



YORK REGION FOREST MANAGEMENT PLAN



YORK REGION FORESTRY
Healthy Trees, Healthy Communities





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The value of trees

Research is confirming the value of the ecosystem services that trees in all settings provide.

“Ecosystem services” are measurable benefits to the environment and people. Ecosystem services provided by trees include:

- Creating oxygen and removing pollutants and particulate matter from the air
- Saving energy by reducing the need for air-conditioning in the summer and heating in the winter
- Capturing carbon for long-term storage, a process also known as “sequestration” that is valuable in mitigating climate change
- Slowing stormwater runoff and improving water quality
- Providing habitat for birds and other wildlife

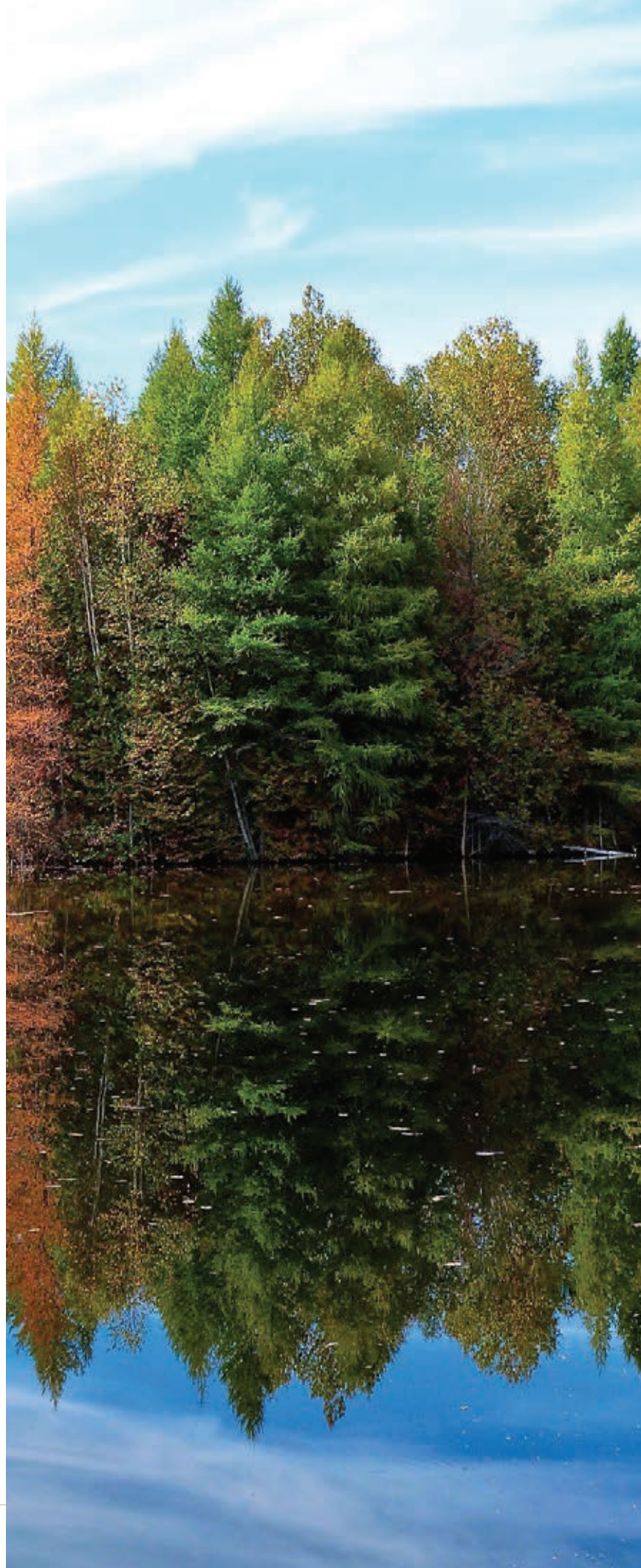
Urban forest studies that the Region has completed in partnership with the cities of Markham and Vaughan and the towns of Aurora, Newmarket and Richmond Hill estimate that 963 tonnes of pollutants are removed from the air each year by trees and forests. These trees save residents \$5.8 million in energy costs from heating in the winter and cooling in the summer.

Trees are an element of what is often called “green infrastructure.” Providing the same services using traditional built infrastructure instead of green infrastructure would be extremely costly and in some cases impossible.

Some of these services are especially valuable in urban settings. For example, the ability of trees to provide shade and cool the air by expelling water through their leaves helps to offset what is known as the urban heat island effect, where lack of trees and vegetation around buildings and paved areas can increase air temperatures in urban areas.

As trees form larger groups and eventually woodlands, they provide unique ecosystem services through their complex relationships with other tree species, plants, birds, animals and other life forms.

Additional benefits that are more difficult to quantify but nonetheless important range from improved public health and well-being and recreational opportunities to increased property values.



I. Why York Region needs this Plan

New strategies for a changing Region

Trees and woodlands cover almost one-third of York Region, an area stretching north from City of Toronto to the shores of Lake Simcoe, and from Peel Region and the Holland River in the west to the Durham Region in the east. These forest resources, which are made up of privately and publicly owned forests as well as trees in parks and cemeteries, along streets and on farms, in residents' front and back yards and on other private lands, greatly benefit the Region's residents and its environment.

But with the Region ranked as Canada's fastest growing large municipality, continuing development pressure is putting its natural heritage, including trees, increasingly at risk. Demand for development land in both built-up and rural areas is reducing the space available for trees and increasing the stress on those that remain. On top of growth pressures come serious threats from exotic insects, diseases and invasive plants, as well as from climate change.

Yet a growing body of evidence shows that tree canopy cover has major environmental, economic, social and public health value, especially in urban areas. Trees in towns and cities help prevent dangerous heat build-up in summer and protect against the cold of winter. They clean the air of pollutants and store carbon that would otherwise contribute to global warming. As they connect to form larger woodland areas, they provide habitat for plants and wildlife, including species at risk of extinction, and offer residents recreational opportunities like hiking and snowshoeing.

York Region has developed this Forest Management Plan to maximize the benefits of all trees in the Region and to combat threats. Two key pillars of the plan are:

- **Recognizing the value of all trees, not just those in woodland areas, and taking them into account as living, green infrastructure assets, and**
- **Working to increase the tree canopy cover in all settings.**

These pillars reflect the changing face of York Region. As the pace of urbanization has quickened, the Region's forestry responsibilities have expanded to include not just protecting large woodlands but also planting and caring for thousands of trees in urban settings. All nine local municipalities are also putting increasing resources into trees in parks and along streets, as well as managing natural areas. The two conservation authorities operating in the Region have also intensified their efforts. Proper measurement and understanding of what has been gained from these investments is critical, as is support for future activities.

This plan also recognizes the need for partnerships at every level across the Region – local municipalities, businesses, homeowners, conservation authorities and non-government organizations – to improve stewardship of all trees in York Region, no matter where they grow. It is premised on innovation, adaptability and continuous improvement to ensure sustainable management of all forest resources.

How this plan was developed

Engagement and discussion with the Region's partners in forestry management and other stakeholders formed the foundation of this plan. Participants included staff from all nine local municipalities, Parks Canada, two conservation authorities, farm organizations, representatives of non-governmental organizations with expertise in delivery of forest services as well as those affected by them, First Nations communities, the Building Industry and Land Development Association, and members of the public. As well as face-to-face meetings, a telephone market research survey of Regional residents was undertaken. An appendix to this report provides a more detailed description of the stakeholder engagement.

Discussions with stakeholders centred on the current and desired end state of woodlands and trees in the Region. It covered the current role of the Region, both as set out in its policies and bylaws and as practised on a day-to-day basis, and how that role and the roles of other partners could or should evolve to maximize the benefits of woodlands and trees across the Region.

A key element of the conversation was the need to define canopy cover to include not just trees in woodlands but all trees in the Region. This had important implications for canopy cover targets and for the role of local municipalities and private landowners, both of which the plan addresses.

Stakeholder engagement and the development of the plan were also informed by background research on best practices in forest management and urban forestry in North America and on tree canopy cover measures, including examples from other municipalities.

During the project, the Region's team made presentations to the Regional Environmental Advisory Committee Forum the York Region Agricultural Advisory Liaison Group and the Building Industry and Land Development Association.

Key stakeholders and senior management were engaged throughout the process, particularly in finalizing the plan's vision, goals and objectives. Research, along with further discussion, helped to develop the implementation plan and associated measures of performance

II. Evolution of forests and forest management in the Region

Bringing back the trees and woodlands

When the glaciers retreated at the end of the last ice age, roughly 11,000 years ago, they left behind the landform now known as the Oak Ridges Moraine that gives York Region its rolling, gentle hills. With the disappearance of the ice and the draining of the waters it left behind, these hills and the river valleys to the north and south of them became crisscrossed with the paths of hunters and gatherers and eventually the trade routes of indigenous societies.

The land that supported these people was home to dynamic populations of animals and plants, including not just trees but tall prairie grasses and delicate wildflowers. Indigenous people hunted and foraged, harvested trees and plants to make medicines and household goods, and used fire to keep parts of the land open for crops, trails and gathering places.

When Europeans first arrived in what is now York Region, extensive forests covered almost all the land. By 1920, however, settlers had cleared the forests almost entirely for farming and logging, and the environmental impacts of this deforestation were becoming evident. These were felt most severely on the moraine, which is made up of permeable sands and gravel. Many farms on the moraine had been abandoned because the soil had proven unsuitable for agriculture and, without covering vegetation, large areas had turned into blow sands, especially following periods of drought.

There was enough concern about the environmental impacts of deforestation by this point that the Province began funding and managing "agreement forests" with counties. The creation of an Agreement Forest in 1924 in what was then York County, as well as reforestation efforts on private lands, were major

milestones in reversing deforestation. The Agreement Forest developed into the York Regional Forest, which today comprises woodlands owned and maintained by the Region – an area of some 23 properties and 2,300 hectares, or about 5,700 acres.

Yet as the century progressed, development and urbanization, especially in the southern reaches of the Region, continued to erode tree cover. What remained was fragmented, younger than the original forests, and often disturbed by intervening usage.

Large, connected woodlands that form complete ecosystems are critical to environmental health and the survival of native trees, other plants and wildlife. Because of this, the approach to forest management in York Region was founded on protection and management of its remaining woodlands. In 1991, the Region established its first tree protection bylaw, which has evolved into the current forest conservation bylaw.

