



# A ROADMAP FOR GREEN INFRASTRUCTURE IN ONTARIO

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# Introduction

The transition to green infrastructure is at an important juncture in Ontario. In municipalities across the province there is a developing interest in, and experience with, the multiple economic, environmental and community well-being benefits that green infrastructure provides. Ontario municipalities are also poised to make major investments in infrastructure through recently announced federal and provincial infrastructure funding programs. This represents an opportunity to make a generational shift towards green infrastructure that delivers cost effective infrastructure services while also providing valuable co-benefits to human health, property values, community well-being, carbon sequestration, and biodiversity. To ensure Ontario's municipalities and communities can make the most of this opportunity, we need a vision of our green infrastructure future and a roadmap of strategies to get there.

The Green Infrastructure Ontario (GIO) Coalition and the Clean Air Partnership with input from numerous municipal, conservation authority and other important stakeholders have collaborated to deliver this **ROADMAP FOR GREEN INFRASTRUCTURE IN ONTARIO**.

The goal of this document is to give the green infrastructure sector a common vision and a roadmap in which to position activities. Collectively, we need to ensure our wide variety of activities are moving us all in the same direction toward a common vision.

## **This roadmap includes:**

- A 2017 to 2040 Timeline
- Vision with Milestones
- Strategies
- Objectives

## **WHAT IS GREEN INFRASTRUCTURE?**

*Green infrastructure is defined as the natural vegetative systems and green technologies that collectively provide society with a multitude of economic, environmental and social benefits.*

## **A GREEN INFRASTRUCTURE APPROACH**

*Where green infrastructure is prioritized and is used independently, or to complement grey infrastructure in an integrated way.*

# Looking Back

## 2009

GIO is founded at a time when green infrastructure is rarely considered and there is little provincial or federal policy support.

## 2010

GIO completes a submission to Ontario's Environmental Bill of Rights Registry (EBR) requesting Ontario ministries update their definitions of 'infrastructure' to encompass 'green infrastructure'. As a result, the Environmental Commissioner of Ontario included green infrastructure as a policy priority for the province in their annual report.

## 2012

GIO publishes a policy review, co-authored with Ecojustice, entitled "*Health, Prosperity, and Sustainability: The Case for Green Infrastructure in Ontario*".

## 2014

The Provincial Policy Statement on land use planning includes green infrastructure.

## 2015

Due in part to GIO's continued efforts, Ontario's new Growth Plan and Ontario's Climate Change Strategy include green infrastructure.

## 2016

Ontario's Draft Municipal Asset Management Planning Regulation states green infrastructure may be included in the definition of Infrastructure Assets.

## 2017

Green infrastructure continues to be cited as an important practice in many provincial plans and pieces of legislation. There is still much work to be done, and policy is just one piece of the puzzle – we have a long way to go to fully embed green infrastructure into infrastructure funding, planning, engineering and implementation.

## A FOUNDATION OF CHANGE

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The purpose of this document is to present a united vision for green infrastructure in Ontario and a pathway to realizing this vision. The strategies and objectives outlined here will need to be implemented collectively by a wide variety of organizations in order to achieve this vision.



# A Vision for Green Infrastructure

## Green infrastructure is the NEW NORMAL

Green infrastructure is widely adopted and has been institutionalized to the point where it is fully incorporated in the infrastructure systems that serve Ontario communities.



## MILESTONES AND VISION

2017  
Baseline

### Green infrastructure is emerging

While the benefits of green infrastructure are increasingly well understood, examples of full-scale implementation are still rare. Knowledge is emerging and guidance being developed but adoption is not widespread and barriers still exist - real or perceived – in knowledge, systems, regulations, professional standards, etc.

2020  
Milestone

### Green infrastructure is on a level footing

Regulatory and funding barriers have disappeared and other barriers are disappearing. Strong evidence is made for the green infrastructure business case.

2025  
Milestone

### Green infrastructure is a preferred option

Based on a solid business case and growing track record in asset performance, green infrastructure options are top of mind in new developments and existing infrastructure is being replaced with a combination of grey and green infrastructure where the opportunity arises.

2040  
Vision

### Green infrastructure is the default option

Preference for green infrastructure is widespread and has been institutionalized to the point where infrastructure projects would need a strong case to deviate from the green infrastructure standard. Replacement of existing infrastructure with green infrastructure alternatives has been accelerated to reap early net benefits of green infrastructure.

# Milestones

## 2017 BASELINE

### Green infrastructure is emerging

#### Stormwater

Communities are vulnerable to flooding and stormwater is being piped into rivers, streams and lakes instead of managed where it falls. Urban areas are blanketed with impervious surfaces associated with buildings, roofs, roads, and other built infrastructure.

#### Natural Heritage

Ecosystem services provided by wetlands and other natural heritage areas are not considered in the context of infrastructure services and natural areas continue.

#### Urban Forests

Historically reactive management practices coupled with the escalating stresses of urban development, invasive species and climate change, threaten the health and vitality of urban forests. Studies reveal striking socio-spatial differences in canopy cover leaving lower income neighbourhoods particularly vulnerable to climate change threats such as urban heat islands.

