

Staff Report



To	Committee of the Whole
Service Area	Public Services
Date	Tuesday, March 7, 2023
Subject	One Canopy Tree Planting Strategy

Recommendation

1. That the One Canopy Tree Planting Strategy (TPS) dated January 2023, included as Attachment-1 to this report, and the proposed actions and recommendations noted within the plan be approved.
 2. That the funding requirements for the One Canopy Tree Planting Strategy be considered in future operating and capital budgets in order to implement the recommendations of the strategy.
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Executive Summary

Purpose of Report

To provide the One Canopy Tree Planting Strategy (TPS), the Strategy, to Council and seek approval to implement the plan's recommendations. The Strategy is a roadmap to progress towards, and ultimately, achieve 40 per cent canopy cover. The Strategy was identified as a priority in the Council approved, second phase of Guelph's Urban Forest Management Plan (UFMP). It builds on the potential plantable spaces analysis completed as part of the 2019 Urban Forest Study (UFS) and considers existing programs, partnerships, funding sources, the existing framework of urban forest canopy and natural heritage policies, plans, guidelines and strategies, community priorities, gaps, and opportunities for tree planting efforts.

The Tree Planting Strategy builds on information from the Urban Forest Study to address how we'll meet Guelph's canopy cover targets by planting on public and private land, with the community and sharing ownership and responsibility of strategy goals and outcomes.

Key Findings

- Guelph has enough land, suitable for tree planting, to support 40 per cent canopy cover target
- The current goal of 40 per cent will not be achieved by 2031 with current planting efforts
- More than half of Guelph's land available for tree planting lies in private ownership and efforts on the City's land alone will not reach the target
- The urban forest canopy cover is vulnerable to pests, disease, climate change, and development

- Incentives, outreach, education, partnerships, and support for the community are needed to increase tree planting across the city
- Increased funding is needed to support planting efforts to meet the canopy target
- Barriers such as cost, conflicting priorities, and maintenance burden, to planting and establishing trees exist
- Quality space for planting and growing trees is limited
- Increasing and diversifying urban forest cover is key to providing optimal benefits
- The urban forest is a critical component of green infrastructure that has the potential to mitigate climate change and contribute to reducing carbon emissions
- Ecosystem benefits accrue as a result of tree planting in urban environments
- Guelph's tree canopy is not evenly or equitably distributed
- Preserving and creating new room for trees (amenity space) as the city grows will prove to be challenging as our community priorities compete for land

Strategic Plan Alignment

The One Canopy Tree Planting Strategy aligns with all of the Strategic Plan priorities and associated directions by supporting the sustainability and resilience of the City's tree canopy cover to prepare for the effects of climate change as Guelph continues to develop and grow, adding value to our community, building partnerships with the community and organizations, helping businesses and developments meet their sustainability goals, growing new natural heritage assets, and contributing to the greening of our transportation corridors. The alignment is described in further detail in the report below.

The implementation of the Strategy is intended to increase planting efforts on both City and private land to achieve 40 per cent canopy cover. The current reported key performance indicator for urban forest sustainability is tree canopy cover at 23.3 per cent.

Financial Implications

The initial investment for planting trees and the costs associated with maintaining older trees are outweighed by the benefits provided over a tree's lifetime, especially during the mature phase of life.

The cost to implement the One Canopy Tree Planting Strategy depends on factors such as the rate of tree loss, rate of tree replacement, and the timeframe over which the cost is spread. The estimated annual cost associated with achieving a 40 per cent tree canopy by 2070 is \$3.6 million, of which \$1.4 million is related to capital and \$2.2 million is for the associated operating impacts.

The City's current level of tree planting has an average capital cost of \$275 thousand per year for tree purchases. The Operating costs associated with this investment is \$412 thousand annually for the ongoing maintenance required to establish newly planted trees.

With the estimated annual cost requirement of \$3.6 million versus a current annual budget of \$687 thousand, an additional \$2.9 million annually will be required to meet the 40 per cent tree canopy cover.

