On May 27, 2021 Regional Council made the following decision:

1. The Regional Clerk circulate this report to the Clerks of the local municipalities, Chippewas of Georgina Island First Nation, Environment and Climate Change Canada, Natural Resources Canada, Ontario Ministry of Natural Resources and Forestry, Ontario Ministry of Environment, Conservation and Parks, Lake Simcoe Region Conservation Authority and Toronto and Region Conservation Authority.

The original staff report is attached for your information.

Please contact Laura McDowell, Director, Environmental Promotion and Protection 1-877-464-9675 ext. 75077 if you have any questions with respect to this matter.

Regards,

Christopher Raynor | Regional Clerk, Regional Clerk's Office, Corporate Services
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The Regional Municipality of York | 17250 Yonge Street | Newmarket, ON L3Y 6Z1
O: 1-877-464-9675 ext. 71300 | christopher.raynor@york.ca | york.ca

Our Mission: **Working together to serve our thriving communities – today and tomorrow**

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The Regional Municipality of York

Committee of the Whole
Environmental Services
May 13, 2021

Report of the Commissioner of Environmental Services

2020 Greening Strategy Achievements and State of the Forest

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1. Recommendation

The Regional Clerk circulate this report to the Clerks of the local municipalities, Chippewas of Georgina Island First Nation, Environment and Climate Change Canada, Natural Resources Canada, Ontario Ministry of Natural Resources and Forestry, Ontario Ministry of Environment, Conservation and Parks, Lake Simcoe Region Conservation Authority and Toronto and Region Conservation Authority.

2. Summary

This report provides Council with an update on activities, partnerships, significant 2020 Greening Strategy achievements and progress towards canopy and woodland cover objectives.

Key Points:

- Canopy cover and woodland cover in York Region have increased to 33.4% and 23.6%, respectively

- While the timeframe to achieve 40% canopy cover by 2051 remains the same, the date for achieving 25% woodland cover will be revised from 2031 to 2051 through the Municipal Comprehensive Review. This allows time to better reflect gains in woodland cover as natural regeneration and past tree planting efforts materialize

- 2020 Greening Strategy achievements include planting 60,539 trees and shrubs, inspiring residents to action through 108 events, and leveraging $534,000 in external funding

- York Regional Forest has experienced a significant increase in visitors during the COVID-19 pandemic. Increased monitoring and additional temporary parking locations have been implemented to ensure a safe and positive visitor experience

- *Lymantria dispar dispar* (European Gypsy Moth) monitoring has identified the potential for severe tree defoliation in 2021; steps are being taken to protect Regional assets and support residents in managing their trees

3. Background

Regional Greening Strategy delivers on-the-ground action through adaptable partnerships and programs that strengthen the natural environment

The Greening Strategy, developed in 2001 and updated in 2012, delivers on-the-ground action to help achieve the Region Official Plan goal of a sustainable natural environment. Actions such as environmental land securement and restoration contribute to Official Plan objectives to protect and enhance the Regional Greenlands System and associated features including forests, wetlands and grasslands (Figure 1). Through its four action areas, the strategy supports healthy natural environments that improve the quality of life for residents across the Region. Success is achieved through innovative and adaptable partnerships that enable the Region to deliver programs that inspire resident action. The Strategy continues to be a key delivery mechanism for increasing canopy and woodland cover across the Region.

Progress towards canopy and woodland cover targets are reported through the State of the Forest report

Trees and forests provide a multitude of environmental, health and economic benefits that make our communities more sustainable and help the Region mitigate and adapt to climate change. In recognition of the vital role that trees and forests play, Council approved the York Region Forest Management Plan on November 17, 2016. The Plan expands on the Greening Strategy and identifies a series of short-, medium- and long-term actions focused on increasing canopy and woodland cover (Figure 1).

A goal of the Plan is to increase tree cover working towards targets to grow canopy cover to 40% by 2051 and woodland cover to 25% by 2031. Progress towards these targets is reported through the State of Forest report (Figure 1). Canopy and woodland cover was last reported to Council on March 23, 2017 as 31% and 23.2%, respectively.

Figure 1

Key Strategies and Plans Deliver on Regional Official Plan Objectives

REGIONAL OFFICIAL PLAN
Goal: A sustainable natural environment

GREENING STRATEGY
Deliver on-the-ground action to support a sustainable natural environment

FORESTS   WETLANDS   STREAMS   GRASSLANDS   HABITAT   POLLINATORS

FOREST MANAGEMENT PLAN
Roadmap to increase canopy and woodland cover

STATE OF THE FOREST
Report progress towards canopy and woodland cover targets

40% CANOPY COVER TARGET

25% WOODLAND COVER TARGET

4. Analysis

Regional Greening Strategy's diverse partnerships demonstrate resilience delivering on-the-ground action in challenging times

In 2020, implementation of Greening Strategy actions delivered tangible, on-the-ground results despite challenges posed by COVID-19. These achievements (Table 1) represent the Region's ongoing commitment to a sustainable natural environment. Staff and partners quickly pivoted programs to reflect changing COVID-19 public health measures while managing an increased demand from residents to access natural areas and participate in programs.

While some partners made the decision to cease or reduce operations, others were able to shift to virtual and socially distanced program delivery. As a result, over 60,000 trees and shrubs were planted and 108 events were held, contributing the creation of 24.8 hectares of new woodland.

Table 1

Greening Strategy 2020 Achievements

Action Area	Goal	Target (Minimum)	2020 Achievement
Stewardship and Education	Educate residents about the value of the natural environment and provide opportunities to connect with nature and inspire action	100 outreach events Engage 50,000 residents	108 outreach events Over 50,000 residents engaged
Enhancement and Rehabilitation	Enhance and rehabilitate the natural environment on both public and private lands	Plant 70,000 trees and shrubs	60,539 trees and shrubs planted
Environmental Land Protection and Preservation	Restore linkages and protect core natural areas including forests, wetlands and significant habitat	Increasing area (hectares) of environmental lands secured	No hectares of environmental land secured
Leadership, Innovation and Knowledge	Share knowledge, demonstrate leadership and be innovative in the protection of the natural environment	Host four technical regional forums Present at two science and technology forums	10 forums hosted with agencies and local municipalities 16 presentations at science and technology forums

The Greening Strategy strengthened the natural environment in 2020 through projects and programs that resulted in planting 4,034 pollinator and grassland plants, distributing 1,500 pollinator seed packets, enhancing 14 hectares of in-stream and streambank habitat, and creating habitat for five species at risk. Securing land in 2020 posed a challenge as landowners were hesitant to make large financial decisions while facing the uncertainties of COVID-19. Despite this challenge, work continued with partners to engage over 30 landowners regarding future securement opportunities. To continue engagement during COVID-19, programs were adapted to allow residents to participate through self-guided activities, webinars, and other virtual events. In place of in-person York Regional Forest events, staff delivered Discover Your Forest Kits with self-guided activities.

