



URBAN FOREST STRATEGY

November 25, 2013



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1. INTRODUCTION

The Urban Forest has been defined as trees, forests, greenspace and related abiotic, biotic and cultural components in and around cities and communities. It includes trees, forest cover and related components in the surrounding rural areas (as defined in the *Canadian Urban Forest Strategy*). Urban Forestry was defined by Jorgensen in 1974 and refined by Deneke in 1993 as:

“The sustained planning, planting, protection, maintenance, and care of trees, forests, greenspace and related resources in and around cities and communities for economic, environmental, social, and public health benefits for people. The definition includes retaining trees and forest cover as urban populations expand into surrounding rural areas and restoring critical parts of the urban environment after construction. Expansion at the urban/rural interface raises environmental and public health and safety concerns, as well as opportunities to create educational and environmental links between urban people and nature. In addition, urban and community forestry includes the development of citizen involvement and support for investments in long-term on-going tree planting, protection, and care programs.”

An Urban Forest Strategy is a policy framework that sets broad direction for forest policy and makes forest sustainability the primary objective of forest management. To achieve long-term forest sustainability can be far more complex in urban areas than in the natural environment due to the variation in land use, ownership, abiotic factors and competing social and economic interests. Some of the key components of the policy framework that have been developed and implemented include; the Tree Preservation By-law, Tree Protection By-law, Tree Protection Manual, Barrie Standard Details, ISA Best Management Practices, Heritage Tree Policy and the Tree Appraisal Policy, *etc.*

The Urban Forest Strategy will direct the creation of an Urban Forest Management Plan for the City of Barrie. This Plan will:

- i. Provide direction on all aspects of the urban forest program;
- ii. Set goals and objectives for the long term sustainability of the urban forest;
- iii. Set measurable targets for success; and
- iv. Project short and long term resource requirements to meet goals.

The Urban Forest provides a variety of social, environmental and economic benefits to the citizens of Barrie. These benefits are well researched and published, and relate to a variety of measurable indicators of urban forest health. Ideally, urban forest managers will attempt to optimize all of the benefits, rather than maximizing any one to achieve the best value for the “services” that the urban forest provides. A basic Venn diagram (next page) illustrates the overlap of the social, environmental and economic interactions.

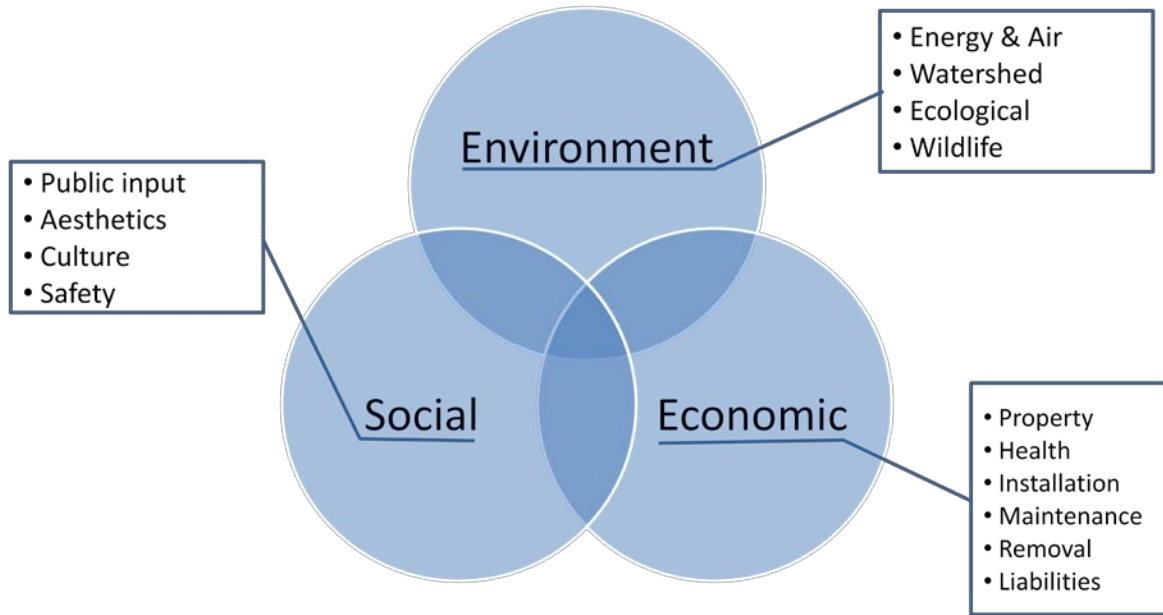


Figure 1. A Venn diagram illustrates the overlapping and often dichotomous values.

2. CURRENT FOREST CONDITION

The current forest condition or status of forest resources (including street trees, parks and open space trees, City owned woodlots in parks and environmental protection areas as well as all trees on private land within City limits) is the basis for all short and long term decision making for Barrie's urban forest. The base information on forested areas and individual trees (both private and public) was collected in 2007, however little detailed information on species composition, age class or condition has been collected. The street tree inventory is the most detailed; however it is based on a non-spatial, tabular database, and is in the process of being converted to a geographic information system inventory. This section describes the general information on the current forest inventory.

2.1 Forested Areas

The total mapped forested areas on both private and public land is 1,595 hectares, or 19.6% of the total land area within the City of Barrie (Figure 2). Of this total, 601 hectares (38%) are in city ownership and 923 hectares (58%) are in private ownership (including school boards), and 71 hectares (4%) are owned by the County of Simcoe. City owned forest is found within parkland and environmental protected areas that are mainly bordered by residential properties. There are currently 145 kilometers of city owned forest edge that border with private property boundaries.

The majority of privately owned forests are within the newly annexed lands (agricultural), the Bear Creek Wetland, or within smaller scattered woodlots across residential or undeveloped lands. A component of the privately owned forest is on or partially on residential properties. The City does not have detailed forest inventory data for the majority of these forested areas (specifically private lands). Ecological Land Classification has been completed at the landscape level for all natural areas within the City.

Many municipalities have set targets for canopy area in their long term strategic goals. The current forest cover is mapped at 19.6% of the land area in Barrie, while current estimates of canopy cover is around 23-25%. An actual measurement of total canopy area (forested area plus individual trees) has never been completed for the City of Barrie.

2.2 Individual Trees

Within the City of Barrie there are approximately 140,000 individual trees (both private and public) mapped in the GIS database (outside of forested or closed canopy areas). The largest component (93,000) of these individual trees is on private property landscapes (residential and commercial property). There are approximately 14,000 individual mapped trees in City parkland and 33,000 trees on city boulevards. The current tree inventory has a total of 93 different species and cultivars of trees.

Individual trees in city parkland is mainly mapped, however information on these trees are limited, and only detailed in higher profile parks such as the waterfront and Sunnidale Park.

