

2019 COMMUNITY
SUSTAINABILITY PLAN



**GREEN
DIRECTIONS**
VAUGHAN



Message from the Mayor

Vaughan is proud to be a green city and we are committed to fostering a sustainable community that will continue to enhance the quality of life for all residents, businesses and visitors. We remain focused on a plan that is true to environmental values that respect future generations.

Green Directions Vaughan is the City's environmental sustainability plan. It serves to guide all our city-building efforts toward initiatives that reinforce our commitment to environmental stewardship. This includes goals to reduce greenhouse gas emissions, as well as enhance stormwater management, water conservation systems and waste reduction.

Vaughan's commitment to environmental sustainability is woven into every aspect of city-building from North Maple Regional Park – Vaughan's most ambitious, 900-acre park development – to Edgeley Pond and Park – the largest open space in our emerging downtown, the Vaughan Metropolitan Centre.

We each have a shared responsibility to protect our future. I am proud to continue to work with staff and stakeholders who are dedicated to our world-class city.

Sincerely,



Hon. Maurizio Bevilacqua, P.C.
Mayor

2018-2022 City of Vaughan Members of Council

First row, left to right:

Linda D. Jackson, Regional Councillor;
Gino Rosati, Regional Councillor;
Hon. Maurizio Bevilacqua, P.C., Mayor;
Mario Ferri, Regional Councillor, Deputy Mayor.

Second row, left to right:

Alan Shefman, Ward 5 Councillor;
Sandra Yeung Racco, Ward 4 Councillor;
Rosanna DeFrancesca, Ward 3 Councillor;
Tony Carella, Ward 2 Councillor;
Marilyn Iafrate, Ward 1 Councillor.



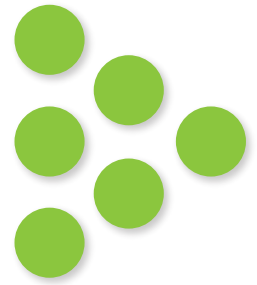


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Executive Summary



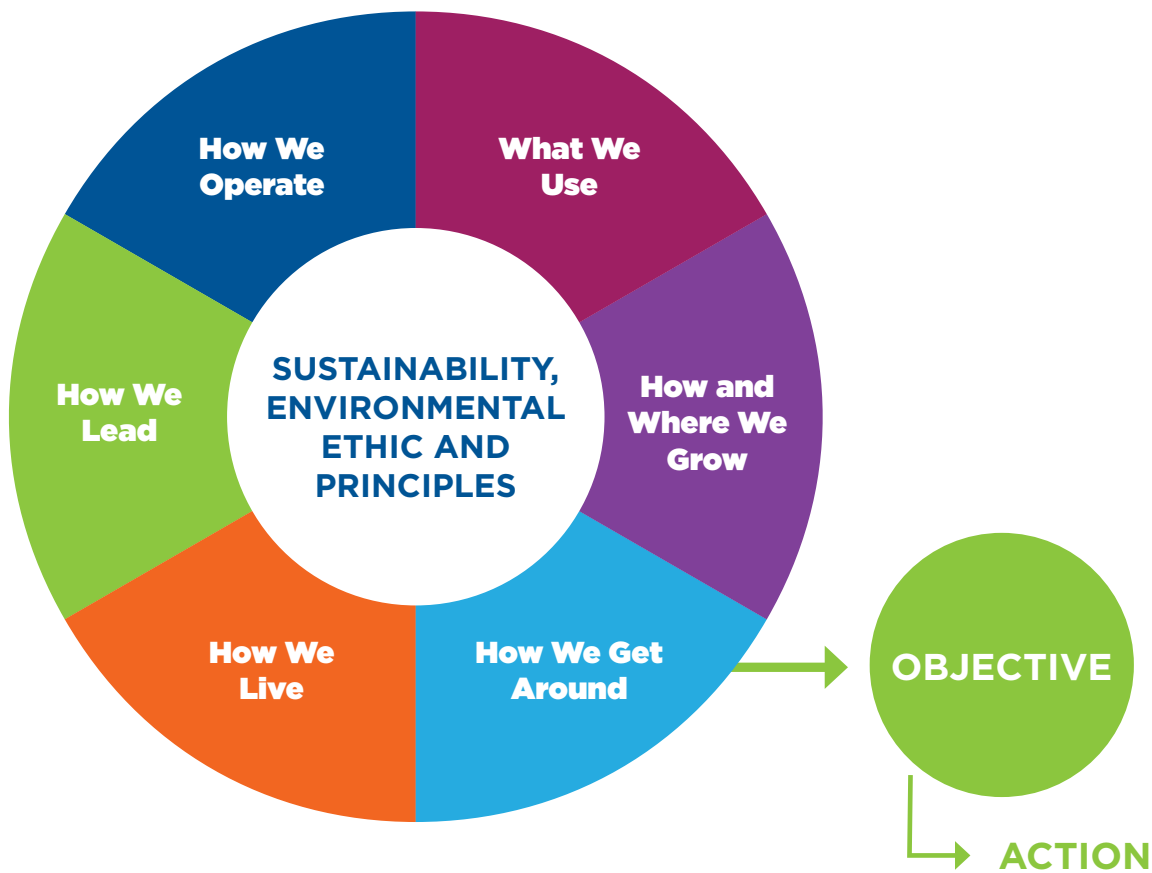
Green Directions Vaughan was first approved by Council in 2009 as the City of Vaughan's (the "City") Community Sustainability and Environmental Master Plan (the "Plan"). This long-term Plan guides the community to a more sustainable future by addressing environmental, cultural, social and economic values. It influences all aspects of the City's operational and regulatory activities. Green Directions Vaughan also serves as an Integrated Community Sustainability Plan and is recognized by the Federation of Canadian Municipalities as a platform to request federal funding.

Guided by a definition of sustainability, environmental ethic and a set of principles, Green Directions Vaughan outlines the City's approach to maintaining a healthy natural environment, vibrant communities and a strong economy by defining six goal areas.

The goal areas are further broken down into objectives and sustainability actions. These sustainability actions enable Vaughan to remain a complete community where the needs for daily living are accessible to people of all ages and abilities.

