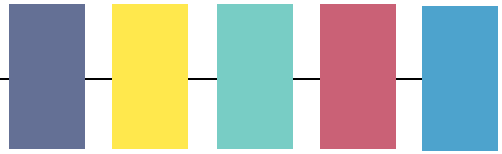
City of Sarnia

Urban Forest Management Plan (UFMP)

Strategic Action Plan



November 2024

Prepared by Urban Forest Innovations Inc.

Executive Summary

This document is the This document is the Strategic Action Plan component of the City of Sarnia Urban Forest Management Plan (UFMP). It builds on the UFMP Key Findings and Directions Report to establish a strategic vision for Sarnia's urban forest, establish urban forestry goals and objectives, and outline forty-six (46) action items as a road map to realizing Sarnia's vision for its urban forest over the next fifteen years and beyond.

Vision

The urban forest vision is an aspirational statement meant to reflect Sarnia's values and priorities for its urban forest. The UFMP vision for Sarnia's urban forest is:

A growing and healthy canopy of Carolinian and other trees covers much of the city of Sarnia in balance with thriving local industries and agriculture.

All members of the Sarnia community understand and appreciate the benefits that the city's urban forest provides to help support the environment, protect human health, beautify the community, and strengthen climate resilience. The City and its community partners work hand-in-hand to plant and protect trees, bring nature back to the city, and build awareness of the importance of trees to the community.

Goals

Sarnia's vision for its urban forest will be realized through the pursuit of the UFMP's five goals, which were developed to align with the urban forestry themes outlined in the Key Findings and Directions Report.

Urban Forestry Theme		UFMP Goal
Understanding Sarnia's urban forest	→	Learn more about the urban forest to improve policies, programs, and operations
Maintaining Sarnia's urban forest	→	Maintain a healthy, safe, and functional urban forest to reduce risk and optimize benefits
Growing Sarnia's urban forest	→	Expand and enhance the urban forest to increase the amount and diversity of services and benefits
Protecting Sarnia's urban forest	→	Protect the urban forest for current and future generations
Engaging in Sarnia's urban forest	→	Engage others in the urban forest to build awareness and develop a culture of stewardship

Objectives

Objectives are more detailed statements that describe the specific desired outcomes emerging from a strategic goal. The objectives of the Sarnia UFMP are outlined below.

UFMP Goal		Objectives	
	Learn more about the urban forest to improve policies, programs, and operations	→	1.1. Obtain more, and maintain better, urban forest data 1.2. Integrate urban forest management with the municipal asset management framework 1.3. Monitor Sarnia's urban forest and its management
	Maintain a healthy, safe, and functional urban forest to reduce risk and optimize benefits	→	2.1. Enhance program capacity to deliver core urban forestry services in a more proactive manner 2.2. Implement appropriate levels of service for urban forest maintenance 2.3. Identify and manage threats to the urban forest more proactively and effectively 2.4. Protect and enhance ecosystem integrity and ecological function
	Expand and enhance the urban forest to increase the amount and diversity of services and benefits	→	3.1. Increase urban forest canopy cover and pursue canopy equity in the urban area 3.2. Enhance tree establishment planning and implementation to improve tree planting outcomes 3.3. Promote urban forest resilience through tree establishment
	Protect the urban forest for current and future generations	→	4.1. Strengthen tree protection during the planning and building process 4.2. Strengthen tree protection on private lands not subject to the planning and building process 4.3. Strengthen tree protection on public lands and capital projects
	Engage others in the urban forest to build awareness and develop a culture of stewardship	→	5.1. Develop a more collaborative and effective urban forest governance structure 5.2. Build community awareness of the urban forest 5.3. Support partner and community engagement in urban forest stewardship 5.4. Advance reconciliation with Indigenous Peoples

Action Items

Sarnia's Urban Forest Management Plan outlines forty-six (46) action items recommended for implementation within the next 15 years. Implementing these actions items will support the achievement of the UFMP's goals and objectives and help the City and its urban forest partners realize Sarnia's vision for its urban forest.

Goal/Objective/Action	
Goal 1. Learn more about the urban forest to improve policies, programs, and operations	
1.1 Obtain more, and maintain better, urban forest data	
1.1.1	Expand the tree inventory to parks and other municipal lands
1.1.2	Operationalize and regularly update the tree inventory
1.2 Integrate urban forest management with the municipal asset management framework	
1.2.1	Integrate urban forestry assets with the City's enterprise asset management systems
1.3 Monitor Sarnia's urban forest and its management	
1.3.1	Track change in urban forest land cover metrics
1.3.2	Re-assess urban forest performance metrics on a periodic basis and track UFMP progress
Goal 2. Maintain a healthy, safe, and functional urban forest to reduce risk and optimize benefits	
2.1 Enhance program capacity to deliver core urban forestry services in a more proactive manner	
2.1.1	Reorganize and increase resources for the Forestry and Horticulture Services division
2.1.2	Pursue external urban forest program resourcing support
2.2 Implement appropriate levels of service for urban forest maintenance	
2.2.1	Develop tree maintenance standards and specifications
2.2.2	Establish a street tree pruning cycle
2.2.3	Establish a park tree pruning cycle
2.2.4	Implement a young tree structural pruning program
2.2.5	Conduct a priority tree risk assessment of trails and natural area edges
2.3 Identify and manage threats to the urban forest more proactively and effectively	
2.3.1	Develop an invasive species assessment and management plan
2.3.2	Develop an oak wilt rapid response plan and awareness campaign

Goal/Objective/Action	
2.4 Protect and enhance ecosystem integrity and ecological function through maintenance	
2.4.1	Develop a natural areas management strategy and site-specific management plans
Goal 3. Expand and enhance the urban forest to increase the amount and diversity of services and benefits	
3.1 Increase urban forest canopy cover and pursue canopy equity in the urban area	
3.1.1	Increase tree establishment to achieve 23% canopy cover in the urban area
3.1.2	Eliminate the tree planting backlog in new communities and operations
3.1.3	Establish land use-based tree canopy cover targets for development sites
3.1.4	Target tree establishment in urban areas with below-average tree canopy cover and other priority areas
3.1.5	Establish a maintenance program for City-planted fruit trees and shrubs
3.2 Enhance tree establishment planning and implementation to improve tree planting outcomes	
3.2.1	Develop new, and strengthen and consolidate existing, tree establishment guidelines, standards, and specifications
3.2.2	Improve tree establishment plan review for new developments
3.2.3	Ensure adequate resourcing for City-led tree establishment in new developments
3.2.4	Improve tree planting stock procurement practices
3.2.5	Improve post-planting tree maintenance and monitoring
3.3 Promote urban forest resilience and ecological function through tree establishment	
3.3.1	Increase tree taxonomic diversity in tree establishment programs
3.3.2	Undertake tree species performance trials
Goal 4. Protect the urban forest for current and future generations	
4.1 Strengthen tree protection during the planning and building process	
4.1.1	Develop new, and strengthen existing, tree protection policies, guidelines, and specifications
4.1.2	Develop a 'Tree Declaration' for municipal permits and consents
4.1.3	Strengthen development plan and building permit application review and implementation oversight
4.1.4	Develop a tree compensation formula and policy
4.1.5	Retain securities for tree protection
4.2 Strengthen tree protection on private lands not subject to the planning and building process	
4.2.1	Establish a private tree regulatory framework
4.3 Strengthen tree protection on public lands and capital projects	

Goal/Objective/Action	
4.3.1	Update the 'Trees' by-law (public tree by-law)
4.3.2	Improve procedures for tree protection on capital projects
Goal 5. Engage others in the urban forest to build awareness and develop a culture of stewardship	
5.1 Develop a more collaborative and effective urban forest governance structure	
5.1.1	Establish an urban forestry interdepartmental working group
5.1.2	Establish an intermunicipal/interagency urban forest working group
5.1.3	Share urban forest data with other City departments and external partners
5.2 Build community awareness of the urban forest	
5.2.1	Enhance existing, and develop new, urban forestry educational materials
5.2.2	Partner with institutions, agencies, and organizations in urban forest research
5.3 Support partner and community engagement in urban forest stewardship	
5.3.1	Promote the 'free City tree' program
5.3.2	Develop a community-involved naturalization and stewardship strategy and partnerships
5.3.3	Provide private and community urban forest stewardship incentives
5.3.4	Develop a community-based urban forest monitoring program
5.3.5	Develop an 'adopt-a-tree' program
5.4 Advance reconciliation with Indigenous Peoples	
5.4.1	Explore and pursue opportunities to integrate Indigenous Peoples' traditional knowledge and cultural practices, and Indigenous community members, into urban forest policies, programs, activities, and practices

Contents

City of Sarnia land acknowledgement

In the spirit of peace and friendship, we honour the Anishinaabek of the Three Fires Confederacy on whose traditional territory we are gathered. The City of Sarnia has resolved to implement the United Nations Declaration on the Rights of Indigenous Peoples.

Project partner acknowledgement

The City of Sarnia Urban Forest Management Plan (UFMP) has been prepared by Urban Forest Innovations Inc. (UFI), with geospatial analysis technical support provided by PlanIT Geo LLC. The consulting team acknowledges the invaluable contributions of City of Sarnia staff, external partner organization representatives, and members of the Sarnia community throughout the UFMP development and engagement process.

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... and the many City of Sarnia staff who participated in the UFMP development process.

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Climate Action Sarnia-Lambton
County of Lambton
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Friends of the St. Clair River
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Lambton College
Lambton Farm Safety Association
Lambton Public Health
Lambton Wildlife
Sarnia United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) Committee
St. Clair Region Conservation Authority
Village of Point Edward

... and the many Sarnia residents who participated in the UFMP development process.

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Sarnia Urban Forest Management Plan (UFMP)

Introduction

Situated on the shores of Lake Huron and the St. Clair River, Sarnia is home to some 72,000 residents and is an important hub in Ontario's petrochemical, biochemical, clean energy, and agricultural economies. The city is located in Canada's smallest, and arguably most biodiverse, forest region—the Carolinian forest.

Sarnia's urban forest includes all trees within the municipal boundary. Covering some 2,726 hectares (2019)—or 17% of the city—Sarnia's urban forest contains a mix of planted and naturally regenerated trees along city streets, in parks, on private properties, and in natural forested areas.

Sarnia's urban forest provides vital environmental, economic, and societal services and benefits to the entire community and must be managed strategically to optimize these benefits while minimizing risk to the public and making the most efficient use of municipal and partner resources.

This document—Sarnia's first Urban Forest Management Plan (UFMP)—provides the vision and direction for sustainable urban forest management for the next 15 years and beyond.

Sarnia's urban forest

Sarnia's Official Plan—the highest-level municipal policy guiding land use decisions in the community—does not currently establish a definition for the urban forest. However, for the purposes of this Urban Forest Management Plan, Sarnia's urban forest is defined as **"a dynamic, human-influenced, ecological system that includes all trees within the municipal boundary."** This definition also extends to include other elements that support or accompany trees, such as soils, infrastructure, and even other woody vegetation.

While the primary focus of the UFMP is on the municipally-owned and -managed portion of the urban forest, such as street and park trees and trees in City-owned woodlands, Sarnia's urban forest also includes trees on private lands, such as residential, commercial, industrial, and institutional properties.

Although the UFMP considers the urban forest in both the designated urban (Settlement Area) and rural/agricultural parts of the city, the UFMP Strategic Action Plan focuses on the existing developed urban areas of Sarnia as well as on lands slated for future development as the community grows. The UFMP also considers the future urban forest—trees that will be planted through municipal operations, development, and community stewardship efforts over the coming years.

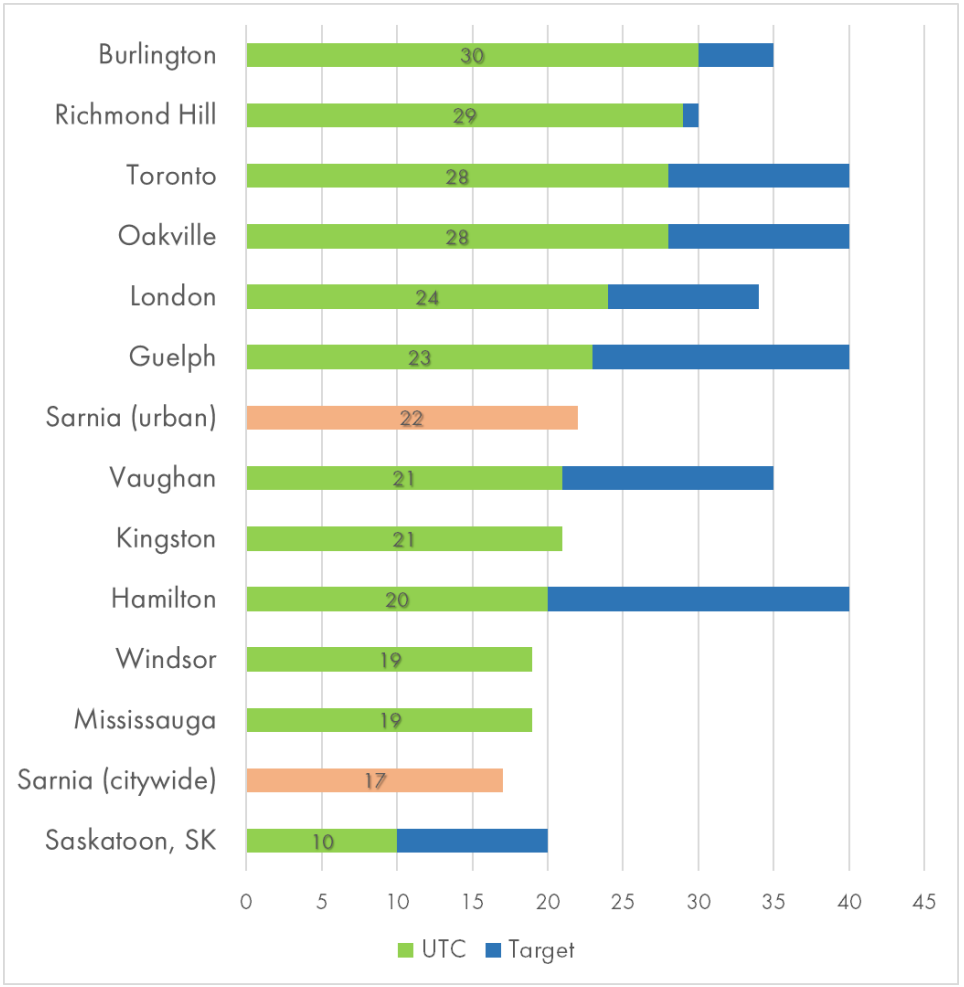


Figure 1: How does Sarnia's urban forest measure up? On a citywide basis, Sarnia's urban tree canopy cover is lower than in many southern Ontario communities. However, **no other municipalities with available UTC data include a similar extent of agricultural land uses**, which are dominated by farm fields without much tree cover. When only the developed (urban) area is considered, Sarnia has relatively more tree canopy (at 22%) than a number of other Ontario municipalities.