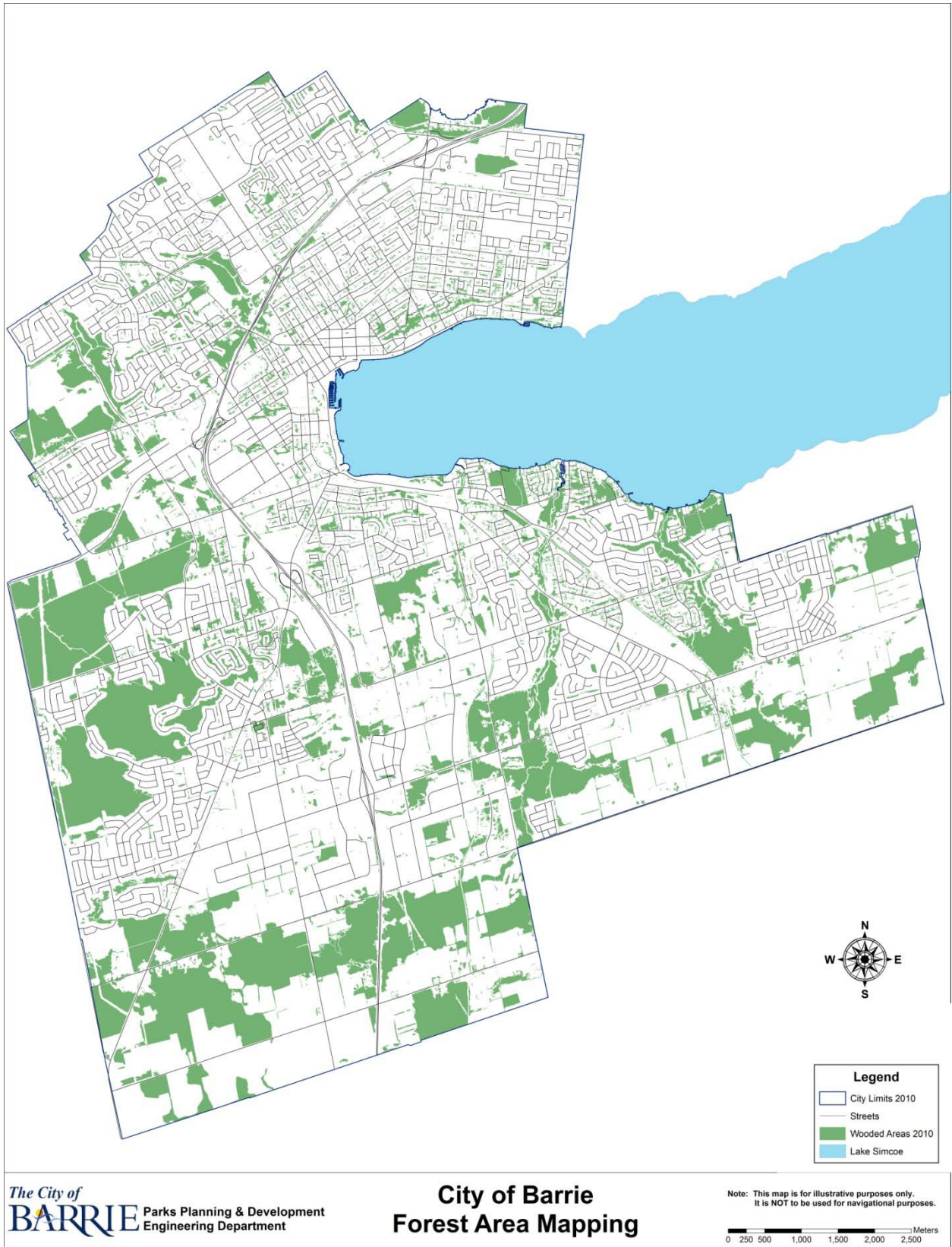
2.3 Street Tree Inventory

The street tree inventory was established in the Tree Inventory Management Software (TRIMS) in 2000 and updated on a continual basis throughout the year as trees are planted, inspected, pruned, removed etc. Since 2004, the inventory has grown from approximately 22,000 trees to over 33,000 trees as a result of new subdivision development. Due to the large expansion of new subdivisions over a relatively short period of time, the inventory of street trees is unbalanced, with 90% of the trees being relatively young in age (Figure 3).

Categorizing the species of trees on the streets by their biological maximum attainable size, there is an approximately even split of medium and large species of trees, with a small component of ornamental or “small” trees (Figure 4). These smaller trees are used in situations where growing space is limited (under overhead wires, limited soil volume in the boulevard, etc).

Maple is the predominant street tree (50%), with Lindens (10%) and Ash (10%) being the next most common genus of street tree (Figure 5). Over the last decade, several over-planted species have been reduced in proportions through the increased planting of other varieties of trees, replacement of over-abundant tree species when they die with alternative species and designing streetscape plans for new subdivisions with a greater mix of species than previously. This has resulted in the notable reduction of the abundance of Norway Maples (non-cultivar) in the inventory from 39% of the total in 2004 to 25% of the current total (-14%, Figure 6).

The city street tree inventory is fairly complete, however requires continual updates and maintenance, as well as inspection of trees that have not had work completed on within the last 7 years.



The City of **BARRIE** Parks Planning & Development
Engineering Department

City of Barrie Forest Area Mapping

Note: This map is for illustrative purposes only.
It is NOT to be used for navigational purposes.

0 250 500 1,000 1,500 2,000 2,500 Meters

Figure 2. Forest Cover and Tree Inventory Map

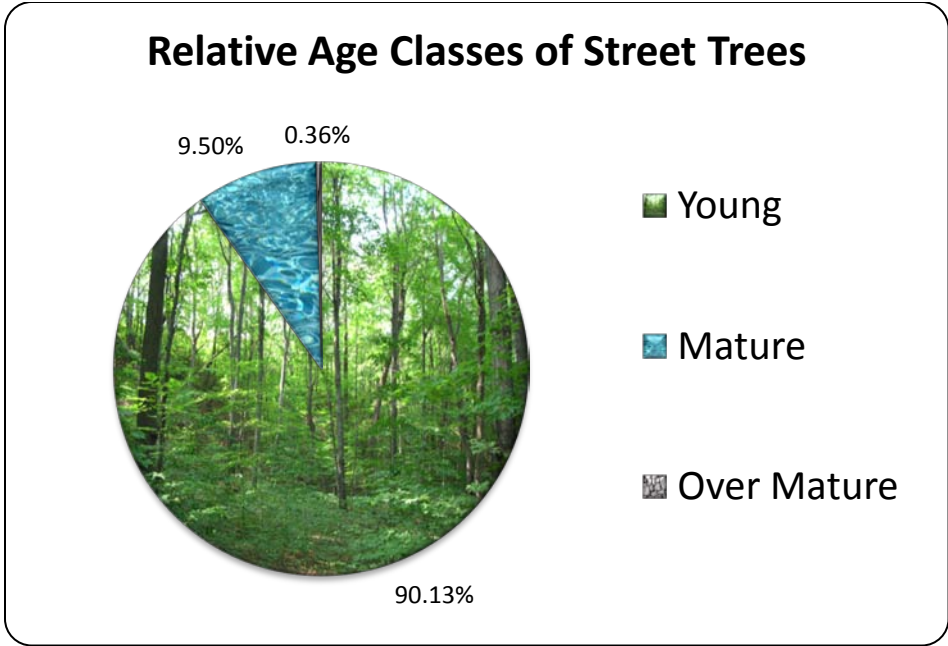


Figure 3. Relative age classes of street trees.