Attention to forest resources further advanced in 1994 with the identification of a Regional Greenlands System through the York Region Official Plan, with policies intended to preserve and enhance natural features and a connected natural heritage system. The backbone of the Greenlands System is the network of forest resources on private land and the York Regional Forest.

The same year, the Region set the first Official Plan forest cover objective: woodlands would cover 25 per cent of its land area.

Supported by a strong Regional Official Plan policy framework, the Region's Greening Strategy was adopted in 2001. It has helped to identify, protect, restore and secure elements of the Greenlands System through partnerships and programs. Accomplishments that mainly support woodlands include:

- Investing \$14 million at five Regional level between 2001 and 2011 that, along with donations, easements and other funding, secured more than 1,270 hectares of environmental lands with a combined worth of more than \$92 million.
- Achieving the first Forest Stewardship Council Certification of a public forest in Canada, for the sustainable management of the York Regional Forest.

- Planting roughly 1.3 million trees and shrubs, as part of the Greening Strategy between 2001 and 2015, in both urban and rural landscapes.

With more urbanization, however, the focus of the Region has increasingly shifted to include trees outside woodlands – especially trees in cities and towns – and ensuring they are well managed and grow to maturity to provide maximum benefits.

Canopy cover is the total area covered by all trees and shrubs in the Region (Figure 1). It includes woodland canopy and the canopy provided by trees and shrubs along streets, in parks, yards, cemeteries, on farms, around businesses, and in all other locations.

Woodland cover is the total area covered by the Region’s woodlands. In earlier Regional documents it was often called “forest cover.” A woodland is a piece of treed land at least 0.2 of a hectare, or about half an acre, in area.

Figure 1. Canopy Cover Measures the Contribution of All Trees



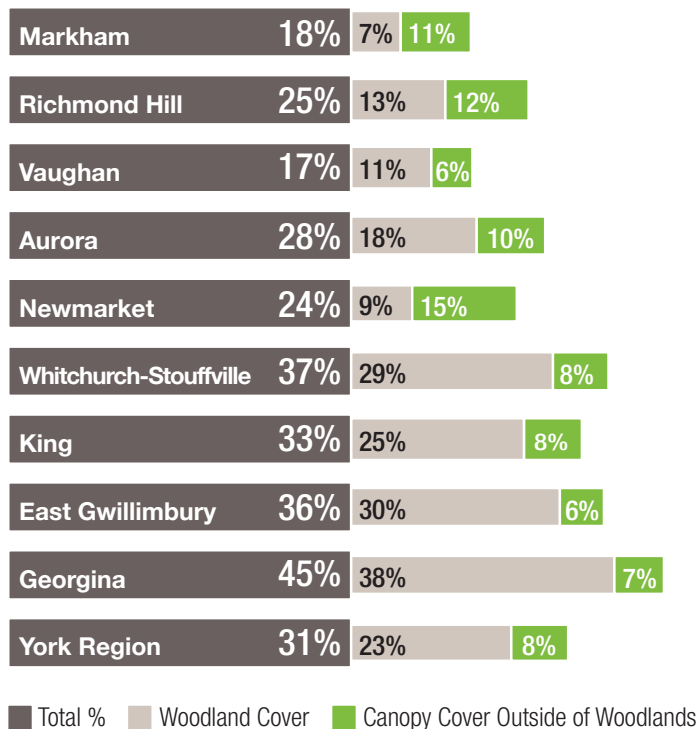
With population growth, the local municipalities – especially the more urbanized ones – have also stepped up their urban tree planting efforts, planting tens of thousands of trees in residential neighbourhoods, along streets and in parks. As Figure 2 shows, across all municipalities, total tree canopy cover averages 31 per cent, with most of that – 23 per cent – attributable to woodland areas. In the five more urban municipalities, however, trees outside woodlands account for a larger share, at almost 11 per cent of the total tree canopy cover.

This broadening of focus reflects the fact that street trees and other urban trees are an essential part of the infrastructure that serves communities and makes them more healthy, livable and sustainable.

York Region policies, strategies and plans recognize the value of canopy cover and woodlands

Numerous Regional strategies and plans support the development of healthy, sustainable forest resources and livable communities. For example:

Figure 2. Contribution of Woodland Cover and Trees Outside of Woodlands to Total Canopy Cover



Tree stewardship tied to new seniors strategy and public health

A new Seniors Strategy for York Region will ensure that as its senior population continues to grow, the Region's role will evolve in the right ways. One way to help turn the strategy into action will be by engaging seniors in green infrastructure initiatives.

With retirement, many seniors will have greater opportunity to volunteer their time to tree-related community activities. These might range from helping to organize tree planting events to developing and taking part in programs to champion tree stewardship in their cultural community.

The Region's senior population varies widely by health status and activity level, education, cultural background and interests. For some older residents, lack of canopy cover represents a health threat because of the urban heat island effect. A study that the Region's Public Health Branch carried out in 2014 showed the seniors in the southern, most highly urbanized areas of the Region faced significant risk from high temperatures.

As a result of the study, the Public Health Branch recommended that the Region increase and improve tree, shrub and other green cover on public and private lands by:

- Reviewing Regional urban tree planting targets and prioritizing planting locations using urban heat island information
- Supporting programs that increase naturalization of Regional properties and parking facilities
- Partnering with municipalities and conservation authorities to create an integrated and connected system of natural heritage, parks and open spaces.

These recommendations helped to inform this Forest Management Plan.

- Developed in 2011 to mark the 40th anniversary of the Region, Vision 2051 sees as an ideal end state “an extensive green network made up of the most valuable natural lands, where native biodiversity can thrive” by 2051. Recognizing that most people will live in urban areas, it envisions a pleasant street network that will prioritize pedestrians and cyclists.
- The 2015 to 2019 Strategic Plan: From Vision to Results, includes a commitment to a sustainable environment, preserving green spaces and increasing canopy and woodland cover.
- The York Region Official Plan, 2010 set out land use policies around the goal of 25 per cent woodland cover by 2031.
- The York Region Greening Strategy, as updated in 2012, includes reforestation efforts to help support the 25 per cent target. It also funds hands-on environmental projects, land protection and preservation activities and a variety of tree planting projects, including programs for residential tree planting.
- In 2013, the State of York Region Infrastructure Report formally recognized for the first time the monetary value of street trees. In the most recent report, for 2015, their worth was estimated at about \$30 million, of which trees less than five years in age accounted for roughly half. The infrastructure report gave green infrastructure, including street trees and the Regional Forest, a combined grade of “B” with a neutral trend.

The Natural Heritage and Forestry division within the Region's Environmental Services department is responsible for managing forest resources. It has led the development of this Forest Management Plan to align with and build on these key Regional directions.

This plan reflects both the irreplaceable services that woodlands provide and the major contributions to community health that trees in urban settings can make. Like the state of infrastructure report, it acknowledges that trees as living green infrastructure are a key element of infrastructure, with life-cycle costs and value that must be tracked to ensure resources are being used effectively.

In addition to Regional measures, there are provincial, federal and local municipal legislation, bylaws, policies and guidelines that also affect forest management in York Region. Some highlights of these are discussed in the sub-sections that follow.

Provincial policies protect some areas and target growth to others

Provincial priorities play a role in the use of land, including forested land, within the Region. The Oak Ridges Moraine is the Region's most significant and environmentally sensitive landform. It is the drainage divide between the Lake Simcoe and Lake Ontario basins and a major groundwater recharge feature for south-central Ontario. As a result, much of it is protected by provincial legislation.

Legislation also identifies a protected Greenbelt encircling the Greater Toronto Area. It includes the moraine and most of the Lake Simcoe watershed. In total, the Lake Simcoe Protection Plan, Greenbelt Plan and Oak Ridges Moraine Conservation Plan cover 69 per cent of the Region.

Grow Green: Ontario's Climate Change Action Plan 2016-2020 sets a target of 50 million new trees planted across the province by 2025. It doubles the previous target for the number of trees to be planted within urban boundaries, taking it from one million to two million and continues to support provincial tree planting programs.

The provincial Growth Plan for the Greater Golden Horseshoe, an area encompassing the Greater Toronto Area, Hamilton and Niagara Region, forecasts future growth, directs where municipalities should be prepared to receive it, and sets minimum levels of intensification in existing built-up areas.

The most recent Growth Plan forecast is that York Region will reach 1,790,000 residents by 2041, an increase of more than 50 per cent from the figure of 1,156,000 in mid-2015. Most of this growth is expected to be absorbed by further intensification in the Region's southern municipalities, although the plan also envisions East Gwillimbury, which is now largely rural, to grow by almost 100,000 residents. In guiding forest management to 2031, this plan takes into account the pressures likely to be placed on both woodlands and trees as these growth trends unfold.

Partnerships and stewardship are key to healthy forests

As well as being responsible for trees on Regionally-owned land and properties, the Region supports and leverages numerous forestry partnerships in both urban and rural settings. It also supports stewardship of forest resources, which broadly speaking includes the wise care of trees to ensure their health and survival, and a commitment to replace them at the end of their natural life span.

A key role for the Region is supporting the tree and forest management work of the local municipalities. In that role the Region coordinates municipal forest studies, helps build capacity and shares and promotes best practices in forest management. As well, many local municipalities have passed bylaws to protect trees. These harmonize with the Regional Forest Conservation Bylaw, which protects woodlands.

The nature of the tree canopy varies across the local municipalities, largely because of their differing degrees of urbanization and settlement patterns. The cities of Vaughan and Markham and the towns of Richmond Hill, Aurora and Newmarket are now predominantly urban in character. The towns of Whitchurch-Stouffville, East Gwillimbury and Georgina and the Township of King remain mainly rural. Figure 3, on the following page, illustrates the distribution of canopy cover across the municipalities within the Region. It also shows there is more overall tree canopy cover in the less urbanized areas and a larger share of that cover is outside woodlands.

The variability in canopy cover has an impact on approaches to forest management. The urban centres have been increasing efforts for many years to manage trees on streets and in their parks, and City of Vaughan and Town of Aurora have already drawn up their own urban Forest Management Plans. Increased attention to forest management is a more recent development in most of the rural municipalities, and has been driven by such events as ice storms and the devastating impact of invasive species like the emerald ash borer.

