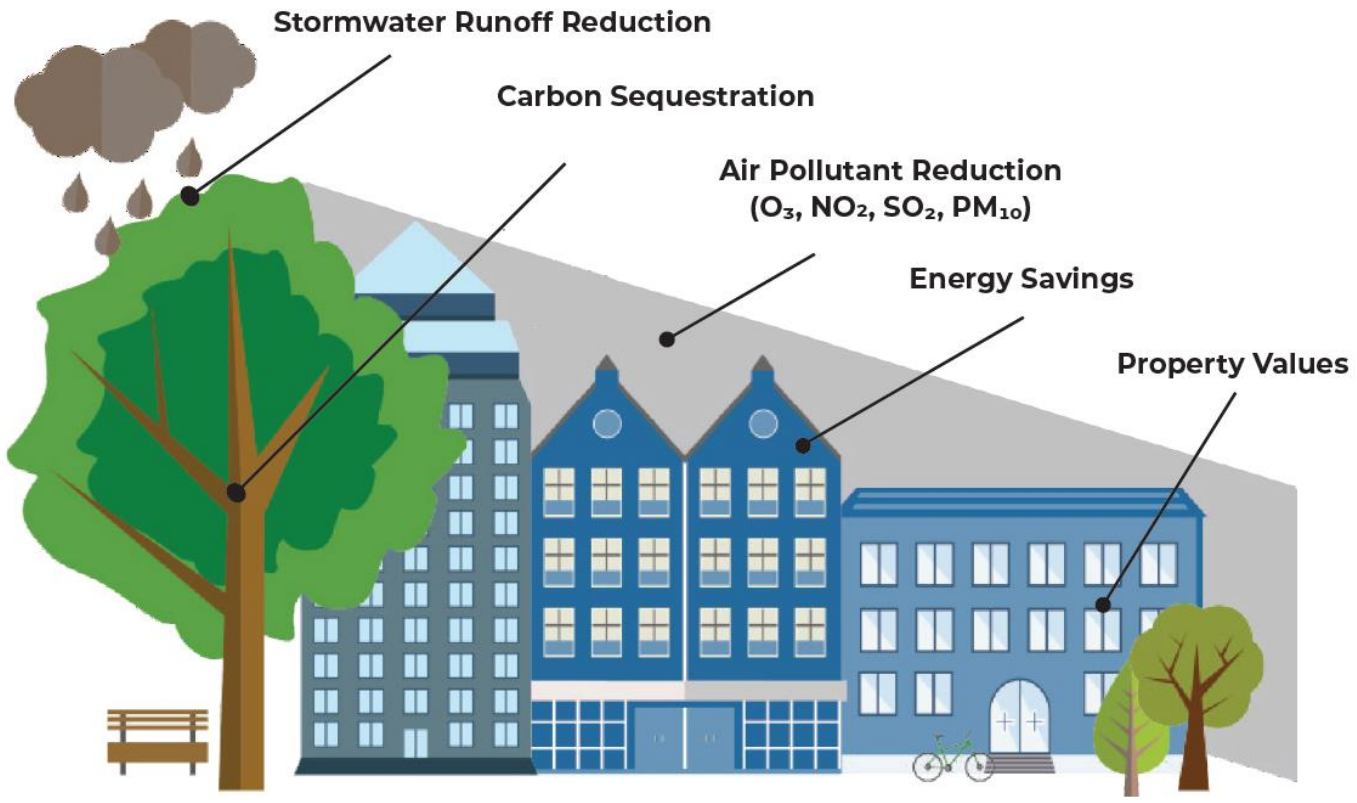
Calm Traffic and Make Neighborhoods Safer and Quieter

People drive more slowly and carefully through tree-lined streets because trees create the illusion of narrower streets. One study found a 46 percent decrease in crash rates across urban arterial and highway sites after landscape improvements were installed. The presence of trees in a suburban landscape reduced the cruising speed of drivers by an average of 3 miles per hour. Faster drivers and slower drivers both drove at decreased speeds in the presence of trees.