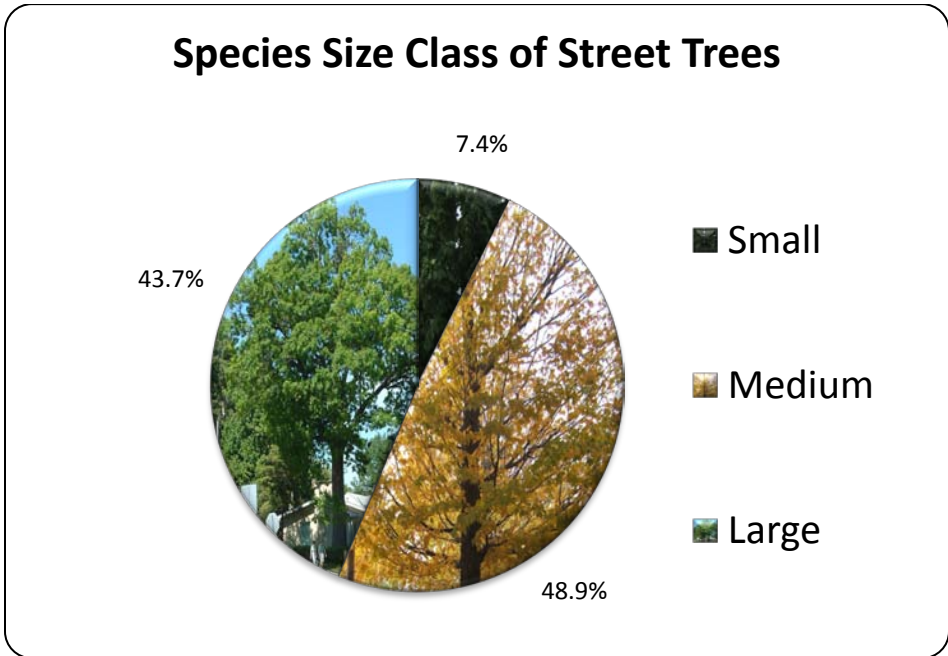


Figure 4. Species size classes of street trees (categorized by maximum biological size for species).

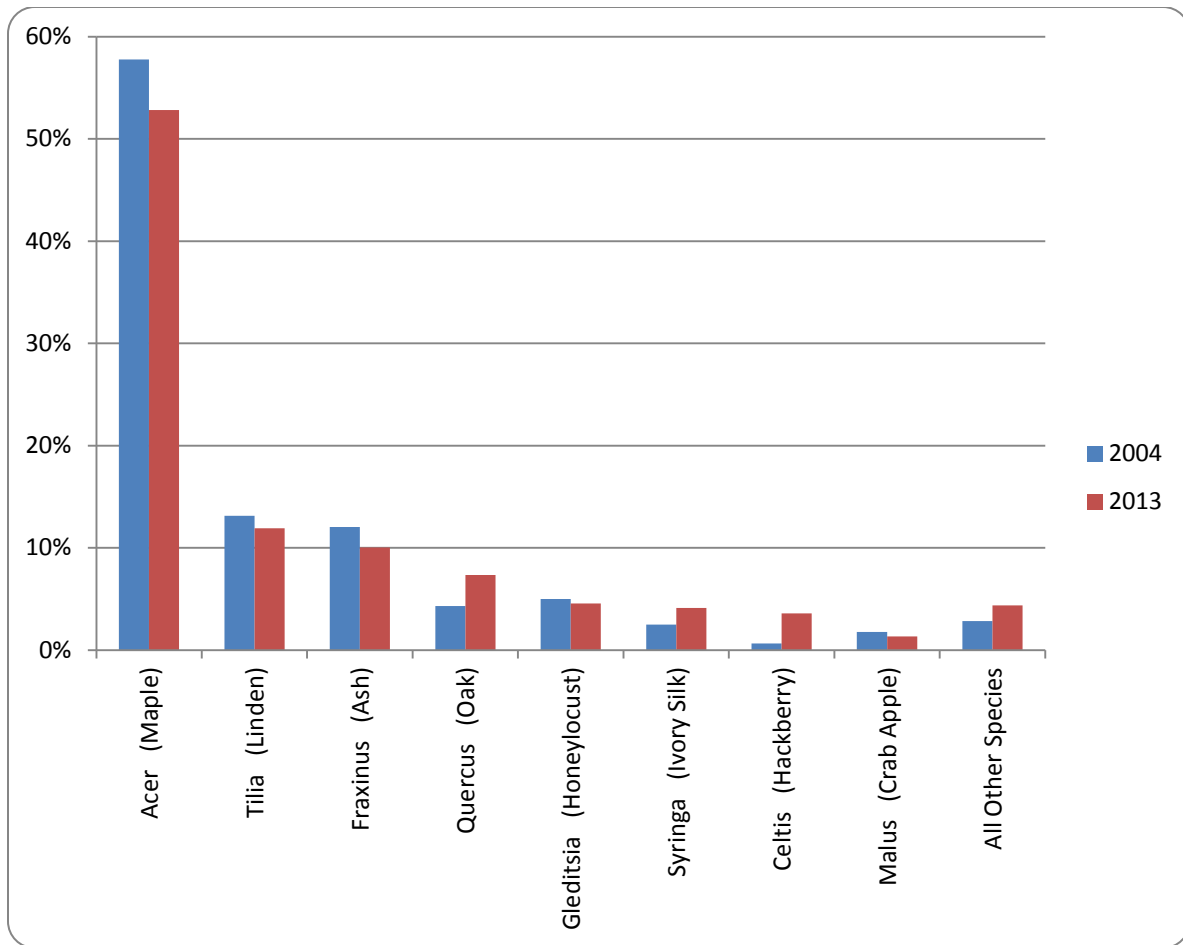


Figure 5. Percent of genus in street tree inventory; changes from 2004-2013.