#### Parks & Open Space

A growing population and increased intensification in certain areas have created a green space deficit where there is inadequate park space to serve communities. Parks are being considered as providing important environmental services.

#### Agriculture & Urban Agriculture

Communities are net importers of food, relying mostly on external supply chains to sustain food consumption. Urban sprawl continues to threaten remaining agricultural lands, in spite of a protective policy framework.

#### Green Roofs

The majority of buildings do not have green roofs.

## 2020 MILESTONE

### Green infrastructure is on a level footing

#### Stormwater

Awareness of the urban water cycle has improved. Green infrastructure measures are helping to mitigate the impacts of urban impervious surfaces on hydrology, erosion and aquatic habitat.

#### Natural Heritage

Natural heritage is increasingly protected, enhanced and restored for the important ecosystem services it provides. Awareness of ecosystem services provided by natural heritage has improved.

#### Urban Forests

Urban forests are managed over their life cycle as assets. Municipalities receive support from higher levels of government to manage their urban forests proactively. Development practices improve so soil volume and quality is prioritized. Invasive species and climate change strategies are developed.

#### Parks & Open Space

Parks are well maintained and new parks are beginning to be created. Parks are being considered for stormwater management opportunities and to improve the health of trees and other plants.

#### Agriculture & Urban Agriculture

Rural and urban lands have been identified and are being protected to enhance food and water sources.

#### Green Roofs

Green roofs are standard on new buildings with flat roofs.

# Milestones

## 2020 MILESTONE

### Green infrastructure is a preferred option

#### Stormwater

Rainfall is managed where it falls or is conveyed where natural waterways are restored and everyone has a strong understanding of their role in stormwater management.

#### Natural Heritage

Ecosystem services provided by wetlands and other natural heritage areas are fully considered in the context of infrastructure services; and natural areas are protected, restored and fully integrated into the landscape.

#### Urban Forests

Urban forests planting, maintenance and protection is fully integrated into community planning. Urban trees are planted with optimum growing conditions for all sites. Tree planting and maintenance is strategically planned for areas of low tree canopy cover.

#### Parks & Open Space

The size of parks and open spaces is maximized in urban areas, stormwater is captured in a way that improves communities, and linkages are created with green infrastructure on streets and in private areas.

#### Agriculture & Urban Agriculture

Local food production has increased, agriculture is being protected, and agricultural production has been integrated into the urban landscape.

#### Green Roofs

Green roofs exist on all appropriate buildings and are being integrated with other rooftop sustainability initiatives (eg. solar panels).

## 2040 VISION

### Green infrastructure is the standard option

#### Stormwater

Ontario leads the world in the percentage of zero runoff in developed areas. Rainfall is managed where it falls.

#### Natural Heritage

All natural heritage systems are improved and protected to preserve their existence and the vital functions they provide for all species, including those within urban environments.

#### Urban Forests

Communities have dense urban forest canopies that are healthy and diverse. Cities are cooler and urban forests are uniformly distributed across the urban landscape with all residents benefiting equally from the services it provides.

#### Parks & Open Space

Parks and Open Spaces are the primary systems that absorb stormwater, and lessen the urban heat island effect throughout urban areas, while creating great places to live, work and play.

#### Agriculture & Urban Agriculture

Communities can rely on local supply chains to sustain food consumption.

#### Green Roofs

Green roofs are visible across the landscape on the majority of buildings, and they are fully integrated with solar power initiatives. Food is grown on roof-tops as community gardens and through commercial operations.

# The Roadmap

The Roadmap uses strategies and objectives to achieve the vision.



## Strategy 1

### Research and communicate

**Study green infrastructure performance and implementation barriers while effectively communicating the benefits and business case**

- Monitor performance and communicate green infrastructure cost/benefits to key influences in municipalities, province and development community.
- Collect and share green infrastructure examples, especially among professionals
- Continue to distill experience to create general and predictive data about costs/benefits.
- Share and reward best practices

## Strategy 2

### Regulate and fund

**Create a green infrastructure-positive regulatory and funding environment**

- Remove funding barriers and seize legislative/planning opportunities
- Remove other regulatory and professional barriers
- Create an enabling environment that encourages green infrastructure
- Enshrine preferences for green infrastructure in legislation at all levels

## Strategy 3

### Manage as assets

**Incorporate green infrastructure into asset management**

- Identify barriers to adding green infrastructure assets to asset management systems and remove those barriers.
- Train asset managers to work with green infrastructure asset classes.
- Improve data quality and performance information for green assets.
- Use green infrastructure asset management to continuously improve management of green infrastructure assets.

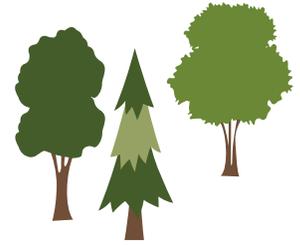
## Strategy 4

### Support professionals

**Support practitioners with green infrastructure tools, training and resources**

- Understand gaps and how best to fill needs of practitioners.
- Roll out tools, resources and training, and monitor effectiveness
- Expand beyond target market to meet resources or training needs of others who can influence green infrastructure
- Expand scope to support green infrastructure nationally and internationally.