The One Canopy Tree Planting Strategy will be considered with the other master plans and strategies and will be viewed with a corporate lens to incorporate the

City's strategic goals. The plan will also be compared to our existing capital and operating plans considering current fiscal constraints and our capacity to deliver. The financial information included is intended to be a high-level estimate that will be refined as it is incorporated into the overall corporate plan and multi-year budget process.

Report

Introduction

Guelph needs to plant at least 3.6 million trees, covering land area of 1,492 hectares, to achieve 40 per cent tree canopy cover by 2070.

The City of Guelph has adopted the goal of increasing the city's canopy cover to 40 per cent to maximize the social, environmental, and economic benefits derived from trees. Guelph's Official Plan requires doubling our current tree canopy in nine years. Land available on City-owned land suitable for planting trees and current planting efforts are not enough to achieve our targets. Increasing planting efforts will require substantial investment, strategic planning, and collaboration with the community, residents, and private landowners.

Canopy cover in Guelph is used an indicator of a sustainable, livable, green city. In 2019, Guelph's urban forest canopy cover was reported to be healthy and diverse, covering 23.3 per cent of the land area of the city. For the purposes of this report, Urban Forest refers to all the tree and associated woody vegetation on both private and public lands in the City of Guelph. The urban forest contributes to the social, environmental, and economic well-being of our city.

If action is not taken, there is a risk that Guelph's tree canopy will decline. A 2012 study found that on average, the tree canopy in urban areas within the United States decreases at a rate of approximately 0.2 per cent per year. Managing growth of our city, increasing threats of climate change, pests and invasives, and decline in the quality and quantity of space suitable to plant trees will make it ever more difficult to grow trees in the city without a strategic approach for both replacing canopy losses and establishing new canopy.

Through the Strategy we explored the current condition of the canopy, modelled the future forest, engaged with the community and stakeholders, evaluated opportunities and alternatives to achieve the canopy target, and developed an action plan.

The objectives of the strategy are:

- Increase canopy cover
- Advance environmental justice and equity
- Improve forest structure and function
- Increase quality of sites for optimal tree growth
- Increase resilience to climate change and other threats
- Increase coordination across City departments and external agencies
- Monitor and manage (use adaptive management to make evidence-based decisions)
- Engage, educate, and empower community members (celebrate successes)
- Invest in cost effective green infrastructure
- Prioritize tree planting based on benefits

Alignment with the Corporate Strategic Plan

The One Canopy Tree Planting Strategy aligns with the following Strategic Plan priorities and associated directions:

Sustaining our future

- Create and execute an ambitious and achievable climate adaptation plan
- Plan and design an increasingly sustainable city as Guelph grows
- Mitigate climate change by reducing Guelph's carbon footprint

Investing in and increasing Guelph's urban forest canopy cover will build a sustainable and resilient urban forest and prepare for the effects of climate change as Guelph continues to develop and grow. We expect to enhance and increase the area of new tree canopy cover across the City to meet our 40 per cent target within the next four to five decades to increase the benefits provided by trees and green infrastructure and to mitigate the impacts of climate change.

Powering our future

- Help businesses succeed and add value to the community

Powering our future strategic priority through policies that support a healthy economy and are consistent with environmental priorities as the recommendations will lead to:

- Planting more trees in boulevards and in increasingly dense urban developments by implementation of green infrastructure technology through alternative design and low impact development standards
- Increased tree planting around and on commercial and service lands to reduce their environmental impact and increasing property values

Working together for our future

- Improve how the City communicates with residents and delivers services
- Develop a long-term financial and resource strategy that is achievable and affordable

Working together for our future strategic priority through exploring new funding options and partnerships to ease taxes for residents and businesses will lead to:

- Developing strategic partnerships with stakeholders to improve service delivery
- Improving the way we deliver services and information to residents and property owners
- Build partnership and allow the City to help businesses achieve their sustainable goals

Building our future

- Maintain existing community assets and secure new ones

Building our future strategic priority through continuing working to develop new urban forest assets that respond to Guelph's growing and changing social, economic, and environmental needs. The urban forest is an asset with specific structural and functional value (i.e., goods and services) that provides social, economic, and environmental benefits. The urban forest is a key component of the City's natural heritage assets.