In 2019, York Region was approved for $10 million in funding through Infrastructure Canada's Disaster Mitigation and Adaptation Fund (DMAF) to implement a natural infrastructure project. The project will result in over 400,000 trees and shrubs being planted across the Region, including establishing 100 hectares of new woodland by 2027. On-the-ground implementation of the DMAF project was initiated in 2020 with the planting of over 2,600 trees and shrubs to help mitigate the impacts of extreme heat in urban areas.

York Region has been recognized as a Tree City of the World

In March 2021, York Region was recognized as a Tree City of the World. Tree Cities of the World program is an international effort to recognize cities and towns committed to ensuring their urban forests and trees are properly maintained, sustainably managed and duly celebrated. The program, established in 2019, is administered by the Arbor Day Foundation and the Food and Agriculture Organization of the United Nations. Over 100 cities in 23 countries are currently recognized including the Cities of Richmond Hill, Toronto, Mississauga, Guelph, and Whitby.

There are five standards that must be met to be recognized: Establish responsibility (individuals dedicated to management), set the rules (policies, bylaws, standards and plans), know what you have (inventory, cover assessments, studies), allocate the resources (budget, staff, and/or volunteers), and celebrate achievements (events, media, promotion). York Region has demonstrated ongoing commitment in each of these five standards.

State of the Forest Report demonstrates an increase in canopy cover to 33.4% and woodland cover to 23.6%

The 2021 State of the Forest report (Attachment 1), contains an updated assessment of canopy and woodland cover across the Region. Canopy cover is the measure of land area covered by tree canopies on both public and private lands. The 2021 assessment was completed with the University of Vermont using high resolution satellite imagery and LiDAR imagery. Canopy cover in York Region was measured at 33.4%, an increase of 2.4% since 2017 (31%). Improved assessment methods and technology attributed to 1.4% of this increase with the balance resulting from planting and growth of young trees. The addition of a 40% canopy cover target in the Regional Official Plan will be considered through the current Municipal Comprehensive Review.

Woodland cover is a subset of canopy cover and measures larger and more densely treed areas in York Region. The 2021 assessment measured woodland cover at 23.6%, an increase of 0.4% since 2017 (23.2%). Approximately half of this increase is related to improved methods and the remainder to natural expansion of woodland edges and large-scale tree plantings which outpaced the loss of woodland due to clearing (a net gain of 261 hectares).
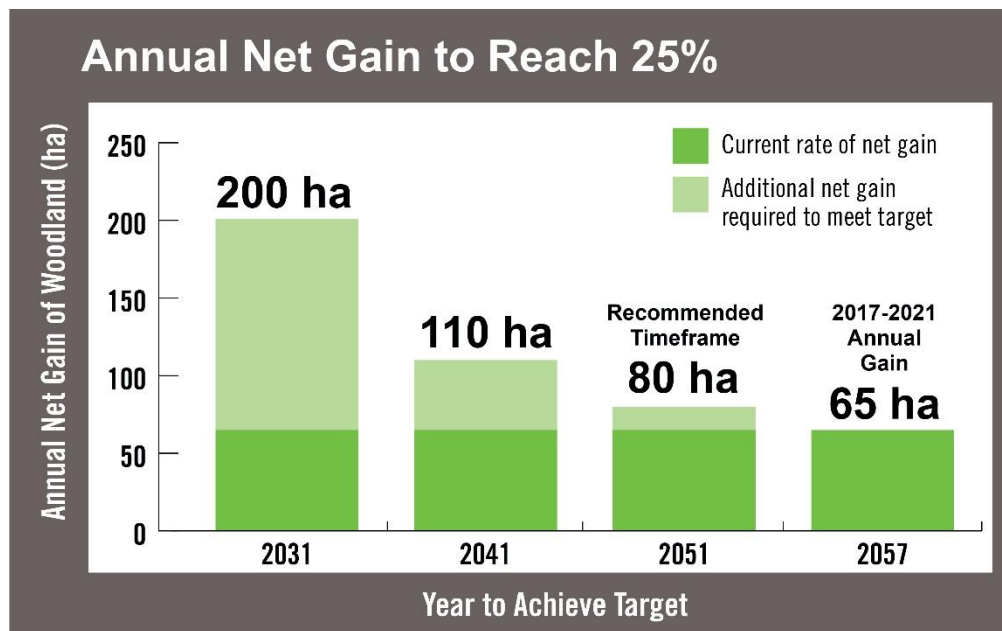
Timeframe to achieve the woodland cover target will be revised to 2051 to better reflect actual increases being achieved

Based on the 2021 analysis of woodland cover and recent annual gains, the Region is unlikely to meet the target of 25% woodland cover by 2031. To achieve this goal by 2031 we would need to increase the rate of gain annually from our current 65 hectares per year to 200 hectares per year. The lower rate of increase in woodland cover over the previous twenty years represents a balance between gains from tree planting and natural growth, and losses to development, agriculture and other uses. While the actual rate of increase, 65 hectares annually, is less than anticipated, reasonable gains are being made given the pressure from different land use needs. The Region is achieving a desired balance among the multiple goals and objectives in the Official Plan. Other challenges to increase woodland cover

include impacts of invasive species, funding for land acquisition and tree planting programs, and landowner participation in planting programs.

Despite these challenges, the Region has seen gains in woodland cover with each assessment. With a modest increase in the annual net gain from 65 hectares to 80 hectares, 25% woodland cover can be reasonably achieved by 2051 (Figure 2). Increases in woodland cover are realized through natural expansion of woodlands and through large-scale tree planting. The recent woodland cover analysis revealed that there is an eight to ten-year delay before new plantings show up as woodland cover in the assessment, which also signifies a lag time between removals and the contribution of compensation plantings. Progress towards canopy and woodland cover targets will be assessed every five years allowing future refinement of targets and timeframes based on measured growth of trees and forests. The revised timeframe for achieving woodland cover will be reflected through the updated Regional Official Plan.