As a living document, the actions and priorities in Green Directions Vaughan have evolved since 2009. Some of the main changes to the new Plan include:

- Emphasizing community collaboration to achieve sustainability outcomes
- Describing the sustainability actions as outcomes so that the public and stakeholders can more easily gauge how we are doing and find ways to collaborate for success
- Aligning sustainability actions to the United Nations Sustainable Development Goals and the World Council on City Data framework
- Recognizing the importance of the Agricultural System and supporting urban-agriculture and local food opportunities within the City
- More attention to climate change mitigation and adaptation efforts to create a resilient City and low carbon economy
- Developing a milestone approach for the governance of Green Directions Vaughan to measure progress on the sustainability actions laid out in the Plan



To develop new sustainability actions, an engagement strategy was used that included:

- Interviews with partners and stakeholders
- A workshop for members of the public (to imagine what a sustainable Vaughan looks like to them)
- An online survey called “All Our Ideas” for rating ideas and suggesting new ones
- Invitations to provide input through email or phone
- A Technical Advisory Committee made up of staff to review and approve sustainability actions

Public consultation is a vital part of the city-building process. The City of Vaughan re-engaged the public to raise awareness of the new Plan and obtain a ‘green thumbs up’ of support for the Plan.


205
‘thumbs up’


4
FACILITATED
OUTREACH
SESSIONS

ATTENDED

8
City-led
events

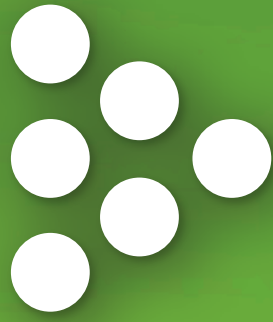
POP-UPS at Vaughan Mills and Promenade Mall

Critical sustainability themes were also used to select and describe actions for the new Plan:

- Climate Resiliency
- Energy
- Mobility
- Green Infrastructure
- Water
- Waste
- Green Economy
- Complete Communities
- Greenspace
- Health
- Diversity
- Governance
- Engagement
- Partnerships

The new Plan, Green Directions Vaughan 2019, describes the City’s environmental and sustainable priorities and outlines a new set of sustainability actions that will guide the City of Vaughan to help achieve a healthy natural environment, vibrant communities and a strong economy. Residents and businesses should be able to clearly see the positive impacts of Green Directions Vaughan. We look forward to collaboration in the community on these shared goals.

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VAUGHAN



CHAPTER 2

INTRODUCTION



Integrating Sustainability into City Business

Green Directions Vaughan is the City of Vaughan's (the "City") community sustainability plan (the "Plan"). The sustainability actions in this Plan relate to many operational functions delivered by the City. Green Directions Vaughan recognizes the leadership role of various City departments in building an environmentally sustainable City.

A main rationale of the first iteration of Green Directions Vaughan (GDV 2009) was to integrate sustainability into the core functions of the City under the primary responsibility of City departments. This is being carried over into the revised Plan, Green Directions Vaughan 2019 (GDV 2019), to promote sustainability in the decision-making process as "a matter of doing business". The following two additional motivations guided the revisions of this Plan:

- Describing the sustainability actions as outcomes to better track progress
- Acknowledging the need of community partners to collaborate on sustainability actions

Success of the sustainability actions relies on local collective action that involves residents, community groups, environmental organizations, businesses, industry leaders, and other levels of government. Working together increases the chance to succeed in creating a sustainable Vaughan. The City recognizes that to achieve our goals it will take collaboration and integrated planning, including through participation in individual and neighbourhood-scale actions. The City will continue to form partnerships and build capacity in the local community.

Alignment with City Plans

GDV 2009 was a component of the City's Growth Management Strategy, Vaughan Tomorrow, that included four linked strategic documents: the Strategic Plan (Vaughan Vision 2020), Green Directions Vaughan, the City's Official Plan 2010, and a series of Master Plans. The linkages between these plans remain today and are illustrated in Figure 2.1.

The Pillars of Sustainability

Some of the current challenges faced by communities are the following:

- native wildlife populations continue to declineⁱ
- climate change impacts have resulted in millions of dollars in clean up and repair for Ontario cities
- declining greenhouse gas emissions are not yet at the pace needed to meet Paris Agreement targets

Let's celebrate some past accomplishments and use this as a springboard for future sustainability action. The chart on the next page illustrates the City's accomplishments in relation to the pillars of sustainability.

Figure 2.1: Master Plan Alignment



Pillars

Vaughan is...

Accomplishments

Social

An engaged and sustainable city



- Approved a Secondary Suites policy as a key part of providing affordable housing options
- Opened five community gardens on City-owned land
- More than 17,000 people participated in the 20-Minute Makeover litter clean-up event each year in 2017 and 2018
- Provide updates, news and events to more than 10,000 followers on Twitter
- Vaughan Earth Hour attracts over 500 residents and contributed to an energy reduction of 3 per cent to 4 per cent in 2017 and 2018
- Opened phase 1 of North Maple Regional Park, part of a 900-acre open space area

Environment A green city

A low-carbon, resilient city



- Planted 12,000 street trees and park trees in 2017 and 2018, combined
- Revitalizing Edgeley Pond as a key open space area in the Vaughan Metropolitan Centre
- Maintain more than 800 hectares of parks, boulevards and open-spaces
- Identified over 6,000 hectares of natural features in the Natural Heritage Network Study, of which half are secured as publicly-owned lands
- Opened the Vaughan Metropolitan Centre subway station
- Replacing streetlights with LEDs that will save the City about 5,000 megawatt hours of energy annually
- Over 60 energy retrofit projects, including upgrading lights and equipment at community centres and arenas have saved the City more than \$250,000 annually since 2012
- Purchased our first fully electric fleet vehicle and adopted anti-idling technology to reduce pollution and save money
- Maintain more than 250 kilometres of cycling and pedestrian routes
- Introduced a stormwater charge that allows the City to improve stormwater assets and mitigate flooding in response to the impacts of climate change

Pillars

Vaughan is...