Navigating our future

- Improve local transportation and regional transit connectivity

Tree planting along walkways, cycle paths, multi-use paths and trails greatly improves the comfort and experience for users by providing shade and in some cases separation from vehicles.

Contrary to the previous statement, the recommendations contained in this report may contradict this pillar as trees often come in conflict with developing new, or improving existing transportation corridors (e.g., boulevards, medians, and rights-of-ways). This potential contradiction can be mitigated through the development and implementation of a “complete streets” strategy, which incorporates the needs of all roads users and includes street trees within standard road cross-sections.

Strategic directions and recommendations

The direction of the Strategy was guided by the UFMP, Strategic Plan, and 2019 UFS. Recommendations of the Strategy were based on the relevant UFS recommendations and most recent community engagement for this project and include:

More canopy is required to achieve our targets

- Increased planting efforts on both public (City and other) and private lands

Plant strategically

- Use planting prioritization maps to inform tactical and operational planning for City tree planting programs
- Prioritize planting opportunities in and adjacent to the Natural Heritage System (NHS) to enhance ecological function

We need to leave spaces for trees to grow

- Identify and implement best practices in zoning and urban design that maximize quality growing space on public and private land
- Use criteria in the Tree Technical Manual to evaluate and prioritize high quality planting sites in rights-of-way and other City lands
- Identify opportunities to increase hard surface planting in highly urbanized land use areas
- Identify options for improving the preservation of quality pervious growing space and soil resources in new residential and nonresidential development
- Ensure all future growing space designated for trees in new residential and non-residential development is high quality, including sufficient soil volume, quality, and crown space to support long-term growth

We need to think about the future/plan for climate change

- Extend the time horizon for achieving 40 per cent canopy to 46 years (2070)
- Implement proactive maintenance and inspection programs to optimize the services delivered by street trees, including maintenance and watering of newly planted trees
- Use the results of the canopy cover and plantable space analyses to develop canopy cover targets for implementation at the project or site level and integrate targets into Guelph’s policies, by-laws or built form guidelines or other guiding documents as appropriate

- Include consideration of current species abundance and leaf area as well as vulnerability to pests (and climate vulnerabilities) in species selection as part of a comprehensive planting strategy
- Increase structural diversity in the forest through strategic planting and species mixes to improve resilience to extreme weather events
- Identify populations of senescent street trees where underplanting would help maintain urban forest benefits and increase resilience to storm events
- Increase the rate of street tree planting to ensure a sustainable street tree population in the City

Collaboration is key to our success

- Fund and implement an outreach campaign with landowners and community organizations in Guelph to build partnerships and expand the urban forest on private lands
- Increase outreach, education, incentives, and reduce barriers for tree planting on residential properties
- Examine opportunities for extending stormwater credit calculations based on per cent hard surface to include per cent relative tree canopy to incentivize tree planting on industrial, commercial, and institutional properties

We need to monitor and measure our progress

- Monitor forest and land cover change regularly using open-source tools developed by the USDA Forest Service (i-Tree) or other proven methods
- Monitor and measure tree planting across the city to better understand effectiveness of efforts
- Set canopy targets and measure milestones at 10-year intervals

Implementation actions

The implementation plan summarizes the priority actions decided upon in the strategy to help the City achieve the target of 40 per cent tree canopy cover. The actions are split first by goals, then strategy, and followed by actions. Additionally, each action is associated with the related objective (or desired outcome). All budget implications will be incorporated into the 2024 four-year operating budget process as well as the 10-year capital budget and forecast. The strategy has identified a key number of findings, gaps and opportunities that led to the actions developed for the next five years.