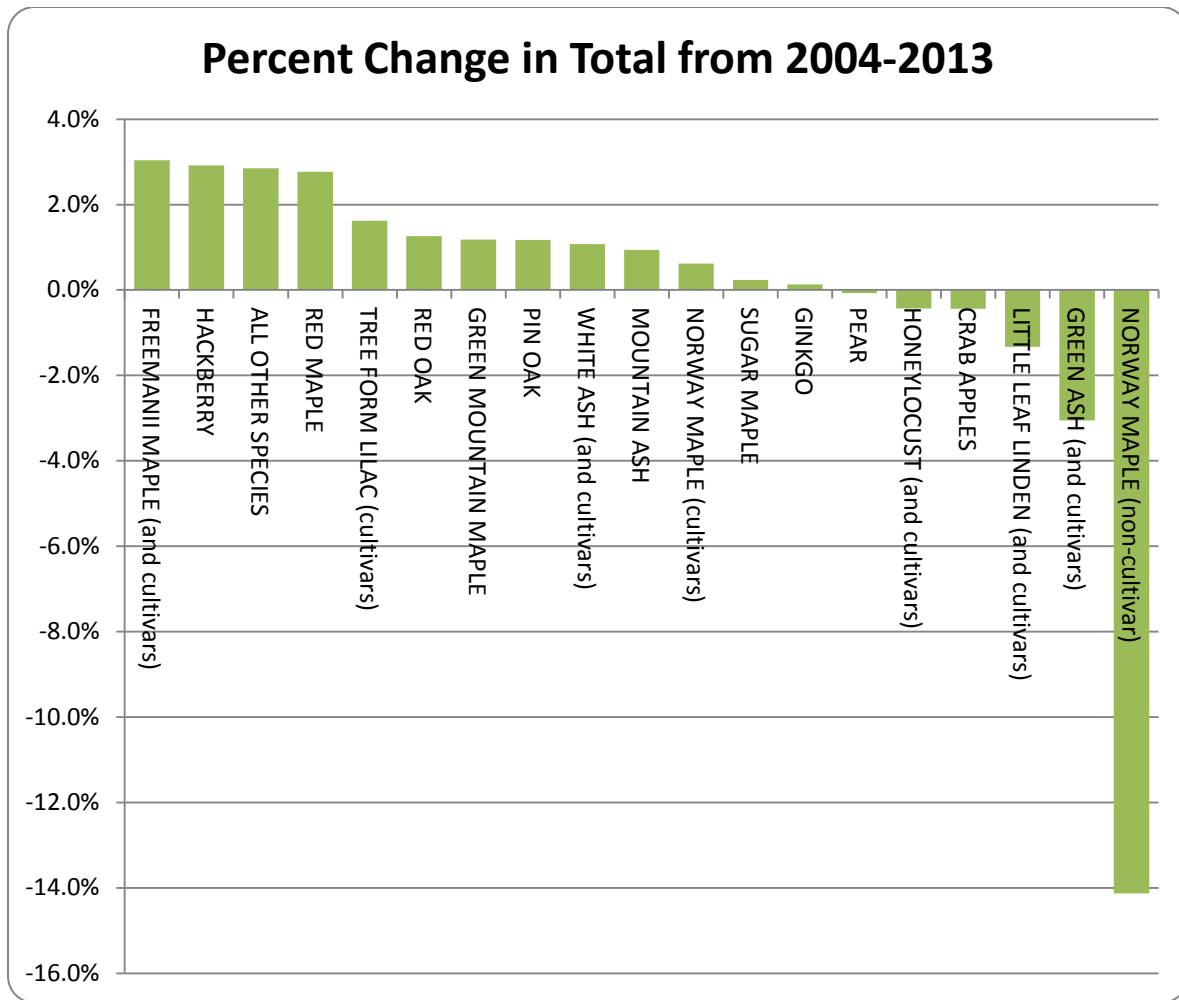


Figure 6. Percentage change in total number by species of street tree from 2004-2013.

2.4 Tree Planting Program

The City of Barrie has an active tree planting program to replace trees that were removed. The program has evolved from a 1:1 ratio street tree replacement program (1 street tree planted for every 1 street tree removed) to a dynamic program of replacement and infill planting on streets and in parks and community programs of naturalization tree planting in open space or environmental protection lands. Funding for this program increased from 2002 levels at \$50,000 annually for street trees to include an additional \$20,000 for park infill planting in 2004. In 2007, funding was increased to \$150,000 for street tree replacement and infill planting because of the large (3-year backlog) of replacement street trees. In addition, park infill planting was increased to \$50,000 annually to infill older parks where tree canopy cover was being lost as well as to fund naturalization and community planting programs.

Currently (2013), the street tree planting budget remains at \$150,000, while the park infill planting program is \$40,000. Reduction in the park infill program was due to the increasing number of community partners getting involved and funding naturalization programs in the City (e.g. Lake Simcoe Region Conservation Authority, Rotary Clubs, TD Bank, Green Streets, Living Green). Overall, this has resulted

in a significant increase in tree planting over the last decade on streets (+403%) and in parks (+4,682%), which will result in a long term benefit to residents and the City of Barrie (Figure 7).

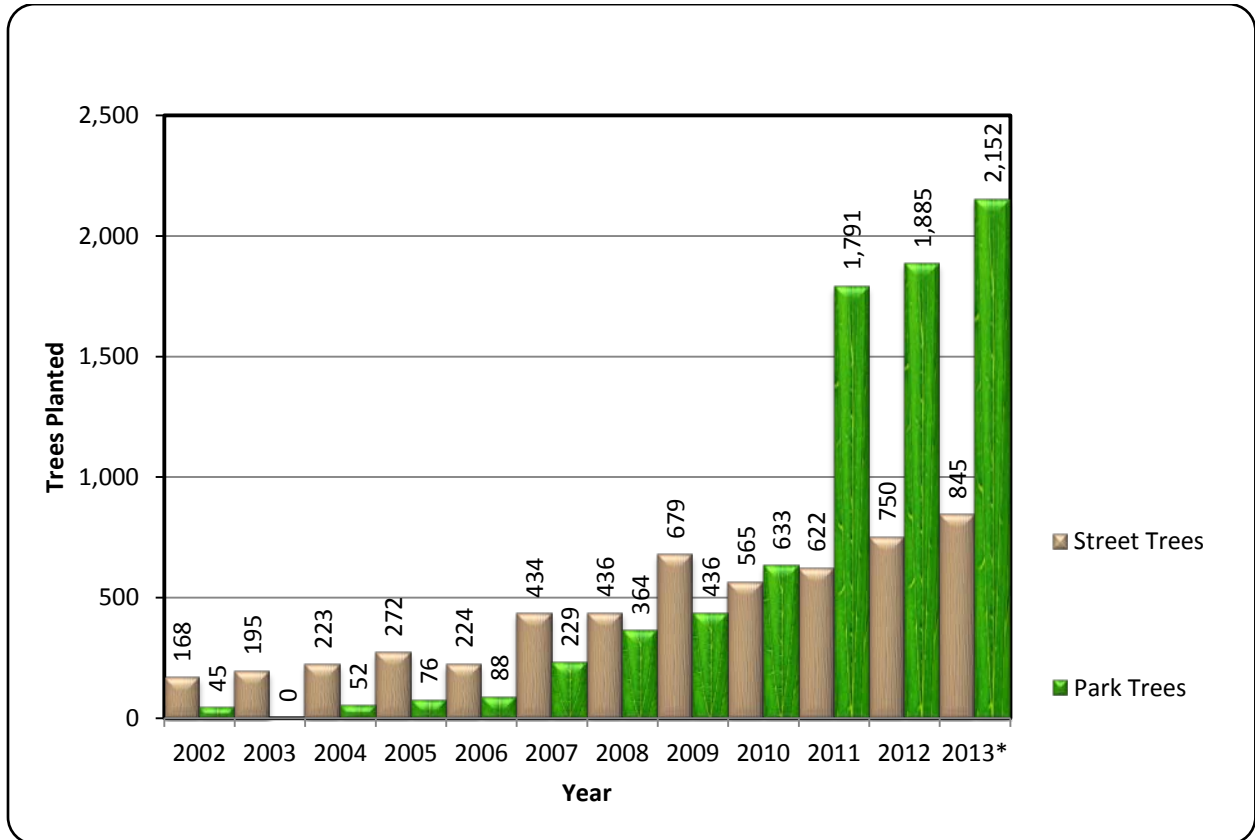


Figure 7. Planting Program Summary from 2002 to 2013 (* 2013 scheduled).

2.5 Tree Maintenance Program

Forestry staff in the Roads, Parks and Fleet Department are responsible for the completion of the maintenance activities on trees on streets and within parks and environmental protection areas. Currently, they are staffed with one Forestry Coordinator, four forestry journeymen, two seasonal forestry workers, and one to two summer casual staff. In addition, the Engineering Department (Parks Planning and Development section) employs an Urban Forester. Staff respond to approximately 2000 service requests per year (from residents, staff, businesses, etc.) for maintenance activities. This number has increased significantly over the last several years, and will continue to increase as new lands are developed within the area annexed in 2010. The table on the following page demonstrates the recent (last 2 years) increase in service requests:

Annual Average Maintenance Activities Completed by Forestry Staff		
Activity	2003-11 Average	2011-13 Average
Inspection only (no work required)	119	120
Risk Assessment	19	30
Survey	4	10
Standard Prune	402	700
Deadwood	58	100
Crown Raise	143	400
Remove Storm Damage	65	50
Remove Accident Damage	12	15
Remove Tree	253	350
Stump Removal	189	200
Other	38	50
TOTAL	1,301	2,025

* 2011-13 Current Average (recent workload)

The International Society of Arboriculture Ontario (ISAO) recommends minimum and “Best Management Practices” for annual tree inspection and maintenance pruning for street trees. The Best Management Practices (BMP) recommends a tree be inspected on a timeline based on its current age and condition (ranging from once every 1 (over mature trees) to every 7 years (tree in the middle of its lifespan). ISAO also recommends a 7 year (BMP) to 10 year (minimum) pruning cycle (prune the tree every 7 to 10 years) for street trees. This pruning cycle will result in healthier, more structurally sound and longer lived street trees. If the average lifespan of a street tree can be increased by even 10 years, it would reduce the annual tree planting program costs by approximately 20% and significantly reduce the number of service requests made each year. In addition, a more structurally sound tree is less likely to be damaged in a storm, or cause damage to municipal and private property (decreasing City liability). The following table illustrates the current status in relation to ISAO recommendations:

	Estimated Annual #	Average Annual Complete*	% of ISA Rec.
Pruning BMP:	4,714	1,200	25.5
Pruning Minimum:	3,300	1,200	36.4
Inspection BMP:	6,600	1,800	27.3

* 2011-13 Current Average (recent workload) includes contracted street tree pruning

2.5 Benefits of Trees

Trees are a vital component of the urban landscape. They provide many important roles within the City of Barrie, including:

- Water conservation;
- Energy conservation;
 - Reducing summer air temperature by providing shade
 - Reducing cold winter winds by acting as a wind break
- Economic benefits;
 - Increasing tourism values
 - Increasing property values
 - Increasing community profile (e.g. Communities in Bloom)
- Improving community health;
 - Reducing air pollution
 - Reducing harmful ultra-violet light exposure
 - Reducing noise pollution
 - Reducing greenhouse gases
- Reducing soil erosion;
- Providing wildlife habitat; and
- Increasing the beauty of the urban landscape.

The Simcoe Muskoka District Health Unit provided key input from a public health perspective regarding the importance of the urban forest, and urban forest policies that promoted public health and well being. The full input is included in Appendix A. The following excerpt from their comments on the May 30, 2013 Public Information Centre provides context on the health benefits of the urban forest:

“This Urban Forest Strategy is important to the health and well-being of the citizens of Barrie for a number of reasons. Where we live affects our health. The way our communities are designed can influence our lives in many ways, from the quality of the air we breathe, to how physically active we are, to the food we readily have access to. A well-planned and maintained urban canopy can improve air quality, access to green space/natural settings for recreational and social opportunities, and mental health promotion.”

3. STRATEGIC OBJECTIVES

The City of Barrie's main objective is to manage the urban forest in a long-term, sustainable manner. There are several areas of focus (strategic objectives) that need to be addressed over the short-term to move the urban forest towards a long-term, sustainable model of management. Each of the Strategic Objectives can be categorized under one of the following six groups:

- 3.1 Tree Inventory and Assessment;
- 3.2 Management of City Forests;
- 3.3 Level of Service;
- 3.4 Customer Service / Service Delivery;
- 3.5 Tree Protection and Management; and
- 3.6 Forest Health and Pest Management.

3.1 Tree Inventory and Assessment (Streets, Parks and EP Areas, Private Land)

3.1.1 Tree Inventory and Forest Canopy Assessment

The tree inventory is the basis of all long term planning and decision making for forest management. Staff will complete continuous updates to the street tree inventory, and direct resources towards completing an inventory of the individual trees in parks and sampling of forest cover data in forested EP areas and parkland.

Staff will investigate partnership opportunities with post-secondary institutions, interest groups, and private land owners to collect information on the quantity and quality of trees and forests on private land through the use of satellite images, volunteer data collection and other data acquisition opportunities.

3.1.2 Forest Cover and Canopy Area Objectives

Through the acquisition of "leaf-on" satellite imagery, staff will complete an assessment of current canopy cover. In addition, an analysis of future projected development, areas of potential reforestation projects, and anticipated growth rates and potential for trees in areas recently developed subdivisions will provide the basis of a reasonable objective for future canopy area targets to be set within a comprehensive Forest Management Plan.

3.1.3 Street and Park Tree Diversity Objectives

Diversification of the tree species within parks and on boulevards provides a healthier, more robust tree inventory that is less prone to serious pest issues (i.e. insects and diseases). Staff has been diversifying the street tree inventory over the last decade. The long-term goal is to have all street tree species occupy less than 10% of the overall total tree inventory.

3.1.4 Age Class Distribution Objectives

An even-aged age class distribution of trees within parks and on boulevards reduces issues of peak year declines due to natural mortality. Due to the large proportion of young trees as a result of subdivision expansion, there will be a future issue with natural mortality and decline as these trees become over-mature within the same decade. An analysis and future projection of

growth, planting and management as part of the Forest Management Plan will be completed to identify strategies to develop a more even-aged tree inventory over the long-term.

3.2 Management of City Forests

3.2.1 Forest Succession Plans

The Forest Management Plan will include objectives and individual forest succession plans for city owned forest in parks and EP areas. Specifically, many forested areas (e.g. mature pine plantations) require forest management to ensure the long-term sustainability of these lands.

3.2.2 Non-native invasive species management

Non-native species are becoming more common in natural areas within the City and surrounding County. Dog-strangling vine, garlic mustard, etc. are serious problems that will impact long term sustainability of forested lands. Staff will continue to investigate partnerships and provincial and federal funding opportunities to identify, map and address the problem caused by non-native invasive species.

3.2.3 Mapping of encroachments and education program for residents

Encroachments by adjacent landowners into City owned forests result in the destruction and/or degradation of natural areas. They also act as a point source of non-native invasive species, and can have long-lasting impacts to natural areas. Using the current data set of encroachments mapped in the Parks GIS database, staff will develop education materials on the impacts of encroachments and consider the most effective method to get the message to residents that city forests are to be left in their natural state.

3.2.4 Provide opportunities for the planting of fruit and nut trees on City open space lands

FruitShare Barrie has a program designed to:

- Improve community food security by improving access to fresh local food;
- Provide volunteer opportunities for community members;
- Enhance neighbourhood well-being by promoting connections and common interests
- Change citizen attitudes with respect to fruit/nut trees (from ornamental or nuisance trees to part of the food system); and
- Educate participants on the value and care of their trees (value of edible landscaping).

Staff will work with the FruitShare Steering Committee to develop options to assist the FruitShare Program by integrating the planting of nut and fruit trees into the Urban Forest Management Plan.

3.3 Level of Service

3.3.1 Inspection Program

A systematic tree inspection program following the International Society of Arboriculture (ISA) standards is a best practice for all tree maintenance programs. Identification of tree issues early with follow-up maintenance can increase the lifespan of a tree, significantly reduce risk of damage caused by tree structural failures, and reduce the long term costs of management of tree inventories. A regular system of inspection and reporting will be developed for city street and park trees as part of a comprehensive Forest Management Plan.

3.3.2 Maintenance (Pruning) Cycle

Regular pruning of trees increases their health, longevity and significantly reduce risk of damage caused by tree structural failures. It also acts to reduce the number of service requests made by residents to report tree problems that would not exist if the tree had been pruned regularly. Staff will review the block pruning program and allocate existing resources towards the goal of achieving a regular maintenance cycle of 7-10 years.

3.3.3 Protocol for Prioritizing Service Requests

Staff will develop a formal protocol for reviewing and prioritizing service requests made for tree maintenance. Priority will be allocated to high-risk issues where problems must be addressed immediately. Lower priority will be assigned to those requests involving minor issues to be corrected.

3.4 Customer Service / Service Delivery

3.4.1 Organization of Forestry Section

Staff will review the current organization of the forestry section to ensure that the best customer service possible is provided. Staff will also identify any opportunities for efficiency through removing any overlaps in workload items and finding cost savings in delivering services.

3.4.2 Response Protocols

Staff will review the current process for receiving service requests through to the completion of the tasks and tracking of work. This process will be reviewed with the goal of reducing the timeline between receiving service requests and final closing of the service request. Operational efficiencies may be found to reduce the timeline associated with addressing service requests.