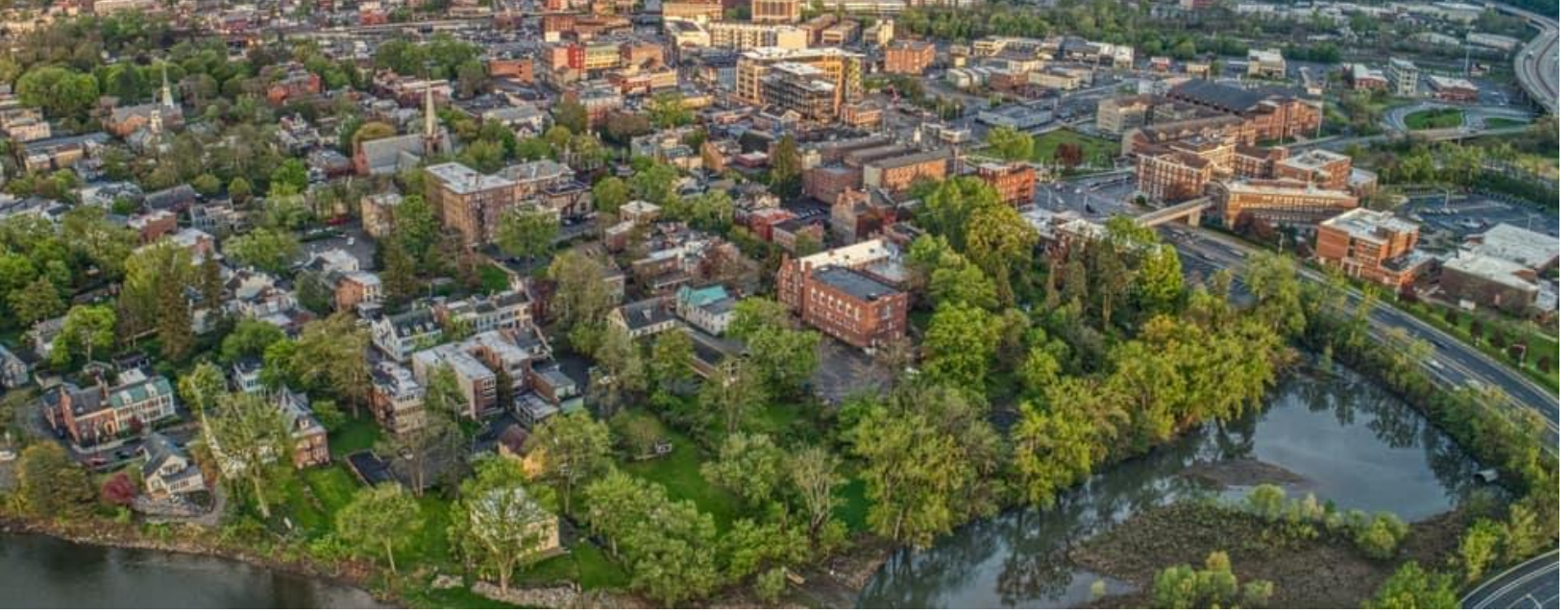
Trees reduce noise pollution, buffering as much as half of urban noise. By absorbing sounds, a belt of trees 100 feet wide and 50 feet tall can reduce highway noise by 6 to 10 decibels. Buffers composed of trees and shrubs can reduce 50 percent of noise.

More information about the benefits of trees, links to the latest research papers, and other research regarding urban forestry can be found at the Invest From the Ground Up resource web page (http://investfromthegroundup.org/resources/research/).

A comprehensive analysis of the ecosystem services and benefits provided by the trees inventoried in 2021 are provided in the Value and Benefits of Schenectady's Tree section later in this document



KEY FINDINGS



The City of Schenectady is dedicated to building a thriving urban and community forest for a healthy and vibrant place to live, work, and play. The more than 10,000 City Street and park trees throughout Schenectady are an asset that brings value and benefits to the community. Furthermore, trees on private property provide added benefits. Together, these public and private trees constitute an "urban and community forest". This resource provides environmental benefits, adds to property values, and contributes to an enhanced quality of life for all Schenectady residents.