The Region has partnered with all nine local municipalities on urban forest studies. These have been completed for Cities of Vaughan and Markham and Towns of Richmond Hill, Aurora and Newmarket. Township of King and Towns of Whitchurch-Stouffville, East Gwillimbury and Georgina are nearing completion. The studies, which are discussed in more detail in the box on page 10, confirm that the tree canopy provides important ecosystem services now and has the capacity to grow to increase those benefits.

Other Regional partners include the Toronto and Region Conservation Authority, the Lake Simcoe Region Conservation Authority, LEAF (Local Enhancement and Appreciation of Forests), Forests Ontario, Parks Canada, the Evergreen Foundation, the Nature Conservancy of Canada and the Oak Ridges Moraine Land Trust.

Urban forest studies provide a clearer picture

Using digital aerial photography, traditional on-the-ground surveys, geographic information systems, and new means of remote sensing, tree studies across the Region have assessed the state of all trees within local municipalities and helped to determine targets for canopy cover.

Study goals and activities include:

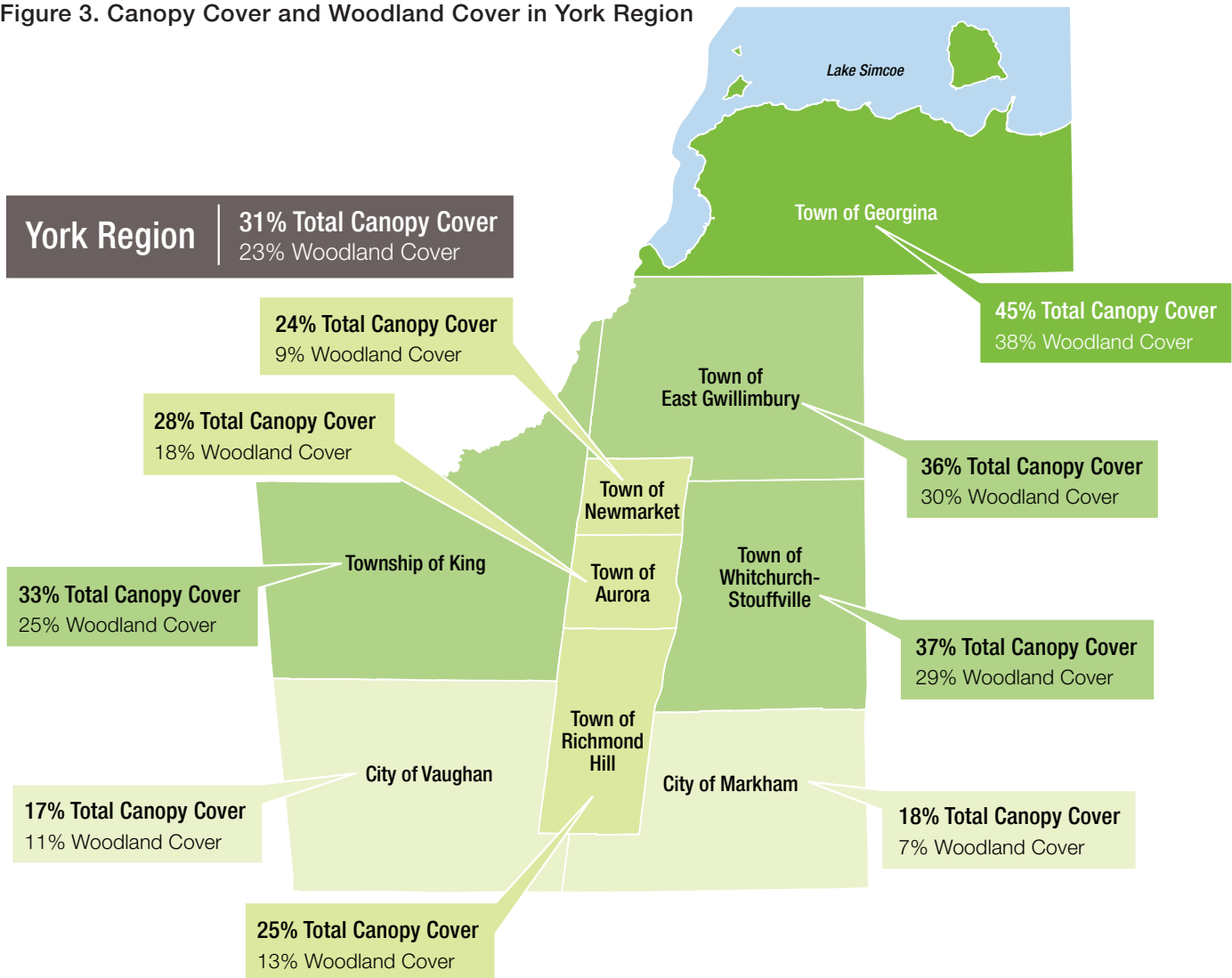
- Quantifying the current distribution, make-up, condition and function of all trees within a municipality to provide a baseline against which to monitor progress;
- Calculating the contribution of existing and potential canopy to such beneficial processes as reducing energy needed to cool and

heat buildings, slowing stormwater run-off, sequestering carbon, and removing polluting gases and particulates from the air;

- Quantifying how trees increase real estate values and enhance human health; and
- Identifying actions needed to enhance the capacity of forest resources to provide these essential ecosystem services and other benefits.

The studies show that trees provide real economic as well as social benefits. As just one example, tree cover reduces residents' energy costs by more than \$5 million a year in the five urban local municipalities alone.

Figure 3. Canopy Cover and Woodland Cover in York Region



III. The forests today, and what's needed for tomorrow

Woodlands provide a wide range of functions and services

In 2013, the most recent year for which complete data are available, woodlands covered 23 per cent of the Region.

Many of the Region's woodland areas lie within the Oak Ridges Moraine. North of the moraine, extensive treed wetlands, including the great swamps associated with Holland Marsh, the Black River, Pefferlaw and Uxbridge brooks, provide much of the woodland cover. These treed swamps are relicts of Lake Algonquin, which covered the area during the last ice age.

The extensive valleylands of the Region's numerous other rivers are also well forested. In the more urbanized south, these valleys – along the Humber, Rouge and Don rivers, which ultimately drain into Lake Ontario – provide by far the greatest share of forested land.

York Region's woodlands can support a diverse range of plant and animal life. The Region falls within the Great Lakes-St Lawrence Forest Region, which lies between the deciduous Carolinian forest to the south and the coniferous boreal forest to the north. As a result, it includes the northern limit of some species and the southern limit of others.

About 50 native tree species, both deciduous and coniferous, are found across the Region. Forests in

the drier uplands are dominated by sugar maple, basswood, beech, white ash, white pine and eastern hemlock. In the wetter lowlands, dominant species include green and black ash, silver maple, red maple, eastern white cedar, yellow birch and balsam fir.

Because they are complex ecosystems comprising a variety of trees, other vegetation, wildlife, insects, fungi and microorganisms, woodlands provide a wide range of services that are essential to the environment. Strong linkages among different parts of the woodland ecosystem support and sustain its health. As a result, management of woodlands generally focuses on the forest as a whole and, in the absence of serious external threats, involves minimal or no intervention.

Trees outside woodlands grow in a variety of places

Including trees outside woodlands, the current canopy cover in York Region is 31 per cent, or close to one-third of its total land area.

Trees outside woodlands account for about 8 per cent of the canopy cover. They are found in many settings on both private and public lands. These include parks, farms and golf courses, cottages and other recreational properties, along streets and transitways, around industrial, commercial and institutional buildings, and in the front and back yards of homes.

York Region one of the hosts of Canada's first national urban park

Major sections of the new Rouge National Urban Park, an extraordinary natural area now taking shape in the eastern part of the Greater Toronto Area, will be located in York Region.

The park's backbone is the existing Rouge River watershed, previously managed by the Toronto and Region Conservation Authority. The Park follows the course of the river of the same name and empties into Lake Ontario. Further upstream, its watershed lies in City of Markham and Town of Stouffville-Whitchurch within York Region.

The new National Urban Park will be more than double the size of the previous park area, thanks to contributions of land from the federal and provincial governments, regions and local municipalities. Once fully established, Parks Canada will manage the largest and best protected urban park of its kind in North America and will offer a fascinating mix of natural, cultural and agricultural landscapes.



A tradition of caring for trees

A tradition among residents of planting and caring for trees is part of the Region’s natural history. Mature tree canopies can now be found lining streets throughout many neighbourhoods. Excellent examples include Lake Drive North in Georgina, Farr Avenue in East Gwillimbury, Main Street in Markham, Clarence Street in Vaughan, Kennedy Street West in Aurora, Church Street in Newmarket, Mill Street in Richmond Hill, Albert Street in Whitchurch-Stouffville, and Keele Street in the Township of King.

As Figure 4 shows, the distribution of the canopy cover reflects contributions from all settings. It also shows that, as might be expected, trees in the urbanized communities of the Region are more often found on existing residential, commercial and industrial properties. Conversely, in rural communities, trees are more likely to be growing in open, natural spaces and on agricultural properties. These findings are helpful both in predicting where canopy will increase as existing trees mature, and identifying opportunities to plant more trees, especially outside woodlands.

Just as their settings vary widely, so do the characteristics of these non-woodland trees. They may occur in a grouping that is smaller than a woodland – for example, a small park, a hedgerow between farm fields, or a windbreak – but that nonetheless offers some of the services and benefits. In some settings, individual trees stand by themselves, unconnected to any other trees or plantings. Trees outside woodlands may be native species or, for ornamental or hardiness reasons, non-native.