3.4.3 Public Education and Information Availability

Increase the opportunities for public education and outreach through community partners, volunteer planting events, and involvement in environmental community events and committees. In addition, the sharing of forestry information (e.g. with community partners, educational institutions) can provide value in return through studies, reports and information shared (e.g. non-native invasive species mapping, private land tree data). Educating

community partners (e.g. garden stores) on the value of native species and the dangers of invasive species could result in less long-term impact on natural areas.

- 3.4.4 Expand and improve the urban forestry information on the city's website to offer more information and resources

A comprehensive review and update of the Urban Forestry information on the City website needs to be completed. The City web page is a great avenue to provide information to the public.

- 3.4.5 Increase opportunities for public education on the benefits of protecting and managing trees on private property

Staff should include time in their annual work plans associated with public education opportunities on the benefits of protecting and managing trees on private property. Trees on private property provide benefits to the City as a whole without any additional investment from the municipality. Since the majority of trees in the City are on private land, this is as important as good management practices for City trees.

3.5 Tree Protection and Management

- 3.5.1 Investigate Significant Woodlot Designation for Forests on Private and Public Lands

Using the Natural Heritage System within the City of Barrie, staff will investigate the identification of "Significant Woodlots" within public and private lands. This will commence upon completion of the tree inventory updates and assessments, and coordinate with the Natural Heritage designations developed within the Official Plan.

- 3.5.2 Review and update Tree By-laws every five years to ensure they remain up-to-date with current needs

Staff will plan regular reviews and updates to the existing Tree By-laws on a 5-year cycle to ensure that changes to legislation, organization and relevance are kept up-to-date.

- 3.5.3 Formalize the review process for all city capital projects with tree impacts and perform regular and documented site inspections

Staff will review the process in place (pre-design through to the completion of construction including any required warranty period) for City capital projects and recommend any changes necessary to ensure that protection of trees on City construction projects remains paramount.

- 3.5.4 Increase resources for city inspection and oversight of tree protection requirements on all project types, and provide training for city staff inspectors

Correct implementation of Tree Protection measures (Barrie Standard Details, mitigation techniques etc.) is the best practice for providing tree protection. Training and any other tools or resources that are made available for city and contract inspectors will increase the successful implementation of tree protection standards and practices.

Staff will develop or research available training courses to provide the knowledge to inspection staff that is critical in ensuring that tree protection is implemented on construction sites.

- 3.5.5 Recommend the inclusion of an environmental planning skill set into the existing Planning Department staff complement

The Planning Department plays a critical role in the development of the City of Barrie. Planning staff are the first point of review of all development applications, and have the first opportunity to influence developers on their planning applications.

Staff recommends that opportunities continue to be made available for Planners to attend workshops and training related to the environmental aspects of municipal development.

3.6 Forest Health and Pest Management

- 3.6.1 Continuation and regular update of the Pest Preparedness Program

Staff will continue to monitor current and future forest pests (insects and diseases) that may have an impact on Barrie's urban forest. New pests, or changes to existing pests will result in the need to update the Pest Preparedness Program to ensure Barrie stays ahead of impending issues.

- 3.6.2 Implementation and monitoring of the Emerald Ash Borer Program

Staff will continue to implement the 15-year program to address the pending threat of emerald ash borer on our inventory of ash trees. The program will be reviewed annually and adjusted to ensure the most efficient and up-to-date information is used in decision making.

- 3.6.3 Assessment of the Watering Program/Policy for newly planted trees

Staff will review and update the watering program for newly planted trees on an annual basis to ensure trees are properly cared for in the critical establishment phase of tree planting.

- 3.6.4 Identification and planning for future forest health issues and climate change

Trees have a significant lifespan and staff must make decisions today that will affect future generations. For example, the choice of tree species and location in a park or on a boulevard can have affects for several decades into the future.

Staff will monitor and stay current on research and information available related to future forest health issues, including climate change.

4. IMPLEMENTATION

Implementation of the Urban Forest Strategy will ultimately lead to the development of a comprehensive Urban Forest Management Plan. Several aspects of the Strategy must be completed (e.g. inventory) prior to commencing the production of a Forest Management Plan. However, there are components of the strategy that will commence upon approval, while others will be completed in the interim leading up to the development of a Forest Management Plan. Each objective has been reviewed in relation to the anticipated timelines for the development of funding partnerships and/or applications, impacts on staff workload and its association with other objectives.

The majority of the objectives were developed to create operational efficiencies and/or reduce the long-term cost to the municipality to deliver services while enhancing the benefits provided by the urban forest. Staff anticipates developing partnerships with educational institutions, external interest groups, and volunteers as well as applying for available funding to support the implementation of the Urban Forest Strategy. The following table describes the target year for completion or implementation of the objective, any quantifiable financial details and the anticipated financial affects and or proposed sources of funding required:

Target Year(s)	#	Objective	Financial	Anticipated Financial Impacts and Sources
annual	3.5.5	Recommend the inclusion of an environmental planning skill set into the existing Planning Department staff complement	-	- existing staff training / conference budgets
annual	3.6.1	Continuation and regular update of the Pest Preparedness Program	-	- proactive management planning reduces impact and costs over long-term (e.g. EAB Program)
annual	3.6.2	Implementation and monitoring of the Emerald Ash Borer Program	\$70-289K / year, 2011-2026	- long term operating budget projections from EAB Program approved in 2011. To be reviewed and adjusted annually, including external funding sources investigations.
annual	3.6.3	Assessment of the Watering Program/Policy for newly planted trees	-	- efficient watering program reduces long-term tree planting budget costs
annual	3.6.4	Identification and planning for future forest health issues and climate change	-	- proactive management planning reduces impact and costs over long-term (e.g. EAB Program)
2014	3.2.4	Provide opportunities for the planting of fruit and nut trees on City open space lands	-	- volunteer program through FruitShare Barrie.

Target Year(s)	#	Objective	Financial	Anticipated Financial Impacts and Sources
2014	3.3.1	Inspection Program	-	- staff time efficiencies created through proactive inspection program (reduces future service requests and related response). Liabilities reduced as issues are addressed prior to tree failures.
2014	3.3.2	Maintenance (Pruning) Cycle	-	- staff time efficiencies created through proactive maintenance pruning program (reduces future service requests and related response)
2014	3.3.1	Protocol for Prioritizing Service Requests	-	- staff time efficiencies created through implementing standard protocols for workload assignment. Improved relations with residents regarding how priorities are assigned to workloads
2014	3.4.1	Organization of Forestry Section	-	- efficiencies gained in staff time by reducing workload overlap, bundling maintenance contracts into larger projects with reduced unit rates.
2014	3.4.2	Response Protocols	-	- staff time efficiencies created through implementing standard protocols for workload assignment. Improved relations with residents regarding how priorities are assigned to workloads
2014	3.4.3	Public Education and Information Availability	-	- reduced staff time responding to public inquiries as a result of greater information availability and transparency
2014	3.4.4	Expand and improve the urban forestry information on the city's website to offer more information and resources	-	- reduced staff time responding to public inquiries related to City programs and general urban forestry information
2014	3.5.2	Review and update Tree By-laws every five years to ensure they remain up-to-date with current needs	-	- reduced administrative costs associated with By-law enforcement
2014	3.5.3	Formalize the review process for all city capital projects with tree impacts and perform regular and documented site inspections	-	- clarification of review process reduces time associated with reviews and design revisions for projects