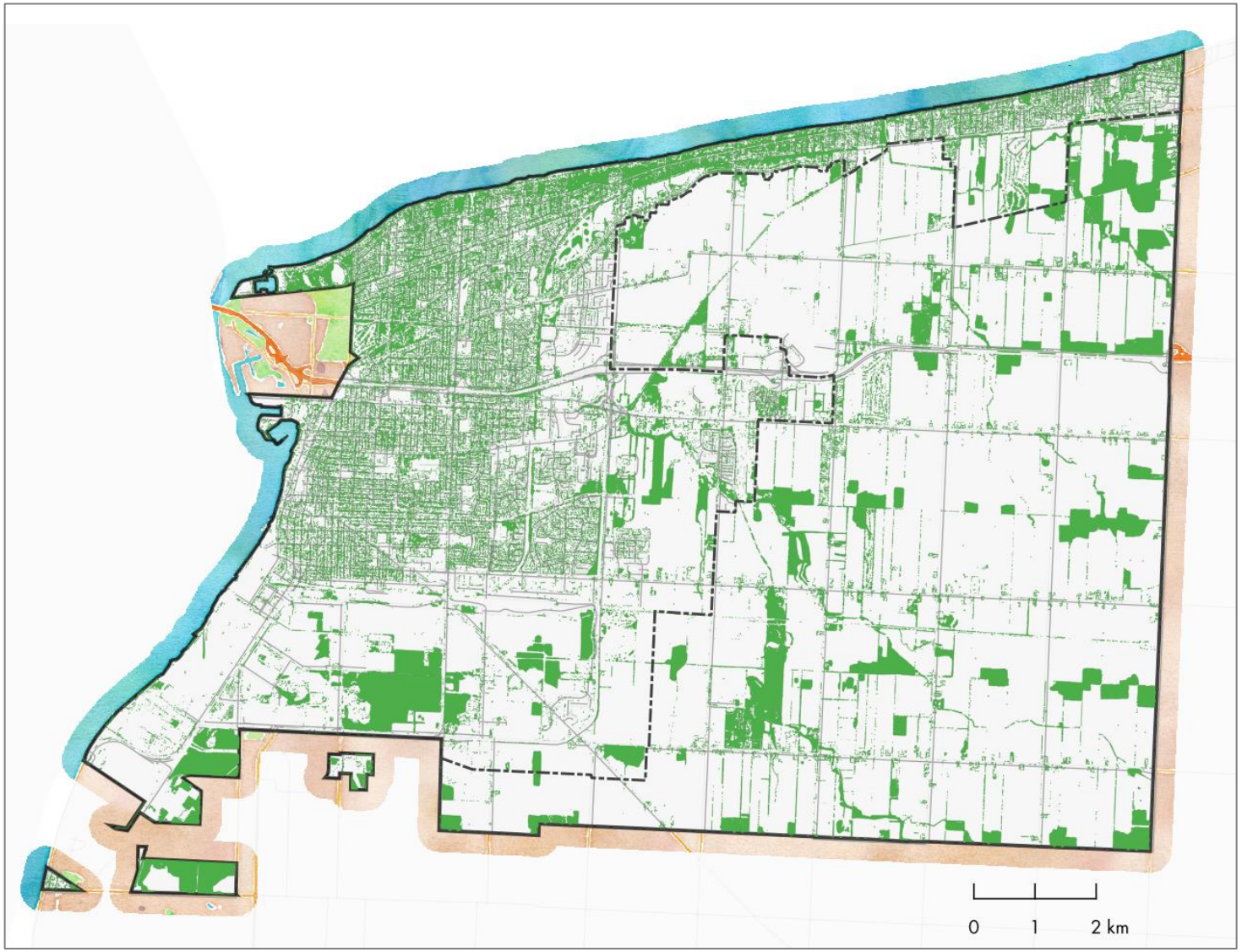


Figure 2: Sarnia's urban tree canopy. Green shows urban tree canopy (UTC) in Sarnia's urban forest (2019 data). About 17% of the entire city (2,726 hectares) is covered by tree canopy. In the designated settlement (urban) area, tree canopy coverage is about 22% (1,634 hectares). About 60% of Sarnia's total tree canopy is found in the urban area and 87% is found on private lands across the city.

Trees in Sarnia's urban forest

In addition to a citywide urban tree canopy cover study, the City has collected a detailed inventory of nearly 25,000 trees situated along city streets and in selected municipal parks. It is estimated that the city is responsible for another 60,000-plus trees in parks and along trails and natural area edges, and potentially tens of thousands more trees in forested natural areas.

The tree inventory includes some 194 different tree species in 36 families and 82 genera. While this seems like a healthy level of urban forest diversity, much of the tree population is made up of just a few species—the top 10 species make up nearly half of the inventory (Fig. 3). This shows a need for greater diversity in tree species selection for future tree planting initiatives across the city to promote urban forest resilience and provide a wide range of urban forest services and benefits.

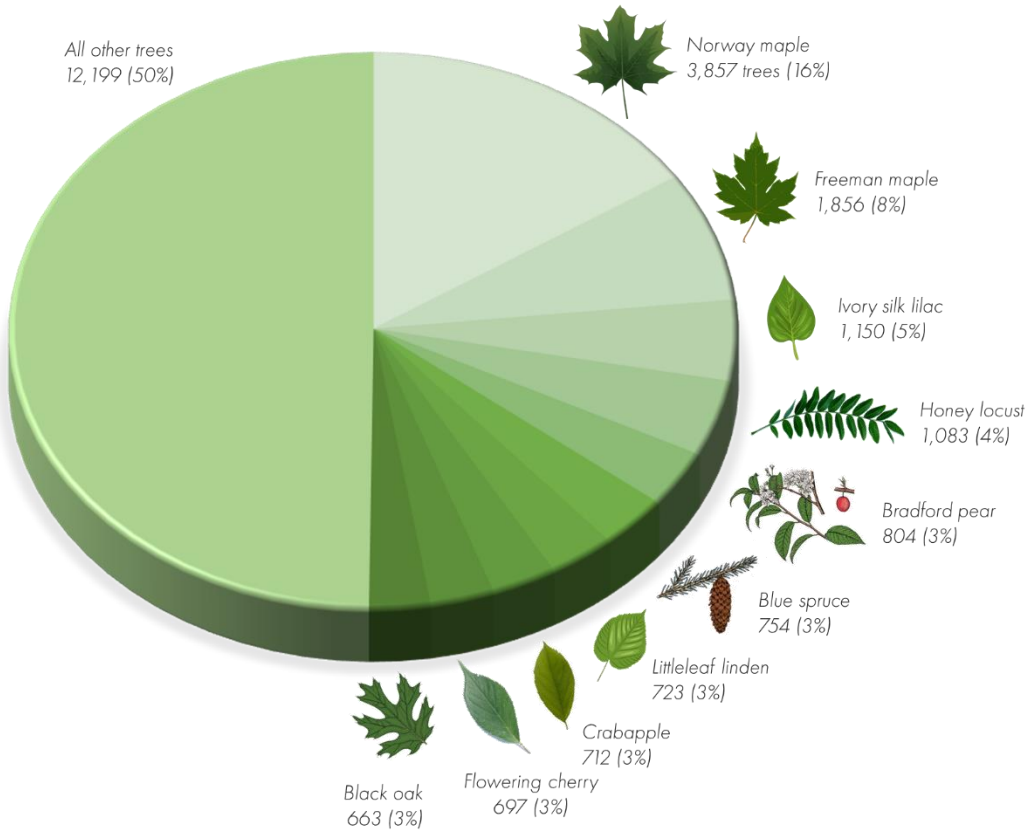


Figure 3 (right): Tree species diversity in Sarnia's urban forest, based on the inventory of nearly 25,000 street and park trees.

Who owns the urban forest?

As in other communities, Sarnia's urban forest is owned and managed by a variety of public and private landowners. While the municipality may be seen as the main driver behind urban forest policies and the owner of the most visible parts of the urban forest, such as street and park trees, other participants also influence a large share of the tree canopy.

Due in part to the large area of private agricultural lands within the municipal boundary, nearly 87% of Sarnia's urban forest, as defined by tree canopy cover, is owned privately or by other non-City agencies. As described below, this large share of non-City ownership poses specific challenges for urban forest management in Sarnia.

Three-quarters (75%) of the future Potential Plantable Area (PPA), or about 2,326 hectares, are also found on private lands across Sarnia, highlighting the need to engage partners to grow Sarnia's urban forest canopy. 80% of PPA is found in the City's Settlement Area, as farmland is generally excluded from the analysis.

The City-managed portion of the urban forest includes just 363 hectares, or about 13% of the urban tree canopy. About 25% of the city's PPA (782 hectares) is found on City-managed lands and within the municipal road right-of-way.

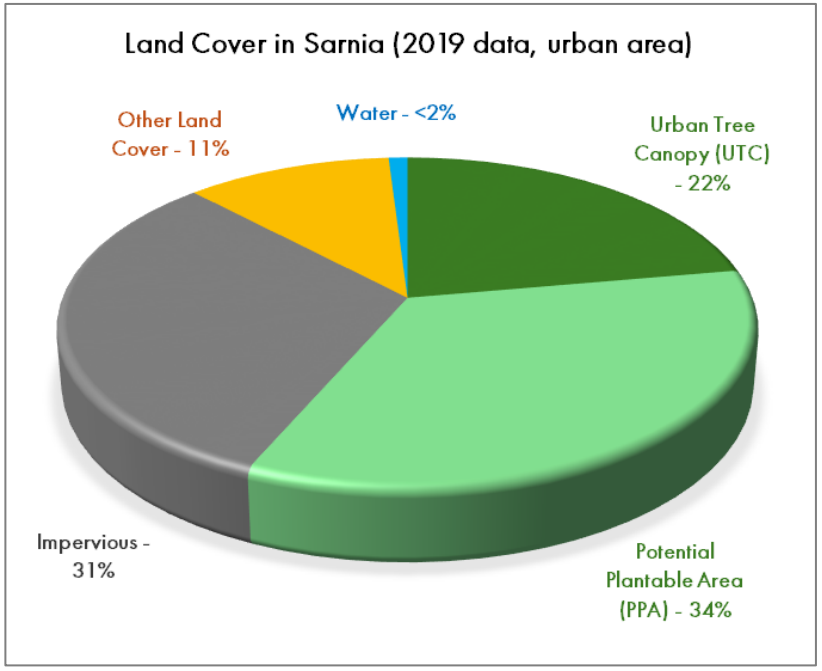


Figure 4: Land cover. UTC, PPA, and other land cover in Sarnia's urban area, based on geospatial analysis of 2019 aerial imagery.

The value of Sarnia's urban forest

Sarnia's Official Plan recognizes that:

"Urban trees provide shade, privacy, and wildlife habitat, help clean air and water, cool homes and parking lots, and beautify parks and streets. A healthy urban canopy contributes to environmental stability and resiliency, and ensures a better quality of life." – Section 5.12.4

The urban tree canopy cover study also quantified the value of four key urban forest services and their associated benefits: air quality improvement, stormwater reduction, carbon sequestration, and carbon storage. According to this study, Sarnia's urban forest provides the community with nearly **$2.7 million in benefits annually**, while the total benefits value (annual benefits plus the value of stored carbon) exceeds $56 million. A summary of these benefits can be found in the **UFMP Key Findings and Directions Report.**

These figures do not include other intangible and invaluable services and benefits provided by the urban forest, such as wildlife habitat and ecosystem connectivity, community beautification, strengthened social cohesion, and improved health and wellbeing, among many others. A detailed list of urban forest benefits can be found on page 7.

Why manage the urban forest?

Sarnia's urban forest is a vital part of the community's green infrastructure—the network of living and non-living assets that rely on natural processes to support the health, safety, prosperity, and livability of the entire community. Urban trees may be among the most multi-functional assets in any community and are the only infrastructure assets that actually increase in value and function as they age. Like other municipal infrastructure, trees in the urban forest must be managed to optimize and sustain services and benefits for current and future generations of community members while minimizing risk to persons and property.

However, like urban forests everywhere, Sarnia's urban forest faces significant challenges that threaten the health, condition, longevity, and functional capacity of trees across the city. Strategic planning and proactive management are necessary to respond effectively to these challenges and to ensure that the urban forest is sustained as a safe, healthy, resilient, and growing green infrastructure system.

Some of the most pressing threats and challenges facing Sarnia's urban forest today include:

- **Program resourcing:** Current resource levels constrain the City's ability to deliver a broad range of core urban forestry services. As such, Sarnia's urban forest management program is largely reactive and limited in scope.
- **Pests, diseases, and invasive species:** Various insect pests, tree diseases, and invasive plant species threaten the health of individual trees and the ecological integrity of natural areas.
- **Difficult urban growing conditions:** Trees in urban areas face a wide range of stressors such as poor-quality or compacted soils, heat and drought, de-icing salt, competition for space, and injury and removal.
- **Limited engagement and private ownership:** Few community residents may be aware of the value of growing and protecting trees and individual property owners need to be engaged in urban forest stewardship to grow the canopy.
- **Limited guidance and regulation:** Sarnia has relatively few urban forest policies and guidelines in place, and the lack of private tree regulation leaves decisions about tree injury or removal to landowner discretion without a requirement for compensatory replanting.
- **Climate change** (see box, page 8)

Environmental

- Reducing air pollution and improving air quality
- Cooling the air and reducing the urban heat island effect
- Protecting soils against erosion by wind and rain
- Storing and sequestering carbon—the primary driver of global climate change
- Reducing flooding and protecting water quality
- Providing wildlife habitat and ecosystem connectivity

Economic

- Increasing property values by making landscapes more functional and desirable
- Promoting economic activity by making spaces more inviting for shoppers and workers
- Reducing energy costs by reducing building heating and cooling demand
- Reducing healthcare costs by protecting physical health
- Reducing infrastructure maintenance and replacement costs by shading and cooling

Societal

- Improving physical health by encouraging outdoor recreation, reducing UV exposure, lowering stress, and improving air quality
- Improving mental health and cognitive functioning by reducing stress through nature exposure and connection
- Contributing to reduced crime rates, especially when large trees are situated on public property
- Increasing social cohesion and strengthening communities by encouraging people to come together in green spaces

Climate change and Sarnia's urban forest

In June 2019, Sarnia City Council officially declared a climate change emergency and, in November 2021, unanimously endorsed the City's Climate Change Action Plan and Implementation Strategy. These actions recognize that climate change will have a profound impact on Sarnia and across the world.

Sarnia's urban forest is essential climate change adaptation infrastructure for the community. By providing services such as shading, microclimate cooling, and stormwater and pollutant capture, Sarnia's trees will make the city a safer and more comfortable place to live as annual temperatures increase.

However, climate change also poses a significant potential risk to Sarnia's urban forest. Higher temperatures ("warmer"), increased annual precipitation ("wetter"), and increased frequency and severity of extreme weather ("wilder") will create a range of adverse impacts on the city's trees, as summarized in Table 3 of the Sarnia UFMP Key Findings and Directions Report.

Managing the impacts of climate change on Sarnia's urban forest will require resources to respond to emergencies and 'on-off' events, such as wind or ice storms, as well as a strategic approach to mitigate long-term impacts of increased temperatures, drought, and pest and disease infestations.

How is Sarnia's urban forest managed today?

The management and stewardship of Sarnia's urban forest is primarily the responsibility of City of Sarnia Forestry and Horticulture Services, housed in the Parks and Recreation Department of the Community Services Division. This division, which includes one supervisor and seven arborists, operates on a largely reactive basis in response to tree maintenance service requests, which average some 70-plus requests per month.

The division is largely focused on the operational aspects of urban forest management, including tree planting, pruning, and removal, as well as emergency storm response. Forestry staff may also occasionally be consulted to review tree-related impacts of development applications or capital projects, but this involvement is limited and inconsistent. The City is also responsible for tree establishment in new subdivision developments and collects fees from developers to offset associated costs.

The high volume of service requests combined with limited program resourcing precludes the division from regularly undertaking other key aspects of urban forest management, such as policy development, asset management, natural areas and invasive species management, naturalization planting monitoring and maintenance, young tree structural pruning, post-planting establishment care, planning review and site inspection, public education and engagement, and other important activities.

Urban Forest Baseline Assessment

As part of the UFMP development process, Sarnia's urban forest and the City's approaches to urban forest management were assessed using a scorecard approach influenced by previous iterations of urban forest assessment tools, including the Criteria and Indicators approach pioneered by Clark and Matheny (1998) and the USDA Forest Service Urban Forest Sustainability and Management Review tool.

In total, the scorecard ranks the City's performance relative to 165 unique assessment questions centred around the five key urban forestry themes (see page 11) and 45 separate elements. The assessment combines qualitative and quantitative factors to rank performance on a three-part scale, ranging from Opportunity for Improvement, to Fair, to Good.

Detailed findings of the urban forest baseline assessment are outlined in the UFMP Key Findings and Directions Report.

Table 1: Summary of urban forest baseline assessment for the City of Sarnia.

	Opportunity for Improvement		Fair		Good	
	#	%	#	%	#	%
Understanding	20	56%	7	19%	9	25%
Maintaining	24	63%	10	26%	4	11%
Growing	19	50%	15	39%	4	11%
Protecting	17	55%	6	19%	1	3%
Engaging	9	41%	11	50%	2	9%
	89	**53%**	**49**	**31%**	**20**	**12%**

The comprehensive assessment of Sarnia's urban forest and its management found that out of a total of 165 assessment questions, the City's performance rates at the Opportunity for Improvement level for 89 (53%), at the Fair level for 49 (31%), and at the Good (highest) level for 20 (12%) assessments. Seven (5%) of the assessment questions were considered not applicable or could not be determined with available data and information. Baseline assessment findings are summarized in Table 1.

Because the assessment considers a wide range of distinct elements and assessment questions—many of which are not related to or influenced by others—it is not appropriate or desirable to assign an overall average performance rating to Sarnia's urban forest or its management. Instead, the report card should be used to identify the strengths and shortcomings of current management approaches for each urban forestry focus area and to inform the Urban Forest Management Plan and future program and policy changes.

Key Directions for the UFMP

This Strategic Action Plan component of the Sarnia Urban Forest Management Plan is informed by a comprehensive **Key Findings and Directions Report.**

This report—developed in consultation with City staff, external partners, and community members—reviews the current state of Sarnia's urban forest and assesses the strengths and shortcomings of the City's approaches to urban forest management. It also details the key challenges facing Sarnia's urban forest, reviews existing urban forest policies and guidelines, and presents relevant urban forestry best practices for consideration and adoption by the City of Sarnia, its urban forest partners, and the broader community.

Finally, the report provides 65 key directions for the Strategic Action Plan, providing guidance for the UFMP vision, goals, objectives, action items, and targets.

Readers of the Strategic Action Plan are encouraged to review the Sarnia UFMP Key Findings and Directions Report for important context and an in-depth analysis of the state of Sarnia's urban forest and municipal and partner approaches to its management.