Figure 2

Annual Net Gain to Reach 25% Woodland Cover

York Region Forest Management Plan sets out a roadmap to increasing canopy and woodland cover

Goals and actions in the York Region Forest Management Plan (2016) set the roadmap to increase canopy cover to 40% and woodland cover to 25%. The actions address the challenges associated with increasing canopy and woodland cover including landowner engagement programs, communicating the value of trees and forests, and impacts of invasive species. To date 41 of the 63 short-term and medium-term actions have been completed or are being delivered annually. Of the remaining 22 actions, work has commenced on seven, with the remainder scheduled to commence in future years.

Recent initiatives such as development of a tree planting prioritization tool and Benefits of Trees and Forests Communications strategy combined with the two billion tree program Federal Government funding announcement further support annual tree planting initiatives. These recent initiatives support the projected annual increase in tree planting from 65 to 80 hectares.

To achieve an annual net gain of 80 hectares staff will also focus on actions to increase tree planting capacity and program uptake, including working with partners to refine large-scale tree planting programs and implement strategies from the Benefits of Trees Communications strategy to increase awareness of tree planting programs.

In partnership with each local municipality and conservation authority, the Region will undertake forest studies across the Region. These studies will be completed between 2021 and 2025. Outcomes will be reported in the 2026 State of the Forest report along with updated canopy and woodland cover metrics. Results will be used to identify the greatest opportunities for increases and inform the York Region Forest Management Plan update ensuring strategies and actions remain effective.

Urban expansion into whitebelt lands to accommodate Provincially mandated growth will influence progress towards canopy and woodland cover targets. Through protection policies in Regional and local official plans key natural heritage features, including woodlands, are protected and compensation plantings implemented to offset losses. With urban expansion into whitebelt lands it is anticipated that canopy cover will increase over time as new trees are planted and mature trees continue to grow within streetscapes, urban parks and residential backyards.

Invasive species continue to impact York Region's trees and natural areas

Many invasive insects and plants continue to impact or pose a threat to the Region's urban landscapes and natural areas. Priority invasive species in York Region are identified where they pose a significant risk based on potential impacts to residents, Regional assets, natural heritage features and public health. The Region continues to collaborate with local municipalities, provincial and federal governments, and non-governmental organizations to manage invasive species, while also providing education and resources to residents.

Examples of priority invasive species currently found in York Region include emerald ash borer, wild parsnip, dog-strangling vine, and Phragmites. Priority invasive species not currently found in the Region but found either in Ontario or close to the border in the United States include hemlock woolly adelgid, oak wilt and spotted lanternfly. In 2020, staff piloted best management practices to address priority populations of Phragmites and the effectiveness of these efforts will be evaluated in 2021. Based on the pilot's success, staff will continue these efforts in collaboration with partners to manage Phragmites.

Invasive moth *Lymantria dispar dispar* outbreak is expected to cause severe tree defoliation in parts of York Region in 2021

Originating from Europe, this invasive moth was first detected in Ontario in the 1960's, however widespread defoliation was not observed until the late 1980's. The last notable

outbreak in York Region was in the early 1990's. The moth population quickly crashed during this outbreak and management was not required. This invasive moth is now well established and will likely never be eradicated. During June and July caterpillars eat the leaves of host species such as oak, birch, maple and elm, and can be a nuisance by leaving droppings and bits of foliage on decks and walkways near infested trees. As with most forest pests, their population growth is cyclical, with populations growing to high numbers in certain locations and then crashing to almost undetectable levels for years after.

Surveys completed in the fall of 2020 identified high populations throughout the Region and potential for severe tree defoliation in 2021. A communications strategy has been prepared to inform residents of the potential defoliation and direct them to resources for managing their trees. Control measures in the form of pesticide treatment will be implemented to protect high value Regional street trees. Results of the survey have been shared with local municipal staff, conservation authorities and partners, and work is underway to coordinate communications and response.

York Regional Forest is experiencing significant increase in visitors during the COVID-19 pandemic

Outdoor recreation spaces, including the York Regional Forest, are experiencing a significant increase in use during the pandemic. With many activities reduced or suspended due to public health measures, residents have sought opportunities to explore natural areas. Residents spending more time in nature is one of the positive outcomes of COVID-19.

Increased use of the Forest has resulted in challenges during peak periods as parking lots frequently exceed capacity. Through collaboration with Regional departments and local municipalities, strategies are being implemented to ensure a safe and enjoyable visit. A communication strategy was developed to direct users to less popular tracts while providing key messages related to public health measures. Staff presence at busy parking lots and addition of temporary parking are helping to manage use during peak periods. Use is expected to decline once public health measures are relaxed, but we anticipate many users who discovered the Forest during the pandemic will continue to visit in the future. Construction of additional parking capacity will be considered based on post pandemic use and budget availability.

5. Financial

Through partnerships, the Greening Strategy leverages significant resources and funds for each action area. In 2020, $1,895,000 was approved in the operating budget for the Greening Strategy, including $974,000 for environmental land purchases (Table 2). The remaining $921,000 supports operating programs and partnerships including large scale reforestation, backyard tree planting, outdoor education, and land securement.

In 2020, program partners leveraged the Region's investment by securing an additional $534,000 in funding for program delivery through grants and matching funds. For example, Ontario Streams secured over $50,000 in funding to support the Adopt-a-Stream program

and tree planting in York Region through grants such as the Federal Canada Nature Fund and through private foundations such as the Echo Foundation.

Table 2

Greening Strategy 2020 Operating Budget Overview

Program	2020 Budget
Environmental Land Purchases	$974,000
Greening Strategy Implementation	$921,000
Total 2020 Operating Budget	$1,895,000

The approved 2021 operating budget includes $1,940,000 to support Greening Strategy initiatives.

6. Local Impact

Canopy and woodland cover assessments support local municipal efforts to plan and manage trees and forests locally. Results of these assessments are shared with local municipalities to inform development of their own urban forest management plans and policies. The Region is also partnering with each municipality and conservation authorities to initiate the 2021-2025 forest studies. These studies will provide a better understanding of what trees we have, vulnerabilities to our trees and forests, and quantify the benefits provided by them. The studies, completed every 10 years, support forest management planning at the Regional and local municipal level.