Enhance and expand canopy cover

Develop sustainable funding model
 Table 1: Develop sustainable funding model

#	Action	Objective	Timeframe	Budget status
1	Undertake a comprehensive review of available and potential funding sources to develop 10-year forecast tree planting budgets in support the tree planting strategy	Invest in cost effective green infrastructure	Short-term	Presently supported in operating budget

#	Action	Objective	Timeframe	Budget status
2	Incorporate tree related costs into capital and infrastructure projects	Invest in cost effective green infrastructure	Short-term	Allocate through 10-year capital forecast
3	Continue to pursue funding for tree planting initiatives and projects (e.g., grants)	Invest in cost effective green infrastructure	Medium-term	Presently supported in operating budget

Develop a strategic planting plan

Table 2: Develop a strategic planting plan

#	Action	Objective	Timeframe	Budget status
4	Develop annual operating tree planting program for Parks (Forestry and natural areas) – above and beyond replacements	Increase canopy cover and prioritize tree planting based on benefit needs	Short-term	To be recommended in future capital and/or operating budget
5	Develop and implement annual planting plans targeting high quality sites (soil) and identify low quality sites for soil amendment program (capital project opportunity)	Increase quality of sites for optimal tree growth	Medium-term	Presently supported in operating budget
6	Develop a planting plan prioritizing vulnerable populations ¹	Advance environmental justice and equity and prioritize tree planting based on benefit needs	Medium-term	Presently supported in operating budget

¹ Vulnerable populations for this purpose a general term meaning with hospitals, schools, hospice facilities, low income, visible minorities.

#	Action	Objective	Timeframe	Budget status
7	Develop and implement annual planting plans with targets to plant species missing successional age classes and mature canopy focusing on species with low maintenance requirements	Improve forest structure and function and prioritize tree planting based on benefit needs	Medium-term	Presently supported in operating budget
8	Develop and implement annual planting plans targeting planting opportunities created through invasives management (ecological restoration/ERIC)	Increase resilience to climate change and other threats and prioritize tree planting based on benefit needs	Short-term	Presently supported in operating budget
9	Work with Engineering to identify opportunities to incorporate tree planting for capital roads and infrastructure projects (e.g., cycling infrastructure)	Increase coordination across City departments and external agencies and prioritize tree planting based on benefit needs	Medium-term	Presently supported in operating budget
10	Coordinate with Alectra Utilities to develop appropriate planting plans and list of trees within tree-height distance of power lines	Increase coordination across City departments and external agencies and prioritize tree planting based on benefit needs	Medium-term	Presently supported in operating budget

Leverage and develop new tree planting programs (non-regulatory tools)

Table 3:Leverage and develop new tree planting programs (non-regulatory tools)

#	Action	Objective	Timeframe	Budget status
11	Develop formal tree planting program	Increase canopy cover	Medium-term	Presently supported in operating

#	Action	Objective	Timeframe	Budget status
				budget
12	Increase capacity of City (staff) to coordinate and implement new tree planting programs	Increase canopy cover	Medium-term	To be recommended in future capital and/or operating budget
13	Explore tree sourcing options such as growing contracts and partnerships with other growers (e.g., Arboretum, Green Legacy)	Increase canopy cover	Short-term	Presently supported in operating budget
14	Leverage Urban Forest Stewardship Group and Urban Forest Working Group to support City and community initiatives	Increase coordination across City departments and external agencies	Short-term	Presently supported in operating budget

Leverage or develop new regulatory tools

Table 4: Leverage or develop new regulatory tools

#	Action	Objective	Timeframe	Budget status
15	Incorporate canopy targets into development/site plan guidelines and explore opportunities for tree planting of City property, especially Parks	Increase canopy cover and prioritize tree planting based on benefit needs	Long-term	Presently supported in operating budget
16	Improve planting standards on all development and capital roads and infrastructure projects through the continued implementation of the TTM	Increase canopy cover	Short-term	Presently supported in operating budget
17	Develop soil conservation and management guidelines	Increase quality of sites for optimal tree growth	Long-term	To be recommended in future capital and/or operating budget