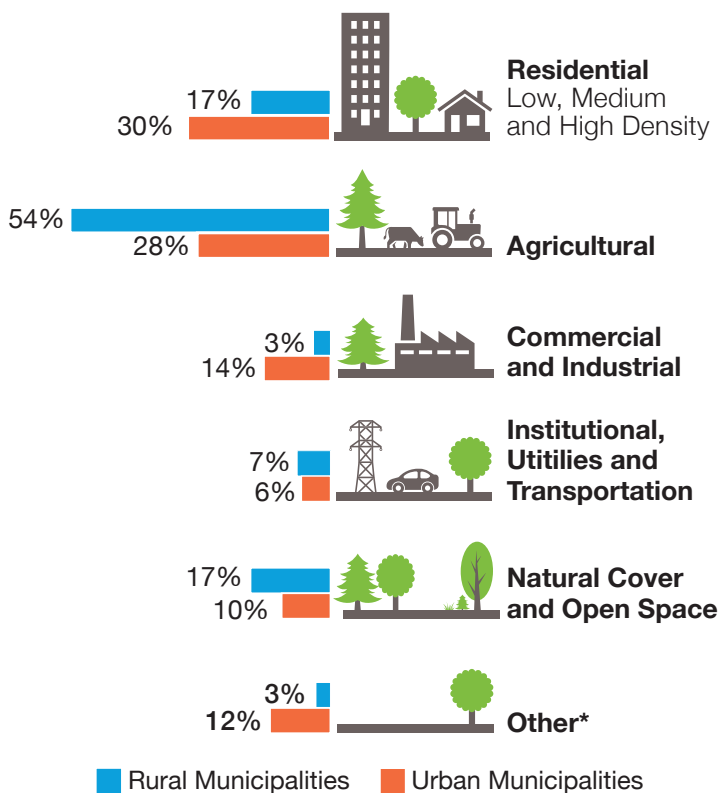
The maintenance needed by these trees also varies. Groupings of trees in less urbanized settings like parks, farms and golf courses may need little or no intense management. These trees face risks from development, invasive species and climate change. Individual trees in a highly built-up area are likely to need much more attention if they are to survive, thrive, and grow to maturity.

But in an urban setting, the services that even individual trees provide are extremely valuable. Trees counteract many of the negative impacts of urbanization and development: heavier traffic and industrial activity that create more carbon dioxide and other harmful emissions, built structures that concentrate heat, and more paved surfaces that increase flooding risk.

Communities can enjoy these benefits, however, only to the extent that their trees grow and survive to reach large size at maturity. At present, the trees outside woodlands are generally young, with the urban forest studies done in the Region showing close to three-quarters have a diameter of less than 24 centimetres (10 inches). This growth potential presents considerable opportunity.

Ensuring that these trees continue to mature will dramatically increase the benefits they provide. That’s because a tree’s canopy – the best measure of its ability to deliver the benefits – grows exponentially: while its trunk diameter increases at a fairly uniform rate of one centimetre a year, its canopy expands at a much

Figure 4. How Tree Canopy Cover is Distributed Across Land Uses in Rural and Urban Municipalities



**Other - comprised predominately of vacant land scheduled for development*

faster rate. Figure 5 shows, between five and 20 years of age, a tree's trunk diameter increases by a factor of four, but its canopy expands from one to 20 square metres in the same period. And, going out to 40 years, an eight-fold increase in diameter, from five to 40 centimetres, increases its canopy 80-fold.

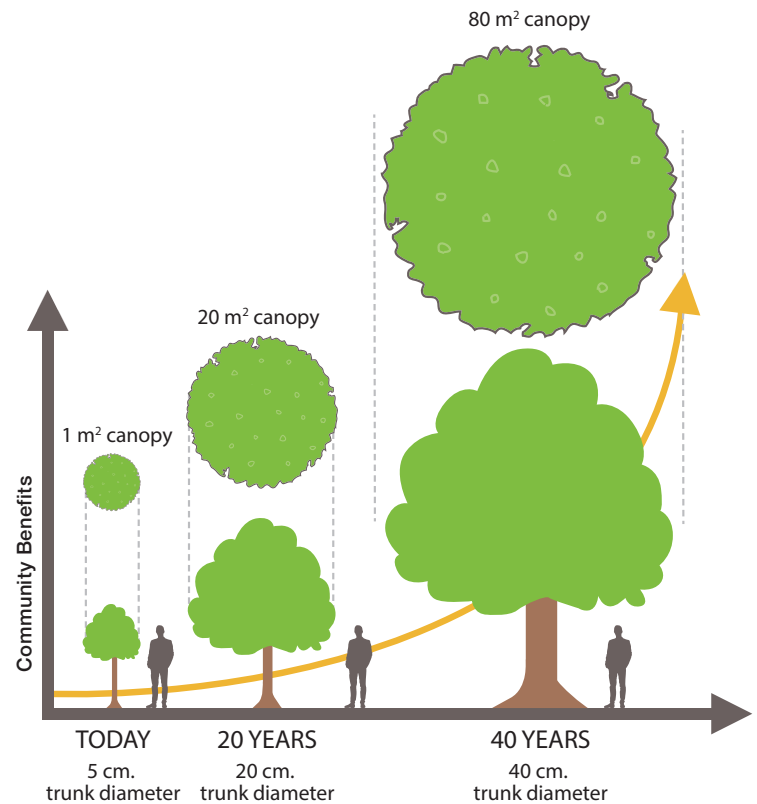
This is why it is essential to invest in tree care and stewardship, and to encourage homeowners, businesses and institutions to plant and nurture trees on their property.

Unlike woodlands, trees in urban settings must usually be managed on a tree-by-tree basis, requiring more intense effort and greater resources. Activities typically include planting larger specimens, as well as watering and pruning.

All trees face serious challenges and need ongoing stewardship

The challenges to trees in the Region cover a broad spectrum, from ice storms, invasive plants and pests to pollution and loss of growing space.

Figure 5. Relationship Between Tree Size, Leaf Area and Benefits Provided to Residents



Partnering to support trees on agricultural land

Stewardship of the land is a role close to the heart of the farming community. Although clearing the land is essential for producing crops, farmers have long recognized that trees, wildflowers and other non-cultivated plants contribute value in hedgerows that separate fields, windbreaks that protect soil, crops and shade livestock, and plantings along watercourses that stabilize the soil.

With pressure from low-cost imported food, however, farmers today must make hard economic decisions about how much space they can allocate to trees. Removing hedgerows creates larger fields that are more cost-effective to work with mechanical equipment. As well, it is now worth tiling and cultivating marginal land that was previously available for naturalization.

These trade-offs make individual farms more viable as businesses, but may have longer-term and wider impacts on farms and the environment overall. Research shows, for example, that hedgerows and windbreaks help to protect crops from the extreme weather events, like drought, associated with climate change. They also increase biodiversity, serve as migration corridors, and provide habitat for pollinators, which are under enormous pressure and whose loss would significantly reduce the yield of many crops. As well, trees along streams and rivers reduce the pollutants entering the water and help keep watercourses from silting up.

Land ownership is also a consideration. A significant portion of farmland in the Region is rented, not owned, by the farmer who works it. Where the land is not in a protected area, the owner may resist planting trees because of an expectation that it has future development potential.

As part of the outreach the Region undertook in developing this strategy, it met with representatives of the agricultural community to discuss the pressures that make it difficult to farm profitably while protecting trees and other natural heritage features. These conversations helped to identify opportunities and possible partnerships to protect farmlands and benefit trees.

The emerald ash borer currently poses the greatest biological threat to trees in the Region. It feeds on ash trees, cutting off the flow of water and nutrients and ultimately killing them. In 2011, Council adopted the Emerald Ash Borer Management Plan to proactively manage the impact. In the summer of 2015, a research study in the Region began investigating whether the stingless Tetrastichus wasp, which attacks the borer, might be a safe and effective control agent in the long term.

Other biological threats include the Asian long-horned beetle, gypsy moth and Dutch elm disease. Invasive plant and tree species include dog-strangling vine and the fast-growing Norway maple, both which can threaten the young understory of trees in a woodland.

An increasingly volatile climate driven by climate change is also a threat, and one whose impacts are very difficult to predict. Potential outcomes that would affect trees in the Region include drought, higher temperatures, more invasive pests and more frequent and severe wind and ice storms. Higher temperatures and drought, in particular, might drive some species northward and possibly out of the Region altogether.

Improving street tree health

With its partners, York Region has planted more than one million trees and shrubs. Natural Heritage and Forestry, the area responsible for trees and woodlands, has also significantly improved the return on green infrastructure investment by helping to ensure more street trees thrive and survive to maturity.

Street trees are provided by a contractor who sources them from nurseries. By setting and monitoring rigorous standards for how trees grow in the nursery and are transported, planted, watered and otherwise cared for, the Region has significantly boosted the health of street trees over the past several years.

The more than three-fold increase in the number of trees in good health in recent years, from 23 to 84 per cent, not only represents major savings because fewer trees need to be replaced, it also allows the canopy cover to expand more quickly. This strongly supports achieving the targets for canopy cover and maximizing benefits for residents and communities.

Like all trees across the Region, trees in urban settings face threats from invasive species and climate volatility. In addition, they are exposed to stresses from air pollution, road salt and crowding – by buildings, roads, parking lots, utility poles and lines, water mains, sewer lines and people – that rural trees face to a lesser degree or not at all.

Because of these stresses, trees in the most heavily urbanized areas must have human help if they are to thrive. Without it, they will deteriorate and die and the benefits they provide will decline.

The Region and its partners are putting significant resources into the trees in and outside of woodlands – to plant them, to ensure they flourish and to manage threats to them. With more and more resources going to trees in urban settings, it is important to measure progress to ensure management efforts yield the best possible results. A key measure comes from integrated monitoring of the canopy cover provided by these trees.

At present, the only metric on which the Region reports is woodland cover. Measuring the canopy coverage provided by all trees, not just those in woodlands, is critical and is a central aim of this plan.

This shift towards recognizing and increasing the contributions made by all trees calls for much broader stewardship than the Region alone can provide. This plan therefore aims to bring together and inspire municipalities, private landowners and other partners to share in the stewardship. Only by working together can the full benefits of trees and woodlands be achieved.

As with other infrastructure classes, the management of trees as green infrastructure must respond to the need for economic and environmental sustainability. Including all trees in performance metrics and setting a target for tree canopy cover are important steps towards ensuring both types of sustainability.

For the Region and its partners, the complexity of the stewardship task, especially given the rate of growth in the Region and the accelerating pace of other threats, also calls for innovative and adaptable forest management approaches and techniques.

To enhance the health of our ecosystems and to better prepare Ontario and its residents to adapt to climate change, tree planting efforts must involve both rural and urban initiatives.

(Trees Ontario. A Healthy Dose of Green, 2011)

IV. The Forest Management Plan: Vision and Goals

The Forest Management Plan is meant to guide Regional decisions and activities around trees and woodland management to the year 2031, while setting out aspirational goals for 2051. Its most detailed recommendations cover the short term (the next three years), followed by broader recommendations for the medium (four to 10 years) and long term (10 to 15 years). Progress on implementation will be reviewed every five years, and the plan updated every 10 years.