Greening Strategy programs provide local municipalities and residents with opportunities to enhance the natural environment. Greening initiatives support protection of Regional and local natural heritage systems, which in turn support sustainable communities. In 2021, staff will consult with local municipalities and partners to update the Greening Strategy ensuring that programs and projects continue to support the four action areas of the Strategy. This update to the Greening Strategy will be brought to Council in 2022.

7. Conclusion

Trees and forests contribute to healthy, sustainable and livable communities throughout York Region. Canopy and woodland cover across the Region are increasing despite ongoing pressures from invasive species, extreme weather events and intensification. The timeframe to achieve 25% woodland cover will be revised to 2051 through the Municipal

Comprehensive Review which will better reflect gains. Implementation of the York Region Forest Management Plan will continue to guide our actions to achieve canopy and woodland cover objectives.

The Region's Greening Strategy continued to deliver results despite challenges from the global pandemic in 2020. The ability to continue to deliver successful programs and projects was due to the flexibility and resilience inherent in working with multiple partners to deliver the Greening Strategy. These achievements will continue to support the health of the natural environment and contribute to a high quality of life for York Region residents.

For more information on this report, please contact Laura McDowell, Director, Environmental Promotion and Protection 1-877-464-9675 ext. 75077. Accessible formats or communication supports are available upon request.

Per:

Recommended by: **Erin Mahoney, M. Eng.**
                      Commissioner of Environmental Services

Approved for Submission: **Bruce Macgregor**
                            Chief Administrative Officer

April 23, 2021
Attachment (1)
12516539

STATE OF THE FOREST

REPORTING PROGRESS ON CANOPY AND WOODLAND COVER

MAY 2021

YORK REGION FORESTRY
Healthy Trees, Healthy Communities

York Region

Forests include **woodlands and trees** in all urban and rural areas

YORK REGION'S TREE COVER IS INCREASING, BENEFITING PEOPLE AND COMMUNITIES

York Region is steadily increasing the benefits residents and communities enjoy from its trees and woodlands, despite challenges from pests, extreme weather, and urbanization.

York Region has over 30 million trees, collectively called the Region's forest. These trees grow on public and private lands, including woodlands, trees along streets, in parks, cemeteries, and backyards.

In 2016, York Region published its Forest Management Plan, which laid out a path for protecting and managing the forest within its borders. It included a goal for woodland cover as set out in the Regional Official Plan (2010), added a new goal for canopy cover and provided the roadmap to achieve these goals. The management plan also committed to regularly monitoring and reporting on canopy and woodland cover every five years and forest diversity and benefits every ten years through the State of the Forest reports.

The first State of the Forest report was prepared in 2017 and this 2021 report provides an update on canopy and woodland cover in York Region. The 2026 report will incorporate a five-year update on canopy and woodland cover and a ten-year update on forest diversity and benefits.
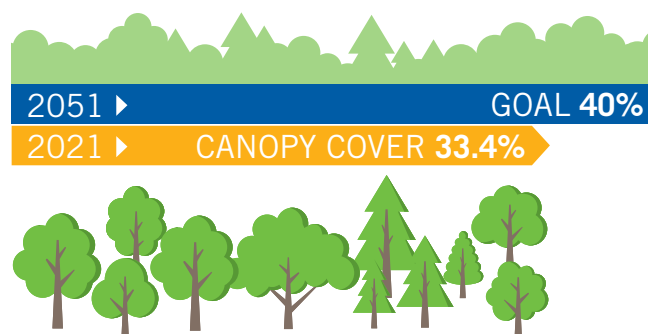
York Region has **over 30 million trees**, collectively called the Region's forest.

CANOPY COVER = EVERY TREE

Woodland Cover ➕ **All Urban Trees** ➕ **All Rural Trees**

CANOPY COVER

Area of land across the Region under every tree

WOODLAND COVER

Area of land across the Region under heavily treed areas that are at least 0.2 hectares in size

Studies carried out for this report show that woodland cover had a net gain of 260 hectares, increasing it to 23.6% in 2021. Woodlands were estimated to cover 41,500 hectares of the Region, making up about two-thirds of the Region's entire canopy cover. Despite a net gain in woodland cover, the Region is unlikely to meet the target of 25% woodland cover by 2031. While the natural expansion of woodland edges and large-scale tree planting outpaced the loss of woodland due to clearing, the net gains achieved are not enough to close the gap by 2031. Even though the rate of increase is less than anticipated, reasonable gains are being made despite the ongoing pressure from different land use needs. With continued planting and protection efforts, the target of 25% woodland cover can reasonably be achieved by 2051.

Canopy cover reached 33.4% in 2021, moving it closer to the goal of 40% by 2051. Canopy cover increases were largely due to the growth and planting of trees in newer residential areas. Many new developments involve the planting of neighbourhood trees. As well, the Region and local municipalities plant and maintain trees along roads and parks, and support partnerships that encourage planting on private property.

Trees outside woodlands now make up about one-third of the total canopy and are expected to be important in achieving the 2051 goal of 40% canopy cover. Their contribution will depend, however, on continued new plantings and good care of existing trees to ensure their long-term health.

The distribution of canopy cover varies across the Region due to urban and rural landscapes. While it would be impossible to distribute canopy cover evenly across the Region, there is the potential in every municipality to increase the number and size of trees and shrubs.