#	Action	Objective	Timeframe	Budget status
18	Develop effective climate mitigation strategy including shade and urban heat island policies	Increase resilience to climate change and other threats	Long-term	To be recommended in future capital and/or operating budget
19	Review existing regulatory tools (guidelines) and align with Strategy/climate mitigation strategy (climate mitigation)	Increase resilience to climate change and other threats	Medium-term	Presently supported in operating budget
20	Review and update species list in TTM and other guidelines for species diversity and function to meet biodiversity targets as they apply to a climate vulnerability (climate adaptation)	Increase resilience to climate change and other threats	Long-term	Presently supported in operating budget
21	Review existing and develop regulatory tools (policies and guidelines) for species diversity and tree establishment requirements	Increase resilience to climate change and other threats	Long-term	Presently supported in operating budget

Educate, engage, and empower

Increase number of community participants in City tree planting events

Table 5: Increase number of community participants in City tree planting events

#	Action	Objective	Timeframe	Budget status
22	Increase number of annual City events	Increase canopy cover	Medium-term	To be recommended in future capital and/or operating budget
23	Increase outreach/advertising	Engage, educate, and empower community members (celebrate successes)	Medium-term	Presently supported in operating budget
24	Offer incentives to for participation	Engage, educate, and empower community members (celebrate successes)	Medium-term	Presently supported in operating budget

Increase number of community participants independent of the City (on private or other public lands)

Table 6: Increase number of community participants independent of the City (on private or public lands)

#	Action	Objective	Timeframe	Budget status
25	Develop urban forest grant and incentives program for private (residential and ICI) properties	Engage, educate, and empower community members (celebrate successes)	Medium-term	To be recommended in future capital and/or operating budget

#	Action	Objective	Timeframe	Budget status
26	Continue to fund stormwater tree rebate with third party organization to deliver workshops and plant native trees on residential properties and expand program to include ICI property	Engage, educate, and empower community members (celebrate successes)	Short-term	Presently supported in capital budget
27	Host tree giveaway events where residents can receive free or subsidized native trees (small stock sizes)	Engage, educate, and empower community members (celebrate successes)	Medium-term	To be recommended in future capital and/or operating budget
28	Develop and implement a Communications plan for targeted outreach (for private property owners in areas identified as high planting priority, to address perception barriers to planting on private property or on ROW in front of properties, in areas of low-income/low canopy equity and other objectives)	Engage, educate, and empower community members (celebrate successes)	Medium-term	Presently supported in operating budget
29	Develop public tree stewardship (watering) campaign with offer of watering tools (i.e., gator bags)	Engage, educate, and empower community members (celebrate successes)	Short-term	Presently supported in operating budget
30	Provide tree planting support to private property owners as well as ICI: workshops, website information, benefits tool calculator, links to programs, partners, and resources, etc.	Engage, educate, and empower community members (celebrate successes)	Short-term	To be recommended in future capital and/or operating budget

#	Action	Objective	Timeframe	Budget status
31	Provide resources/tools to community groups to water and mulch newly planted trees	Engage, educate, and empower community members (celebrate successes)	Short-term	To be recommended in future capital and/or operating budget

Increase collaboration

Table 7: Increase collaboration

#	Action	Objective	Timeframe	Budget status
32	Build on existing partnerships with school boards and pursue new partnerships (ICI), places of worship, businesses, etc. to support tree planting on their properties.	Increase coordination across City departments and external agencies	Medium-term	To be recommended in future capital and/or operating budget
33	Collaborate with GRCA around tree planting initiatives and identify opportunities for City or community planting events	Increase coordination across City departments and external agencies and prioritize tree planting based on benefit needs	Medium-term	Not required
34	Explore opportunities to partner or support tree planting or nature-based initiatives with organizations/agencies supporting vulnerable populations	Engage, educate, and empower community members (celebrate successes)	Medium-term	Not required
35	Partner with Indigenous community to integrate Indigenous Forest management principles into tree planting practices (e.g., species selection, species/cultural values)	Engage, educate, and empower community members (celebrate successes)	Medium-term	Not required