Vision

The development of this plan resulted in a renewed vision for forest resources in the Region:

Healthy trees and diverse, sustainable forest ecosystems that support the well-being and quality of life of residents and communities

This vision articulates clearly that all trees – from individual specimens to large woodland tracts – are of value to the Region and its residents. By including all trees as valuable forest assets, the Region invites its many partners, including local municipalities and residents, to share in the vision.

Five Goals

Five overarching goals underpin the vision. While the five goals are summarized below, their objectives are shown in greater detail in the Forest Management Plan Implementation on pages 24 to 29.

1. Increasing tree canopy cover by working toward the existing target of woodland canopy of 25 per cent by 2031 and setting targets for canopy cover of 35 per cent by 2031 and 40 per cent by 2051.

This goal reflects the new vision, with its inclusion of trees in all settings, and aims to increase their environmental, social and economic benefits. To help achieve both the woodland cover and canopy cover goals, the plan leverages the valuable data collected through the urban forest studies with local municipalities and integrated monitoring.

It will also be achieved by:

- Looking for opportunities to increase canopy cover on private and public land, including tree planting programs and partnerships;
- Supporting the development of local municipal urban Forest Management Plans that include canopy cover and woodland cover targets;
- Using and sharing best practices for protecting, establishing and restoring canopy cover and woodland cover; and
- Ensuring that legislation, policies and bylaws support the protection and enhancement of canopy cover and woodland cover.





A NEW VISION

Healthy trees and diverse, sustainable forest ecosystems that support the well-being and quality of life of residents and communities.

This vision articulates clearly that all trees – from individual specimens to large woodland tracts – are of value to the Region and its residents.

2. Managing tree and woodland biodiversity to increase ecological resilience and minimize the impacts of climate change.

The purposes of this goal are to save as many existing native tree species as possible, look for native species from other areas that might replace those lost in the Region, and strengthen the resiliency of trees and woodlands in the face of increasing threats.

It will be achieved by:

- Increasing the diversity of tree species planted throughout York Region by coordinating efforts and strategies among the Region, local municipalities and other agencies;
- Using best practices to prevent and mitigate the impacts of invasive species on canopy cover and woodland cover; and
- Ensuring that climate change strategies and tactics support the resiliency of the forests of York Region.

3. Increasing public awareness and appreciation of the value of trees and woodlands.

This goal recognizes the critical need to build awareness and appreciation of the benefits of trees across a wide range of stakeholders.

It will be achieved by:

- Leveraging information from the urban forestry studies;
- Using educational outreach, planting events and marketing initiatives; and
- Developing engagement strategies aligned with demographic and cultural perspectives on trees and woodlands.



4. Increasing stewardship of trees and woodlands on public and private lands.

The purpose of this goal is to achieve comprehensive stewardship that includes local municipalities, residents, industry, businesses and others.

It will be achieved by:

- Expanding partnerships, engaging community networks and collaborating with the agricultural community to develop more tree planting opportunities and fight threats to trees; and
- Developing incentive programs that promote stewardship of trees and forests on private lands.

5. Sustainably manage the forests of York Region through continuous improvement, adaptation and innovation.

This goal is consistent with the recognition that trees are an element of green infrastructure, and like other infrastructure they need to be cared for over time in ways that are forward-thinking and sustainable.

It will be achieved by:

- Identifying and reviewing emerging practices, programs and trends within canopy cover and woodland cover, as well as continuing the best existing practices;
- Developing a framework to manage green infrastructure as a capital asset, and better integrating canopy cover and woodland cover initiatives across departments
- Building and maintaining ties to academic researchers, private industry and other stakeholders to stay at the leading edge of forestry science and technology and to test and incorporate new ideas;
- Monitoring proposed federal and provincial policies and legislation to identify opportunities and other impacts on the Region's plans; and
- Monitoring outcomes of initiatives to report on progress and, where needed, to update strategies and actions.

The full plan appears in Forestry Management Implementation: Strategies and Actions beginning on page 24 of this document.

V. Putting the plan into action

In acting on this plan, partnerships and leadership will both be critical. The Region will serve as the plan’s champion, but it will rely on others including: residents and businesses, as well as local municipalities, the conservation authorities and non-governmental organizations, to achieve its goals.

The Region will continue to work with key partners to enhance existing programs and activities. It will also apply best practices and leverage scientific advances to meet existing and evolving challenges.

Above all, the Region will take a strong leadership role in educating residents and businesses on the importance of the canopy cover and encouraging their role in increasing canopy cover and acting as stewards. This is tied closely to the goal of Forest Management Plans at the local municipal level that will align with the Regional plan.

All of these activities are needed to support the plan’s ambitious but essential goals, especially around canopy cover. This measure is currently at 31 per cent. The Region aims to increase it to 35 per cent by 2031 and ultimately, by 2051, to 40 per cent.

Achieving this will involve increasing canopy cover outside woodlands. At present, the 31 per cent canopy cover consists of 23 per cent woodland canopy and 8 per cent other canopy (that is, canopy outside woodlands). Table 1 below shows how these elements would have to increase to meet the 2031 and 2051 goals:

Table 1. Current and Targeted Regional Canopy Cover and Woodland Cover

	Current	2031	2051
Woodland cover	23%	25%	25%
Other tree canopy cover	8%	19%	15%
Canopy cover	31%	35%	40%

As the table shows, the canopy cover provided by trees and shrubs outside woodlands – most of which are on private land – would have to increase by one-quarter by 2031 to meet the 35 per cent goal. It would

have to almost double to meet the goal of 40 per cent total tree canopy cover by 2051.

Most of the trees in urban areas are relatively young and in a period of strong growth. An important share of canopy growth will come, therefore, from ensuring that these existing trees remain healthy and continue to grow.

Table 2 on the following page shows the forecast contributions to both woodland cover and canopy cover by local municipalities towards achieving the regional targets.

The experience in other municipalities is encouraging. For example, in City of Mississauga, canopy cover has increased in recent years, despite the damage done by the emerald ash borer and a devastating ice storm in December 2013. This appears to be due largely to the continuing growth of young, existing trees. York Region’s urban trees may hold similar if not greater potential, given that they are, on average, younger than those in City of Mississauga.

Within woodlands, however, the picture is different. In the table, the needed growth in woodland cover appears relatively small – a gain of about two percentage points, from 23 to 25 per cent, or less than one-tenth the current area. But increasing woodland cover is challenging; the growth of trees within an existing woodland does not contribute to increasing its area. Additional tree planting is required to expand the size of woodland cover.

These factors suggest that the growth of existing trees in York Region will not provide all of the needed new canopy cover. Natural growth – especially outside woodlands – could, however, provide a large part of the needed increase, possibly between one-half and two-thirds. The actual contribution is difficult to forecast, as it depends on how well existing trees are cared for, losses, as well as the possibility of unforeseen new threats. As well, some of the Region’s older trees will reach the end of their natural lives between now and 2051.

This is a reminder that even with the best care of existing trees, the Region and its partners will also need to plant new trees to reach the canopy targets. The plan therefore includes both stewardship of existing trees and tree planting initiatives, and focuses strongly on striking the right balance between the two in order to ensure the most cost-effective approach.

Table 2. Current and Desired Canopy Cover and Woodland Cover

Existing Canopy Cover and Woodland Cover (% of area)

	Markham	Richmond Hill	Vaughan	Aurora	Newmarket	Whitchurch - Stouffville	King	East Gwillimbury	Georgina	York Region
Total Canopy Cover <i>(all land uses including woodlands)</i>	18%	25%	17%	28%	24%	37%	33%	36%	45%	31%
Woodland Cover	7%	13%	11%	18%	9%	29%	25%	30%	38%	23%
Canopy Cover Excluding Woodlands	11%	12%	6%	10%	15%	8%	8%	6%	7%	8%
Current Canopy Cover Target	30%	25%	20-25%	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Current Woodland Cover Target	n/a	n/a	n/a	n/a	12%	n/a	n/a	30%	n/a	25%
Recommended Range of Woodland Cover	8% to 10%	14% to 15%	14% to 17%	19% to 20%	11% to 13%	30% to 32%	26% to 28%	31% to 33%	39% to 40%	25% (2031)
Recommended Range of Total Canopy Cover	20% to 35%	26% to 35%	25% to 35%	29% to 35%	25% to 35%	40% to 45%	36% to 41%	39% to 44%	46% to 47%	35% (2031) 40% (2051)

Current State based on Urban Forest Studies and York Region Woodland Cover Assessment
 Desired State - Recommended Ranges for Canopy and Woodland Cover

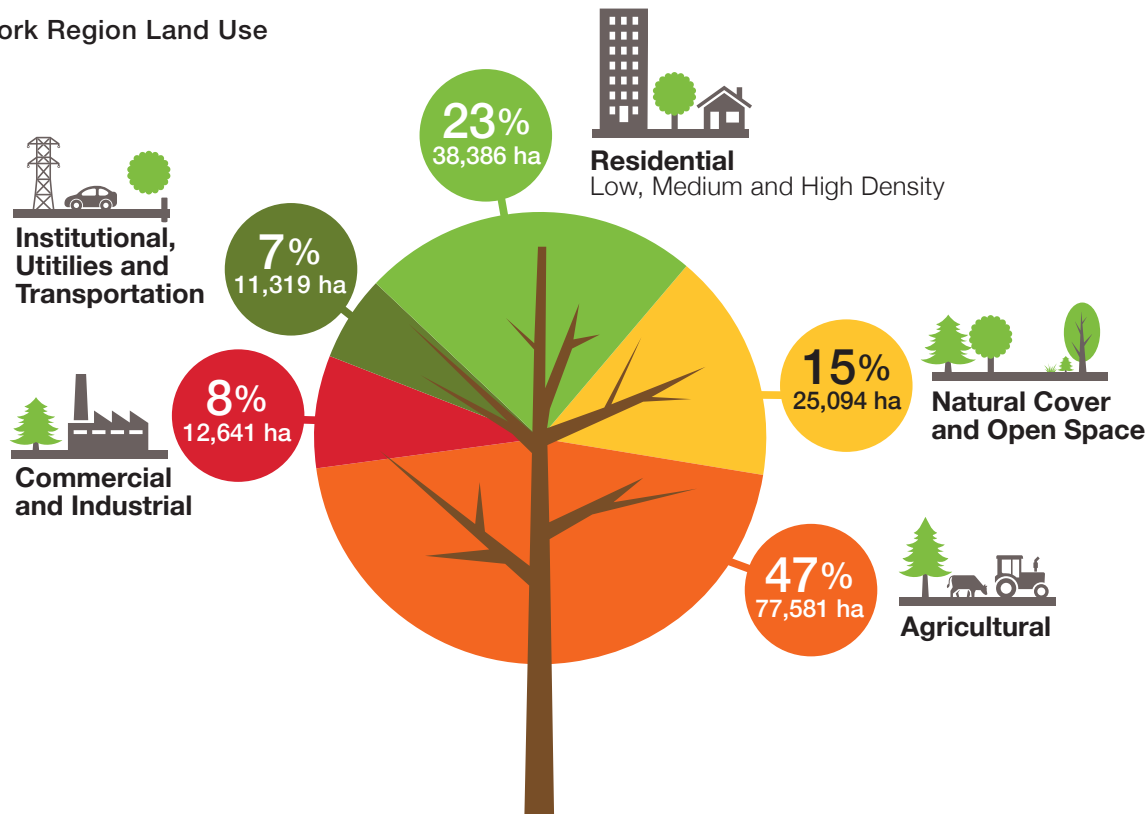
- 1 - Canopy cover metrics from "Urban Forest Study Technical Reports" - various dates and LSRCA | Tree Canopy Analysis. Woodland cover metrics from "2013 Greening Strategy Achievements", February 14, 2014, from the Commissioner of Environmental Services.
- 2 - Town of Markham Greenprint, Markham Community Sustainability Plan 2011.
- 3 - Town of Richmond Hill Official Plan, 2016.