Target Year(s)	#	Objective	Financial	Anticipated Financial Impacts and Sources
2014	3.5.4	Increase resources for city inspection and oversight of tree protection requirements on all project types, and provide training for city staff inspectors	-	- information availability and training reduces future issues, resulting in long-term cost reductions
2015	3.2.2	Non-native invasive species management	-	- partnerships, external funding sources (e.g. Trees Canada), federal and provincial grants
2015	3.2.3	Mapping of encroachments and education program for residents	-	- existing data set, partnerships, external funding sources and staff time
2015	3.4.5	Increase opportunities for public education on the benefits of protecting and managing trees on private property	-	- increased knowledge base of general public anticipated to increase the quality and quantity of the urban forest on private lands.
2016	3.1.1	Tree Inventory and Forest Canopy Assessment		- partnerships, external funding opportunities, Coop student data collection, staff time.
		<i>Satellite Imagery Acquisition</i>	\$5,000	
		<i>Street tree inventory update</i> <i>Parkland / open space trees</i> <i>Forested area inventory</i>	\$55,000	
		<i>Private Land tree inventory</i>		
2017 (FMP)	3.1.2	Forest Cover and Canopy Area Objectives	-	- future reduction in operating costs due to focused planting and maintenance efforts in areas with declining canopy cover
2017 (FMP)	3.2.1	Forest Succession Plans	-	- management of city forests creates a minor source of potential revenue to be used to offset forestry operating costs. Reduction in future maintenance costs for dead and declining trees in natural areas (trails, forest edges)
2017 (FMP)	3.5.1	Investigate Significant Woodlot Designation for Forests on Private and Public Lands	-	- function of identifying and planning for future management/improvements of the urban forest.
2034	3.1.3	Street and Park Tree Diversity Objectives	-	- future reduction in operating costs due to a healthier, more diverse tree inventory being less susceptible to the impacts of forest pests. It is anticipated to take at least 20 years to achieve this goal.

Target Year(s)	#	Objective	Financial	Anticipated Financial Impacts and Sources
2064	3.1.4	Age Class Distribution Objectives	-	- normalization of annual maintenance/operating costs as tree inventory becomes more even aged (rate of mortality, removal and replacement evens out over time). It is anticipated to take approximately 50 years to normalize the age class distribution of street and park trees.

Development of a comprehensive Forest Management Plan is targeted for completion in 2017 following the completion of a detailed tree inventory and other components of the Urban Forest Strategy that will be integral to the development of the Plan.

5. CONCLUSION

The Urban Forest is a vital piece of green infrastructure within the City of Barrie. It is important to the residents who live here, plays an important role in their health and quality of life, and provides many economic and social values. The Urban Forest Strategy is intended to enhance those benefits over time without significant associated costs to the taxpayers. Communities in Bloom judges have noted the many improvements that have already been made over the last decade. Communities in Bloom ratings for Urban Forestry in Barrie has increased from the being awarded the lowest score of the several categories evaluated in 1999 to consistently one of the highest scores during the last few years of competition. This can be attributed to the result of implementing many of the urban forestry recommendations made in the “Trees in Barrie” report authored by McNair & Marshall (Executive Summary, Appendix B). The Urban Forest Strategy is a continuation of a process that was started through partnerships, innovation and forward thinking.

Partnerships with the community, interest groups, other agencies and post-secondary educational institutions are an important component of many of the strategies proposed. However, another critical aspect of ensuring long-term forest sustainability is adaptive management. Consistent review and adjustment of management planning will result in greater long-term forest health and sustainability. This Urban Forest Strategy is intended to create the building blocks for an Urban Forest Management Plan that will be adapted over time as new information, issues, pests, etc. are discovered.

APPENDIX 'A'

Urban Forest Strategy Public Comments

The majority of residents who participated in the Urban Forest Strategy Questionnaire ranked themselves as having a “high” knowledge base of invasive plants and insects, and an “average” knowledge base of forestry and/or environmental management. Based on this acquired knowledge it is felt that the most difficult component of the Urban Forest to manage is the Private Trees, followed by the Private owned forests. Therefore, the City should spend less effort/tax dollars on these two components while putting more effort into managing the Street trees and Park Tree components of our Urban Forest. Residents also felt that they should have more access to Urban Forest Issues and Programs.

The main objectives of the Urban Forest Management Plan were ranked from highest to lowest priority, with Tree Inventory and Assessment found to be ranked as the highest priority. The remaining objectives were ranked in the following order: Forest Management of City Owned Woodlands, Customer Service, Tree Protection and Management, Forest Health and Pest Management and Level of Service at the lowest priority.

Participants felt that there should be no change in the capabilities of staff to respond to service requests for tree maintenance, and the frequency of street and park tree pruning and inspections. While, there should be an increase in the planning and public involvement in urban forestry, the forest management of City owned forest, the identification and removal of non-native invasive species, the health of the forests, the tree canopy area in the City, community planting events, tree by-laws and enforcement, forestry expertise at the City and forestry educational programs. Comments left by participants showed that many are especially concerned with non-native invasive species in the area, increasing the urban canopy, increasing biodiversity in the City and increasing education and public information.

Comments prepared by staff of the Simcoe Muskoka District Health Unit for submission in lieu of the comment sheet provided at the PIC.

Thank-you for the opportunity to comment on the City of Barrie's Urban Forest Strategy. We are pleased to see the development of this policy framework. Staff of the Simcoe Muskoka District Health Unit have reflected on the Strategy and are pleased to provide you with input from a public health perspective.

This Urban Forest Strategy is important to the health and well-being of the citizens of Barrie for a number of reasons. Where we live affects our health. The way our communities are designed can influence our lives in many ways, from the quality of the air we breathe, to how physically active we are, to the food we readily have access to.

A well-planned and maintained urban canopy can improve air quality, access to green space/natural settings for recreational and social opportunities, and mental health promotion. It can also offer shade which reduces the risks associated with ultraviolet radiation (UV) exposure, and has the potential to be source of food.

It is recommended that the City of Barrie Urban Forest Strategy include as appropriate the following planning policies and implementation strategies as which are found in the SMDHU policy resource entitled [Healthy Community Design: Policy Statements for Official Plans](#):

Environment

Ensure land use designation has a positive impact on health, the environment and overall quality of life. Protect and preserve the natural environment to ensure residents breathe clean air and have access to greenspace. Clean air is critical to the health of any community making it essential that this resource be protected and enhanced at every opportunity.

Planning Policies

1. To maximize the environmental and community health benefits of having healthy trees, a community-wide Urban Forestry Plan shall be developed with particular attention to protecting the community's stock of existing trees, supporting the growth of new trees and expanding the tree canopy in the community.

Implementation Activities

1. Wherever possible, work with community partners to implement the components of the Urban Forestry Plan (e.g. designate and promote a community tree planting day).

Rationale: The preservation of greenspace minimizes the effects of heat islands which drive up cooling and refrigeration-related energy consumption and generation. Urban trees can reduce air temperature thereby reducing ozone formation and removing air pollutants. Greenspaces protect water quality by providing opportunity for water absorption and filtration. Research suggests a positive impact on the psychological well-being of people who are able to interact with the natural environment, particularly greenspace.

Trees also provide a measurable impact on the local air quality, absorbing carbon monoxide, carbon dioxide, sulfur dioxide, nitrogen dioxides, and fine particulates. One hectare of forest typically absorbs 2.4 tonnes per year, which has both local and global environmental benefits. Urban trees absorb several times more carbon dioxide than rural ones due to their proximity to emission sources. Larger trees absorb much more than smaller trees; a 30 inch diameter tree absorbs about 70 times more than a tree 3 inches in diameter. Numerous studies show that poor air quality contributes to premature death, cardiovascular disease, cancer, stroke, asthma and other respiratory diseases.

Physical Activity

A healthy physical environment involves creating spaces that function best for the people using them such as increasing a person's ability to be more physically active through walking, cycling for either recreation or active transportation purposes. Treed areas are widely perceived as making a place more aesthetically pleasing and welcoming; creating outdoor spaces where people actually want to spend time.