Monitor, measure, and report

Table 8: Monitor, measure, and report

#	Action	Objective	Timeframe	Budget status
36	Purchase leaf-on imagery and undertake spatial canopy cover analysis every five years	Monitor and manage (use adaptive management to make evidence-based decisions)	Long-term	Presently supported in capital budget
37	Continue to undertake comprehensive urban forest study every 10 years (includes canopy cover analysis, ecosystem service and valuation modelling, and state of the urban forest report)	Monitor and manage (use adaptive management to make evidence-based decisions)	Long-term	Presently supported in capital budget
38	Develop a protocol for tracking and documenting the number of new trees planted, including but not limited to development, capital projects and planting events on both City and non-City-owned lands	Monitor and manage (use adaptive management to make evidence-based decisions)	Short-term	Presently supported in operating budget
39	Develop a protocol to monitor the quantity, quality, and survival of tree plantings	Monitor and manage (use adaptive management to make evidence-based decisions)	Short-term	Presently supported in operating budget
40	Undertake canopy change assessment to determine Guelph specific development and natural mortality rates	Monitor and manage (use adaptive management to make evidence-based decisions)	Long-term	Presently supported in capital budget

#	Action	Objective	Timeframe	Budget status
41	Update tree planting strategy with subsequent urban forest studies	Monitor and manage (use adaptive management to make evidence-based decisions)	Long-term	Presently supported in operating budget
42	Continue to provide annual tree planting updates to Council and the community	Engage, educate, and empower community members (celebrate successes)	Short-term	Presently supported in capital budget

Financial Implications

The initial investment for planting trees and the costs associated with maintaining older trees are outweighed by the benefits provided over a tree’s lifetime, especially during the mature phase of life.

The cost to implement the One Canopy Tree Planting Strategy depends on factors such the rate of tree loss, rate of tree replacement, and the timeframe over which the cost is spread. The estimated annual cost associated with achieving a 40 per cent tree canopy by 2070 is \$3.6 million, of which \$1.4 million is related to capital and \$2.2 million is for the associated operating impacts.

The City’s current level of tree planting has an average capital cost of \$275 thousand per year for tree purchases. The Operating costs associated with this investment is \$412 thousand annually for the ongoing maintenance required to establish newly planted trees.

With the estimated annual cost requirement of \$3.6 million verses a current annual budget of \$687 thousand, an additional \$2.9 million annually will be required to meet the 40 per cent tree canopy cover.

The One Canopy Tree Planting Strategy will be considered with the other master plans and strategies and will be viewed with a corporate lens to incorporate the City’s strategic goals. The plan will also be compared to our existing capital and operating plans considering current fiscal constraints and our capacity to deliver. The financial information included is intended to be a high-level estimate that will be refined as it is incorporated into the overall corporate plan and multi-year budget process.

Consultations

Internal Engagement

The Strategy was developed in collaboration with the City’s interdepartmental Tree Team, with consists of key staff across many departments. Input from other City

staff in Parks, Environmental Planning, Policy Planning, Finance and Engineering, ensured a collaborative approach.

External engagement

External engagement included the community, Natural Heritage Advisory Committee, the City's Urban Forest Working Group, Grand River Conservation Authority, and Indigenous Treaty partners. Consultation took the form of stakeholder meetings, public workshops, advisory committees of Council, survey, and online engagement tools.

Staff incorporated feedback data to inform the Strategy.

Key messages that came out of engagement included:

- Improve outreach and education
- Empower the community
- Improve tree establishment practices
- Prioritize space for trees
- Monitor tree planting efforts
- Prepare for climate change
- Review or develop new policies related to tree planting

Community feedback from the UFMP update in 2020 was also included.

The decision of Council will be communicated in various ways including social media, the City's website and City-led events.

Attachments

Attachment-1 One Canopy Tree Planting Strategy, January 2023

Attachment-2 Council Presentation

Departmental Approval

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