Urban forestry themes

The Key Findings and Directions Report outlines five urban forestry themes. These themes are carried forward into the Strategic Action Plan, which outlines one strategic goal and multiple objectives per theme (17 total objectives; see pages 19 through 24). The five urban forestry themes include:

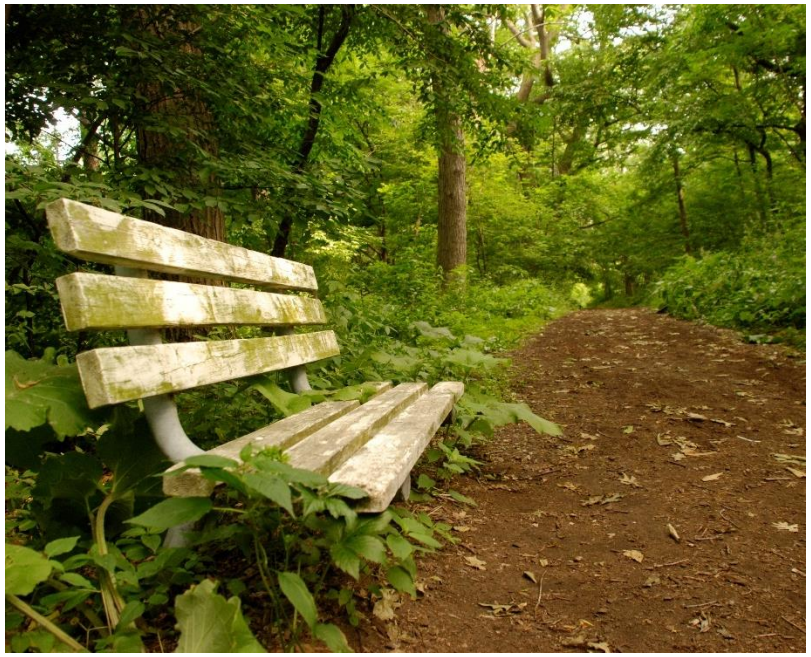
- **Understanding Sarnia's urban forest,** which considers the urban forest as a biological system and reviews the City's urban forest data management tools and practices.
- **Maintaining Sarnia's urban forest,** which reviews the organizational structure of the City's urban forest management programs and addresses tree maintenance operations.
- **Growing Sarnia's urban forest**, which addresses tree establishment and urban forest enhancement programs.
- **Protecting Sarnia's urban forest**, which addresses policies and practices related to protecting existing trees throughout the planning and building process, during capital projects, and on private lands.
- **Engaging in Sarnia's urban forest**, which reviews existing and potential future urban forest partnerships and programs to engage community members in urban forest stewardship on both City and private lands.

Purpose and scope

The overall purpose of any strategic plan is to realize the plan's guiding vision and achieve its strategic goals, objectives, and targets through prioritized actions and an effective monitoring and adaptive management framework. The Sarnia Urban Forest Management Plan is intended to guide City of Sarnia municipal departments, City Council, external agencies and other partners, and members of the broader community on a path towards achieving the community's vision for its urban forest.

Over the next 15 years, Sarnia's UFMP will guide urban forest policy and program development, implementation, resourcing, and priority-setting. It will help to ensure that decisions about the urban forest reflect the needs and values of the community, are based on technical and scientific knowledge, consider innovative and best practices, and are supported by adequate resources. The UFMP will shape the City's approaches to understanding, maintaining, enhancing, and protecting its urban forest, and will encourage other community members to engage in these efforts on both public and private lands.

The lead division responsible for the implementation of most of the Strategic Action Plan will be Forestry and Horticulture Services. However, strategies outlined in the plan address both the City- and privately-owned portions of the urban forest with the aim of engaging partners and community members in caring for, enhancing, and protecting the urban forest across the entire city. The strategies and actions established in the plan will apply to both established communities and lands planned for future development, and successful implementation will require the support of other City departments and external partners.



Sarnia Urban Forest Management Plan (UFMP)

Strategic Framework

The 'strategic framework' refers to the organization of interrelated components of the strategic plan, representing a hierarchical structure of elements of increasing detail and specificity. Key elements of the strategic framework of the Sarnia UFMP Strategic Action Plan include the urban forest vision, goals, and objectives. These strategic elements inform the plan's targets and action items. The strategic framework is outlined below.

Vision

Sarnia's urban forest vision is an aspirational statement indented to reflect the community's values and priorities for its urban forest. The purpose of the vision statement is to establish a shared and common understanding about the desired outcomes for the urban forest to be achieved through the implementation of the UFMP. In other words, the UFMP will be considered a success if the vision statement accurately reflects Sarnia's urban forest when read fifteen years down the road.

Goals

Strategic goals are broad statements that describe the outcomes to be achieved in support of the urban forest vision. The UFMP's five strategic goals correspond to the urban forestry themes established in the Key Findings and Directions report.

Objectives

Objectives are more detailed statements that describe the specific desired outcomes emerging from a strategic goal. Each of the five strategic goals for Sarnia's urban forest is supported by multiple related objectives.

Action Items

The Sarnia UFMP Strategic Action Plan presents 46 action items to provide detailed guidance for a wide range of actions by the City of Sarnia and its urban forest partners and the community.

Action item implementation will help the City and its partners realize the plan's urban forest vision and achieve its goals, objectives, and targets. In addition to providing detailed guidance and timing, action items identify implementation leads and partners, provide high-level resource requirements, and (if applicable) establish measurable targets.

Implementation guidance

Each action item summarizes the relevant current status context and presents point-form implementation guidance detailing a recommended course of action to support the related UFMP goal and objective.

A comprehensive review of best practices to guide action item implementation is provided in the Sarnia Urban Forest Management Plan Key Findings and Directions Report.

Timing

Beginning in 2025, the Strategic Action Plan is divided into three five-year management periods. Action item implementation guidance is organized according to the applicable five-year management period for action items that are to be phased-in or staged within the 15-year planning horizon. Action items that require a change in process or procedures, or that establish new programs, are intended to be carried forward throughout the planning horizon and beyond.

Priority

Action items without a defined priority ranking are not considered essential to the success of the UFMP, but are recommended as valuable improvements to Sarnia's urban forest management program.

Action items denoted as **High** priority are considered vital to the success of the UFMP and may be prerequisite for the implementation of one or more other action items. These actions should be resourced and undertaken as early in the UFMP implementation phases as possible.

Action items denoted as **Very High** may be critical to health and safety, urban forest health, or the provision of core urban forestry services. These actions should be implemented as soon as possible and should be prioritized in resource allocation.

Implementation leads and partners

Each action item assigns one or more City of Sarnia divisions responsibility for leading action item implementation and providing accountability to the community, City Council, and the Urban Forest Management Plan itself. Internal or external implementation support partners may also be identified.

Resources

The **estimated** resources required to implement each action item are outlined. These are categorized as follows:

Existing:	Can by accommodated by existing staff/ resources through enhancements to existing policies, programs, or practices
New:	Requires support of additional resources allocated in action item 2.1.1.
$:	Less than $50,000
$$:	$50,000 - $100,000
$$$:	$100,000 - $150,000
$$$$:	$150,000+

Targets/outcomes

Targets are performance metrics that can be quantified (measured, ranked, or scored) to track progress and achievement. Where applicable, quantifiable targets are established for the accompanying action items.

Outcomes may include key deliverables, such as new policies, studies, procedures, etc., that will demonstrate success in action item implementation upon delivery, completion, or enactment.

Summary: How the UFMP Strategic Action Plan is organized

The **vision** sets the big picture for Sarnia's urban forest in 20 years. Achieving the vision is the overarching goal of the UFMP.

Five strategic **goals** describe the desired outcomes related to each key urban forestry theme, as established in the Key Findings and Directions Report.

Multiple **objectives** per goal (17 total objectives) provide more specificity to guide urban forest management and organize the goals into clear directions for action.

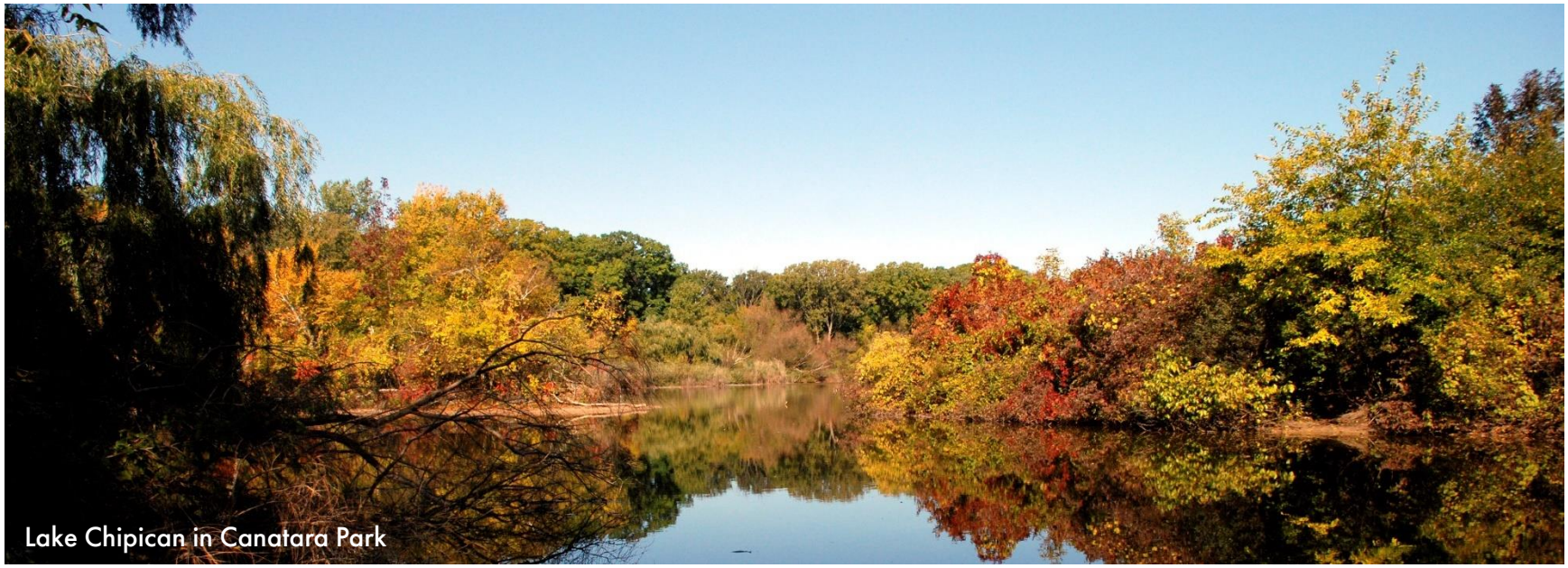
Action items under each objective provide detailed guidance for implementation by the City and its urban forest partners. Some action items have associated **targets and/or outcomes**, which define the benchmark for success related to that specific action.

Vision

The Urban Forest Management Plan's vision for Sarnia's urban forest in the next fifteen years and beyond is:

> A growing and healthy canopy of Carolinian and other trees covers much of the city of Sarnia in balance with thriving local industries and agriculture.
>
> All members of the Sarnia community understand and appreciate the benefits that the city's urban forest provides to help support the environment, protect human health, beautify the community, and strengthen climate resilience. The City and its community partners work hand-in-hand to plant and protect trees, bring nature back to the city, and build awareness of the importance of trees to the community.

The UFMP will be considered successful if, when read in 2040, the vision statement accurately reflects the state of Sarnia's urban forest.



Lake Chipican in Canatara Park

Goals and Objectives

Sarnia's vision for its urban forest will be realized through the pursuit and achievement of the UFMP's five goals, as described in this section. These goals were developed to align with the five urban forestry themes outlined in the Key Findings and Directions Report. The alignment between the urban forestry themes and goals is shown in Table 2.

Table 2: Urban forestry themes and goals. Alignment between the urban forestry themes outlined in the Sarnia UFMP Key Findings and Directions Report and the goals of the Strategic Action Plan.

Urban Forestry Theme		UFMP Goal
Understanding Sarnia's urban forest	→	*Learn more about the urban forest to improve policies, programs, and operations*
Maintaining Sarnia's urban forest	→	*Maintain a healthy, safe, and functional urban forest to reduce risk and optimize benefits*
Growing Sarnia's urban forest	→	*Expand and enhance the urban forest to increase the amount and diversity of services and benefits*
Protecting Sarnia's urban forest	→	*Protect the urban forest for current and future generations*
Engaging in Sarnia's urban forest	→	*Engage others in the urban forest to build awareness and develop a culture of stewardship*

Goal 1: Learn more about the urban forest to improve policies, programs, and operations

The structure, condition, and functional capacity of the urban forest as a biophysical resource influence urban forest policies, programs, and maintenance operations, as these key elements of urban forest management must be responsive to 'on-the-ground' conditions and strategically shape the future urban forest to help achieve the plan vision. As such, the City and its partners must build and maintain up-to-date, accurate, and timely knowledge about the urban forest resource on both public and private lands, and must also monitor and track the effectiveness of their policies, programs, and practices.

Through the implementation of the Urban Forest Management Plan, the City of Sarnia and its urban forest partners will learn more about all aspects of the urban forest, more effectively manage and update supporting information and data, and use this knowledge to make more informed and collaborative decisions regarding policies, programs, and operations.

Achievement of this goal will be supported by the implementation of actions under three key objectives, including:

1.1. **Obtain more, and maintain better, urban forest data**
The City and its partners will implement systems and practices to collect, use, and share information about urban forest structure, condition, function, opportunities, and challenges. Urban forest data will be maintained at a high level of quality to ensure that urban forest management is informed by the most up-to-date and accurate information available.

1.2. **Integrate urban forest management with the municipal asset management framework**
The City will integrate urban forest management information with existing and forthcoming asset management policies, plans, tools, and systems to optimize urban forest management efficiency and support program resourcing.

1.3. **Monitor Sarnia's urban forest and its management**
The City and its partners will monitor the state of the urban forest, the performance of urban forest management programs, and the status of the UFMP to track progress towards established targets and refine policies, programs, practices, targets, and budgets as necessary.

Goal 2: Maintain a healthy, safe, and functional urban forest to reduce risk and optimize benefits

Difficult growing conditions; pests, diseases, and invasive species; climate change; and other stressors threaten the health, structural condition, and longevity of trees and potentially increase the level of risk associated with tree or branch failure. A proactive, responsive, collaborative, and adequately resourced urban forest maintenance program is required to effectively address these important challenges.

Through the implementation of the Urban Forest Management Plan, the City of Sarnia and its urban forest partners will apply best management practices to maintain and improve urban forest health, condition and longevity, manage tree-related risk at a reasonable level, and enhance the functional capacity of trees to provide the community with important environmental, economic, and societal services and benefits.

Achievement of this goal will be supported by the implementation of actions under four key objectives, including:

2.1. **Enhance program capacity to deliver core urban forestry services in a more proactive manner**
The City will ensure that its urban forest management program is appropriately structured, and that adequate levels of human and financial resources are allocated, to enable the delivery of a full range of core urban forestry services in a sustained and effective manner.

2.2. **Implement appropriate levels of service for urban forest maintenance**
The City and its partners will implement appropriate best practices for a wide range of urban forest maintenance operations to protect tree health and condition, manage tree-related risk to persons and property at reasonable and acceptable levels, and enhance the functional capacity of the urban forest.

2.3. **Identify and manage threats to the urban forest more proactively and effectively**
The City and its partners will work to proactively and effectively address a wide range of existing, emerging, and potential threats to trees and natural areas.

2.4. **Protect and enhance ecosystem integrity and ecological function**
The City and its partners will reduce impacts upon and enhance City-owned natural areas.

Goal 3: Expand and enhance the urban forest to increase the amount and diversity of services and benefits

Leaf area and urban tree canopy cover are the primary sources of urban forest services and benefits, and increasing the amount, diversity, and value of urban forest services and benefits requires tree planting to replace lost trees and expand the urban forest. However, growing the urban forest entails much more than just planting trees—ongoing and active efforts by the City and its partners are required to provide high-quality tree growing environments, ensure the right trees are planted in the right sites, and support young trees until they are fully established and self-sufficient. Efforts must also be made to ensure that all community residents have equitable access to the urban forest and the benefits it provides, as some parts of the city currently have considerably more canopy cover than others.

Through the implementation of this Urban Forest Management Plan, the City of Sarnia and its urban forest partners will grow and expand the City's urban forest canopy cover, strengthen urban forest resilience against climate change and other stressors, and pursue equitable access to urban forest services and benefits for all community members.

Achievement of this goal will be supported by the implementation of actions under three key objectives, including:

3.1. **Increase urban forest canopy cover and pursue canopy equity in the urban area**
The City and its partners will establish trees on public and private lands to grow tree canopy cover in the urban area, and will work to support equitable access to urban forest services and benefits for all of Sarnia's community members.

3.2. **Enhance tree establishment planning and implementation to improve tree planting outcomes**
The City and its partners will strengthen policies, guidelines, programs, and practices to ensure that all trees are planted in adequate growing environments and are provided the necessary care to survive, become established, and thrive.