First Nation/Municipality	Canopy Cover	Recommended Range	Woodland Cover	Recommended Range
Chippewas of Georgina Island First Nation	88.9%	★ ★ ★ ★	78.7%	★ ★ ★ ★
Aurora	34.0%	29% to 35%	18.4%	19% to 20%
East Gwillimbury	37.4%	39% to 44%	30.4%	31% to 33%
Georgina	44.4%	46% to 47%	34.8%	39% to 40%
King	34.3%	36% to 41%	26.5%	26% to 28%
Markham	20.6%	20% to 35%	7.5%	8% to 10%
Newmarket	28.1%	25% to 35%	9.8%	11% to 13%
Richmond Hill	29.8%	26% to 35%	14.7%	14% to 15%
Vaughan	21.9%	25% to 35%	12.4%	14% to 17%
Whitchurch-Stouffville	38.9%	40% to 45%	30.9%	30% to 32%
York Region	**33.4%**	**40% by 2051**	**23.6%**	**25% by 2051**

THE 2021 CANOPY COVER ASSESSMENT FOUND THAT:

🌱 More rural municipalities have the **most canopy cover**, including more woodlands

🌱 Areas with a higher population density have significantly **lower canopy cover**
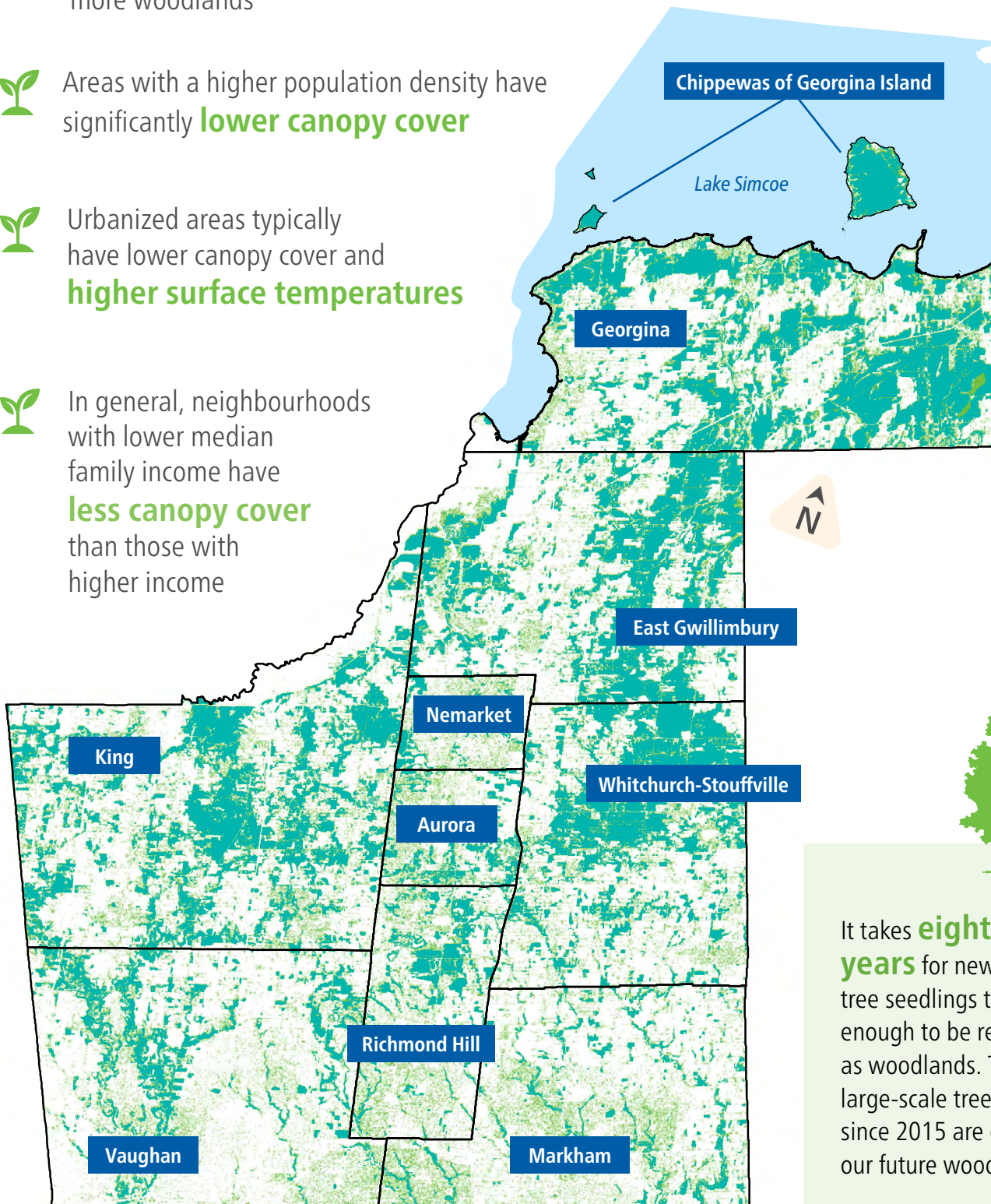
🌱 Urbanized areas typically have lower canopy cover and **higher surface temperatures**

🌱 In general, neighbourhoods with lower median family income have **less canopy cover** than those with higher income

CANOPY COVER OUTSIDE WOODLANDS

WOODLAND COVER

Chippewas of Georgina Island

Lake Simcoe

Georgina

N

East Gwillimbury

Nemarket

King

Whitchurch-Stouffville

Aurora

Richmond Hill

Vaughan

Markham

It takes **eight to ten years** for newly planted tree seedlings to grow large enough to be recognized as woodlands. That means large-scale tree plantings since 2015 are growing into our future woodlands.

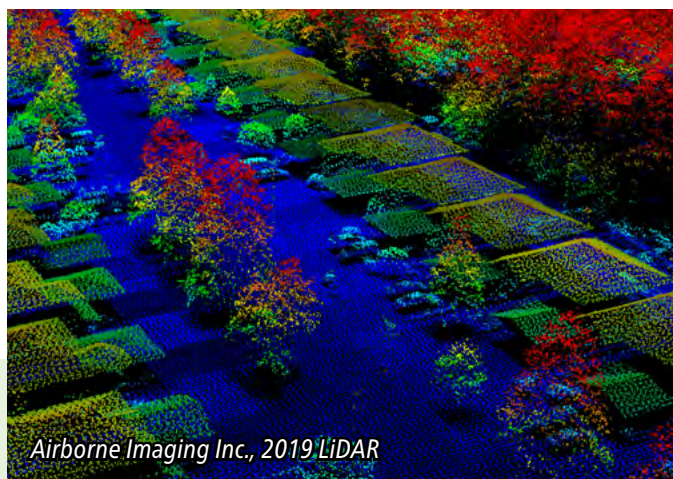*Satellite Imagery © 2019 DigitalGlobe, Inc., a Maxar company.*