Accomplishments

Economic

A prosperous city



- Encourage continued investment in Vaughan by supporting new business opportunities through the Vaughan Business Enterprise Centre
- Commenced construction of the Mackenzie Vaughan hospital
- In 2016, Vaughan was ranked in the top 25 best places for business in Canada by Canadian Business and PROFIT
- Became a founding member of the ClimateWise Business Network to advocate for energy reduction



How Green Directions Vaughan 2019 was Developed

Since the initial Plan was approved in 2009, the City has made a lot of progress thanks to the efforts of City of Vaughan staff, partners, businesses and our citizens. The renewal of Green Directions Vaughan was recognized as a specific initiative in the Term of Council Priority (2014 - 2018), specifically, "To continue to cultivate an environmentally sustainable City". The renewal process has produced this updated document, Green Directions Vaughan 2019, that can be used to inform the Growth Management Strategy, the Official Plan review, and the revision of the long-term strategic plan. This Plan is the result of the following research and consultation effort:

- preliminary revised sustainability actions were drafted from a jurisdictional scan, policy review, and extensive internal departmental consultations
- a community engagement effort, including over 40 stakeholder meetings, a public event held on November 29, 2017, and a "wiki" survey ("All Our Ideas") made available to residents
- the finalization of the sustainability actions was overseen by an internal Technical Advisory Committee

About this Plan

Introduction

Guiding Principles and Sustainability

Resilience and Smart Cities

Models of Sustainability

What we Heard

Sustainability Actions

Governance

Indicators

Best Practices

These introductory sections of GDV 2019 describe the approaches to sustainability guiding this Plan, with a particular focus on the UN Sustainable Development Goals.

The community engagement effort informed the revised sustainability actions. Public comments and stakeholder consultation are summarized here.

The “green directions” are listed in the Goals, Objectives, and Actions framework.

Implementing Green Directions Vaughan and tracking progress is described through the governance framework, use of quantitative indicators, and an understanding of relevant best practices.



i. World Wildlife Fund Canada. 2017. Living Planet Report Canada, 2017. Toronto, Ontario. https://assets.wwf.ca/downloads/WEB_WWF_REPORT.pdf



**GUIDING
PRINCIPLES &
SUSTAINABILITY**

Green Directions Vaughan 2009 established a sustainability statement, environmental ethic and governing principles that remain in place today. The definition of sustainability reflects a breadth of municipal responsibilities and sets expectations for City of Vaughan (the “City”) decisions and practices. The sustainability statement, ethic and governing principles are carried forward in the revised community sustainability plan, Green Directions Vaughan 2019 (“GDV 2019” or the “Plan”).

The City leads by the following definition:

Sustainability means we make decisions and take actions that ensure a healthy environment, vibrant communities and economic vitality for current and future generations.

In pursuit of sustainability, the City will be guided by the following ethic:

In Vaughan we lead by example as responsible stewards of our community. Our decisions entail determining the impact of our actions on the environment, weighing the social and cultural consequences and understanding any financial implications. Our actions will enhance both the natural, socio-economic and built environments.

The City will adhere to the following principles in carrying out the sustainability actions:

- 1. Leadership** We act as advocates for a sustainable future and support positive initiatives emerging from all sectors of society.
- 2. Innovation** We build upon best practices to create “Made-in-Vaughan” solutions to guide our operations and shape our plans and policies.
- 3. Transparency** Our actions are open and traceable; we monitor and report on our progress.
- 4. Accountability** We take responsibility for our actions and we build on past experience.

5. Responsibility Everyone in Vaughan has a role to play in the Plan.

6. Engagement We involve our citizens and partners in decision making.

7. Acknowledgement Recognize the traditional territories of the Indigenous peoples who live and have lived in Vaughan.

These principles help achieve a healthy natural environment, vibrant communities and a strong economy. Implementing Green Directions Vaughan is a collective effort by all City departments in collaboration with our citizens and stakeholders. The actions of each department are outlined in a series of six goals, derived from the principles above and can be found in Chapter 6.

Indigenous Land Acknowledgement

We respectfully acknowledge that we are situated on Traditional Territories and Treaty Lands, in particular those of the Mississaugas of the Credit First Nation, as well as the Anishinaabeg of the Williams Treaties First Nations, the Huron-Wendat Nation, and the Métis Nation. As representatives of the people of the City of Vaughan, we are grateful to have the opportunity to work and live in this territory.

At the City we acknowledge the existing treaty rights of the Indigenous peoples of these lands, as we share our air, land and water. We understand the Crown has the Duty to Consult where a decision may adversely impact asserted or established treaty rights. As a lower-tier municipality, we will meet our responsibilities to build and create meaningful relationships and partnerships with Indigenous communities. We acknowledge that the decisions we make today will impact future generations, therefore through Green Directions Vaughan, we will strive to understand Indigenous treaty rights and work together with respect and good faith to protect our natural environment and archaeological resources.ⁱ



Sustainable Development

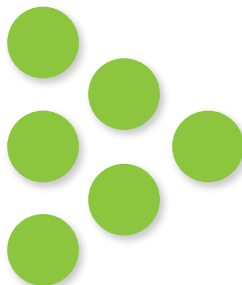
Although the definition of sustainability, environmental ethic and operating principles continue to guide the new Plan, the City has aligned the revision of the sustainability actions in this Plan with the United Nations Sustainable Development Goals and the World Council on City Data. Refer to Appendix A for a description of additional models of sustainability, including the ICLEI Montreal Commitment and Action Plan 2018-2021, Melbourne Principles for Sustainable Cities and The Natural Step, that help guide the actions in this Plan.

United Nations Sustainable Development Goalsⁱⁱ

In 2015, the United Nations (UN) announced the 2030 Agenda for Sustainable Development, which introduced 17 Sustainable Development Goals (SDGs) and 169 targets. The SDGs aim to encourage critical action over a period of 15 years in the three key pillars of sustainable development: economic, social, and environmental.