Realizing the community forest is a valued asset, Schenectady, herein referred to as "the Electric City", invested in a collaborative planning process with support from the New York State Department of Environmental Conservation. The planning process involved extensive resource and program analysis to develop a clear, concise and timeline-oriented Community Forest Management Plan. The overall goal of the planning process was to develop a sustainable Community Forestry Program for the preservation and expansion of the community forest to serve the public interest by improving the community's physical, social, cultural, and economic environment. This effort was led by the Development Department is committed to this measured, monitored, and strategic long-term investment. The strategic planning process evaluated all aspects of a comprehensive community forestry program. Together, this team developed goals and actions to guide the City's Community Forestry Program over the next 8 years.

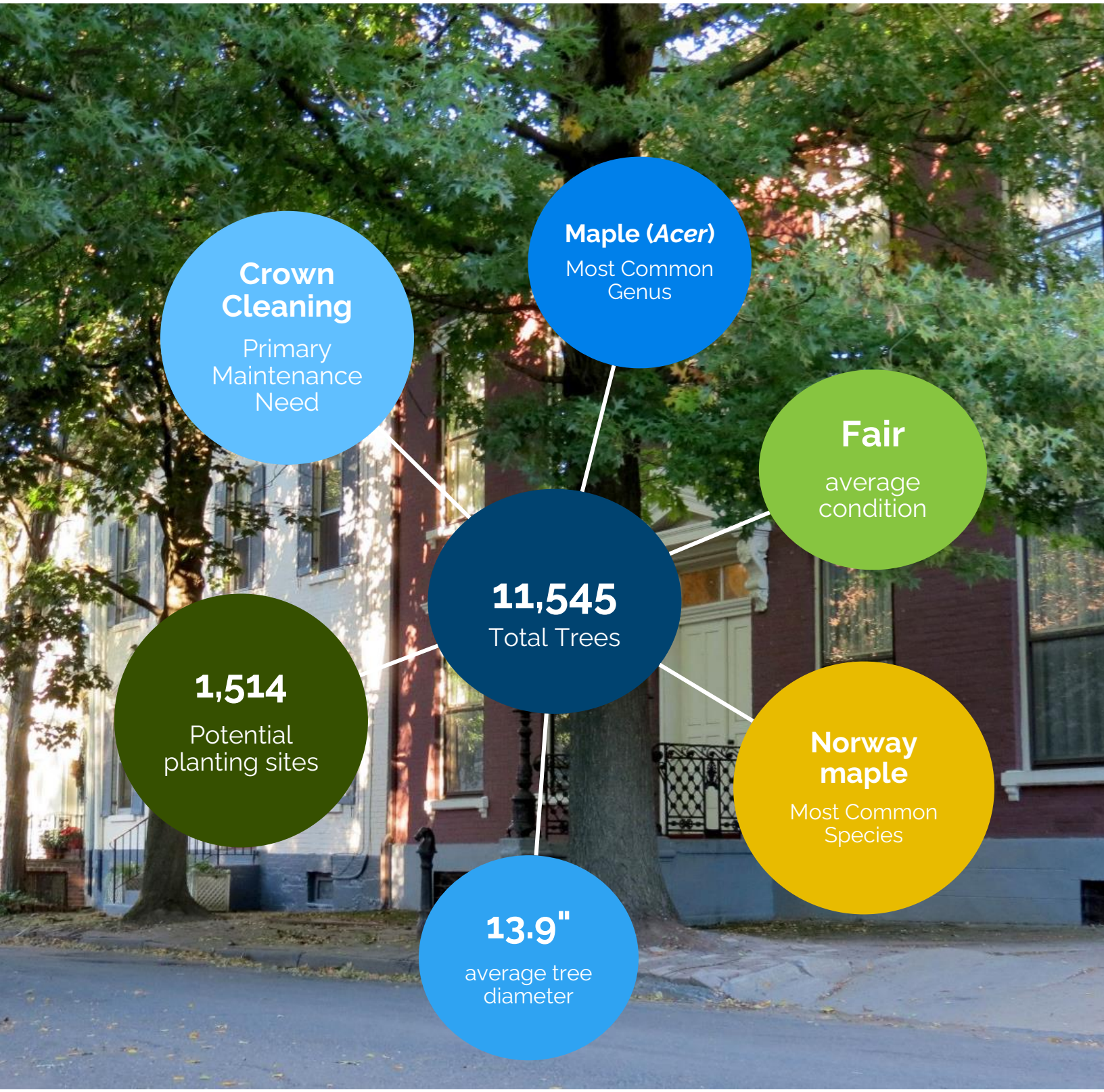
The development of a comprehensive Community Forest Management Plan included an analysis of the 2021 public tree and "vacant site"—i.e. potential planting sites—inventory along rights-of-way and in City parks. This Plan complements and supports the objectives of the City's adopted 2008 Comprehensive Plan, *Reinventing the City of Invention*, and serves as a guide to future investment in the urban and community forest resource. As stated in the Comprehensive Plan 2020 Vision:

Schenectady is and will continue to be a place of beauty, character, and heritage whose parks, rose garden, greenhouse, open spaces, and historic resources are linked by greenways within the city and across the region.

This Community Forest Management Plan supports the goals established in *Reinventing the City of Invention*—Protect Sensitive Natural, Scenic, and Environmental Areas and Permanently Preserve Open Spaces; Develop and Maintain Excellent Park and Recreation Resources and Become a Model "Healthy Community"; Employ Best Practices and Creative Land Use Tools to Shape Development, and Promote Beautification Program and Efforts City-wide. The Comprehensive Plan specifies planning, regulatory, and enforcement policies that the City will engage to encourage the preservation and expansion of the urban forest on public land in order to maximize the City's benefits.

Tree Inventory Summary

The Fall of 2021 inventory completed by International Society of Arboriculture Certified Arborists included trees, stumps, and planting sites along public street rights-of-way (ROW) and in specified parks and public facilities. The results of the inventory analysis include the following:



The 11,545 public trees in Schenectady provide value in terms of improved well-being and increased property values, air quality improvements, reduction in stormwater volumes and an improvement in water quality, energy savings from the shade of their canopy and protection from cool winds, and their ability to sequester and store carbon. These values, originating from research conducted by the U.S. Forest Service and implemented in i-Tree software, equate to:

- $1.4 million total annual value of benefits
- $122 in annual benefits per tree
- $22 in benefits per capita

PLAN ACTION STRATEGIES & MAINTENANCE PRIORITIES

Action Strategy One:

Maximize the efficiencies in maintaining trees

A. Manage Risk Trees

- Address the Priority 1 and 2 tree removals (1,446 trees). Use information in this Plan to acquire more funding and support.
- Use the City's TreePlotter software or similar program to prioritize the maintenance.
- Use the Tree Maintenance Worksheet provided in the Community Forest Management Plan to address these trees in a 3-year period. Use the worksheet to estimate costs.

B. Establish a Routine Street and Park Tree Pruning Cycle

- Establish a 7-year cycle for street and park trees, pruning approximately 831 street trees and 243 park trees per year.
- Use the Tree Maintenance Worksheet to estimate and budget annual and 7-year costs for routine pruning.
- Prioritize, schedule, and track tree maintenance using the City's TreePlotter software.
- Build support for the pruning cycles by using the data summarized in the Community Forest Management Plan.

C. Plant and Maintain Young Trees

- Consider a "no net loss" policy by implementing at least a 1:1 ratio in terms of tree removals to replacements. It is recommended to plant at least 207 trees per year to compensate for recommended removals and upwards of 124 trees per year to compensate for natural mortality.
- Consider using trained volunteer groups for the planting and post-planting care of young trees. Require the use of industry best practices. Continue to partner for grants.

D. Continue to Monitor

- As maintenance, removals, and plantings are conducted, track information in the City's TreePlotter software or similar program.
- Keep the tree inventory data maintained and monitor for any changes or risks to public trees and the community forest such as tree pests and diseases. Consider a citywide canopy assessment for a better understanding of the community forest.

E. Evaluate Staffing and Levels of Services

- Evaluate the recommendations in this Plan to identify the necessary staff and resources to manage the urban forest sustainability and improve the levels of services to the community.
- Consider hiring a City Arborist to support implementation of this Plan.
- As an alternative to or in addition to the City Arborist, consider hiring an on-call consulting arborist to support tree monitoring, tree permitting, ordinance enforcement, selective pruning, routine tree maintenance, planting, and other standards and best practices as recommended in the Plan.