ADVANCED MEASURING TOOLS GIVE A BETTER ESTIMATE OF CANOPY AND WOODLAND SIZE

For this report, canopy cover estimates were updated using sophisticated methods that included high-resolution multi-spectral satellite imagery and LiDAR, which stands for Light Detection and Ranging.
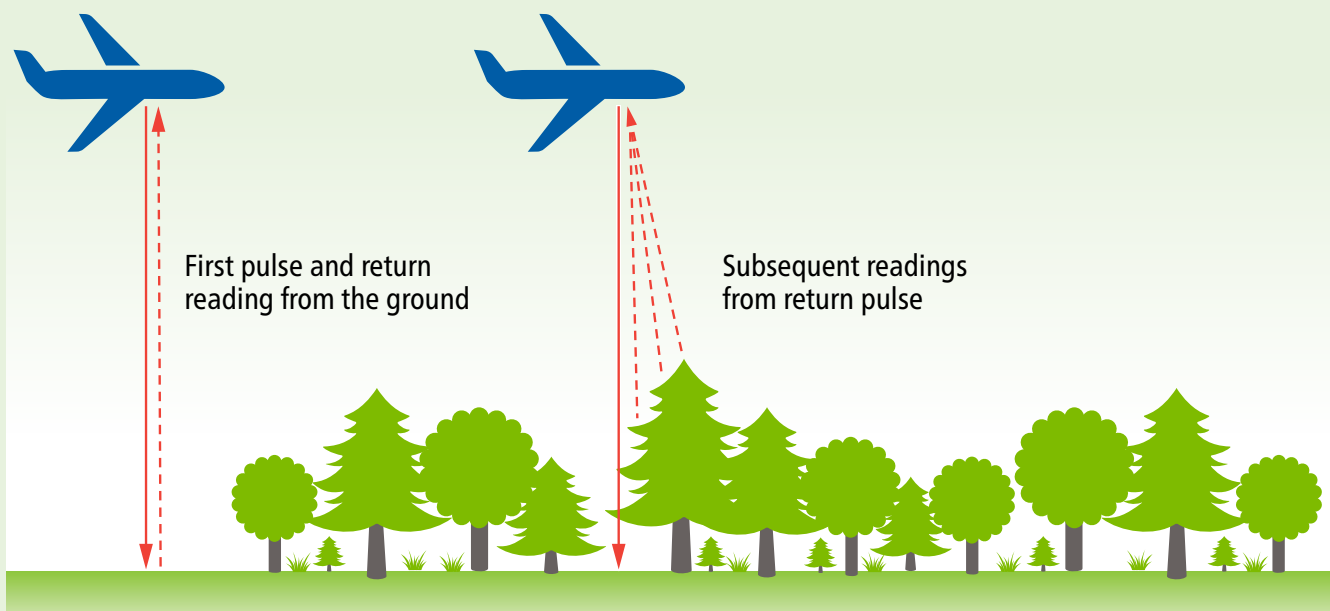
Multi-spectral satellite imagery captures different wavelengths of light to identify vegetation, bare ground, water and built structures like roads and buildings. Images are corrected for viewing angles, topography, and earth curvature to give what is called orthoimagery.

To generate LiDAR data, a pulsed laser beam is projected from an aircraft to measure the constantly changing distance to the earth, producing a three-dimensional image of the surface. LiDAR data is then combined with orthoimagery and other information to produce a detailed image of the earth's surface that identifies canopy cover provided by trees and shrubs.

Previous estimates of canopy cover relied on a variety of methods used at different points in time, and satellite imagery was not available for the entire Region. Because the combination of LiDAR and Region-wide orthoimagery improved the accuracy of canopy mapping, for this report visual inspections were carried out in some areas to determine how much of the apparent increase in canopy from earlier studies was due to more precise measurement techniques and how much reflected actual canopy growth.

Airborne Imaging Inc., 2019 LiDAR

HOW LIDAR WORKS

First pulse and return reading from the ground

Subsequent readings from return pulse

Woodland cover across the Region has **increased** by **260 hectares** - that's about **363 soccer fields**

The analysis showed that just over half of the increase resulted from better measuring techniques while the remaining increase was from actual canopy growth. Canopy cover grew to 33.4% in 2021, and the previous canopy cover estimate of 31% was underestimated.

Unlike canopy cover, woodlands are identified from digital orthophotographs based on size and tree density. Past assessments calculated woodland cover using the total area but using land area (excludes water bodies) is a more accurate reflection of woodland cover. From satellite imagery and LiDAR, the land area for the Region is derived, therefore, with this report, the land area is used to estimate the 2021 woodland cover and correct the 2017 woodland cover from 23.2% to 23.5%.

The techniques used for this report have created a solid baseline, and the Region plans to use them again to measure canopy and woodland cover in 2026 to ensure consistency and accuracy in measuring progress.

© *First Base Solutions Inc., 2019 Orthophotography*

WITH GROWTH AND URBANIZATION, INVESTING IN TREES IS MORE ESSENTIAL THAN EVER

Forests provide a wide variety of public health, economic, social, and environmental services that help make York Region a better place to live. These services are becoming more essential as growth and urbanization continue, bringing more people and more intense development.
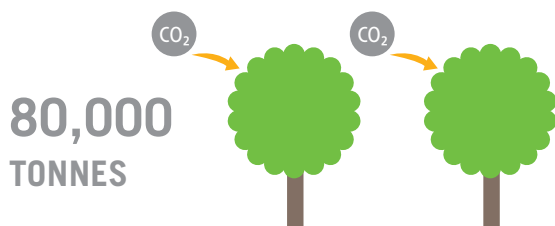
Attempting to provide these same services with built or manufactured infrastructure would be extremely costly and in some cases impossible. In addition, the huge intrinsic value that nature provides to residents cannot be quantified or replaced.

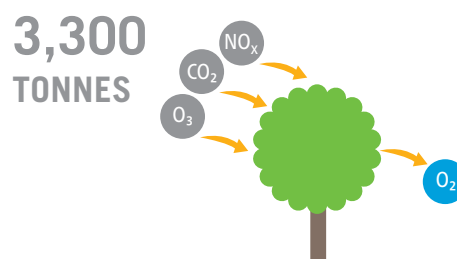Examples of services that trees and forests provide:

REDUCING ENERGY USE

The shade provided by trees around homes and buildings reduces the need for conventional air conditioning, saving York Region property owners an estimated $8 million a year in energy costs. In winter, trees planted as windbreaks can lower home heating bills.