- 4 - Vaughan Parks and Forestry Operations, 2012. Expanding the urban forest - one tree at a time: an update to Planting Our Future: A 5-Year Plan to Expand the Urban Forest.
- 5 - Town of Newmarket Official Plan, 2014. Woodlot policies set a tree cover of 12 per cent.
- 6 - Town of East Gwillimbury Official Plan, 2014.



Where the new trees will go is a key question for achieving the plan. Figure 6 shows how land is currently used across the Region.

Figure 6. York Region Land Use



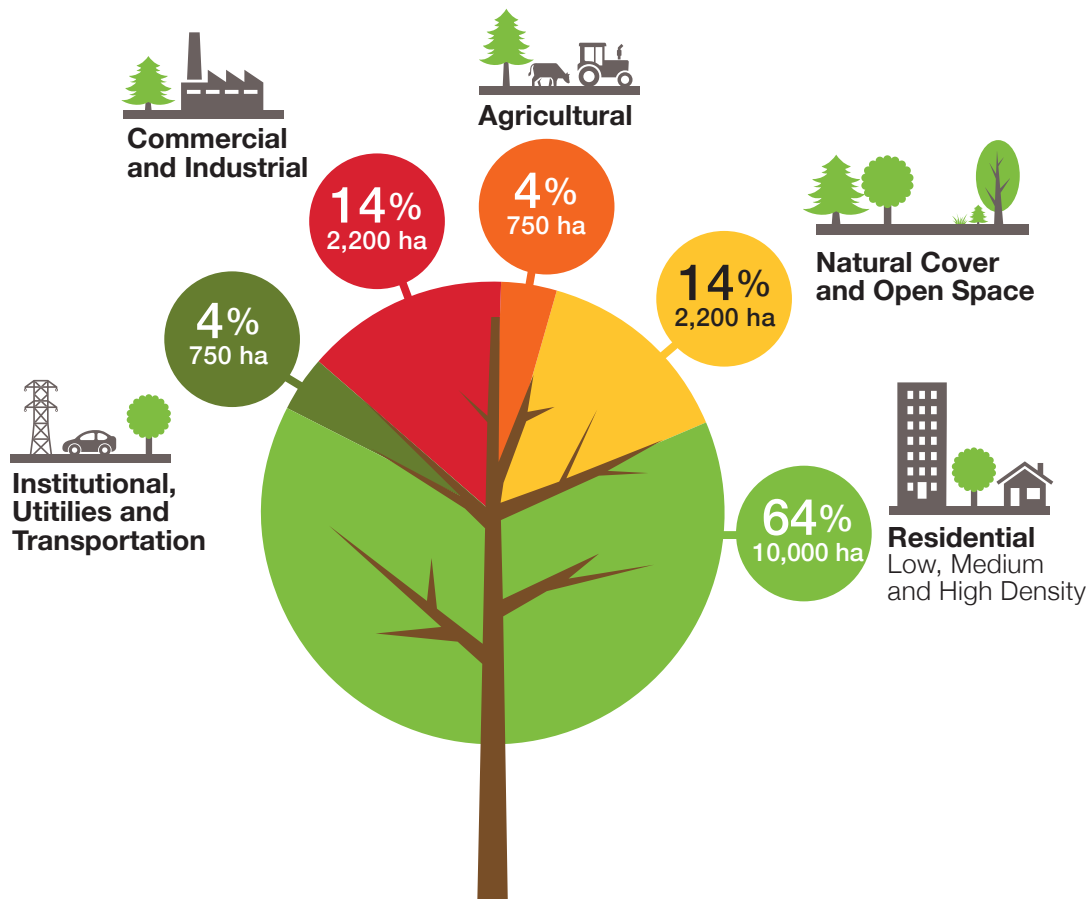
Careful analysis of existing land uses and potential opportunities for tree planting on various types of land informed the following conclusions:

- Opportunities to plant new trees where there is natural cover and open space are limited because these lands, if not already forested, are used for recreational purposes like playing fields.
- Farms provide some potential for tree planting but, as the sidebar on page 13 notes, mounting economic pressure is limiting this potential. The plan contains actions under Goal 4 to continue working with the farm community to help preserve farmland and protect trees.
- Institutional, utility and transportation lands vary in their potential for tree planting. New trees are often planted in road and transit rights-of-way. The Region, guided by a streetscaping policy, has put significant effort and investment into this area. There are also opportunities around schools, hospitals and other public buildings. But planting trees in utility corridors, for example under electricity lines, is more difficult, as utilities need to maintain access. In any event, the contribution of this category is limited mainly by the fairly small share it represents of land across the Region.
- Land used for industrial-commercial purposes offers good planting possibilities. The plan includes actions in Goal 1 to work with the commercial-industrial sector to leverage the economic benefits, for example reducing energy costs, that follow from planting trees. One consideration, however, is that businesses sometimes consider the vacant land around their site as available for future expansion.
- There are significant opportunities to encourage stewardship and plant trees in existing and new residential areas, which already comprise almost one-quarter of the land in the Region and will grow over time. Almost every housing type, from low to high density, includes some green space on the property. An analysis of residential land showed that more than one-third could be planted with trees. These plantings would provide benefits that are both environmental and, for the homeowner, economic: mature trees can increase a home's value by as much as seven per cent.

The plan supports increased canopy cover on commercial, industrial and residential land under several goals, particularly by supporting education and stewardship, recommending action to ensure development is carried out in ways that do not reduce trees' chance of survival, and highlighting the need for local municipalities to develop canopy cover targets.

Taking these factors into account, and looking at where existing, young trees will add significant growth, the Forest Management Plan foresees how various types of land could best contribute to achieving its goals. Figure 7 shows the expected contribution by land use to the canopy cover target of 35 per cent by 2031 and 40 per cent by 2051, including both growth of the existing canopy and the canopy contribution from new tree planting efforts.

Figure 7. Contribution of Land Use by Total Tree Canopy Cover Goal



The figure shows that the plan will focus on residential and commercial-industrial lands to help achieve the canopy cover goals. Together, these two types of land use are expected to meet 78 per cent of the goal.

Because residential and industrial-commercial lands tend to be located in more urban areas, increasing the canopy cover on this land will also help to maximize the benefits of trees as green infrastructure in urban settings. But because urban areas can present the most challenging growing conditions, the stewardship role of municipalities, homeowners and businesses will be critical.

With these allocations as guidance, and looking at the existing and planned canopy cover by municipality, the plan then recommends ranges for canopy cover in each municipality.

The Region recognizes the need for ongoing engagement with and support for local municipalities

in developing and acting on the recommended local canopy cover targets that align with the Regional targets set out in this plan. Several actions outlined in the plan, directly focus on this support for local initiatives. Many other actions – for example around best practices, public education and stewardship – are intended to help build support for both Regional and local municipal goals.

The plan also aims to strengthen the important partnerships that the Region and local municipalities will leverage with residents, conservation authorities, non-government organizations and researchers to achieve their targets.

The Forest Management Plan will make the most effective use of existing resources to increase tree canopy cover the Region. Over time, as the Plan is implemented, Environmental Services Department will develop business cases for any specific actions that are not already funded.

VI. Conclusion

The Forest Management Plan has goals to protect and enhance York Region's trees and woodlands, and build support for stewardship across the Region and address critical threats. The strategy acknowledges and responds to the spectrum of important functions trees carry out, from the support that large, connected woodlands give to entire ecosystems, to the benefits trees provide on farms and in other rural settings, through to the valuable role they play in urban settings by providing shade, shelter, and clean air, preventing dangerous heat build-up, and absorbing storm waters. It acknowledges and supports the key roles played by the Region's partners.

Through its goals, strategies and actions, the management plan provides a carefully thought-out roadmap to achieving its targets. This will ensure programs and activities are focused on desired outcomes, ensuring the best possible use of available resources. Careful monitoring of and reporting on results will help ensure the strategy's focus is maintained.

Even more important, the success of the plan will help ensure that residents can enjoy the benefits of healthy, sustainable woodlands and trees now and in the future. This is a goal that has never been more important, as the Region becomes more urban and more aware of the need to maximize the benefits of green infrastructure. In York Region, every tree counts.

The purpose of the Forest Management Plan is to make the most effective use of existing resources to increase tree canopy cover in the Region. Over time, as the strategy is implemented, the Environmental Services department will develop business cases for any specific actions that are not already funded.



I can see
trees in
my future.

 METROLINX | VIVANEXT
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Forest Management Plan Implementation: Strategies and Actions



GOAL 1

Canopy cover and woodland cover

Increase total tree canopy cover and woodland cover in the Region.

Increase the woodland cover to 25% and the canopy cover to 35% by 2031, and canopy cover to 40% by 2051, to maximize the environmental, social and economic benefits provided by trees and woodlands.

Review and prioritize opportunities to increase canopy cover and woodland cover on public and private lands.