# 2018 Current



## STRATEGY REQUIRED TO REACH OBJECTIVE

### OBJECTIVE

1. Municipal leaders show increased willingness to implement green infrastructure.
2. Green Infrastructure stakeholders implement and monitor performance (including costs) of projects



Research and Communicate

3. Green Infrastructure qualifies for provincial and federal infrastructure funding.
4. Green Infrastructure is included in climate adaptation plans at all levels.
5. Specific funding streams exist for green infrastructure.
6. Municipal governments assess the local policy barriers to green infrastructure implementation.



Regulate and fund

7. Local and provincial politicians show support for inclusion of green infrastructure in asset management systems.
8. The leading software tools for asset management can be applied to some if not all green infrastructure asset classes.



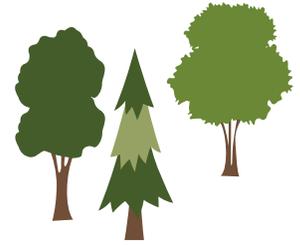
Manage as assets

9. There is a clear understanding of what green infrastructure tools, resources and training are needed and how to deliver them.



Support professionals

# 2020 Milestone



## STRATEGY REQUIRED TO REACH OBJECTIVE

### OBJECTIVE

- 10. A large pool of professional advocates and practitioners exists.
- 11. There is a large pool of successful examples to pull from.



Research and Communicate

- 12. Provincial agencies and municipal governments have mapped out the process to incorporate green infrastructure measures and have ensured that staff are trained to review and approve.
- 13. Municipal government create and implement local green infrastructure strategies.
- 14. There are incentives for green infrastructure development on private property.



Regulate and fund

- 15. Asset managers in most large communities and some small ones know how to include green infrastructure in their asset management plans and have or are developing inventories of green infrastructure assets to be included.



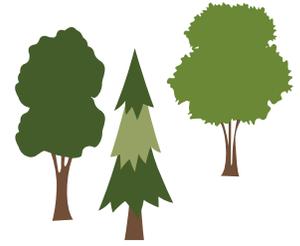
Manage as assets

- 16. A green infrastructure centre of excellence has been created to bring together resources and expertise for effective delivery of tools and training to support the transition.



Support professionals

# 2025 Milestone



## STRATEGY REQUIRED TO REACH OBJECTIVE

### OBJECTIVE

17. It is easy to create quantifiable business cases and communities across Ontario do so regularly when making infrastructure decisions.



Research and Communicate

18. Implementation of green infrastructure strategies are well underway and local policies and programs support GI.



Regulate and fund

19. Reliability of green Infrastructure asset data is as good as traditional data in asset management systems.



Manage as assets

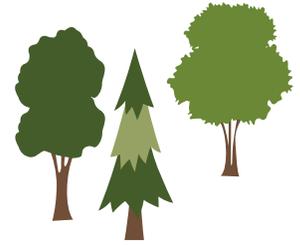
20. Green infrastructure practitioners can work in a supportive and collaborative environment with others who share their green infrastructure values and language.



Support professionals

21. Green infrastructure is a viable career option for construction, maintenance, and design, and many people are going into the field.

# 2040 Vision



## STRATEGY REQUIRED TO REACH OBJECTIVE

### OBJECTIVE

22. Momentum is maintained and there is public support



Research and Communicate

23. All infrastructure projects in new and redevelopments must use green infrastructure options where appropriate or explain why not. There may be penalties for non-use of green infrastructure.



Regulate and fund

24. Installation of voluntary green infrastructure on private property is widespread.

25. Municipal decision-makers are regularly using green infrastructure asset management information to improve level of service, minimize risk and reduce costs.



Manage as assets

26. Green infrastructure experts from Ontario are sought globally for the quality of their work. Ontario is recognized as a world leader in green infrastructure.



Support professionals

# Where do we go from here



## STRENGTHEN COLLECTIVE ACTION

This roadmap contains strategies and objectives that touch on the activities of many organizations, municipalities and other orders of government across the Ontario. The goal of the document is to give the green infrastructure sector a common vision and a roadmap in which to position activities. Collectively, we need to ensure our wide variety of activities are moving us all in the same direction toward a common vision. To achieve this vision, this roadmap will be shared with elected officials and other key decision makers with the long-term goal of securing their full support for the vision, milestones and strategies of the roadmap.



## MONITOR, ADAPT AND COMMUNICATE PROGRESS

Looking forward, the Green Infrastructure Ontario Coalition will monitor the progress towards the interim milestones and the roadmap vision and communicate that progress to our members and the broader green infrastructure sector. An adaptive management approach will also be applied: at certain junctures or milestones of the roadmap, the Green Infrastructure Ontario Coalition will review the roadmap and assess the effectiveness of the strategies being employed, and make changes to the roadmap, as needed.



Let's Make Green Infrastructure  
the New Normal.

[greeninfrastructureontario.org](http://greeninfrastructureontario.org)