Implementation Activities

1. Ensure the Urban Forest Strategy complements other City planning policies such as the Official Plan, Urban Design Guidelines, Waterfront Master Plan, and the Multimodal Active Transportation Master Plan to create healthy and supportive environments where people gather and participate in physical activity.

Sun Safety

A healthy physical environment involves creating spaces that function best for the people using them such as providing shade to protect users from the sun/UV radiation in public and outdoor spaces. Community planning should include natural and built shade features to help protect citizens and reduce the risk of skin cancers.

Planning Policies

1. Development standards shall be created to support citizens' health by requiring new developments to integrate sun protection features and landscapes.
2. Municipal projects and parks shall be designed to take into account peoples' health as it relates to protection from sun exposure.

Implementation Activities

1. Implement a tree planting program at outdoor municipal recreation sites specifically targeted toward shade provision for people using the sites.

Rationale: Most skin cancers are caused by the sun and deaths from these forms of cancers are rising. A major health issue is skin cancer, with 940 deaths in 2009 in Canada, and a financial cost of \$532 million, which is expected to rise to \$922 million annually by 2031. The well-known link between over-exposure to UV radiation and skin cancer means that is important to ensure that public spaces have significant and useable shaded areas; a role that urban trees effectively fill. Many municipalities now have a 'Shade Policy' or guidelines which promote urban trees for this reason.

Food Access

Preserve and protect land currently used, and land with the potential for use in the growing and production of food. Also ensure that healthy food is available in every neighbourhood.

Planning Policies

1. The Urban Forest Strategy shall incorporate access to food (fruit and nut trees) which support the health of citizens.

Implementation Activities

1. Develop a community education and outreach program to highlight the importance of community/urban agriculture (fruit and nut trees) and how this can be integrated into public and private spaces.

Rationale: The ability to afford and have access to healthy, nutritious food is a strong determinant of an individual's health. For instance, research shows that sprawled neighbourhoods that have poor access to public transit, lower rates of resident walking and cycling trips per day and less proximity to food outlets selling fresh fruits and vegetables experience higher rates of diabetes than neighbourhoods with more supportive factors. It is important, therefore, to not only ensure access to healthy, affordable food in neighbourhood development proposals (e.g. locating a grocery store within proximity to residential areas; zoning that includes community gardens and access to farmer's markets), it is equally important to protect agricultural land for the vital role it plays in the growing of healthy and nutritious foods.

We are confident that the inclusion of aforementioned planning policies, and the implementation of the suggested activities in relation to the Urban Forest Strategy, will help to protect and foster optimal health, well-being and quality of life for the residents of Barrie. We look forward to additional opportunities for community stakeholder input as this policy framework is developed.

APPENDIX 'B'



TREES IN BARRIE

*The Tree Cutting By-law and Tree Management
(Draft Report for discussion purposes)*

McNair & Marshall
Planning and Development Consultants
Barrie, Ontario Project: U-806
March 3, 2000

EXECUTIVE SUMMARY

Study Purpose

This study examines the City of Barrie Tree Cutting By-law 90-175 and tree management generally in the municipality.

Council Resolution 98-G-391 has requested that:

- The exception process for development in By-law 90-175 be examined; and,
- Recommendations be made for tree by-law coverage for woodlots under the half-acre in area.

The exception process for By-law 90-175

We have found that the City's By-law 90-175, that restricts the clear cutting of woodlots, has generally served the City well. There has been just one infraction involving the clear cutting of a woodlot during the last decade.

However, there is considerable frustration directed at the exception process on the part of neighbours and the development industry, but for different reasons. The exception process requires Council approval for tree cutting for construction of subdivisions and other proposed developments in woodlots.

Based on our review of municipal tree by-laws and tree protection measures available through the *Planning Act*, we have concluded that the exception process in By-law 90-175 is not required.

We are recommending that the City's tree cutting by-law include a provision to exempt development approved under the Planning Act that has an approved tree protection plan.

Municipalities, including the Cities of Kitchener and Cambridge, have instituted

management procedures to ensure that their planning approval systems protect trees from initial consultation to final construction.

The City of Barrie should review its approval system together with the management procedures for these two cities to ensure that tree protection is addressed in all development approvals under the *Planning Act* and that the public is given sufficient information on woodland protection at public meetings.

Recommendations for areas under ½ acre

The City of Barrie has the option under the *Municipal Act* of instituting a tree permit system that would require owners to obtain a permit to cut or injure any tree in the City whether it is in a woodlot or not. Alternatively, the City could institute a permit system for specific significant trees or within significant woodlands.

We recommend that the City of Barrie not pursue a tree permit system for areas under ½ acre at this time.

A comprehensive tree permit system could be expensive to administer with an annual cost of about \$200,000, based on estimates for the City of Kitchener. It would be burdensome on individual property owners and could lead to a backlash. Finally, the City does not yet have adequate inventories of its urban forest to identify significant trees, or significant woodlands that should be protected through a permit system.

The City of Kitchener has also examined the option of a tree permit system. A staff report concluded that a better use of municipal resources would be a tree planting program. The City has recently won an

“Excellence in Planning Award” for its program to plant trees, rather than issue permits.

Tree management in Barrie

Because of the value of trees for energy savings, aesthetics, economic benefits, pollution reduction, water management, etc., ***we are recommending that the City of Barrie consider its urban forest as an essential community service.***

The City of Barrie has already had considerable successes with measures for its urban forest, such as tree planting partnerships and acquisitions of woodlands for major park areas.

We are suggesting that the City build on these successes to ensure that Barrie continues to have an attractive environment in the future. Nature needs help in the urban forest.

With a comprehensive management plan the City can determine how to best allocate resources to enhance its urban forest. As New York ecologist, Rene Dubois has stated, we get back what we give: “We shape our environment and afterwards it shapes us.”

We recommend that the City of Barrie undertake an overall Tree Master Plan in the year 2000 to ensure the wise management of its urban forest.

We suggest that a preliminary list of issues for the Tree Master Plan include:

- (1) Street trees;
- (2) Trees on public lands;
- (3) Trees on private lands;
- (4) Significant woodlands and natural heritage areas;
- (5) Heritage trees;
- (6) Corridor and linked open space system;
- (7) Tree by-laws;
- (8) Servicing and tree protection;
- (9) Planning approvals and development design;

(10) Tourism and economic development.

Vision 2020...Barrie's urban forest in the year 2020

In November, 1999, a workshop of 52 community leaders, including City Council and staff, lawyers, students, planners, builders and health professionals looked into the future to develop an ideal vision for the City's urban forest in the year 2020.

Their views are summarized on the next page and in the Appendix.

Community leaders stressed the need for the City of Barrie to undertake a ***Tree Master Plan*** to co-ordinate implementation of *Vision 2020*.

Recommendations

We recommend that the City of Barrie:

- (1) ***Revise its Tree Cutting By-law 90-175 to exempt development approved under the Planning Act that has an approved tree protection plan; ;***
- (2) ***Not pursue a tree permit system for woodlots under ½ acre;***
- (3) ***Review management policies for the Cities of Cambridge and Kitchener, in order to fully integrate tree protection in the development approval system;***
- (4) ***Review the proposed lot grading by-law to protect trees, similar to Cambridge By-law 151-96;***
- (5) ***Consider trees as an “essential community service”;***
- (6) ***Appoint a Task Force in 2000 to develop a Tree Master Plan, including statement of goals, urban forest inventory, strategy, implementation plan and monitoring;***
- (7) ***Identify its significant woodlands and natural heritage systems;***
- (8) ***Update its “Street Tree” By-law 76-162.***