- S**
 - Develop a prioritized planting plan by analyzing current planting opportunities.
 - Continue to assess tree planting opportunities on Regional-owned properties and refine delivery to include both canopy cover and woodland cover objectives.
 - Prepare a summary report of urban forest studies, including results of canopy cover and woodland cover integrated monitoring.
- M**
 - Use the results of the prioritized planting plan to inform the delivery of tree planting partnerships.
- L**
 - Review delivery of York Region capital infrastructure projects to identify opportunities to increase tree planting.

Enhance existing tree planting partnerships, and explore new partnerships and tree planting initiatives.

- S**
 - Continue to optimize existing tree planting partnerships (e.g. school board).
 - Implement 'Grow Your Legacy' large-scale private land tree planting campaign.
- M**
 - Work with partners to continually improve tree planting programs that are targeted and cost effective.
 - Explore new tree planting partnerships targeting industrial and commercial land uses.
 - Review and renew existing tree planting agreements and strategies.

Support the development of local municipal urban Forest Management Plans that include canopy cover and woodland cover targets.

Encourage the development of goals and objectives in local municipal urban Forest Management Plans which align with the Region's Forest Management Plan.

- S**
 - Continue to actively support local municipalities, conservation authorities and others in the development of urban Forest Management Plans.
- M**
 - Collaborate with York Region departments, local municipalities and other organizations on policies to conserve soil on development sites for better tree health.
- L**
 - Undertake urban forestry studies in partnership with local municipalities on a 10-year cycle.



Review and implement best management practices for the protection, establishment and restoration of canopy cover and woodland cover.

Identify and share best practices through communication and collaboration with local municipalities and other partners.

- S** • Continue to collaborate with York Region departments, local municipalities, agencies and partners to share information and exchange ideas.
- M** • Complete a review of Regional standards and specifications, including soils and technologies, supporting healthy trees in urbanized environments.
- Update and distribute York Region's Urban Forest Management Tool Kit, which provides guidance to local municipalities to develop urban forestry plans.
- Continue to host the York Region Urban Forestry Forum, a twice-a-year forum where the Region, local municipalities and conservation authorities discuss tree and forest issues, and review terms of reference to ensure alignment with plan objectives.
- L** • Host an Urban Forestry Summit, bringing together a broad range of forestry stakeholders, to promote communication, collaboration and innovation.

Integrate canopy cover and woodland protection into the review of development applications and capital infrastructure projects.

- M** • Ensure Regional Street Tree and Forest Preservation Guidelines and Street Tree planting Design Guidelines and specifications are integrated in development applications and capital infrastructure projects.

Monitor progress towards achieving canopy cover and woodland cover targets through science-based assessment.

- S** • Monitor to ensure that the plan is followed, that reports on the results of management activities are prepared and that activities achieve the desired results.
- M** • Assess total canopy cover and woodland cover every five years.

Ensure legislation, policy and bylaws support the protection and enhancement of canopy cover and woodland cover.

Review and prioritize opportunities to increase canopy cover and woodland cover on public and private lands.

- S** • Complete the update of York Region's Street Tree and Forest Preservation and Compensation Guidelines.
- Continue to advocate for legislative and policy improvements to support canopy cover objectives (e.g. provincial legislation, soil preservation).
- Update York Region's Street Tree planting Design Guidelines and share with local municipalities.
- Assess the alignment of the Forest Management Plan with Provincial Plans and York Region's Official Plan.
- M** • Review the Forest Conservation Bylaw in consultation with local municipalities to ensure harmonized preservation of trees and forests.





GOAL 2

Climate Change and Sustainability

Manage tree and woodland biodiversity to increase ecological resilience and minimize the impacts of climate change.

Manage the forests of York Region to improve forest health, maximize ecosystem services and increase biodiversity.

Increase the diversity of tree species planted throughout York Region by coordinating efforts and strategies among the Region, local municipalities and other agencies.

- S** • Continue to undertake assisted migration trial plantings to adapt to climate change.
- M** • Develop best practices for selecting tree species that promote diversity at a Regional and local municipal scale.
- L** • Use results of urban forestry studies, including canopy and woodland cover assessments, to assess biodiversity and ecological integrity.

Use best practices to prevent and mitigate the impacts of invasive species on canopy cover and woodland cover.

Mitigate the impact of invasive species canopy cover and woodland cover

- S** • Continue to collaborate with organizations including the Invasive Species Council, Canadian Food Inspection Agency and the Canadian Forest Service to quickly detect and respond to threats.
- Continue to collaborate with partners to explore science-based biological control opportunities.
- M** • Work with agencies and academic institutions on existing and new initiatives to manage invasive species.
- Continue to participate in invasive species monitoring and control programs.
- L** • Explore research partnerships with organizations including the Canadian Forest Service to improve detection of and response to invasive species.

Ensure that climate change strategies and tactics support the resiliency of the forests of York Region.

Review the alignment and integration of best practices and innovative programs to mitigate and adapt to climate change.

- M** • Identify and develop best practices in tree planting stock requirements and tree maintenance.

Explore innovative science- and technology-based approaches to mitigate and adapt to climate change.

- S** • Look into innovative low-impact development practices that emphasize conservation and use of green infrastructure to manage water quantity and quality.
- M** • Investigate the role of trees and woodlands in storing carbon for future carbon cap and trade programs.
- Participate in forums on climate change strategies.
- Investigate a tree nursery network to promote collaboration and develop synergy among nurseries and municipalities to assess the performance of new tree species and varieties.
- L** • Evaluate the success of low-impact development designs on public land and promote use in private land construction projects.





GOAL 3

Awareness and Engagement

Increase public awareness and appreciation of the value of trees and woodlands.

Increase awareness of the environmental, social and economic value of trees and woodlands, including public health and community benefits.

Ensure information from Urban Forestry Studies is used to increase public appreciation of the ecosystem services and benefits provided by trees and woodlands.

- S** • Produce and distribute a ‘State of the Forest’ report summarizing the results of urban forest studies, including canopy cover and woodland cover assessments.
- Educate York Region residents about the ecosystem functions and services provided by trees and woodlands, including health, economic, social and ecological benefits.
- M** • Compile and distribute on-line report cards. Track numbers and species of trees planted and follow up audits at 3-5 year intervals.

Increase public awareness and appreciation of trees and woodlands and their health benefits through the use of educational outreach, planting events and marketing initiatives.

- S** • Continue to deliver York Region forest festivals and events and education programs.
- Continue to expand partnerships with York Region Public Health.
- Participate in and contribute to legislation and policy reviews that recognize the connection of trees and public health.
- Support and participate in local community events that promote the benefits of trees.
- M** • Promote health and wellness events at the York Regional Forest.
- L** • Support environmental education partners with messaging around public health benefits.

Engage a broad range of stakeholders and partners in the delivery of tree and forest initiatives.

Develop engagement strategies aligned with demographic and cultural perspectives on trees and woodlands.

- S** • Update website to post educational materials; promote events and solicit public feedback.
- M** • Undertake market research to determine baseline and changing public attitudes.
- Develop innovative marketing and communication tactics, including social media, to improve the understanding and acceptance of trees and woodlands.
- L** • Build on existing market research to assess residents’ understanding of behaviour towards and relationships with trees and woodlands.





GOAL 4

Stewardship and Taking Action

Increase stewardship of trees and woodlands on public and private lands.

Expand partnerships and engage community networks to increase stewardship actions on public and private lands.

Collaborate with the rural community to identify suitable targets for tree planting sensitive to protection of productive farmlands.

- S** • Continue to explore environmental partnerships with the agricultural community to protect farmland and improve canopy cover.
- Document use of agricultural easements and shared benefits, practices in collaboration with the Ontario Farmland Trust.
- M** • Undertake a review of rural road tree planting projects and prepare best practices for tree planting along rural roads in York Region.
- L** • Partner with agricultural communities and academic institutions to support the advancement and adoption of farm practices that benefit the environment, particularly forest resources.

Increase awareness of invasive species and impacts through engagement, education and outreach.

- S** • Continue to coordinate the Emerald Ash Borer Technical Working Group.
- M** • Monitor and evaluate stewardship activities and initiatives within the Region for participation, demographics of users and public awareness, to refine programs.
- L** • Monitor success of incentive programs and partnerships through market research and urban forest studies and refine as required.

Ensure the York Regional Forest continues to demonstrate best management practices in the stewardship of public lands

- S** • Continue to manage the York Regional Forest to meet the Forest Stewardship Council certification requirements.
- M** • Share York Regional Forest best practices through educational events and interpretive media.

Develop incentive programs that promote stewardship of trees and forests on private lands.

Explore the development of new tree planting incentive programs for private landowners

- S** • Share best practices on urban tree planting and maintenance through forums and events.
- M** • Continue existing programs and investigate new tree planting incentives for private landowners to increase the canopy cover.

Promote stewardship of trees and woodlands through focused landowner engagement.

- S** • Strengthen relationships among the Region, local municipalities, Ontario Woodlot Association, Forests Ontario, and others to encourage good forestry practices on private land.
- M** • Explore opportunities to develop a series of landowner workshops on forest management.
- L** • Explore opportunities to have private forests in York Region and surrounding areas certified.





GOAL 5

Governance, Innovation, Research and Development

Sustainably manage the Forests of York Region through continuous improvement, adaptation and innovation.

Explore science, research and technologies to improve approaches and develop innovative best management practices.

Identify and review emerging practices, programs and trends for canopy cover and woodland cover.

- S** • Continue to review emerging science-based arboriculture practices and integrate into tree planting and maintenance specifications.

Continue to manage street trees and the York Regional Forest to maximize benefits through adaptive management, best practices and innovation.

- S** • Continue to review science-based silvicultural practices to inform management of the York Regional Forest and implementation of the Forest Conservation Bylaw.
- M** • Establish strong working relationships with the tree nursery industry to increase the variety and quality of stock available, especially for street trees.

Recognize green infrastructure, including trees and woodlands, as a capital asset requiring maintenance and long-term investment.

Develop a framework for the management of green infrastructure as a capital asset requiring inventory, investment and renewal.

- S** • Complete a green infrastructure asset management plan for Regional assets, including street trees.
- Promote green infrastructure asset management as a best practice to the province, municipalities and other organizations.
- M** • Continue to participate in department and corporate State of the Infrastructure reporting.
- L** • Explore alignment of woodland canopy assessment with State of the Infrastructure report.