As the City's community sustainability plan, GDV 2019 establishes principles of sustainability and guides the City towards sustainable decisions and actions. Through the successful implementation of GDV 2019, the City contributes to the achievement of the following SDGs:

GREEN DIRECTIONS VAUGHAN



SDG 2
Sustainable food production and resilient agriculture



SDG 3
Ensure healthy lives and promote well-being



SDG 6
Sustainable water and sanitation for all



SDG 7
Access to affordable, reliable, sustainable and modern energy for all



SDG 8
Promote sustained, inclusive and sustainable economic growth



SDG 9
Build resilient infrastructure



SDG 11
Sustainable cities and communities



SDG 12
Ensure sustainable consumption and production patterns



SDG 13
Take urgent action to combat climate change



SDG 15
Protect and restore ecosystems and halt biodiversity loss

World Council on City Dataⁱⁱⁱ

The City of Vaughan joined the World Council on City Data (WCCD) in 2011, becoming only the second Canadian city to join. The WCCD provides a global platform for standardized City data and acts as a hub to help strengthen partnerships across cities, international organizations, corporate partners, and academia. Standardized indicators and membership with the WCCD enables the City to assess its performance, measure progress toward the UN SDGs, and draw comparative lessons from other cities both locally and globally.

WCCD was established to globally operationalize ISO^{iv} 37120 Sustainable Cities and Communities: Indicators for City Services and Quality of Life standard

– the first international standard on metrics for sustainable cities and open data. ISO 37120 includes 100 indicators, which are structured around the following 17 themes: economy, education, energy, environment, finance, fire and emergency response, governance, health, recreation, safety, shelter, solid waste, telecommunications, transportation, urban planning, wastewater, and water and sanitation.

Resilience and Smart Cities are described in more detail in Chapter 4.



i. City of Vaughan. 2017. Aboriginal Territorial Acknowledgement. Item 10, Report No. 21, of the Committee of the Whole, which was adopted without amendment by the Council of the City of Vaughan on June 5, 2017. http://www.vaughan.ca/council/minutes_agendas/AgendaItems/CW0523_17_10.pdf

ii. United Nations Sustainable Development Goals. <https://sustainabledevelopment.un.org/?menu=1300>

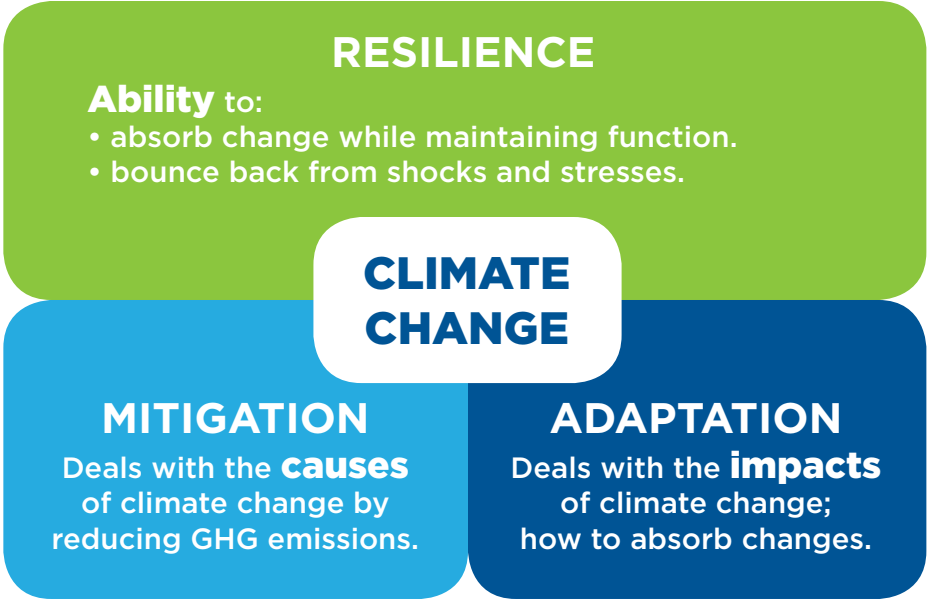
iii. World Council on City Data. <https://www.dataforcities.org/>.

iv. The International Organization for Standardization (ISO) is a non-governmental organization that publishes international standards and brings together experts to share knowledge and support innovative solutions to global challenges





RESILIENCE AND SMART CITIES



According to the World Economic Forum’s 2019 Global Risks Report, extreme weather events, natural disasters and failure of climate mitigation and adaptation appear in the top five for both the most impactful risks and most likely risks.ⁱ

Resilience

Resilience encompasses two important components: first, the ability of a system to absorb changes while maintaining regular function, and second, its ability to recover quickly from shocks or stresses. This term is often used in the context of climate change; cities must become resilient to the impacts of climate change.

The local impacts of climate change that will affect Ontario, and may impact Vaughan, includeⁱⁱ:

- More frequent extreme weather events
- More frequent water usage alerts, as summer temperatures and evaporation rates increase
- Greater risks to public health from injury, illness and premature death from climate-related events such as extreme weather, heat waves, smog and the spread of diseases
- Damage to Ontario’s ecosystems, through the combined influence of changing climate, human activities (such as conventional agriculture and fossil fuel dependent transportation and energy sources) and natural disturbances like fire, outbreaks of insects and disease

From a global perspective, floods, hurricanes, tsunamis, extreme heat, drought, rising sea levels and habitat loss are significant impacts of climate change.

Cities are on the frontline when it comes to both contributing to and facing the impacts of climate change. Cities consume over two-thirds of the world’s energy and are responsible for over 70 per cent of global CO₂ emissionsⁱⁱⁱ. More than half of the world’s population lives in cities, and by 2050 this figure will rise to about 75 per cent. Given the increased population in cities, the impacts of climate change on cities are and will continue to be a key component of any solution to the climate change problem.

Ontario continues to see a rise in climate-related extreme weather events; in 2018 it resulted in over \$1.2 billion in insured losses^{iv}. Climate change impacts put more stress on the health care system and municipal infrastructure such as roads, stormwater systems and urban trees. A proactive approach that invests in building a resilient city helps reduce costs in the long-term. Cities can better ensure financial sustainability by integrating resiliency into planning and development.