3.3. **Promote urban forest resilience through tree establishment**
The City and its partners will promote urban forest diversity to develop a more climate- and threat-resilient urban forest.

Goal 4: Protect the urban forest for current and future generations

Land use change, intensification, and site disturbance commonly associated with development may contribute to the loss of trees and may compromise growing conditions for the future urban forest. On lands not subject to development, landowner discretion to injure or remove trees may further reduce the urban forest canopy. As such, planning, development, and related policies and practices should support urban forest protection wherever feasible. Where tree protection cannot be fully accommodated, appropriate mitigation and compensation measures should be put in place to offset the loss of community assets and urban forest services and benefits.

Through the implementation of this Urban Forest Management Plan, the City of Sarnia and its urban forest partners will ensure that existing trees and tree growing environments are effectively protected against injury and destruction wherever possible and that appropriate compensation is provided for the loss of trees and the services and benefits they provide.

Achievement of this goal will be supported by the implementation of actions under three key objectives, including:

4.1. **Strengthen tree protection during the planning and building process**
The City will ensure that planning guidelines and policies, application review practices, and development oversight promote more effective tree protection and, if necessary, adequate tree replacement or compensation.

4.2. **Strengthen tree protection on private lands not subject to the planning and building process**
The City will encourage and promote tree protection on private lands not subject to development or building applications and will work with private landowners to encourage protection of significant trees.

4.3. **Strengthen tree protection on public lands and capital projects**
The City will ensure that its urban forest assets are effectively protected during development on adjacent private lands and municipal capital projects.

Goal 5: Engage others in the urban forest to build awareness and develop a culture of stewardship

While the City of Sarnia owns and manages some of the highest-profile parts of the urban forest, such as street and park trees and several natural areas, the vast majority of existing urban forest canopy (87%) and opportunities to expand the urban forest (75%) are found on lands owned by private landowners and other levels of government. These lands, such as commercial and industrial properties, institutional lands, and individual residential parcels, provide some of the best opportunities to sustain existing mature trees and plant the future urban forest. Community members can also help maintain and expand Sarnia's urban forest on public lands through a wide range of stewardship actions. It is therefore vital that these partners be engaged in maintaining, growing, and protecting the urban forest, and that the City support strong and effective partnerships to realize a shared vision for the urban forest.

Through the implementation of this Urban Forest Management Plan, the City and its urban forest partners will foster an urban forest culture in Sarnia, encouraging all community members to appreciate the value and importance of the urban forest and engage in urban forest stewardship on public and private lands across the city. Achievement of this goal will be supported by the implementation of actions under four key objectives, including:

5.1. **Develop a more collaborative and effective urban forest governance structure**
The City will ensure that municipal divisions collaborate more effectively to understand the urban forest and better maintain, plant, and protect trees.

5.2. **Build community awareness of the urban forest**
The City and its partners will encourage appreciation of trees, build awareness of urban forest challenges, and highlight opportunities for community members to make a positive impact on Sarnia's urban forest.

5.3. **Support partner and community engagement in urban forest stewardship**
The City will provide technical and resource support to community members and other partners to encourage more and stronger urban forest stewardship on public and private lands across the city.

5.4. **Advance reconciliation with Indigenous Peoples**
The City will meaningfully engage with local Indigenous Peoples toward identifying opportunities to advance and support reconciliation with Indigenous Peoples through urban forestry programs, activities, and actions.

Summary of Goals and Objectives

The goals and objectives of the City of Sarnia UFMP Strategic Action Plan are summarized below.

	Goal 1. Learn more about the urban forest to improve policies, programs, and operations
1.1	Obtain more, and maintain better, urban forest data
1.2	Integrate urban forest management with the municipal asset management framework
1.3	Monitor Sarnia's urban forest and its management
	Goal 2. Maintain a healthy, safe, and functional urban forest to reduce risk and optimize benefits
2.1	Enhance program capacity to deliver core urban forestry services in a more proactive manner
2.2	Implement appropriate levels of service for urban forest maintenance
2.3	Identify and manage threats to the urban forest more proactively and effectively
2.4	Protect and enhance ecosystem integrity and ecological function
	Goal 3. Expand and enhance the urban forest to increase the amount and diversity of services and benefits
3.1	Increase urban forest canopy cover and pursue canopy equity in the urban area
3.2	Enhance tree establishment planning and implementation to improve tree planting outcomes
3.3	Promote urban forest resilience and ecological function through tree establishment
	Goal 4. Protect the urban forest for current and future generations
4.1	Strengthen tree protection during the planning and building process
4.2	Strengthen tree protection on private lands not subject to the planning and building process
4.3	Strengthen tree protection on public lands and capital projects
	Goal 5. Engage others in the urban forest to build awareness and develop a culture of stewardship
5.1	Develop a more collaborative and effective urban forest governance structure
5.2	Build community awareness of the urban forest
5.3	Support partner and community engagement in urban forest stewardship
5.4	Advance reconciliation with Indigenous Peoples

Sarnia Urban Forest Management Plan (UFMP)

Action Items

Goal 1

Learn more about the urban forest to improve policies, programs, and operations

Objective 1.1 - Obtain more, and maintain better, urban forest data

Action 1.1.1 – Expand the tree inventory to parks and other municipal lands

Current status: Only approximately 2,500 park trees in selected parks including Canatara, Oak Acres, and Cardiff Acres, are currently inventoried. Trees in other municipal parks and other City-owned and managed lands are not inventoried. As such, urban forest structure and maintenance needs in these areas are unknown and information to plan proactive management of these trees is unavailable.

Guidance: Collect geospatial tree inventory data for trees in actively managed areas of City parks, along formal trails in natural areas, rural roads, City facilities, and other municipal lands. Ensure inventory database and attribute alignment with existing street tree inventory.

Timing: Management Period 1 (2025-2030) – **High Priority**

Resources: $$

Targets/outcomes: Park and municipal lands tree inventory is completed before the end of Management Period 1.

Action 1.1.2 – Operationalize and regularly update the tree inventory

Current status: Existing street and park tree inventory has not been effectively used to inform or prioritize tree maintenance operations. Tree inventory is static and has not been regularly updated as trees are maintained, removed, or planted.

Guidance: Query existing tree inventory for outstanding tree maintenance requirements and to prioritize work. Develop and implement internal procedures to integrate all newly planted, City-managed trees into the inventory within 3 months of installation. In instances where developers plant street trees, require developers (landscape consultants) to submit tree installation 'as built' geospatial data in inventory-compatible format for integration into City tree inventory at the time of assumption. Pending 2027 roll-out of Cityworks forestry asset management systems (see action item 1.2.1), procure adequate hardware and implement procedures for updating of basic tree inventory data for existing City trees (e.g., DBH, condition, maintenance record, etc.) each time an inventoried tree is inspected, pruned, or removed by City staff arborists and/or contractors.

Timing: Management Period 1 (2025-2030) – **Very High Priority**

Resources: Requires support of additional (new) resources allocated in action item 2.1.1

Targets/outcomes: Tree inventory is routinely updated through tree maintenance operations. All newly planted trees are added to inventory within 3 months of installation.

Objective 1.2 - Integrate urban forest management with the municipal asset management framework

Action 1.2.1 – Integrate urban forestry assets with the City's enterprise asset management systems

Current status: Tree inventory and other urban forestry assets are not currently integrated with the Cityworks Enterprise Asset Management System (EAMS). Work order management is not effectively digitized.

Guidance: Integrate existing geospatial tree inventory data into municipal GIS and Cityworks systems. Utilize GIS and EAMS functionality to manage, track, and plan tree establishment and tree maintenance. Provide appropriate training and hardware for Forestry Supervisors and other appropriate staff to facilitate service/work order management and asset inventory updating. Utilize tree inventory data to integrate forestry assets in future City asset management plans for non-core assets in accordance with Provincial requirements.

Timing: Management Period 1 (2025-2030)

Resources: Existing resources

Targets/outcomes: Tree inventory data are integrated with Cityworks Enterprise Asset Management System before the end of Management Period 1. Relevant Forestry and Horticulture Services staff are trained and equipped to manage work orders and tree inventory with Cityworks systems.

Objective 1.3 - Monitor Sarnia's urban forest and its management

Action 1.3.1 – Track change in urban forest land cover metrics

Current status: A point-in-time urban forest land cover analysis has been undertaken as part of the UFMP project, utilizing 2019 land cover data. No plans or processes for updated urban forest land cover analysis and tracking are in place.

Guidance: Undertake geospatial analysis to map existing urban tree canopy (UTC), potential plantable area (PPA), and other urban forest land cover metrics. Undertake analysis and reporting using a methodology consistent with the baseline analysis to facilitate land cover change tracking to identify drivers of canopy loss and gain at site-specific level. Use results to track progress towards UTC targets, prioritize tree establishment, and forecast tree planting and post-planting maintenance resource requirements to remain on-track towards targets.

Timing: Management Period 2 (2025-2030), subsequently every five years

Resources: $

Targets/outcomes: Urban Tree Canopy (UTC) and other urban forest land cover geospatial analysis and reporting completed.

Action 1.3.2 – Re-assess urban forest performance metrics on a periodic basis and track UFMP progress

Current status: A baseline urban forest performance analysis has been undertaken as part of the UFMP process.

Guidance: Near the end of each Management Period, undertake a review of the UFMP including:

- Completion or compilation of relevant urban forest assessments or studies (e.g., inventory, UTC, etc.)
- Scoped public and partner engagement (e.g., survey, Public Information Centre) to assess changes to existing, or emerging, threats and challenges, values, needs, priorities, opportunities, perceptions, and urban forest management approaches and policies.
- Re-assessment of criteria-based performance indicators to track performance change.
- Establishment of new UFMP targets, if necessary.
- Assessment of relevant changes to urban forest policies, legislation/regulations, best practices, etc.
- Assessment of successes, shortcomings, and barriers to implementation of UFMP action items, and tracking of progress towards action item implementation.
- If necessary, re-prioritization of existing UFMP actions items, reallocation of resources, and development of new action items.
- Development of a UFMP update report and delivery to Council.

Timing: End of Management Period 1 (2025-2030), every five years

Resources: $

Targets/outcomes: Urban Forest Management Plan (UFMP) update report and supporting studies and materials completed.

Goal 2

Maintain a healthy, safe, and functional urban forest to reduce risk and optimize benefits

Objective 2.1 - Enhance program capacity to deliver core urban forestry services in a more proactive manner

Action 2.1.1 – Reorganize and increase resources for urban forest management

Current status: Urban forest maintenance operations are undertaken on a solely reactive basis. Multiple key urban forest services are currently not implemented or are implemented at an inadequate level. Forestry staff resources are frequently diverted for reactive management, contributing to tree maintenance backlog and inadequate post-planting care for young trees. Forestry section's flat organizational structure and lack of staff specialization or delineated organizational units focuses division on reactive tree maintenance at expense of other services.

Guidance: In Management Period 1, establish one Forestry technician/coordinator and one planning forester/ecologist positions to support tree inspection, tree-related planning/building application review, urban forest health (pest, disease, and invasive species management), tree establishment planning and implementation, and community education/engagement, among other core tasks. In Management Period 2, establish one additional Forestry technician position, re-assess divisional resource requirements, and begin process of developing a more specialized divisional structure, including operating divisions responsible for tree maintenance, tree establishment, and other core Forestry services. Separate Forestry and Horticulture Services into two distinct branches with separate supervisory positions and review requirements for additional Forestry supervisory and other positions based on new Forestry divisional structure.

Timing: Management Period 1 (2025-2030) – **Very High Priority**

Resources: $$$$

Targets/outcomes: One Forestry technician/coordinator and one planning forester/ecologist position staffed before the end of MP1. One additional Forestry technician position staffed before the end of MP2.

Action 2.1.2 – Pursue external urban forest program resourcing support

Current status: The City has obtained limited grant funding for some urban forestry projects in the past (e.g., Forests Ontario Imperial Oil planting; Tree Canada Edible Trees program grant). However, grant and other external program funding opportunities are rarely pursued in a comprehensive manner.

Guidance: Partner with community organizations, external agencies, and other urban forest partners to obtain partnership grants or support other funding opportunities for community or City-led initiatives on public or appropriate private lands for projects and acquisition. Examples of current grant opportunities include Tree Canada Community Tree Grants (Greening Canada's School Grounds, Edible Trees, and Treemendous Communities), Federal 2 Billion Trees Program grants (Tree Canada/Federation of Canadian Municipalities Growing Canada's Community Canopies "GCCC" grant program), FCM Green Municipal Fund, Forests Ontario 50 Million Tree Program grants, Canadian Tree Fund research grants, and public health grants, among others. Maintain ongoing awareness of new and emerging external program funding support opportunities.

Timing: Management Period 1 (2025-2030)

External Partners: Local environmental organizations; Green industry members; Local First Nations, the Métis Nation of Ontario, and/or Indigenous Peoples' organizations, and/or Sarnia United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) Committee

Resources: Requires support of additional (new) resources allocated in action item 2.1.1

Targets/outcomes: At least three high-quality urban forestry project grant funding applications submitted before the end of MP1.

Objective 2.2 - Implement appropriate levels of service for urban forest maintenance

Action 2.2.1 – Develop tree maintenance standards and specifications

Current status: There are currently no in-house tree maintenance standards, standard operating procedures, or specifications in place. Tree maintenance operations are guided by staff knowledge and general adherence to arboricultural standards and best practices. There are no Level of Service standards in place for prioritizing tree service requests, which may lead to inconsistent implementation, delayed response (including of high-priority work), and public communications challenges.

Guidance: Develop divisional standards, standard operating procedures, and specifications (as required) for core urban forestry services including tree inspection/service request response, shared/boundary tree ownership determination and maintenance, tree pruning, tree and stump removal, tree risk assessment and management, plant health care (pest, disease, and invasive species management), and tree establishment (in progress), among others.

Timing: Management Period 1 (2025-2030) – **High Priority**

Resources: $

Targets/outcomes: A tree maintenance Level of Service standards manual, including technical specifications for tree pruning, is developed before the end of MP1.

Action 2.2.2 – Establish a street tree pruning cycle

Current status: All street tree pruning is undertaken on a reactive manner in response to service requests/work orders, likely compromising tree health, structure, and function, and contributing to the ongoing tree maintenance backlog.

Guidance: Allocate adequate operating resources to inspect and prune approximately 2,250 street trees per year to achieve a seven-year street tree pruning cycle (based on estimated 16,000 street trees in cycle, determined by DBH). Will likely require contracting of reactive or proactive (cyclical) pruning operations to augment existing in-house staff capacity. Will require additional capacity for work order and contract management, pre-pruning inspection and pruning list management, etc.

Timing: Management Period 2 (2030-2035) – **High Priority**

Resources: $$$$

Targets/outcomes: A seven-year street tree pruning cycle is in place before the end of MP2.

Action 2.2.3 – Establish a park tree pruning cycle

Current status: Like street trees, park trees are pruned on a reactive basis in response to service requests and work orders.

Guidance: Complete park tree inventory to determine quantity, location, and other attributes of trees to be included in pruning cycle. Allocate adequate operating resources to inspect and prune trees in actively managed park areas and other City-managed lands (e.g., public facilities) on a ten-year (or more frequent) cycle.

Timing: Management Period 2 (2030-2035)

Resources: $$$-$$$$

Targets/outcomes: A ten-year pruning cycle is in place for actively managed park trees before the end of MP2.

Action 2.2.4 – Implement a young tree structural pruning program

Current status: Forestry and Horticulture Services staff are aware of the importance of structural pruning and generally knowledgeable of specialized structural pruning techniques. However, the division does not currently operate a young tree structural pruning program.

Guidance: In Management Period 1 (2025-2030), contract to provide a 'catch-up' structural pruning round for all City-managed trees planted since 2014 (i.e., trees 10 years old or younger; estimated 3,500-4,000 trees). In Management Period 2 (2030-2035), begin ongoing implementation of '3-in-10' structural pruning program (min. 3 inspections and pruning rounds in first 10 years following planting) for all City-managed caliper street and park trees.

Timing: Management Period 2 (2030-2035) – **High Priority**

Resources: $$

Targets/outcomes: '3-in-10' structural pruning program in place for all newly planted City trees before the end of MP2.

Action 2.2.5 – Conduct a priority tree risk assessment of trails and natural area edges

Current status: No assessment of trees along formal trails and natural area edges has been undertaken and no proactive tree risk management is undertaken in these areas.

Guidance: Conduct a limited visual (ANSI/ISA Level 1 – Limited Visual) tree risk assessment of City-owned trees along formal (sanctioned) trails in City-owned natural areas and along the edges of natural areas bordering on the right-of-way and adjacent public and private properties with occasional to frequent occupancy. Identify, inventory, prioritize, and map trees for Level 2 – Basic visual assessment and/or risk mitigation (e.g., pruning, removal), including trees within at least 1.5x tree height tip-out distance of potential target areas. Identify trees with elevated risk in privately-owned natural areas bordering City property or rights-of-way and, if required, initiate property standards orders to mitigate identified risk pursuant to By-law 75-2009 (property maintenance) or Section 5 of the Trees By-law (34-1992).