IMPROVING AIR QUALITY

Air pollutants reduce respiratory health and air quality. Each year, the Region's trees and shrubs "breathe in" about 3,300 tonnes of air pollutants such as ozone, sulfur dioxide and nitrogen dioxide through their leaves, trap or convert the harmful chemicals, and breathe out pure oxygen in return.
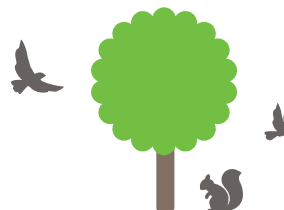
FIGHTING CLIMATE CHANGE

Trees in York Region store, or sequester, roughly 80,000 tonnes of carbon each year by absorbing carbon dioxide. This is equivalent to taking 62,000 vehicles off the road.

SHELTERING WILDLIFE

Trees and shrubs provide critical habitat for a wide range of wildlife, including birds, pollinators and other insects.

REDUCING EXTREME HEAT IN BUILT-UP AREAS

Hard surfaces such as roads and buildings collect the sun's heat, then radiate it out again. This "urban heat island effect" raises local temperatures and is especially hard on children, seniors and the chronically ill. Numerous studies show that canopy cover reduces temperatures and the heat island effect.

ADDING TO PROPERTY VALUE

Canadian surveys have shown that having mature trees around a house can increase its value by up to 15% by providing privacy and adding character to a neighbourhood. Trees and shrubs also advance the Region's goal of creating Complete Communities by encouraging active transportation and enhancing natural heritage.

IMPROVING MENTAL AND PHYSICAL HEALTH

Research has verified that simply spending time near trees improves physical, emotional, mental, and social wellbeing. Woodlands and urban trees create an appealing environment that encourages walking, running, cycling and other outdoor exercise. Trees block UV rays, which helps prevent skin cancer, and their shade makes exercising more comfortable.

ABSORBING STORMWATER AND IMPROVING WATER QUALITY

If unchecked, the runoff from storms can flood basements and low-lying areas, carry away valuable topsoil, erode stream banks and overburden storm sewers. The Region's trees and shrubs absorb millions of cubic metres of stormwater each year through their roots, countering these threats. They also reduce suspended solids in streams and rivers, making water cleaner and clearer.

LIDAR GIVES FIRST DETAILED LOOK AT TREE HEIGHTS ACROSS THE REGION

Using LiDAR for the 2021 assessment allowed the varying height of the canopy across the Region to be measured for the first time. Height was found to range from 2 metres to 36 metres (or about 6 to 120 feet) with half of the canopy measuring at a height below average.

This supplements earlier conclusions based on trunk diameter that the trees in the Region's forest are generally younger. Over the past 20 years, the Region and its partners have planted trees along streets and in residential areas, often after land was developed. In areas with little canopy cover, even a small tree significantly improves the local environment.
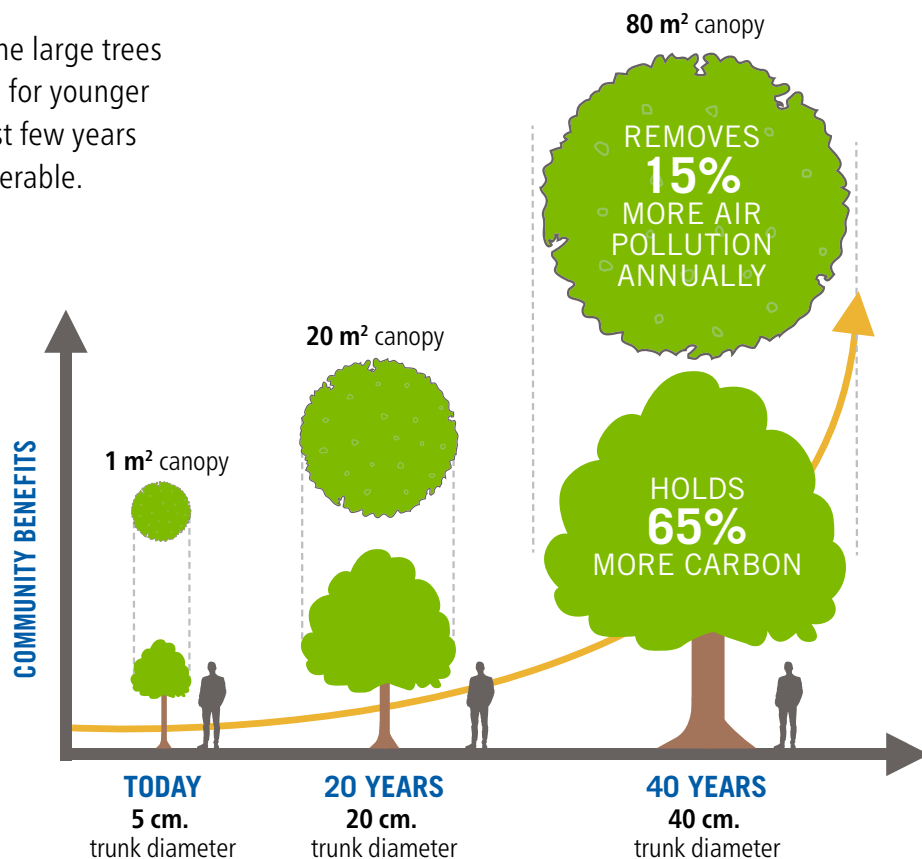
Larger trees, however, provide exponentially more canopy cover and associated services than smaller ones. One large healthy tree can store about 65 times more carbon and remove 15 times more air pollution annually than one small tree. It also provides far more shade and shelter.

The most effective way of developing the large trees the Region needs is to protect and care for younger trees as they grow, especially in the first few years after planting when they are most vulnerable.

Results from the Region's 2020 Street Tree Health Assessment reinforced the importance of actions such as mulching and watering to reduce stress from transplanting and drought. This attention is especially important for trees outside woodlands, which tend to face more stressful growing conditions.

Since larger trees provide far more services, investing in their survival in the early years provides excellent returns. Continuing to plant and encourage new trees every year also remains important, so that when the largest and oldest trees eventually die, trees of the right size are always in place to succeed them.

The use of LiDAR for future five-year reports on the state of the forest, combined with field measurement every ten years, will help improve management decisions by providing valuable insight into how the forest is maturing.