Green Resilience^v

Green resilience solutions contribute to both mitigation, by reducing greenhouse gas (GHG) emissions, and adaptation, by better protecting against climate change impacts. Such strategies have additional co-benefits to human health, the natural environment, and cost savings. Green resilience projects can be large or small, helping to build momentum for climate action and accelerate implementation and potential for scale-up.

The City, businesses and residents need to ramp up efforts to make Vaughan more resilient to the impacts of climate change. To better understand how Vaughan is becoming resilient, the theme of climate resiliency has been assigned to sustainability actions outlined in Chapter 6.

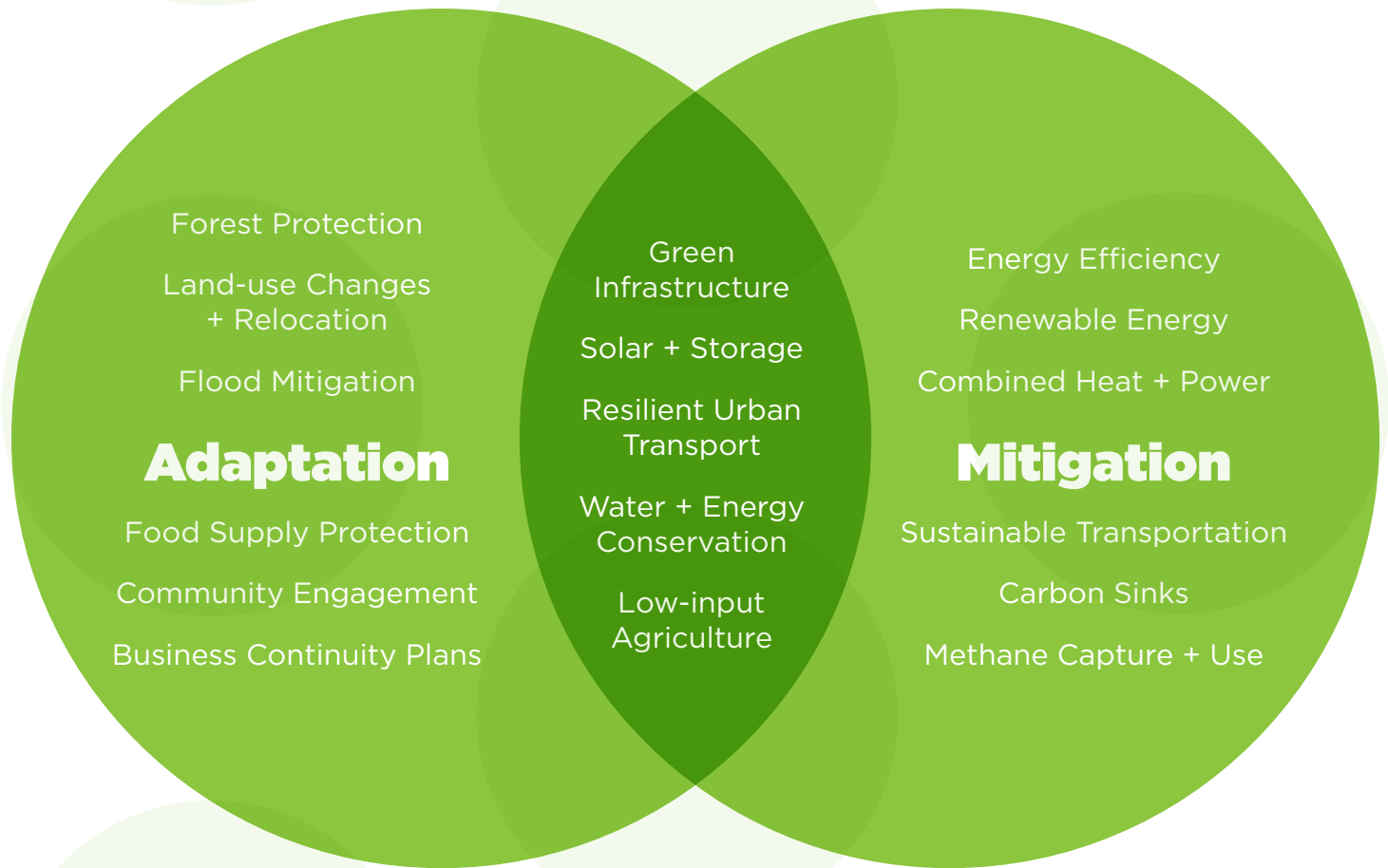


Figure 4.1 highlights green resilience actions compared to adaptation and mitigation only^v.

Smart Cities

What is a Smart City? While there are numerous definitions, the International Organization for Standardization (ISO) defines a Smart City as one that increases the pace at which it provides social, economic, and environmental sustainability outcomes. A Smart City enhances mobility, safety, communication, economy, the environment, standard of living and governance. Key elements include the use of technology and data, an emphasis on collaboration and partnerships, citizen engagement, sharing and a focus on sustainability and resilience.

Data is integral to Smart Cities. As a member of the World Council on City Data (WCCD), the City of Vaughan is helping to spearhead and lead the efforts on open data. The City of Vaughan has engaged in international benchmarking to identify common issues and themes, to learn and share best practices with cities globally and to increase economic development.

The City of Vaughan launched a Smart City Business Unit in August 2019 and is planning to launch a Smart City Task Force that will foster and develop key relationships with Smart City leaders in Canada and abroad. Their mandate will focus on increasing awareness internally and externally and developing strategic Smart City opportunities and partnerships. The business unit will work to realize business development and City service opportunities benefitting citizens, the performance of the City, and the community and economy at-large. The Mayor of Vaughan and Members of Council will continue to engage, collaborate and co-create with the community through the Smart City Task Force^{vii}.