Timing: Management Period 1 (2025-2030) – **High Priority**

Resources: $

Targets/outcomes: A trails and natural areas priority tree risk assessment is completed and priority mitigation actions are carried out before the end of MP1.

Objective 2.3 - Identify and manage threats to the urban forest more proactively and effectively

Action 2.3.1 – Develop an invasive species assessment and management plan

Current status: The City does not actively manage invasive species in natural areas and there is no invasive species inventory or mapping in place. The City has undertaken one-off invasive species control on an *ad hoc* basis, but there is no plan or program in place.

Guidance: Conduct a field-based inventory and mapping of priority invasive plant species in City-managed forested natural areas. Include point locations and polygons as required. Consult Ontario Invasive Plant Council, Invasive Species Centre, Ontario's Invading Species Awareness Program, St. Clair Region Conservation Authority (SCRCA), and other authorities for list of current priority invasive species, location/distribution maps of known populations in Sarnia, and prioritization criteria. Promote public use of EDDMaps application for community-sourced invasive species location mapping and integrate into City database. Develop an actionable, prioritized, and adequately resourced management plan with established prioritization criteria to respond to and manage priority invasive species in targeted forested natural areas, educate the public about invasive species, and monitor and prevent spread of future invasive species. Action item implementation to be led by planning forester/ecologist position recommended in action item 2.1.1.

Timing: Management Period 2 (2030-2035)

External Partners: Canadian Food Inspection Agency (CFIA), St. Clair Region Conservation Authority (SCRCA)

Resources: $$

Targets/outcomes: A natural areas invasive species assessment and management plan is in place, and implementation is underway, before the end of MP2.

Action 2.3.2 – Develop an oak wilt rapid response plan and awareness campaign

Current status: Some 10% of the inventoried street tree population, and an unknown proportion of the entire urban forest canopy, is potentially threatened by oak wilt. The City has issued oak wilt pruning media releases in past years. Forestry staff are aware of the threat of oak wilt and are knowledgeable of signs and symptoms, but there is no regular oak tree monitoring program in place.

Guidance: On a high priority basis develop an oak wilt rapid response plan identifying program elements including public and private oak tree inspection and monitoring, quarantine, tree removal/sanitation, wood waste handling and disposal, regulation, tree replacement, public awareness-building, and interagency coordination and cooperation. Work with Canadian Food Inspection Agency (CFIA) on plan development and seek resource-sharing and recovery and other supports for program implementation. Refresh existing and develop new oak wilt-related public educational materials, including traditional media, website, social media content, and videos. Encourage oak wilt reporting using existing reporting portals (e.g., Invasive Species Centre Reporting Hotline and CFIA) and undertake visual assessment of suspected oak wilt on both public and private lands. Investigate feasibility of enacting an emergency oak wilt control by-law, including an oak tree pruning ban between April 1 and October 31 and to enable issuance of orders to remove infected trees on private property.

Timing: Management Period 1 (2025-2030) – **Very High Priority**

External Partners: Canadian Food Inspection Agency (CFIA), St. Clair Region Conservation Authority (SCRCA)

Resources: $

Targets/outcomes: An oak wilt response plan and awareness campaign are in place by 2026.

Objective 2.4 - Protect and enhance ecosystem integrity and ecological function through maintenance

Action 2.4.1 – Develop a natural areas management strategy and site-specific management plans

Current status: There is no overarching inventory, assessment, or management strategy for City-owned natural areas. Basic management plans for six natural areas have been developed but have not been implemented and are likely out-of-date. Natural areas, edges, and trails are managed reactively, potentially increasing risk and liability exposure. The lack of proactive management may also contribute to degraded ecological function and integrity due to unmanaged impacts such as invasive species, encroachment and trail development, and tree loss.

Guidance: Undertake a comprehensive natural heritage inventory and site assessments of City-owned natural areas, and integrate environmental data gathered through land use planning studies, development applications, and other means, to update the natural heritage inventory. Based on these assessments, develop an integrated and long-term natural areas management strategy outlining objectives and management prioritization criteria such as ecological integrity and biodiversity, invasive species, level of human impact, habitat (including Species at Risk) connectivity, etc. Review and update existing natural areas management plans. Determine resource requirements for prioritized implementation and implement pilot and full-scale projects guided by the strategy. Action item implementation to be led by planning forester/ecologist position recommended in action item 2.1.1.

Timing: Management Period 2 (2030-2035)

External Partners: Local environmental organizations, St. Clair Region Conservation Authority (SCRCA), Sarnia Environmental Advisory Committee (SEAC)

Resources: $$$ (Implementation cost TBD)

Targets/outcomes: Citywide natural areas management strategy and site-specific management plans are developed before the end of MP2.

Goal 3

Expand and enhance the urban forest to increase the amount and diversity of services and benefits

Objective 3.1 - Increase urban forest canopy cover and pursue canopy equity in the urban area

Action 3.1.1 – Increase tree establishment to achieve 23% canopy cover in the urban area by 2050

Current status: Canopy cover in the urban area is 22%. At current planting levels, tree canopy cover is likely to decline over time to an estimated 21% or less by 2050.

Guidance: Increase tree planting to a minimum of 1,200 caliper trees per year through City operations, development, and private land planting (assumes 40:60 planting ratio of mid-sized to large-sized trees at maturity; does not include naturalization plantings due to unknown survival rates, small stock size, and slower growth). Monitor change in urban tree canopy (see action item 1.3.1) and adjust planting targets accordingly.

Timing: Management Period 1 (2025-2030)

External Partners: Community members, Local development community, Local environmental organizations, Green industry members, St. Clair Region Conservation Authority (SCRCA), Sarnia Environmental Advisory Committee (SEAC)

Resources: $$

Targets/outcomes: A minimum of 1,200 caliper trees are planted per year through City operations, development, and private land planting. Observed increase in urban tree canopy every analysis and reporting period (see action item 1.3.1). Citywide urban tree canopy cover of 23% achieved by 2050.

Action 3.1.2 – Eliminate the tree planting backlog in new communities and operations

Current status: A backlog of trees to be planted in new subdivision communities is reported to have developed over the past several years. Although the size of the backlog was previously estimated at between 200-300 trees, its current size is not clear and the City has been working to reduce the backlog.

Guidance: Review planting lists and work order to determine the actual extent of the subdivision tree planting backlog. If and as necessary, allocated one-time funding to resolve the backlog using in-house capacity and/or contract the procurement, planting, and post-planting maintenance of trees to clear the backlog.

Timing: Management Period 1 (2025-2030) – **High Priority**

Resources: $

Targets/outcomes: Tree planting backlog eliminated before the end of MP1.

Action 3.1.3 – Establish land use-based tree canopy cover targets for development sites

Current status: There are currently no guidelines in place to assess the adequacy of proposed tree planting or future tree canopy cover on new or infill development sites. Tree planting may be required for screening on a landscaped planting strip or for tree removal compensation.

Guidance: In conjunction with future reviews and amendments to the Official Plan, Zoning By-law, Site Plan Approval Policy Guidelines and Standards, and other applicable policies and guidelines, include zoning-based tree canopy cover targets for new and infill developments. Suggested according to existing zoning categories (per Draft Comprehensive Zoning By-law, 2024) are listed below. Targets may be further refined according to specific zoning sub-categories.

- **Airport:** N/A
- **Downtown Core:** 15%
- **Employment:** 20%
- **Mixed-Use Corridor:** 15%
- **Neighbourhood Supporting Uses:** 15-25%
- **Parks and Open Space, Natural Heritage System:** No net loss of existing canopy
- **Residential (optional/ aspirational for low density):** 20%
- **Rural/Agricultural:** N/A
- **Waterfront:** 20%

Develop guidelines for site-based canopy cover assessment and projections based on proposed landscaping/tree establishment and 'grow-out' credits for protection of existing trees. Refer to Town of Oakville North Oakville Strategic Urban Forest Management Plan (2012) and *Development Application Guidelines: Canopy cover plan and canopy calculation chart* for guidance.

Timing: Management Period 3 (2035-2040) and/or in conjunction with future Official Plan and Zoning By-law reviews.

Resources: Existing resources

Targets/outcomes: Land use-based tree canopy cover targets integrated into applicable planning policies before the end of MP3.

Action 3.1.4 – Target tree establishment in urban areas with below-average tree canopy cover and other priority areas

Current status: Tree establishment is largely opportunistic and not guided by tree canopy cover assessment or goals.

Guidance: To support urban forest equity, to the extent possible prioritize tree planting operations, naturalization plantings, and other tree establishment programs in areas identified as having below-average urban tree canopy cover in the urban area. Use tree canopy difference (see Figure 5) and Potential Plantable Area (PPA) mapping to identify dissemination areas with below-average UTC for tree planting prioritization. Consider using other prioritization tools and criteria such as the HealthyPlan.City environmental equity online tool. Track change in UTC in priority areas (see action item 1.3.1) and adjust planting targets as necessary over subsequent management periods.

Timing: Management Period 1 (2025-2030)

Resources: Existing resources

Targets/outcomes: At least 50% of operations-based tree establishment is undertaken in areas of below-average urban tree canopy cover in the urban area by the end of MP1.

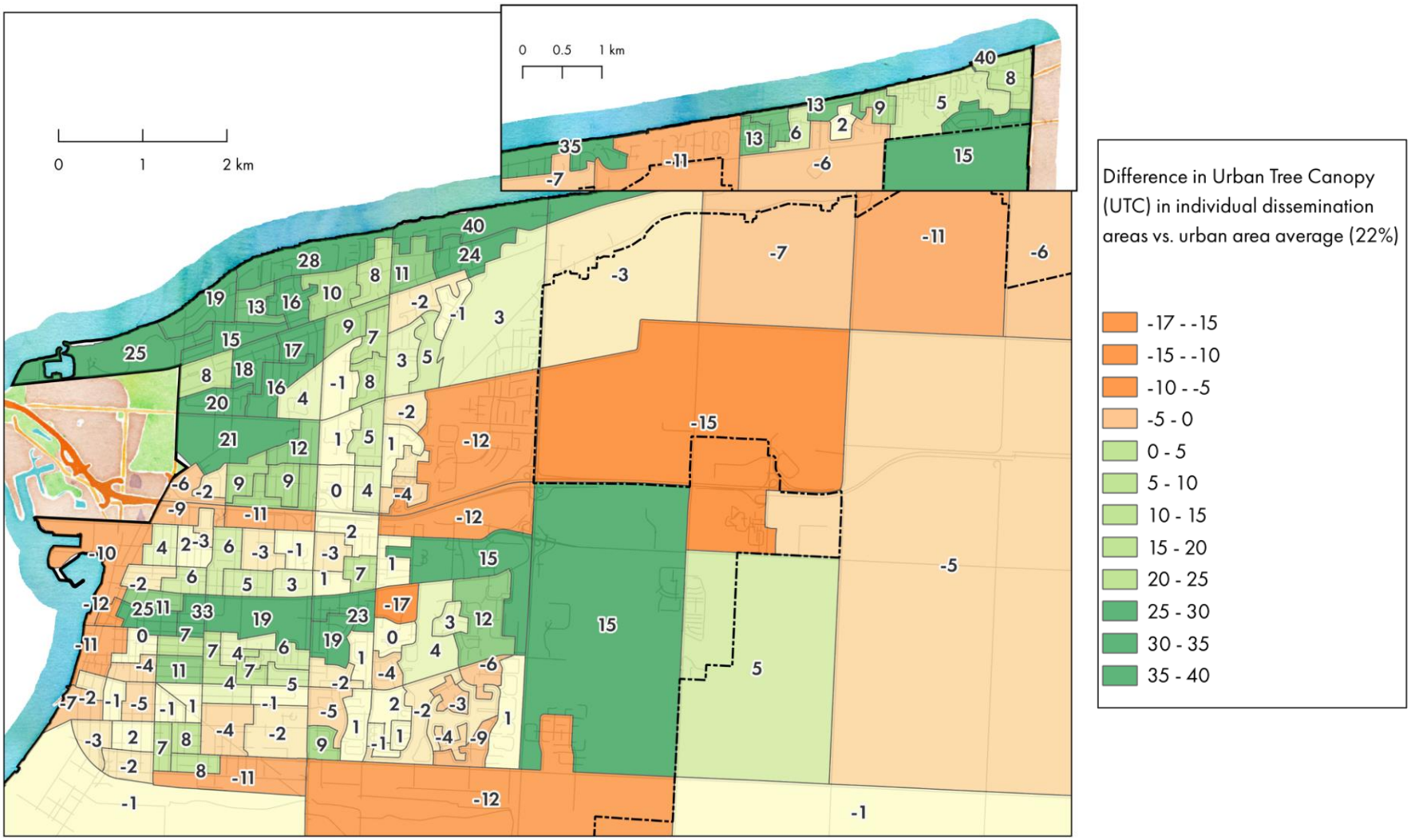


Figure 5: Canopy cover differences. The difference in Urban Tree Canopy (UTC) in individual dissemination areas versus the average across Sarnia's urban area (22%). For example, a dissemination area labeled 15 has 15% more tree canopy cover than the average, or 37% UTC. Conversely, an area labeled -6 has 6% less canopy cover than the average, or 16% UTC.

Action 3.1.5 – Establish a maintenance program for City-planted fruit trees and shrubs

Current status: The City and partners have previously planted a limited number of fruit trees in Mike Weir Park. Council endorsed an annual food planting strategy called 'Food for All' that integrates food-bearing plants and trees in parks and other municipal properties throughout the City. Staff will begin planting fruit trees under this program in Fall 2024. $10,000 is to be allocated each budget cycle to the growth and maintenance of this program. Fruit trees typically require a higher level of maintenance to ensure they grow to fruit-bearing maturity while developing appropriate structure to support fruit harvesting without resultant tree injury or disease. Adequate resources must be allocated to post-planting and long-term maintenance, including watering, mulching, fruit-promoting and structural pruning, and monitoring, while ensuring that overall urban forest program capacity is not diverted away from other high-priority tree and urban forest maintenance requirements. Currently, resourcing necessary to support the additional maintenance required for fruit-bearing trees has not been allocated.

Guidance: Determine maintenance requirements for fruit trees and shrubs planted under the 'Food for All' program, including post-planting establishment care, structural and fruit-bearing pruning, pest and disease control, watering, monitoring, and harvesting. Determine and allocate adequate resources (e.g., contracted maintenance) and investigate potential for community partnerships to undertake monitoring and fruit harvesting and distribution, among other needs.

Timing: Management Period 2 (2030-2035)

External Partners: Local environmental organizations, Sarnia Environmental Advisory Committee (SEAC), Community members

Resources: $

Targets/outcomes: An urban forest orchard maintenance program adequately resources and in effect before the end of MP2.

Objective 3.2 - Enhance tree establishment planning and implementation to improve tree planting outcomes

Action 3.2.1 – Develop new, and strengthen and consolidate existing, tree establishment guidelines, standards, and specifications

Current status: Draft tree planting standards have been developed by Forestry and Horticulture Services. However, there is currently no consolidated series of tree establishment guidelines, standards, and specifications for use in new developments and on City capital projects. The draft Forestry standards and the Area 2 Urban Design Guidelines provide progressive guidelines to inform the development of high-quality citywide standards and specifications.

Guidance: Coordinate with Engineering and obtain external peer review/contracted services to expand, revise, and finalize draft Forestry tree planting standard for use as a citywide standard. Expand to include technical detail drawings and specifications for soil quality, soil volume, drainage and irrigation, utility alignment and offsets, and other tree growing environment design elements. Develop guidelines and standards for soil cells, suspended pavements, and other engineered growing environment solutions.

Through future revisions, integrate new tree planting standards into the Engineering Standard Specifications manual and require adherence to standards for all development and capital projects. Consolidate tree establishment guidance in a single overarching guidelines, standards, and specifications compendium document, to be applicable for all tree establishment scenarios on existing or future public lands, including forestry operations, naturalization/stewardship, planning applications (greenfield and infill), and capital projects. Ensure that existing inter-document contradictions and conflicts in guidelines, standards, and specifications are resolved.

Timing: Management Period 2 (2030-2035) – **High Priority**

External Partners: Local development community **Resources:** $$

Targets/outcomes: A comprehensive tree establishment guidelines, standards, and specifications manual is developed before the end of MP2

Action 3.2.2 – Improve tree establishment plan review for new developments

Current status: Forestry and Horticulture Services is occasionally—but not consistently—circulated on subdivision development applications to review and provide comment on proposed tree species and tree locations. This may result in the proposed establishment of inappropriate species or trees in inadequate locations.

Guidance: Enact process changes to ensure that Forestry and Horticulture Services is circulated for tree establishment plan review for all planning applications and that Forestry comments are conveyed to the applicant and integrated into plan revisions.