Improve integration of canopy cover and woodland cover initiatives across departments to identify planting opportunities and protection mechanisms.

- M** • Review opportunities for better integration of tree planting and preservation with Regional infrastructure projects and operating practices.

Increase communication, collaboration and alignment with other Regional departments, local municipalities, academia, institutions, private industry, business improvement area groups, and non-government organizations.

Explore opportunities for collaborative research with academic institutions and agencies.

- M** • Host inter-departmental Street Tree Symposium to ensure alignment of Plan, goals and objectives and promote best practices.
- L** • Identify collaborative tree and forest research, pilot projects and initiatives with academic institutions and agencies.

Monitor and evaluate changes to federal and provincial policies and legislation for opportunities (e.g. incentive programs), or impact on management practices, groups, and non-government organizations.

Provide input on federal and provincial policies and legislation to support the protection and enhancement of green infrastructure, including canopy cover and woodland cover

- S** • Continue to provide input to provincial and federal legislation through coordinated reviews within and between departments.

Monitor outcomes of plan initiatives to report on progress and update strategies and actions.

Review implementation and long-term management direction for the Forest Management Plan.

- L** • Complete a 10-year review and update of the Forest Management Plan.

Monitoring and reporting

An important aspect of the Forest Management Plan is monitoring progress on implementing the plan and reporting on the results to help fine-tune it. Previous assessments of progress towards Regional goals for woodland cover were carried out on a variety of schedules. The proposed schedule for monitoring and reporting on the Forest Management Plan brings these elements into alignment.

As shown in Table 3, assessments will be carried out based on the following work plan:

Every five years:

- Assess canopy cover and woodland cover (starting in 2016; actual five-year cycle starts in 2020)
- Report on canopy cover and woodland cover (starting in 2017; actual five-year cycle starts in 2020)
- Report on Forest Management Plan implementation starting in 2021

Every ten years:

- Urban forest studies to occur in the four years prior to reporting: 2022, 2023, 2024, 2025
- Report on urban forest studies (starting in 2017; actual 10-year cycle begins in 2026)
- Forest Management Plan reviewed, refined and updated starting in 2026

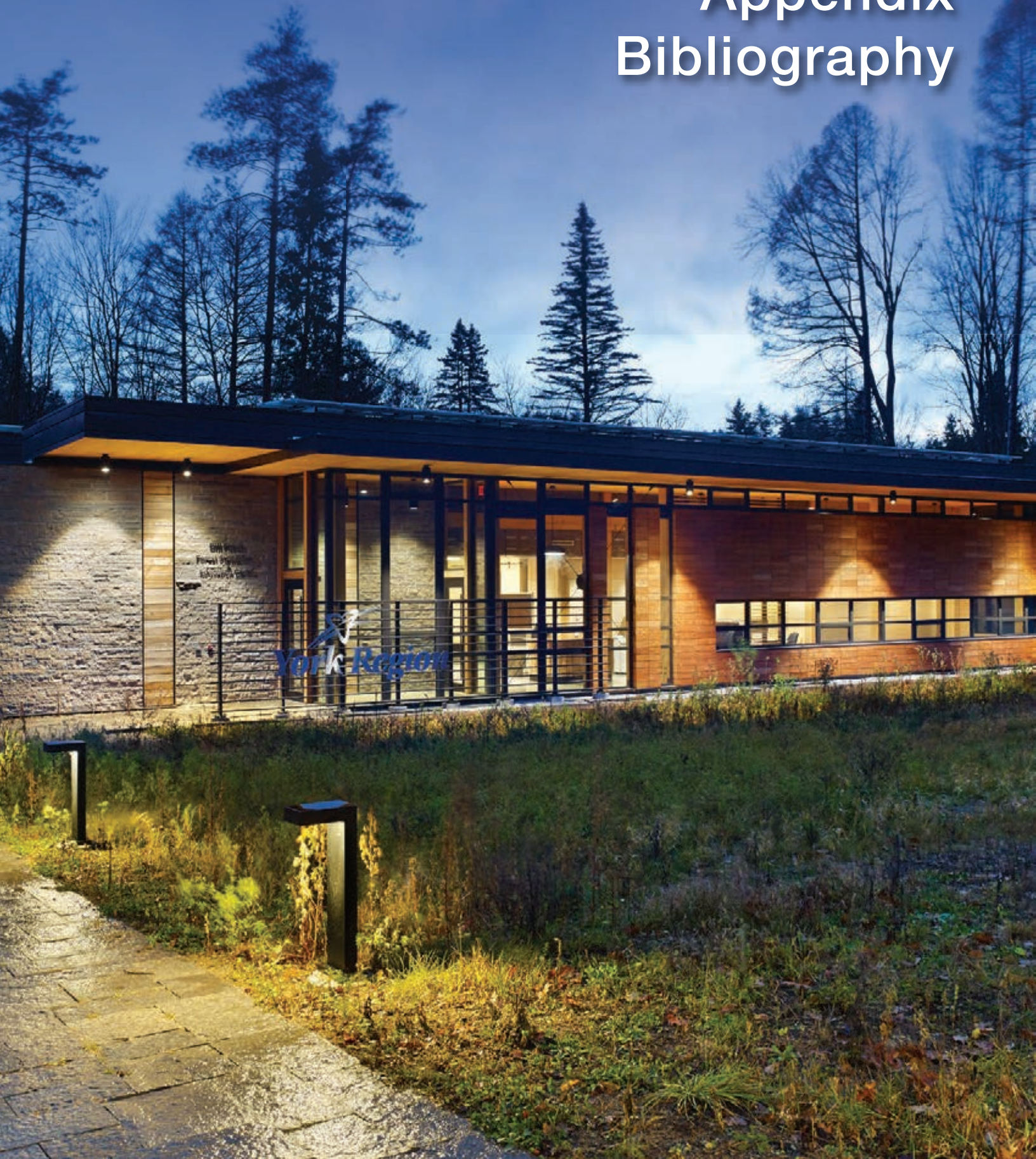
Table 3. Forest Management Plan updates and reporting schedule

2018 to 2021 Reporting Period				
2017	2018	2019	2020	2021
State of the Forests Report			Complete canopy cover and woodland cover assessment	State of the Forests report
2022 to 2026 Reporting Period				
2022	2023	2024	2025	2026
Complete forest study for Vaughan and Richmond Hill	Complete forest study for Markham and Aurora	Complete forest study for Newmarket and East Gwillimbury	Completed forest study for rural York Region (King, Whitchurch-Stouffville, Georgina) Complete canopy cover and woodland cover assessment	State of the Forests report Forest Management Plan refinement and update
2027 to 2031 Reporting Period				
2027	2028	2029	2030	2031
			Complete canopy cover and woodland cover assessment	State of the Forests report

Acknowledgments

Appendix

Bibliography



Acknowledgments

Creating a clear and coherent strategy to enhance the woodlands and trees of York Region took the expertise and support of many people. The Natural Heritage and Forestry division of the Region's Environmental Services department would like to acknowledge, in particular, the skills and enthusiasm of our steering committee, whose contributions were invaluable:

- Toronto and Region Conservation Authority
- Lake Simcoe and Region Conservation Authority
- City of Vaughan
- Town of Georgina
- SLR Consulting (Canada) Ltd.
- Silv-Econ Ltd.

Our key stakeholders played a similarly crucial role in helping to ensure that the strategy reflected many diverse voices across the Region:

- Town of Richmond Hill
- City of Markham
- City of Vaughan
- Town of Whitchurch-Stouffville
- Town of Aurora
- Town of Newmarket
- Township of King
- Town of East Gwillimbury
- Town of Georgina
- Chippewas of Georgina Island
- Toronto and Region Conservation Authority
- Lake Simcoe and Region Conservation Authority
- Parks Canada
- Local Enhancement and Appreciation of Forests (LEAF)
- Forests Ontario
- Ontario Urban Forest Council
- Evergreen
- Ontario Woodlot Association
- Building Industry and Land Development Association

We also thank our consultants: SLR Consulting (Canada) Ltd. and Silv-Econ Ltd. for technical expertise and help in our engagement process, and Coutts & King Inc. for editorial services.

Finally, we must acknowledge our gratitude to senior management of the Region and Regional Council for their long-standing recognition of the importance of forest resources in protecting the natural environment and providing residents with a high quality of life.



Appendix: Stakeholder Engagement

Natural Heritage and Forestry undertook an extensive consultation process throughout the development of the York Region Forest Management Plan. Stakeholders were engaged formally through the plan's steering committee and key stakeholders group. In addition, members of local municipal Environmental Advisory Committees and the Agricultural Liaison Committee were provided with the opportunity to provide input and feedback on the plan.

Public engagement in the Forest Management Plan was obtained through the completion of a market research study completed at the beginning of the Plan development. The market research study identified public understanding and perception of trees and forests and explored opportunities and barriers to increase canopy cover.

The Steering Committee, composed of York Region staff, consultants, and representatives from local municipalities and the two conservation authorities, provided guidance on the direction of the plan and input and feedback on drafts. The Steering Committee met in person five times over the course of the development of the plan, beginning in November 2015.

In addition, a Key Stakeholders Group was formed to include representatives of local municipalities, conservation authorities, Parks Canada, First Nations, various non-governmental organizations, as follows:

- Town of Richmond Hill
- City of Markham
- City of Vaughan
- Town of Whitchurch-Stouffville
- Town of Aurora
- Town of Newmarket
- Township of King
- Town of East Gwillimbury
- Town of Georgina
- Chippewas of Georgina Island
- Toronto and Region Conservation Authority
- Lake Simcoe and Region Conservation Authority
- Parks Canada
- Local Enhancement and Appreciation of Forests (LEAF)
- Forests Ontario
- Ontario Urban Forest Council
- Evergreen
- Ontario Woodlot Association
- Building Industry and Land Development Association

This group also included York Region staff from various departments. It met twice in facilitated workshops, in December 2015 and May 2016, and provided input and guidance on the development of the plan, its overall vision, goals, and objectives, and key themes.

Various stakeholders, particularly the local municipalities, were also directly consulted outside of the Steering Committee and Key Stakeholders Group on the plan, particularly for the development of canopy and woodland cover ranges.

Feedback showed that stakeholders generally supported the aims of the plan, and the engagement process generated valuable comments and suggestions that helped improve and refine this first-ever York Region Forest Management Plan.

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