- i. World Economic Forum. 2019. Global Risks Report 2019 Executive Summary. <http://reports.weforum.org/global-risks-2019/executive-summary/>
- ii. Environmental Commissioner of Ontario. 2018. Climate Action in Ontario: What's Next. 2018 Greenhouse Gas Progress Report. <https://eco.auditor.on.ca/our-reports/climate-change/>
- iii. C40 Cities. <https://www.c40.org/>
- iv. Insurance Bureau of Canada. November 2018. Press Release. <https://www.newswire.ca/news-releases/insurance-bureau-of-canada-supports-ontario-governments-environment-plan-701634532.html>
- v. Winkelman, S., Nichol, E., and Harford, D. 2017. Taking Action on Green Resilience: Climate Change Adaptation and Mitigation Synergies. Workshop Conclusions: Livable Cities Forum Pre-Event. http://act-adapt.org/wp-content/uploads/2017/11/ACT_ALTGR_Web4.pdf
- vi. World Council on City Data. <https://www.dataforcities.org/>
- vii. City of Vaughan. 2016. Creating a Smart City of Excellence. Item 21, Report No. 24, of the Committee of the Whole, which was adopted, as amended, by the Council of the City of Vaughan on June 7, 2016. http://www.vaughan.ca/council/minutes_agendas/Extracts/24cw0531_16ex_21.pdf

The WCCD's Global City Registry for ISO 37120 Sustainable Cities and Communities: Indicators for City Services and Quality of Life, is the first international standard for cities on open data. Under this standard, the City has been Platinum certified since 2015, meaning we report on over 90 indicators. This demonstrates our commitment to global efforts for standardized open data.^{vi}

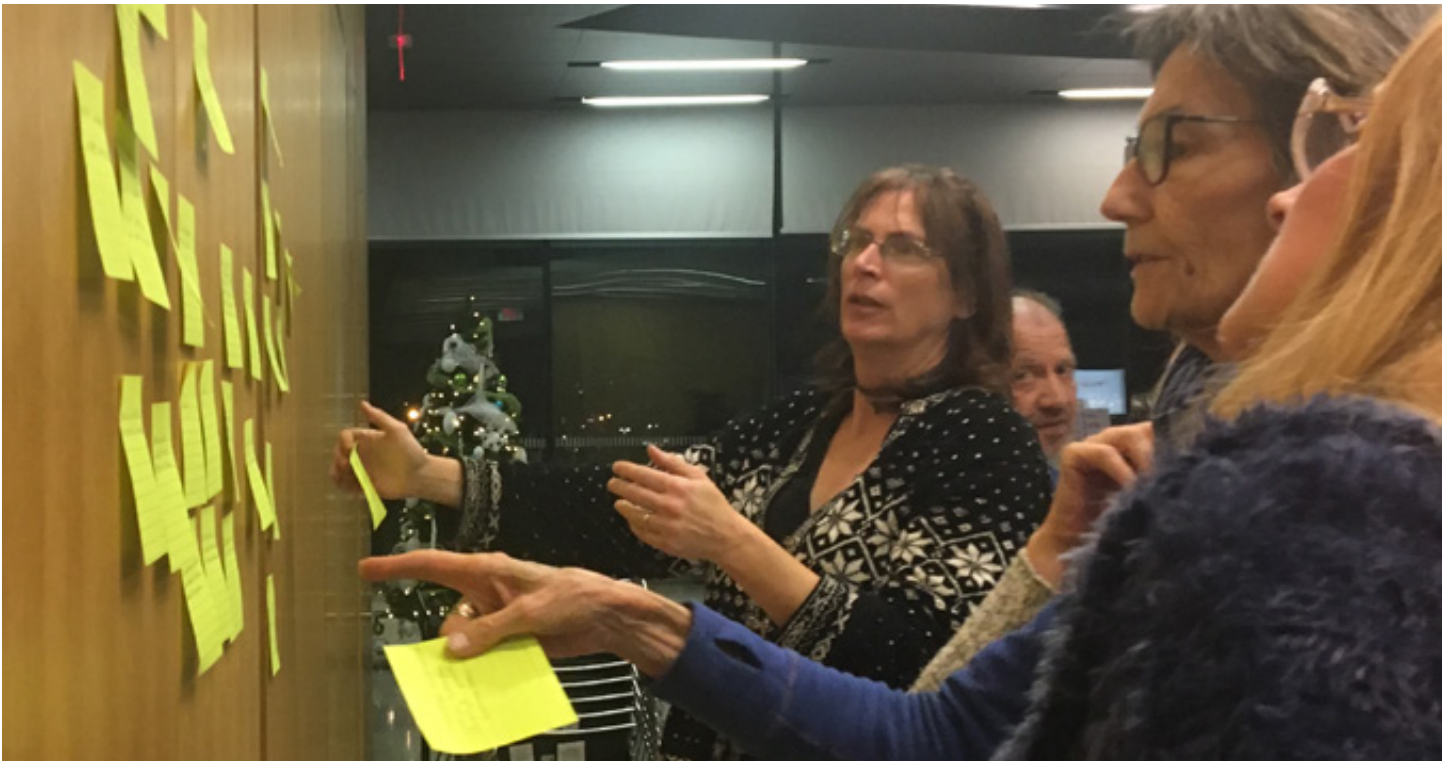
City of Vaughan Smart City Achievements:

- In 2019, Vaughan became the first Canadian municipality to join US Ignite, a Smart Gigabit Community and organization that promotes international leadership to develop new applications and to foster an environment for local governments
- Vaughan has begun its digital transformation through the development and implementation of its Digital Strategy
- Vaughan's first hospital - the new Mackenzie Vaughan Hospital - will be Canada's first smart hospital and feature fully integrated 'smart' technology systems and medical devices.

Becoming a recognized Smart City would make Vaughan a more resilient City by being better prepared to respond to the challenges of climate change, population growth, and political and economic trends. As a Smart City, Vaughan can improve how we engage society, collaborate for shared goals, work across disciplines and city systems, and use data information and modern technologies to deliver better services and quality of life.