Action Strategy Two:

Use planning, legislation, and enforcement to integrate trees more fully

A. Update and Acquire Approval of the Street Tree Ordinance

- Use the recommendations and resources in the Community Forest Management Plan to finalize the Street Tree Ordinance for adoption.
- Conduct outreach with the community and communications with other City departments to establish awareness and clear understanding of the Street Tree Ordinance. The Tree Board will be advocates and enforcers of this effort.

B. Integrate Community Forestry with Plans and Policy

- Leverage the urban forest strategies listed in the City's Comprehensive Plan (*Reinventing the City of Invention*) to achieve goals and recommendations in this Plan. Strategies in the Comprehensive Plan include: Protect Sensitive Natural, Scenic, and Environmental Areas and Permanently Preserve Open Spaces; Develop and Maintain Excellent Park and Recreation Resources, and Become a Model "Healthy Community"; Employ Best Practices and Creative Land Use Tools to Shape Development, and Promote Beautification Program and Efforts City-wide.
- Provide urban and community forest expertise during the design and planning stages of projects to preserve appropriate existing trees, enhance tree plantings, and provide adequate canopy and root growing space.
- Provide urban and community forest expertise when existing policy and ordinances are updated such as design standards and Zoning minimum green space requirements. Reference the adopted Street Tree Ordinance where applicable.

Action Strategy Three:

Implement Best Management Practices for the health and benefits of trees

A. Develop and Implement Tree Planting Plans

- Develop tree planting plans to establish and maintain optimal levels of age and tree species diversity.
- Consider the spatial location of trees for increasing equity of tree canopy and associated benefits.
- Plant street and park trees that maximize benefits, minimize risk, consider site conditions and water restraints, maintenance costs, and potential tree pest and disease risk.
- Establish or update a recommended tree species list that provides recommendations based on mature tree size and the given site conditions.
- Continue to utilize the expertise of the Tree Board.

B. Adhere to Best Management Practices and Standards in Tree Care

- Continue to implement approved best management practices and standards for tree planting, tree pruning, tree nursery selection, and all other community forestry operations.
- Reference these practices and standards in the Street Tree Ordinance and keep it updated.
- Monitor the community forest for potential tree pest and disease risks and use the emerald ash borer plan developed by the Street Tree Advisory Board. Consider a plan

for the Asian longhorned beetle due to the abundance of green ash trees and maple trees.
- Require adherence to best practices and standards for any shared maintenance responsibility of young, established, and mature trees.
- Establish or update protocols relating to storm planning, response, and mitigation.
- Consider wood utilization options for any woody debris resulting from tree maintenance and removal operations.

Action Strategy Four:

Foster support for the community forest

A. Educate and Engage the Community

- Promote the formation of a tree council or advisory committee to connect the City to a dedicated group of resident tree advocates.
- Continue to partner with the ReTree Schenectady program and other volunteer tree stewardship programs and events.
- Provide educational materials, workshops, and information on the City's website regarding community forestry and this Plan.
- Maintain and enhance partnerships to implement recommendations in this Plan.
- Promote the community forest ecosystem benefits summarized in this Plan.
- Provide community forestry information specific to developers, businesses, and property owners.
- Lead by example by continuing to implement sound community forest management practices.
- Implement actions in this Plan to acquire and maintain the Arbor Day Foundation's Tree City USA award.
- Use the enhanced community support to acquire more resources and funding for the community forest management program.

MAINTENANCE PRIORITY OVERVIEW:

PRIORITY 1 REMOVALS	**66** **47** **19**	Total Trees Street Trees Park Trees	**Year 1-3**
PRIORITY 2 REMOVALS	**1,380** **1,064** **316**	Total Trees Street Trees Park Trees	**Year 1-3**
PRIORITY 3 ROUTINE **STREET** TREE PRUNING CYCLE	**5,820** **831**	Street Trees Trees Per Year	**7-year cycle @ Year 3**
PRIORITY 3 ROUTINE **PARK** TREE PRUNING CYCLE	**1,703** **243**	Park Trees Trees Per Year	**7-year cycle @ Year 3**
PRIORITY 4 YOUNG TREE TRAINING CYCLE	**2,473** **824**	Young Trees Trees Per Year	**3-year cycle @ Year 1**
TREE PLANTING RECOMMENDATION	**124** **207**	Trees Per Year (no-net loss) Trees Per Year (Replacement of P1 and P2 Removal Trees)	**Year 1-7**