80 m² canopy

REMOVES
15%
MORE AIR POLLUTION ANNUALLY

20 m² canopy

HOLDS
65%
MORE CARBON

1 m² canopy

COMMUNITY BENEFITS

TODAY
5 cm.
trunk diameter

20 YEARS
20 cm.
trunk diameter

40 YEARS
40 cm.
trunk diameter

Human life could not **exist** if there were **no trees**.

A MIX OF SPECIES PROVIDES BETTER PROTECTION FROM THREATS

Greater species diversity is important to the health of a forest because it reduces vulnerability to threats like invasive pests and diseases and climate change. It also supports a greater range of ecological processes and provides food and habitat for more birds, pollinators and other wildlife.

When the mix includes native species, the benefits are even greater. While a central goal of forestry programs is continuing to encourage native species, the challenges posed by some planting locations, especially in highly urbanized areas, coupled with a changing climate, support the use of select non-native species.

The 2017 State of the Forest Report showed that forests in York Region contained approximately 50 different native tree species and were dominated by maple, cedar and ash. The 10-year assessment being carried out for 2026 State of the Forest report, using the i-Tree Eco tool developed by the United States Department of Agriculture Forest Service, will show how tree species composition is changing.

One important shift has been in the prevalence of ash, which has been declining in the Region because of the invasive emerald ash borer. The 2026 State of the Forest report will also provide an update on the impact of this and other invasive species.

EMERALD ASH BORER (EAB)

FOREST MANAGEMENT PLAN: THE REGION'S ROADMAP TO A HEALTHY FOREST

The 77 actions in the 2016 York Region Forest Management Plan are the roadmap to achieving the goals of 40% canopy cover and 25% woodland cover by 2051.

In the four years since the plan was adopted, 45 of the 63 short and medium term actions have been completed or are being delivered on an ongoing basis, and work on the 14 long term actions are planned for future implementation.

Actions aim to leverage opportunities to grow the forest by engaging private landowners and communicating the value of trees to all residents, while addressing challenges like the impacts of invasive species. Since 2016, the Region has:

$10 MILLION

Secured **$10 million** in funding from the federal Disaster Mitigation and Adaptation Fund for land securement and tree planting

Planted **over 350,000 trees** and shrubs through the Region's Greening Strategy and on heavily travelled roads as part of the Viva bus rapidways program

Developed and adopted *It's in our Nature: Management Plan for the York Regional Forest 2019 – 2038*

Secured an **additional 64.5 hectares** to link natural areas in the Greenlands System, bringing the **total to 1,376 hectares** of environmentally significant land protected through its land securement program since 2001

Worked with partners to counter **invasive species** such as dog-strangling vine, and taking part in ongoing forums to **share knowledge** about other known and **emerging threats**

Shown leadership in innovation in forestry practices, as evidenced by research findings presented at a total of **35 science and technology gatherings** from 2018 to 2020

Developed a communication strategy to **increase public awareness** of the benefits of trees and forests

Developed **best practices** for tree planting along rural roads, based on a review of existing practices

Created a **planting prioritization tool** to analyze planting opportunities across the Region

Public engagement and education are key to creating a sense of forest stewardship across the Region. Recent outreach efforts include:

Hosting or co-hosting over 400 events between 2018 and 2020 involving more than 15,000 participants, who learned about the importance of the natural environment and the benefits of trees

Delivering an outdoor education pilot project, targeting the Region's rapidly growing seniors' cohort, to highlight the York Regional Forest and explain the benefits of connecting with nature

Gathering in-depth data and using it to work toward the goals of the York Region Forest Management Plan is an important aspect of adaptive management -- that is, management that is flexible to respond to changing needs and conditions.

A key example is the next important step in realizing the plan: working in partnership with local municipality and conservation authorities to undertake forest studies across the Region. These studies will be completed between 2021 and 2025 and results will be included in the 2026 State of the Forest report, along with updated canopy and woodland cover metrics. These results will be used to review and update the overall plan to ensure its strategies and actions remain effective.

As it continues to implement the forest management plan, York Region will:

Promote and support stewardship and planting programs on private land, such as *Grow Your Legacy* and residential tree-planting programs

Work with partners to leverage the prioritized planting tool to target planting to areas that will most benefit

Deliver the Nature's Classroom program to engage and increase public awareness of the York Regional Forest and the natural environment

Continue to use the *Green Infrastructure Asset Management Plan* to drive better stewardship and care of the Region's existing trees and woodlands

Identify and work towards securing land for conservation and planting in partnership with local organizations and municipalities

Work with partners to research and monitor the forest to protect and enhance forest health

Participate in programs that communicate the value of trees and support tree-planting initiatives, such as *Adopt-A-Stream* and planting on school grounds

Plant 400,000 trees and shrubs and establish 100 additional hectares of woodland by 2027 with funding from Infrastructure Canada's *Disaster Mitigation and Adaptation Fund*

Enhance and rehabilitate natural areas with local municipalities and conservation authorities through the *Greening Action Partnership*

Canada's federal government has committed to using nature-based solutions to fight climate change, including planting **two billion trees** over the next **10 years**. The Region looks to this and other federal initiatives to provide additional funding for its tree-planting initiatives.

MAKING HEADWAY DESPITE A RANGE OF THREATS REQUIRES CONTINUED COMMITMENT

Guided by the Regional Official Plan and York Region Forest Management Plan, the Region has made good progress on the goal of increasing tree cover. While woodland cover is growing more slowly than anticipated, reasonable gains are being made as the Region balances tree-planting and stewardship efforts with the need for land for development, agriculture and other uses. Progress on all fronts is being made despite threats posed by invasive species and weather that is both less predictable and more extreme.

These threats are not just continuing, they are increasing. If left unchecked, they could easily push the Region and its communities off their current path to success. Reaching the Region's goals for canopy and woodland cover, which are key to the Region remaining welcoming and livable as it grows and urbanizes, will require continued vigilance and commitment.

It will also call for recognition that as living infrastructure, trees and woodlands are a long-term investment in the Region's future. Rows of saplings planted 8-10 years ago to reclaim and rebuild woodlands are now starting to show the diversity and complexity of thriving woodlands. Street trees in their fifth growing season are beginning to soften the hardscaping around them, providing shade, shelter and visual interest.

This is a reminder that while the impacts of today's work to expand the canopy and enhance its health will take decades to fully mature, the ultimate result will be an invaluable legacy to the people of York Region.

York Region