WHAT WE HEARD





What We Heard

As part of the renewal process to update Green Directions Vaughan, the City undertook a public engagement process to collect feedback from citizens and stakeholders. Over the fall of 2017 and early 2018, IndEco Strategic Consulting Inc. (IndEco) undertook several initiatives to solicit input, including:

- Personal interviews were conducted with existing partners and stakeholders, including Members of Council, representatives from City departments, representatives of higher-tier governments, environmental and other citizen groups, the local regional utility and businesses.
- An open invitation workshop took place on Nov. 29, 2017 at Vaughan City Hall for the public to provide ideas on what they imagine a sustainable Vaughan would look like and proposed actions to bring this vision to reality.
- An online survey, using a tool called All Our Ideas, allowed the public to propose ideas and vote on other submitted ideas to make Vaughan more sustainable. Users were also asked to prioritize various lists of ideas.
- Invitations were posted on the web and through social media to invite the public to provide input through other means, such as by email or telephone.

Metrics :

34,000 online ad impressions for the public workshop and **All Our Ideas** campaign

More than 63,000 social media impressions for the public workshop and **All Our Ideas** campaign

More than 1,200 views on the registration page for the public workshop

More than 100 people visited, the “Have your say” webpage posted on the Environmental Sustainability website

28 meetings with about **70** participants

21 attendees to the **public workshop** on Nov. 29, 2017

109 **All Our Ideas** users on the platform and more than **3,600** votes on ideas



So, what did we hear?

Both internal and external stakeholders expressed interest in continuing to be informed of, and involved in, the update of Green Directions Vaughan. Through the workshop and All Our Ideas platform, IndEco collected suggestions for what to include in the new Plan. One main observation was the need for more education, better communication and increased collaboration and partnerships with community groups. The conclusions and recommendations resulting from the internal and external engagement process were utilized to write a new set of sustainability actions that can be found in Chapter 6. Some common suggestions to improve communication and education are listed below.

What We Heard	Next Steps and Actions Taken
Develop internal business plans for the sustainability actions to facilitate a corporate culture of environmental stewardship at the City of Vaughan	Developed Action 6.1.2 (Chapter 6). Will create governance and financial frameworks for each sustainability action (Chapter 7)

What We Heard

Clearly define how staff responsibilities are allocated and explain the role of the City's Environmental Sustainability team

Set specific targets and create indicators to track progress

Develop the new Plan with an awareness of what other municipalities are doing to address sustainability

Establish an internal stakeholder group and a separate external stakeholder group to both inform and implement aspects of the new Plan.

Next Steps and Actions Taken

Defined responsibilities of the City's Council, Environmental Sustainability team and various City departments (Chapter 7)

Will create governance framework to track progress using milestones and update indicators (Chapter 7 and 8)

Conducted interviews with external stakeholders that informed the new set of sustainability actions.

Established an internal Technical Advisory Committee to review and finalize the sustainability actions and developed Action 6.1.1 (Chapter 6)

The chart below outlines some of the ideas that we heard from the community to help to create a sustainable Vaughan, and it identifies which sustainability objectives in Chapter 6 incorporate the ideas. The chart also includes a list of suggested individual and community actions that can be done to contribute to sustainability outcomes. Success of the sustainability objectives and actions in this Plan rely on building partnerships and capacity in the local community. The City will continue to work with residents and stakeholders to expand the list of individual and community actions.



Category	What We Heard: Summary of Community Feedback	Related Sustainability Objectives	Suggested Community Actions - Quick Wins
Energy and Building Standards	<ul style="list-style-type: none"> • More opportunities for solar generation • Develop net-zero neighbourhoods • Promote home retrofit programs • Integrate green technology into building design 	Objectives 1.2,2.3	<ul style="list-style-type: none"> • Invest in a programmable or smart thermostat • Upgrade insulation and caulk, or weather-strip, gaps around windows, doors and vents • Upgrade light systems and appliances (look for ENERGY STAR-rated products) • Add energy retrofits when planning a home renovation • Try to live a “one tonne lifestyle” (a “one tonne lifestyle” is one where a person’s personal carbon footprint is less than one tonne of CO₂ per year)

Category	What We Heard: Summary of Community Feedback	Related Sustainability Objectives	Suggested Community Actions - Quick Wins
Waste Reduction	<ul style="list-style-type: none"> Ban plastic bags Go paperless Encourage compostable and sustainable packaging 	Objective 1.4	<ul style="list-style-type: none"> Sew and repair clothing and household items rather than discarding Buy groceries from stores that allow customers to bring and use reusable containers Participate in Repair Cafes and Curbside Giveaway events
Transportation Options	<ul style="list-style-type: none"> Provide more bike lanes and bike share opportunities Enhance transit services Promote electric vehicles and provide more charging stations Create “car-free” neighbourhoods Encourage carpooling Create dedicated bus lanes Improve active transportation facilities to promote cycling and walking 	Objectives 1.1, 3.1, 3.2, 3.3	<ul style="list-style-type: none"> Consider switching to a hybrid or fully electric vehicle Find out if there is a Smart Commute or carpooling program at your place of work Ask your work place if it supports tele-commuting

Category	What We Heard: Summary of Community Feedback	Related Sustainability Objectives	Suggested Community Actions - Quick Wins
Community Amenities	<ul style="list-style-type: none"> • Build compact, walkable and complete communities • Provide more community gardens to promote local food • Create vibrant public spaces • Encourage a variety of housing types (mixed-use, affordable, secondary suites) 	Objectives 2.2, 2.3, 4.1, 4.3	<ul style="list-style-type: none"> • Volunteer at one of the City's community gardens • Create pollinator gardens at home or work



Category	What We Heard: Summary of Community Feedback	Related Sustainability Objectives	Suggested Community Actions - Quick Wins
Economic Vitality	<ul style="list-style-type: none"> • Encourage economic and job growth • Promote a sharing economy • Promote financial benefits of sustainable best practices at home and at work • Lower taxes for homes that are considered eco-friendly 	Objectives 4.1, 4.2	<ul style="list-style-type: none"> • Buy local food, look for the Foodland Ontario logo at your grocery store or check out the York Farm Fresh website to find local farms • Find out if your car insurer has a 'green car discount' • Ask your mortgage lender if they have a 'green mortgage' program for energy efficient homes • Look for products made from recycled materials