Timing: Management Period 1 (2025-2030)

External Partners: Local development community

Resources: Requires support of additional (new) resources allocated in action item 2.1.1

Targets/outcomes: Internal process improvements are in place in accordance with action item guidance before the end of MP1.

Action 3.2.3 – Ensure adequate resourcing for City-led tree establishment in new developments

Current status: To support tree planting in new developments, the City collects a tree planting fee of $250 per tree, which is used to procure trees in accordance with the approved planting schedule for the development. This fee is inadequate to cover the cost of tree procurement, delivery, installation, and post-planting maintenance.

Guidance: Increase the tree planting fee to adequately cover all City costs associated with subdivision street tree establishment. A minimum fee of $700 should be collected, subject to periodic increase.

Timing: Management Period 1 (2025-2030) – **High Priority**

External Partners: Local development community

Resources: Existing resources

Targets/outcomes: City collects an adequate tree planting fee for each tree to be established before the end of MP1. Tree planting fee is adjusted on an annual basis.

Action 3.2.4 – Improve tree planting stock procurement practices

Current status: Trees are procured using a bidding and tendering process to supply an annual planting list. Trees are inspected upon delivery and defective trees may be rejected. However, supply has frequently been subject to substitutions of trees species, stock types, and quality, resulting in the planting of sub-standard trees.

Guidance: Engage with local growers to determine program requirements to establish long-term caliper and small-stock tree growing and procurement agreements focusing on locally sourced seed, locally-grown stock, high-quality root production and root ball management, and structural development, ensuring adequate production volumes to meet the City's long-term caliper tree planting requirements. Engage with local environmental organizations and First Nations (e.g., Aamjiwnaang Native Plant Rescue and Maajiigin Gumig greenhouse programs) to develop program and capacity funding agreements to engage members in seed collection and growing for priority native tree species.

Timing: Management Period 2 (2030-2035)

External Partners: Local environmental organizations, Green industry members; Local First Nations, the Métis Nation of Ontario, and/or Indigenous Peoples' organizations, and/or Sarnia United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) Committee

Resources: Existing resources

Targets/outcomes: Long-term tree growing and procurement agreements are in place by the end of MP2.

Action 3.2.5 – Improve post-planting tree maintenance and monitoring

Current status: Recently, the City has begun installing watering bags on most newly planted trees and has outfitted a specialized watering truck. However, watering staff capacity is currently dependent on a temporary position and there are no human resources allocated to tree watering during the watering season on a permanent full-time basis. The City no longer provides informational door hangers to encourage residents to water trees planted in the right-of-way. There is no formal young tree structural pruning program, although staff are encouraged and requested to undertake such pruning if opportunities are observed in proximity to active work orders.

Guidance: Assign staff arborists and/or summer temporary employees to tree watering truck on a rotating basis to ensure full-time watering service delivery for all newly planted trees for at least the first two growing/watering seasons (preferably for three or more seasons). Implement young tree structural pruning program (see action item 2.2.4). Undertake tree health and survival monitoring for newly planted trees to develop tree species performance profiles and inform maintenance and replacement requirements. Revise tree watering informational door hanger and reinstate program to distribute tree watering information to residents and businesses adjacent to all newly planted trees.

Timing: Management Period 1 (2025-2030) – **High Priority**

Resources: $

Targets/outcomes: Full-time tree watering crew (1-person) and young tree structural pruning program are in place before the end of MP1 (see action item 2.2.4). Revised informational door hanger has been developed and is distributed before the end of MP1. New tree monitoring program is in place before the end of MP1.

Objective 3.3 - Promote urban forest resilience and ecological function through tree establishment

Action 3.3.1 – Increase taxonomic diversity in tree establishment programs

Current status: Forestry tree establishment operations utilize a diverse list of tree species. However, there are no taxonomic diversity targets or guidelines in place for City operations or development.

Guidance: Develop a consolidated tree species/cultivar selection matrix tool or regularly updated static tree species list delineating tree species site tolerances and preferences, physical and biological characteristics, functional groups, bioclimatic envelopes, and appropriate planting scenarios and typologies, for use in all tree establishment planning scenarios on public and private lands, including Forestry operations, capital projects, and planning. Upon completion of park tree inventory, develop neighbourhood (or dissemination area)-based tree taxonomic diversity assessments to inform tree establishment planning. Do not plant tree species exceeding 10% or genera exceeding 15% in any street segment or park to increase tree taxonomic and functional diversity through tree establishment programs and operations (i.e., tree replacement, vacant planting site infill, park naturalization, etc.) at the block and neighbourhood level. Reduce planting of most common and/or inappropriate tree species, such as Freeman maple, honey locust, littleleaf linden, Callery pear, and tree lilac. Increase use of underutilized species and genera such as oaks, ironwood, sycamore/planetree, hackberry, tuliptree, etc. Maintain awareness of novel cultivars and species available in the nursery trade.

Timing: Management Period 2 (2030-2035)

External Partners: Green industry members

Resources: Existing resources

Targets/outcomes: An updated and comprehensive tree selection matrix/list is developed, and urban forest diversity targets are integrated into tree establishment policies, before the end of MP2.

Action 3.3.2 – Undertake tree species performance trials

Current status: Novel or underutilized tree species have not been formally trialled in various settings in Sarnia. Tree species performance is observed anecdotally.

Guidance: Develop and implement internal processes and procedures to formally track young tree survival rates and establishment success through urban forestry tree planting operations, including street, park, and development tree planting. Consider partnerships with academic institutions and/or community to support monitoring efforts (see action items 5.2.2 and 5.3.4). Monitor trees on a (minimum) annual basis at a minimum of 1, 3, 5, and 8 years after planting.

Undertake local tree species/cultivar suitability trials by obtaining and planting at least 30 caliper-sized trees per type. Collaborate with local growers to select appropriate trial species/cultivars (types). Trial at least 10 novel or underutilized types that are uncommon, underutilized, or unutilized in Sarnia; are large-growing and known to provide urban forest services and exhibit other desirable characteristics (e.g., species vigor, structural integrity, low allergenicity, aesthetic value, etc.), and are native to warmer (i.e., more southerly) Plant Hardiness Zones and climates and are likely to be 'climate change ready' in Sarnia.

Favour selection of North American species or derived cultivars. However, non-native and hybrid trees should also be trialed in settings away from natural areas if known to be non-invasive. Plant trial trees across different settings on City-owned lands (e.g., parks, boulevards, hardscapes, softscapes, etc.) according to known site tolerances and preferences. Ensure trees are geospatially inventoried and adequately maintained (watered, pruned, mulched) throughout the trial period.

Action 3.3.2 – Undertake tree species performance trials (cont'd)

Undertake detailed assessment at least quarterly for first 3 years and annually thereafter for a minimum trial period of five years. Measure/assess tree growth, health, condition, and maintenance needs. Seek in-kind support/partnership from local tree suppliers/growers and academic institutions and, where possible, integrate trials with capital projects, to reduce set-up and monitoring costs. Refer to *Climate ready street tree trials: A best practice guide* (Manea *et al.*, 2021). Use trial findings to revise tree species/cultivar lists for City operations, capital projects, and other scenarios.

Timing: Management Period 2 (2030-2035)

External Partners: Green industry members; Local environmental organizations; Other (local and regional educational institutions, agencies, school boards, and other organizations)

Resources: Requires support of additional (new) resources allocated in action item 2.1.1

Targets/outcomes: A tree species trial program is in place, and at least 300 trial trees are established and under observation, before the end of MP2.

Goal 4

Protect the urban forest for current and future generations

Objective 4.1 - Strengthen tree protection during the planning and building process

Action 4.1.1 – Develop new, and strengthen existing, tree protection policies, guidelines, and specifications

Current status: Tree-related planning submission requirements for most applications are basic and do not effectively support tree protection. The City does not maintain a tree protection policy or standards, specifications, or technical detail (engineering) drawings for tree protection measures such as Tree Protection Zones (TPZs), TPZ barriers and signage, root zone compaction protection, root-sensitive excavation, or others.

Guidance: Develop a comprehensive tree protection policy for City-owned and significant private trees, to be applicable both within and outside of the planning process. In addition to standard policy elements (purpose, definitions, scope, etc.), the policy should include:

- Procedures/process map for tree protection plan submission and review, tree protection installation and inspection, tree injury mitigation, and other elements.
- Technical specifications for implementation of tree protection measures, including Tree Protection Zones (TPZ) and barriers, root-sensitive excavation and grading, root pruning, soil compaction protection, trunk protection, and others.
- Technical detail drawings for standard tree protection measures.
- Security and compensation requirements for tree injury and removal.

Timing: Management Period 1 (2025-2030) – **High Priority**

Resources: $$

Targets/outcomes: Comprehensive tree protection policy in effect by the end of MP1.

Action 4.1.2 – Develop a 'Tree Declaration' for municipal permits and consents

Current status: There is no 'Tree Declaration' required in conjunction with building, demolition, curb/utility cut, road occupancy, and other municipal permit applications and consents.

Guidance: Develop a tree declaration as a part of all relevant permit application forms and processes to facilitate screening for potential impacts upon City-owned trees. Forward applications with 'positive' (i.e., tree is present) Tree Declarations to Forestry in a timely manner for review within legislated application review timelines to ensure compliance with relevant tree protection requirements (see action item 4.1.1) and City trees by-law. Subject to implementation outcomes and outcomes of action item 4.2.1, expand the scope of the Tree Declaration to include other regulated and significant trees.

Timing: Management Period 1 (2025-2030) – **High Priority**

Resources: Existing resources

Targets/outcomes: Tree Declaration in place on relevant municipal permit application forms, and a process to expedite Forestry and Horticulture Services review of affected applications in effect, before the end of MP1.

Action 4.1.3 – Strengthen development plan and building permit application review and implementation oversight

Current status: Tree protection may be discussed at the pre-consultation stage if City-owned trees might be impacted by the proposed development. Building and other permits are not reviewed for potential tree impacts. Staff report a lack of in-house expertise to review the environmental and tree-related impacts of proposed applications. Forestry staff are occasionally, but not routinely, circulated on applications to review potential impacts upon City-owned trees but impacts to private trees are rarely considered.

Guidance: Supported by action item 2.1.1, dedicate a minimum of 0.5 FTE of new Forestry position to tree protection (i.e., development and permit application) review and site inspection. To align with changes in Provincial planning legislation and regulations, require all planning applications potentially affecting trees to provide preliminary tree impact assessments and mitigation plans as part of development application Pre-Consultation to ensure tree protection is adequately considered in the early stages of development planning. Consistently circulate Forestry and Horticulture Services on planning applications that may potentially adversely affect existing trees (City-managed and private) or tree growing environments (i.e., site soils).

Timing: Management Period 1 (2025-2030) – **High Priority**

Resources: Requires support of additional (new) resources allocated in action item 2.1.1

Targets/outcomes: New Forestry technician position staffed (see action item 2.1.1), and enhanced development and permit application review procedures in place, before the end of MP1.

Action 4.1.4 – Develop a tree compensation formula and policy

Current status: There are no formal tree compensation guidelines in effect. Compensation is typically required on a 2:1 replacement ratio basis, both for individual City trees and removal of natural areas.

Guidance: Develop tree removal compensation guidelines, including full-cost compensation (i.e., appraised tree value, removal and restoration, administration, and replacement planting) for City-owned trees, aggregate caliper for significant private trees, and area-basis for natural areas.

Timing: Management Period 1 (2025-2030)

Resources: Requires support of additional (new) resources allocated in action item 2.1.1

Targets/outcomes: Tree removal compensation guidelines in place before the end of MP1.

Action 4.1.5 – Retain securities for tree protection

Current status: The City routinely collects financial securities (e.g., cash deposit, letter of credit) for the general completion of site works, including landscaping. However, securities are not itemized and are not held for tree protection works, including the protection of City trees.

Guidance: Develop a policy and procedures to retain financial securities for the protection of City trees. Retain securities for tree protection hoarding and other required tree protection methods (if applicable), as well as tree protection inspections. In Management Period 2, develop similar policy for significant private trees (see action item 4.2.1).

Timing: Management Period 1 (2025-2030) and Management Period 2 (2030-2035)

Resources: Requires support of additional (new) resources allocated in action item 2.1.1

Targets/outcomes: Tree protection security policy and procedures in place before the end of MP1 (City trees) and MP2 (significant private trees).

Objective 4.2 - Strengthen tree protection on private lands not subject to the planning and building process

Action 4.2.1 – Establish a private tree regulatory framework

Current status: The injury and removal of privately-owned trees are currently unregulated in Sarnia. It is not known how many privately-owned trees are removed in Sarnia annually.

Guidance: Undertake community and partner consultation for, draft, and enact a private tree by-law. Consider multiple options for tree regulation, such as size-based (i.e., DBH limits), species, other significant attributes (e.g., location), allowable annual exemptions, etc. Convey consistent messaging that a private tree by-law does not prohibit tree removal, but rather requires permitting/notification and appropriate compensation (e.g., tree replanting) to sustain urban forest services and benefits. Ensure appropriate exemptions and a streamlined permitting process to enable reasonable tree injury and removal requests, subject to appropriate levels of tree replacement and/or in-lieu compensation.

To reduce possibility of pre-emptive tree removal, consider two implementation options, including:

- A 'soft phase-in' period initially requiring notification, transitioning to permitting and full regulation over time, to build community familiarity with and acceptance of the tree by-law.
- An interim significant tree by-law (with a permitting process), followed by community consultation to develop a more context-appropriate by-law.

Timing: Management Period 2 (2030-2035)

Resources: $$

Targets/outcomes: Private tree regulatory framework (i.e., tree by-law) enacted before the end of MP2.

Objective 4.3 - Strengthen tree protection on public lands and capital projects

Action 4.3.1 – Update the 'Trees' by-law (public tree by-law)

Current status: Trees situated in municipal parks and along streets or highways are regulated pursuant to By-law 34-1992, commonly referred to as the "Trees by-law". Several provisions of the by-law do not reflect modern urban forest management best practices and the by-law should be updated.

Guidance: Undertake a comprehensive review and revision of the Trees By-law, and replace with a new or updated public tree by-law. Update by-law provisions concerning tree ownership determination, tree compensation appraisal, tree protection measures, and penalties. Establish a permitting system for City tree injury and removal, subject to typical permit application, reporting, mitigation, security, and compensation requirements in alignment with tree protection policies (see action item 4.1.1). Consider transitioning penalties and fines to an Administrative Penalty framework instead of penalties under the Provincial Offences Act.

Timing: Management Period 2 (2030-2035)

Resources: $

Targets/outcomes: 'Trees by-law' updated before the end of MP2.

Action 4.3.2 – Improve procedures for tree protection on capital projects

Current status: Limited planning for, and implementation and oversight of, tree protection on City capital projects. Occasional lack of agreement and clarity on resourcing and responsibility for tree protection during capital works and a need for recognition of City trees as a shared municipal asset.

Guidance: Develop a streamlined internal review and 'permitting' system for City tree injury and removal on capital projects and utility operations and maintenance (O&M). Require City departments/divisions delivering capital projects that affect trees to adhere to tree protection policy requirements (see Action 4.1.1) including tree protection planning (i.e., tree inventory and arborist report), implementation of tree protection measures, site monitoring, securities and compensation, and pre-construction and on-site liaison with Forestry and Horticulture Services. Require external utilities to adhere to tree protection requirements and liaise with Forestry and Horticulture Services to mitigate adverse impacts of O&M works in proximity to trees. Require root-sensitive excavation, root pruning, arborist supervision, and similar tree protection methods for utility works affecting trees in the right-of-way and other City properties. Ensure that tree protection is adequately budgeted in all capital projects.

Timing: Management Period 2 (2030-2035) – **High Priority**

External Partners: Utility providers

Resources: Requires support of additional (new) resources allocated in action item 2.1.1

Targets/outcomes: Enhanced procedures for capital project tree protection planning and implementation in place before the end of MP2.

Goal 5

Engage others in the urban forest to build awareness and develop a culture of stewardship

Objective 5.1 - Develop a more collaborative and effective urban forest governance structure

Action 5.1.1 – Establish an urban forestry interdepartmental working group

Current status: Although staff report increasing collaboration on urban forest issues, this is largely on an *ad hoc* basis. There is no formal working group in place to support interdepartmental collaboration on urban forest management.

Guidance: Establish an urban forest working team/group to facilitate interdepartmental data and information sharing and collaboration on projects, policies, and practices that may affect trees and the urban forest. Include, at minimum, representation from Forestry and Horticulture Services, Engineering, Operations, Parks and Recreation, Planning, and Building. Develop a Terms of Reference for the working team and hold quarterly and as-needed meetings to discuss policy development and review, project planning, standards and specifications, and engagement initiatives, among other topics. Liaise with other City departments not formally included in the working group as necessary.

Timing: Management Period 1 (2025-2030) – **High Priority**

Resources: Requires support of additional (new) resources allocated in action item 2.1.1

Targets/outcomes: Urban forestry interdepartmental working group established and operating before the end of MP1.

Action 5.1.2 – Establish an intermunicipal/interagency urban forest working group

Current status: There is currently no interagency working group to support urban forest management in Sarnia.

Guidance: Engage with external agencies and other local governments including County of Lambton, neighbouring municipalities, St. Clair Region Conservation Authority (SCRCA), Canadian Food Inspection Agency (CFIA), local utility companies (e.g., Bluewater Hydro, Enbridge, telecoms), and others to coordinate the establishment of an intermunicipal/interagency urban forestry working group. Support the development of a Terms of Reference to establish working group goals and meeting and action protocols. Engage on topics such as information and cost sharing, pest and disease management, shared resourcing opportunities, urban forest/canopy technical assessments, policy development, best practices, green industry engagement, service and materials procurement, etc.

Timing: Management Period 2 (2030-2035)

External Partners: Canadian Food Inspection Agency (CFIA), County of Lambton, St. Clair Region Conservation Authority (SCRCA), Utility providers, Other (neighbouring municipalities, etc.)

Resources: Requires support of additional (new) resources allocated in action item 2.1.1

Targets/outcomes: Urban forestry intermunicipal/interagency working group established and operating before the end of MP2.

Action 5.1.3 – Share urban forest data with other City departments and external partners

Current status: Digital urban forest data (e.g., tree inventory) are not incorporated into capital project planning (internal), readily shared with external partners, or publicly available. Data are not integrated with service request functionality.

Guidance: Ensure that basic tree data (e.g., species, size, location, tree protection zone, etc.) are accessible to other City divisions to facilitate project planning and service delivery (e.g., capital projects, infrastructure maintenance, etc.) Investigate opportunities to integrate urban forest inventory data with online mapping and customer service request functionality as the Cityworks system rolls out increased functionality over time.

Timing: Management Period 1 (2025-2030) and Management Period 2 (2030-2035)

External Partners: Canadian Food Inspection Agency (CFIA); Local environmental organizations; Local First Nations, the Métis Nation of Ontario, and/or Indigenous Peoples' organizations, and/or Sarnia United Nations Declaration on the Rights of Indigenous Peoples Committee; St. Clair Region Conservation Authority (SCRCA); Utility providers

Resources: Existing resources

Targets/outcomes: Urban forest inventory data available online for public access before the end of MP1 and integrated with broader corporate asset management systems before the end of MP2 (see action item 1.2.1).

Objective 5.2 - Build community awareness of the urban forest

Action 5.2.1 – Enhance existing, and develop new, urban forestry educational materials

Current status: Urban forest educational materials are limited in scope and content.

Guidance: Update and expand the City of Sarnia 'Urban Forestry: Tree Care and Maintenance' webpages to create a comprehensive urban forestry information portal. Portal should include pages related to Sarnia's urban forest and management programs; urban forest guidelines and standards; tree-related policies and regulations; tree planting and maintenance; urban forest threats (e.g., pests, diseases, and invasive species); tree inventory; service request submission and tracking; community tree event promotion; and others. Content should be regularly updated and integrated with social media. Update Trees of Distinction tour mapping, including digital mapping (e.g., Google Maps/Google Earth waypoints, ArcGIS Storymap), as trees are added or removed.

Develop informational and engaging social media urban forestry content across major social media platforms (e.g., Instagram, Tik Tok, Facebook, and X). Establish a process for rapid for rapid review, approval, and posting of high-priority or time-sensitive content. Develop video-based content when relevant and feasible, due to significantly higher engagement rates. Leverage and interact with existing local environmental and 'green network' partners to share and amplify content. Examples of content may include tree maintenance facts and tips (e.g., instructional content, tree watering reminders), seasonally- or time-relevant content (e.g., Arbor Day, National Tree Day/Forest Week, elm/oak pruning bans/windows, etc.), or content in response to specific conditions or situations (e.g., drought or emergency response, pest/disease management).

Action 5.2.1 – Enhance existing, and develop new, urban forestry educational materials (cont'd)

Guidance (cont'd): In addition to digital content (above), enhance or develop 'hard copy' educational materials, such as:

- Improved informational door hangers, to be distributed to property owners adjacent to newly planted trees or other significant trees (e.g., oak trees – oak wilt awareness, trees to be removed and replaced, etc.)
- 'Hands-on' interactive educational materials for use and display at community events and educational settings, such as visually interesting wood pieces and cross-sections (wood 'cookies'), preserved insects (tree pests) and fungi, experiment aids, etc.
- Updated Trees of Distinction tree tour brochure (update as trees are removed or added).
- Curriculum support aids for school use

Timing: Management Period 1 (2025-2030) – **High Priority**

Resources: $

Targets/outcomes: To be determined through the implementation process.

Action 5.2.2 – Partner with institutions, agencies, and organizations in urban forest research

Current status: There are no current urban forest research partnerships in place in Sarnia.

Guidance: Explore partnership opportunities with local and regional educational institutions, agencies (e.g., CFIA, SCRCA), school boards, and other organizations to support and facilitate urban forest research with mutual benefit and management utility. Opportunities for support may include access to study sites, staff time, supervisory and technical oversight, or additional in-kind or other contributions. Note: It is generally not advisable to rely on research partners to lead or undertake urban forest data collection with direct bearing on tree maintenance, tree risk management, or other urban forest operations (e.g., tree inventory).

Potential areas of research partnership may include pest and disease management, urban forest mapping and analysis, urban forest health and climate change adaptation/resilience, social dimensions of urban forest management, and others (as identified by research partners).

Timing: Management Period 2 (2035-2040)

External Partners: Green industry members, Other (local and regional educational institutions, agencies, school boards, and other organizations)

Resources: $

Targets/outcomes: At least two urban forest research partnerships (informal agreements) in place before the end of MP2.

Objective 5.3 - Support partner and community engagement in urban forest stewardship

Action 5.3.1 – Promote the 'free City tree' program

Current status: The City investigates and fulfils service requests for tree planting in the right-of-way. However, this opportunity is not promoted and there is no formalized program to administer tree planting requests.

Guidance: Develop a program title/tagline (e.g., "Get a free street tree!") and use online, social, and traditional media (e.g., newspaper advertisement, transit posters, etc.) to advertise the opportunity for residents to obtain a free street tree. Integrate street tree planting requests into Forestry operations-based tree establishment program planting lists and post-planting maintenance activities.

Timing: Management Period 2 (2030-2035)

Resources: Requires support of additional (new) resources allocated in action item 2.1.1

Targets/outcomes: Active promotion of 'free City tree' program in place before the end of MP2.

Action 5.3.2 – Develop a community-involved naturalization and stewardship strategy and partnerships

Current status:

Naturalization plantings have been undertaken in an opportunistic manner in informal/limited partnership with several community groups. A lack of committed resourcing and capacity for post-planting monitoring and maintenance have contributed to poor performance and appearance of some naturalization planting efforts, resulting in community opposition and a temporary moratorium on further naturalization plantings.

Guidance:

Engage with St. Clair Region Conservation Authority (SCRCA), local environmental organizations, neighbourhood groups, Indigenous Peoples, and other external partners to develop a community-engaged naturalization strategy that identifies and prioritizes areas of publicly owned land for naturalization and explores potential opportunities for private land naturalization (subject to long-term protection/maintenance agreements) and stewardship.

Develop collaborative goals and criteria (including rating/ranking system) for prioritization of sites for naturalization. Example goals may include increasing connectivity, enhancement of targeted ecological functions and habitats, education, beautification, promoting reconciliation with Indigenous Peoples, and others. Example criteria may include proximity to high-quality or degraded natural areas (depending on naturalization/restoration goals), habitat patch size, rare/sensitive species, green space connectivity, soil quality/erosion severity, ease/cost of site access, site stability, invasive species presence/absence, public and staff support, visibility, equity, human health, community and Indigenous values, recreational usage patterns, regulatory complexity, and others.

Develop a multi-year naturalization plan, including identified resource requirements and a resourcing strategy for implementation and maintenance/monitoring. Consider requiring partial matching funding commitments prior to implementation and establishing reserves for maintenance, monitoring, and replacement or top-up planting.

Action 5.3.2 – Develop a community-involved naturalization and stewardship strategy and partnerships (cont'd)

Guidance (cont'd): Implement naturalization planting opportunities through jointly-organized and publicized community planting events. Provide additional stewardship opportunities such as basic invasive species control (e.g., weed pulls), monitoring, and tending (e.g., watering and mulching).

Timing: Management Period 2 (2030-2035) – **High Priority**

External Partners: Community members; Local environmental organizations; Local First Nations, the Métis Nation of Ontario, and/or Indigenous Peoples' organizations, and/or Sarnia United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) Committee; St. Clair Region Conservation Authority (SCRCA); Sarnia Environmental Advisory Committee (SEAC)

Resources: $$

Targets/outcomes: A community-involved naturalization and stewardship strategy in place, and a minimum of five naturalization pilot projects implemented, before the end of MP2.

Action 5.3.3 – Provide private and community urban forest stewardship incentives

Current status:

The City of Sarnia does not currently provide any incentives for private and community urban forest stewardship. In October 2024, a motion to accept the Sarnia Environmental Advisory Committee's proposal for a Neighbourhood Tree Giveaway pilot project ($15,000 one-time funding) was submitted to Council for referral to 2025 budget deliberations.

Guidance:

Tree establishment: Develop a 'tree giveaway' program, whereby City residents can sign up to receive one free native tree for establishment on private property. Require pre-registration and a scheduled tree pick-up window; distribute a variety of small potted native deciduous trees; provide educational material about proper tree siting, planting, and post-planting maintenance; inform residents of the importance of obtaining utility locates before planting; and seek partnership support from St. Clair Region Conservation Authority (SCRCA) and other external partners for implementation and materials. Target 300-450 trees given away annually.

Tree maintenance: Develop a tree maintenance rebate program, whereby residents can apply for a rebate for obtaining the services of a certified arborist for acceptable types of tree maintenance (e.g., maintenance pruning, pest and disease management) with appropriate verification (refer to City of London Tree Canopy Conservation Program or Town of New Tecumseth Urban Forest Enhancement Rebate Program for example guidance).

Other offered incentives may include reduction of future stormwater fees (if imposed) for tree establishment, stewardship, and/or protection; community grants for small-scale community-led urban forest stewardship projects; early release of securities or reduction in landscaping or compensation requirements for effective tree protection on development sites; providing recognition for notable contributions to urban forest stewardship (e.g., tree protection, maintenance, or establishment) for individuals, businesses, community groups, and other partners; and a tree and plant 'rescue' program.

Provide information about available incentives on the City Forestry web portal (see action item 5.2.1).

Action 5.3.3 – Provide private and community urban forest stewardship incentives (cont'd)

Timing: Management Period 1 (2025-2030) and Management Period 2 (2030-2035) – **High Priority**

External Partners: Community members, Sarnia Environmental Advisory Committee (SEAC)

Resources: $-$$

Targets/outcomes: A tree giveaway program in place before the end of MP1. Two other urban forest incentive programs in place before the end of MP2.

Action 5.3.4 – Develop a community-based urban forest monitoring program

Current status: Urban forest monitoring is limited and there are no formal opportunities for community involvement.

Guidance: Establish a program for community-based monitoring of naturalization planting areas and projects, natural areas, and street and park trees. Integrate monitoring program protocols with naturalization strategy (see action item 5.3.2.) For naturalization plantings, develop protocols for formalized monitoring and reporting of tree condition and survival rates, weed competition, animal browse, and maintenance/replanting requirements. Refer to Richmond Hill Community Stewardship Program for program guidance. For natural areas and street and park trees, develop protocols and reporting mechanisms for both informal and formalized general urban forest health and condition monitoring, and pest, disease, and invasive species detection and monitoring.

Enhance online geospatial mapping systems to allow community members to upload basic urban forest data such as potential/available plantable sites, service requests, private tree inventory, nominated outstanding trees, pest/disease reporting, and other tree-specific observations (necessitates data screening, sample-based field verification, and data moderation).

Encourage general increased public urban forest monitoring and promote public use of EDDMaps Ontario invasive species mapping tool. Use reported data to inform invasive species management planning and response (necessitates field-based verification). In general, use reported data for high-level planning; ground-truthing by trained staff or contractors is required for most data if used to inform maintenance operations.

Timing: Management Period 3 (2035-2040)

External Partners: Local environmental organizations; Local First Nations, the Métis Nation of Ontario, and/or Indigenous Peoples' organizations, and/or Sarnia United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) Committee

Resources: $ **Targets/outcomes:** Community-based urban forest monitoring program in place before the end of MP3.

Action 5.3.5 – Develop an 'adopt-a-tree' program

Current status: There is currently no program in place to encourage resident care of young trees.

Guidance: Develop a program to engage individuals, groups or businesses to formalize their commitment to water, mulch, weed, and/or monitor City residential front yard, street, and/or park trees. At the most basic level, the program can encourage residents to informally "adopt" a tree without any tracking, reporting or other program structure. A more advanced program allows participants to select a tree from a list or online map of available trees, make a public commitment to watering/tending by formally 'adopting' the tree, and report on activities (e.g., watering frequency). If reporting/activity frequency is insufficient, adopters can be prompted to action or disqualified from the program. For park tree adopters, ensure that access to water source and mulch piles is available throughout the season. Encourage reporting/tracking of tree work undertaken (e.g. mulch top-up, watering) and reporting of observed tree health issues. Formal recognition of individual, group, or business tree adopters can encourage participation.

Timing: Management Period 3 (2035-2040)

External Partners: Community members, Local environmental organizations

Resources: $

Targets/outcomes: 'Adopt-a-tree' program in place before the end of MP3.

Objective 5.4 - Advance reconciliation with Indigenous Peoples

Action 5.4.1 – Explore and pursue opportunities to integrate Indigenous Peoples' traditional knowledge and cultural practices, and Indigenous community members, into urban forest policies, programs, activities, and practices

Current status: No engagement or partnerships with local First Nations/Indigenous Peoples on urban forestry.

Guidance: Engage with members of the City's United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) Committee to explore opportunities for meaningful engagement and collaboration with local First Nations, the Métis Nation of Ontario, and Indigenous Peoples' organizations in Sarnia around questions of urban forest access and incorporation of Indigenous knowledge and perspectives into urban forest management. Assess the need for capacity support agreements to support engagement and collaboration. Pursue opportunities to support Indigenous urban forest initiatives and cultural practices (e.g., harvesting) through capacity and in-kind support, information and data sharing, access to urban forest resources, and establishment of biocultural species. Explore collaborative learning opportunities for City staff about Indigenous issues, especially in relation to the urban forest, while respecting the First Nations Principles of OCAP® (Ownership, Control, Access, and Possession). Encourage non-Indigenous organizations to include and involve local Indigenous communities in their proposed urban forest stewardship activities and projects.

Timing: Management Period 1 (2025-2030) – **High Priority**

External Partners: Local First Nations, the Métis Nation of Ontario, and/or Indigenous Peoples' organizations, and/or Sarnia United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) Committee

Resources: $

Targets/outcomes: To be determined through the implementation process.

Sarnia Urban Forest Management Plan (UFMP)

Implementation and Monitoring

Leads and Partners

While Forestry and Horticulture Services, in the Parks and Recreation Department of the Community Services Division, will lead the implementation of most of the action items outlined in the Sarnia UFMP Strategic Action Plan, success will depend upon the support of a wide range of internal (City), external, and community urban forest partners. Likely partners are listed below. External partners are also listed in the detailed Implementation Table in the following section.

City of Sarnia

- Asset Management
- Building and By-law Services
- Communications
- Customer Service
- Engineering
- Environmental Services
- Forestry and Horticulture Services
- Geospatial Solutions
- Information Technology
- Legal Services
- Parks and Facility Operations
- Planning
- Public Works

External partners

CFIA:	Canadian Food Inspection Agency
CMTY:	Community members
DEV:	Local development community (e.g., Sarnia-Lambton Home Builders' Association)
ENV:	Local environmental organizations
GI:	Green industry members
IND:	Local First Nations, the Métis Nation of Ontario, and/or Indigenous Peoples' organizations, and/or Sarnia United Nations Declaration on the Rights of Indigenous Peoples Committee
LC:	County of Lambton
SCRCA:	St. Clair Region Conservation Authority
SEAC:	Sarnia Environmental Advisory Committee
UTIL:	Utility providers
Other:	Other external partners (as specified)

Implementation Table - Key

The action items outlined in the Sarnia UFMP Strategic Action Plan are summarized in the implementation guide on the following pages. The implementation guide outlines the action item, priority/timeframe, leads and partners, anticipated resource requirements, and key targets/outcomes. The implementation guide key is presented below:

Timing

MP1:	Management Period 1 (2025-2030)
MP2:	Management Period 2 (2030-2035)
MP3:	Management Period 3 (2035-2040)

Priority

Action items without a defined priority ranking are not considered essential to the success of the UFMP, but are recommended as valuable improvements to Sarnia's urban forest management program.

Action items denoted as **High** priority are considered important to the success of the overall UFMP and may be prerequisite for the implementation of one or more other action items. These actions should be resourced and implemented as early in the UFMP implementation phases as possible.

Action items denoted as **Very High** are considered critical to the success of the UFMP and should be implemented as soon as possible and prioritized in resource allocation and work planning.

Resources (estimated)

Existing:	Can by accommodated by existing staff/ resources through enhancements to existing policies, programs, or practices
New:	Requires support of additional resources allocated in action item 2.1.1.
$:	Less than $50,000
$$:	$50,000 - $100,000
$$$:	$100,000 - $150,000
$$$$:	$150,000+

Implementation Table – Detailed

The implementation guide table below is organized by UFMP goal and objective and summarizes the City of Sarnia UFMP Strategic Action Plan's 46 action items to guide urban forest management in Sarnia over the plan's 15-year horizon and beyond.

Goal/Objective/Action		Timing	External Partners	Priority	Resources
Goal 1.	**Learn more about the urban forest to improve policies, programs, and operations**				
1.1	Obtain more, and maintain better, urban forest data				
1.1.1	Expand the tree inventory to parks and other municipal lands	MP1	-	High	$$
1.1.2	Operationalize and regularly update the tree inventory	MP1	-	Very High	New
1.2	Integrate urban forest management with the municipal asset management framework				
1.2.1	Integrate urban forestry assets with the City's enterprise asset management systems	MP1	-	-	Existing
1.3	Monitor Sarnia's urban forest and its management				
1.3.1	Track change in urban forest land cover metrics	MP2[1]	-	-	$
1.3.2	Re-assess urban forest performance metrics on a periodic basis and track UFMP progress	MP1[1]	-	-	$
Goal 2.	**Maintain a healthy, safe, and functional urban forest to reduce risk and optimize benefits**				
2.1	Enhance program capacity to deliver core urban forestry services in a more proactive manner				
2.1.1	Reorganize and increase resources for the Forestry and Horticulture Services division	MP1	-	Very High	$$$$
2.1.2	Pursue external urban forest program resourcing support	MP1	ENV, GI, IND	-	New
2.2	Implement appropriate levels of service for urban forest maintenance				
2.2.1	Develop tree maintenance standards and specifications	MP1	-	High	$
2.2.2	Establish a street tree pruning cycle	MP2	-	High	$$$$
2.2.3	Establish a park tree pruning cycle	MP2	-	-	$$$-$$$$

Goal/Objective/Action		Timing	External Partners	Priority	Resources
2.2.4	Implement a young tree structural pruning program	MP2	-	High	$$
2.2.5	Conduct a priority tree risk assessment of trails and natural area edges	MP1	-	High	$
2.3	Identify and manage threats to the urban forest more proactively and effectively				
2.3.1	Develop an invasive species assessment and management plan	MP2	CFIA, SCRCA	-	$$
2.3.2	Develop an oak wilt rapid response plan and awareness campaign	MP1	CFIA, SCRCA	Very High	$
2.4	Protect and enhance ecosystem integrity and ecological function through maintenance				
2.4.1	Develop a natural areas management strategy and site-specific management plans	MP2	ENV, SCRCA, SEAC	-	$$$[2]
Goal 3.	**Expand and enhance the urban forest to increase the amount and diversity of services and benefits**				
3.1	Increase urban forest canopy cover and pursue canopy equity in the urban area				
3.1.1	Increase tree establishment to achieve 23% canopy cover in the urban area	MP1	CMTY, DEV, ENV, GI, SCRCA, SEAC	-	$$
3.1.2	Eliminate the tree planting backlog in new communities and operations	MP1	-	High	$
3.1.3	Establish land use-based tree canopy cover targets for development sites	MP2[3]	-	-	Existing
3.1.4	Target tree establishment in urban areas with below-average tree canopy cover and other priority areas	MP1	-	-	Existing
3.1.5	Establish a maintenance program for City-planted fruit trees and shrubs	MP2	ENV, SEAC, CMTY	-	$
3.2	Enhance tree establishment planning and implementation to improve tree planting outcomes				
3.2.1	Develop new, and strengthen and consolidate existing, tree establishment guidelines, standards, and specifications	MP2	DEV	High	$$
3.2.2	Improve tree establishment plan review for new developments	MP1	DEV	-	New
3.2.3	Ensure adequate resourcing for City-led tree establishment in new developments	MP1	DEV	High	Existing
3.2.4	Improve tree planting stock procurement practices	MP2	ENV, GI, IND	-	Existing

Goal/Objective/Action		Timing	External Partners	Priority	Resources
3.2.5	Improve post-planting tree maintenance and monitoring	MP1	-	High	$
3.3	Promote urban forest resilience and ecological function through tree establishment				
3.3.1	Increase tree taxonomic diversity in tree establishment programs	MP2	GI	-	New
3.3.2	Undertake tree species performance trials	MP2	GI, ENV, Other	-	New
Goal 4.	**Protect the urban forest for current and future generations**				
4.1	Strengthen tree protection during the planning and building process				
4.1.1	Develop new, and strengthen existing, tree protection policies, guidelines, and specifications	MP1	-	High	$$
4.1.2	Develop a 'Tree Declaration' for municipal permits and consents	MP1	-	High	Existing
4.1.3	Strengthen development plan and building permit application review and implementation oversight	MP1	-	High	New
4.1.4	Develop a tree compensation formula and policy	MP1	-	-	New
4.1.5	Retain securities for tree protection	MP1/ MP2	-	-	New
4.2	Strengthen tree protection on private lands not subject to the planning and building process				
4.2.1	Establish a private tree regulatory framework	MP2	-	-	$$
4.3	Strengthen tree protection on public lands and capital projects				
4.3.1	Update the 'Trees' by-law (public tree by-law)	MP2	-	-	$
4.3.2	Improve procedures for tree protection on capital projects	MP2	UTIL	High	New

Goal/Objective/Action		Timing	External Partners	Priority	Resources
Goal 5.	**Engage others in the urban forest to build awareness and develop a culture of stewardship**				
5.1	Develop a more collaborative and effective urban forest governance structure				
5.1.1	Establish an urban forestry interdepartmental working group	MP1	-	High	New
5.1.2	Establish an intermunicipal/interagency urban forest working group	MP2	CFIA, LC, SCRCA, UTIL, Other	-	New
5.1.3	Share urban forest data with other City departments and external partners	MP1/ MP2	CFIA, ENV, IND, SCRCA, UTIL	-	Existing
5.2	Build community awareness of the urban forest				
5.2.1	Enhance existing, and develop new, urban forestry educational materials	MP1	-	High	$
5.2.2	Partner with institutions, agencies, and organizations in urban forest research	MP3	GI, Other	-	$
5.3	Support partner and community engagement in urban forest stewardship				
5.3.1	Promote the 'free City tree' program	MP2	-	-	New
5.3.2	Develop a community-involved naturalization and stewardship strategy and partnerships	MP2	CMTY, ENV, IND, SCRCA, SEAC	High	$$
5.3.3	Provide private and community urban forest stewardship incentives	MP1/ MP2	CMTY, SEAC	-	$$
5.3.4	Develop a community-based urban forest monitoring program	MP3	ENV, IND	-	$
5.3.5	Develop an 'adopt-a-tree' program	MP3	CMTY, ENV	-	$
5.4	Advance reconciliation with Indigenous Peoples				
5.4.1	Explore and pursue opportunities to integrate Indigenous Peoples' traditional knowledge and cultural practices, and Indigenous community members, into urban forest policies, programs, activities, and practices	MP1	IND	High	$

Notes:

[1] – Subsequently every five years

[2] – Implementation cost TBD based on strategy outcomes

[3] – And/or in conjunction with Official Plan and/or Zoning By-law reviews

Implementation Table - by Management Period

Beginning in 2025, the Sarnia UFMP Strategic Action Plan is divided into three five-year management periods, covering the plan's 15-year horizon. The tables below present the UFMP action items according to the management period of scheduled implementation. Action items that call for a change in processes or procedures, or that establish new urban forestry programs, are not intended to be 'one-and-done'. Instead, these actions items are intended to be carried forward throughout the planning horizon and beyond following initial implementation or phase-in within in a defined management period. Additional details (e.g., leads, partners, resources, etc.) for each management period are presented in the Implementation Table above.

Management Period 1 (2025-2030)	
1.1.1	Expand the tree inventory to parks and other municipal lands
1.1.2	Operationalize and regularly update the tree inventory
1.2.1	Integrate urban forestry assets with the City's enterprise asset management systems
1.3.2	Re-assess urban forest performance metrics on a periodic basis and track UFMP progress
2.1.1	Reorganize and increase resources for the Forestry and Horticulture Services division
2.1.2	Pursue external urban forest program resourcing support
2.2.1	Develop tree maintenance standards and specifications
2.2.5	Conduct a priority tree risk assessment of trails and natural area edges
2.3.2	Develop an oak wilt rapid response plan and awareness campaign
3.1.1	Increase tree establishment to achieve 23% canopy cover in the urban area
3.1.2	Eliminate the tree planting backlog in new communities and operations
3.1.4	Target tree establishment in urban areas with below-average tree canopy cover and other priority areas
3.2.2	Improve tree establishment plan review for new developments

Management Period 1 (2025-2030) (cont'd)	
3.2.3	Ensure adequate resourcing for City-led tree establishment in new developments
3.2.5	Improve post-planting tree maintenance and monitoring
4.1.1	Develop new, and strengthen existing, tree protection policies, guidelines, and specifications
4.1.2	Develop a 'Tree Declaration' for municipal permits and consents
4.1.3	Strengthen development plan and building permit application review and implementation oversight
4.1.4	Develop a tree compensation formula and policy
4.1.5	Retain securities for tree protection
5.1.1	Establish an urban forestry interdepartmental working group
5.1.3	Share urban forest data with other City departments and external partners
5.2.1	Enhance existing, and develop new, urban forestry educational materials
5.3.3	Provide private and community urban forest stewardship incentives
5.4.1	Explore and pursue opportunities to integrate Indigenous Peoples' traditional knowledge and cultural practices, and Indigenous community members, into urban forest policies, programs, activities, and practices

Management Period 2 (2030-2035)	
1.3.1	Track change in urban forest land cover metrics
2.2.2	Establish a street tree pruning cycle
2.2.3	Establish a park tree pruning cycle
2.2.4	Implement a young tree structural pruning program
2.3.1	Develop an invasive species assessment and management plan
2.4.1	Develop a natural areas management strategy and site-specific management plans
3.1.3	Establish land use-based tree canopy cover targets for development sites
3.1.5	Establish a maintenance program for City-planted fruit trees and shrubs
3.2.1	Develop new, and strengthen and consolidate existing, tree establishment guidelines, standards, and specifications
3.2.4	Improve tree planting stock procurement practices
3.3.1	Increase tree taxonomic diversity in tree establishment programs
3.3.2	Undertake tree species performance trials
4.2.1	Establish a private tree regulatory framework
4.3.1	Update the 'Trees' by-law (public tree by-law)
4.3.2	Improve procedures for tree protection on capital projects
5.1.2	Establish an intermunicipal/interagency urban forest working group
5.1.3	Share urban forest data with other City departments and external partners
5.3.1	Promote the 'free City tree' program
5.3.2	Develop a community-involved naturalization and stewardship strategy and partnerships
5.3.3	Provide private and community urban forest stewardship incentives

Management Period 3 (2035-2040)	
5.2.2	Partner with institutions, agencies, and organizations in urban forest research
5.3.4	Develop a community-based urban forest monitoring program
5.3.5	Develop an 'adopt-a-tree' program

Monitoring – Metrics and Targets

The following table summarizes key metrics and targets that the City of Sarnia and its partners will monitor and pursue throughout the course of the UFMP planning horizon through the implementation of the action items. The timeframes for metric re-assessment and reporting, as well as for target achievement, are also outlined. Where known, existing baseline metrics are also presented.

Metric	Assessment Method	Assessment/ Reporting Freq.	Baseline	Target	Timeline for Achievement
Urban Tree Cover (UTC) – urban area only	Geospatial UTC analysis	MP2, then every 5 years	22%	23%	2050
Street tree pruning cycle	Program analysis	N/A	None	7 years	Within MP2
Park tree pruning cycle	Program analysis	N/A	None	10 years or better	Within MP2
Tree structural condition	Tree inventory analysis, trees in good/excellent structural condition	N/A	Street: 80% Park: Unknown	90%	2040
Tree health	Tree inventory analysis, trees in good/excellent health	N/A	Street: 92% Park: Unknown	95%	2040
Tree establishment	Program analysis	Annual	Ops and dev.: <400 (est'd) Private: Unknown	1,200	Within MP1
Tree inspection/ maintenance requests	Program analysis	Annual	~850/year	550/year	2035
Average time for service request completion (excl. emergency)	Program analysis	Annual	Unknown	1.5 months	2035
City-led community tree planting events per year	Program analysis	Annual	None	3	2035

Glossary

Arborist

A specialist in the selection, planting, and maintenance of trees and other woody plants.

Asset management (or asset management planning)

An ongoing and long-term process that allows municipalities to make the best possible investment decisions for their infrastructure assets. This includes building, operation, maintenance, renewal, replacement, and disposal. In many parts of Ontario, existing infrastructure is degrading faster than it is being repaired or replaced, putting services at risk. To help address this issue, the Province implemented the *Asset Management Planning for Municipal Infrastructure Regulation, O. Reg. 588/17*, effective January 1, 2018.

Best practices (best management practices)

Procedures accepted, prescribed or demonstrated by scientific and technical research or industry peers, as producing optimal results and proposed as standards suitable for widespread adoption.

Climate change adaptation

Actions taken by to adjust to the impacts of climate change.

Equity

In an environmental context—protection from environmental risks and access to environmental benefits and services, irrespective of income, race, and other characteristics.

Function

In the context of urban forestry, the capacity of trees to provide a diverse range of environmental, economic, and societal and health benefits and services to community members.

Genus (plural genera)

A principal taxonomic category of organisms that ranks above species and below family, and is denoted by a capitalized Latin name, e.g., *Acer* (maple).

Greenfield

Lands within settlement areas (not including rural settlements) but outside of delineated built-up areas that have been designated in an Official Plan for development and are required to accommodate forecasted population growth. This term typically, but not always, refers to former agricultural lands designated for future development.

Green infrastructure

The natural vegetative systems and green technologies that provide society with a multitude of economic, environmental and social benefits. These may include urban forests and woodlands; bioswales, engineered wetlands and stormwater ponds; wetlands, ravines, waterways and riparian zones; meadows and agricultural lands; green roofs and green walls; urban agriculture; parks, gardens and grassed areas; soils in volumes and qualities adequate to sustain green infrastructure and absorb water; technologies such as porous pavements, rain barrels and cisterns; and others.

Invasive species

A plant, animal or pathogen that has been introduced to an environment where it is not originally occurring (i.e., native) and where it may become a nuisance or detriment to indigenous species or ecosystem functions, commonly through rapid spread and/or population growth.

Inventory (tree)

A tabular and/or geospatial database containing attributes pertaining to the entirety or a subset of the tree population in a defined area. A tree inventory is typically used to inform urban forest maintenance operations and long-term planning.

Leaf area

The surface area of a leaf or leaves. The quantity and value of most urban forest services increase with an increase in the leaf area of trees in the urban forest.

Potential Plantable Area (PPA)

Land that is suitable for indefinite use as tree habitat and not constrained by competing existing or projected site uses or land use values.

Sequestration (carbon)

The process of removal of atmospheric carbon dioxide gas (CO_2) by plant tissues. In the context of urban forestry, carbon sequestration is typically expressed on an annual basis as the difference in estimated carbon storage between year x and year x+1.

Species

A group of living organisms consisting of similar individuals capable of exchanging genes or interbreeding. The principal natural taxonomic unit, ranking below a genus and denoted by a binomial, e.g., *Acer platanoides* (Norway maple).

Stewardship

The careful and responsible management of something entrusted to one's care.

Storage (carbon)

A measure of the carbon that is stored within above-ground and below-ground woody vegetation. Trees and other plants sequester atmospheric carbon dioxide gas through photosynthesis and store carbon in stems and roots. Stored carbon can be released back into the atmosphere as plants die and decompose, when it can reform into carbon dioxide gas and contribute to climate change. Carbon sequestered by trees can be permanently stored in wood products.

Structural pruning

Tree pruning with a primary objective of developing high-quality tree structure, typically characterized by a strongly dominant central leader, adequately spaced and well-attached branches, and appropriate stem taper.

Tree

A long-lived, shedding, woody perennial plant, typically having one dominant trunk and capable of attaining a considerable mature height.

Urban forest

The mix of the remnants of native forest cover and planted trees and vegetation on all private and public lands in and around the built-up areas. The urban forest includes municipally-owned street, park and facility trees, trees in valleys and woodlands, and privately-owned trees on residential properties or on commercial, industrial, and institutional lands, among others.

Urban tree canopy cover

The spatial extent or coverage of trees in a defined area, commonly expressed as a simple area (e.g., hectares) or as a percentage of total land area.