Category	What We Heard: Summary of Community Feedback	Related Sustainability Objectives	Suggested Community Actions - Quick Wins
Vibrant Community	<ul style="list-style-type: none"> Foster partnerships to educate all generations on sustainability initiatives Communicate positive messages and celebrate sustainability accomplishments to motivate people to take action Promote inter-generational interaction and engagement Create citizen opportunities to achieve sustainability goals 	Objectives 4.1, 5.1, 5.2	<ul style="list-style-type: none"> Pick up a Great Walks of Vaughan brochure and explore the City's trail network Download a Walk Audit kit from 8 80ⁱ Cities to survey your neighbourhood Participate in the City's annual Culture Days events
Greenspace and Conservation	<ul style="list-style-type: none"> Protect connected and integrated green spaces Expand urban tree canopy Increase connectivity between trails Secure land for parks and provide more greenspace for all ages to enjoy 	Objective 2.2	<ul style="list-style-type: none"> Reach out to organizations, such as LEAF, to plant backyard trees Pick up a rain barrel from the City's Public Works department to store rainwater Consider permeable concrete or asphalt or other permeable materials if re-paving your driveway

i. 8 80 Cities is an organization aimed to create safe and happy cities that prioritize people's well-being. The vision is that if everything we do in our public spaces is great for an 8 year old and an 80 year old, then it will be great for all people.

A young child in a striped shirt is holding a small tree sapling. An adult's hands are visible, supporting the base of the sapling. The scene is outdoors in a grassy area with trees in the background. The image has a green tint.

SUSTAINABILITY ACTIONS

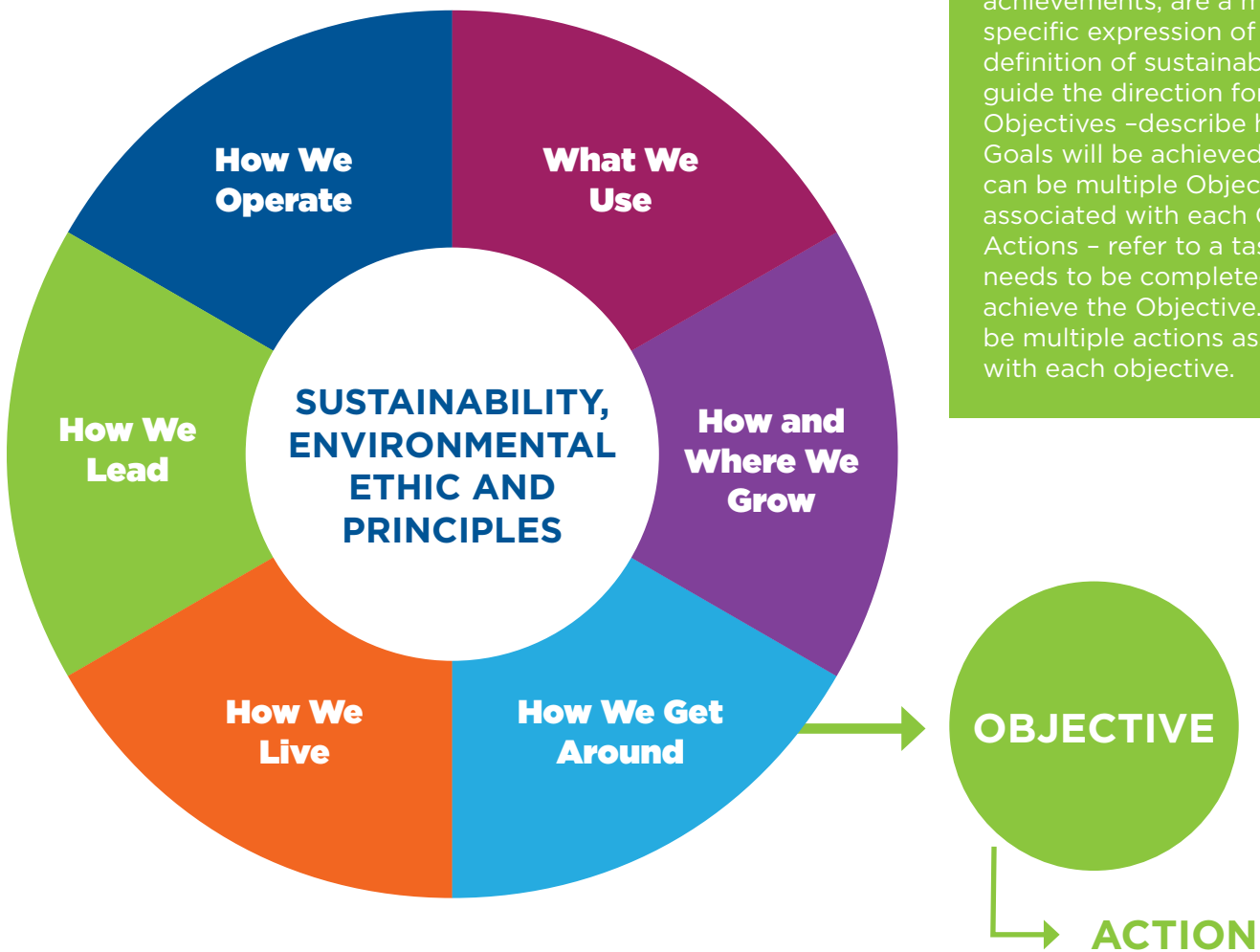


FIGURE 6.1: Goals –correspond to one of the aspects of a complete city. Goals are general statements of desired achievements, are a more specific expression of Vaughan’s definition of sustainability and guide the direction for the plan. Objectives –describe how the Goals will be achieved. There can be multiple Objectives associated with each Goal. Actions – refer to a task that needs to be completed to achieve the Objective. There can be multiple actions associated with each objective.

Sustainability Actions

The sustainability actions implement the objectives of Green Directions Vaughan 2019 and are described as specific outcomes to be achieved in under five years. A governance framework and a financial framework for each action will track progress. Each action is derived from a goal and a set of objectives identified by City staff, the community and stakeholders. These are shown schematically in Figure 6.1.

What We Use: Goal 1 – To significantly reduce waste and the use of our natural resources.

How and Where We Grow: Goal 2 – To ensure sustainable development and redevelopment.

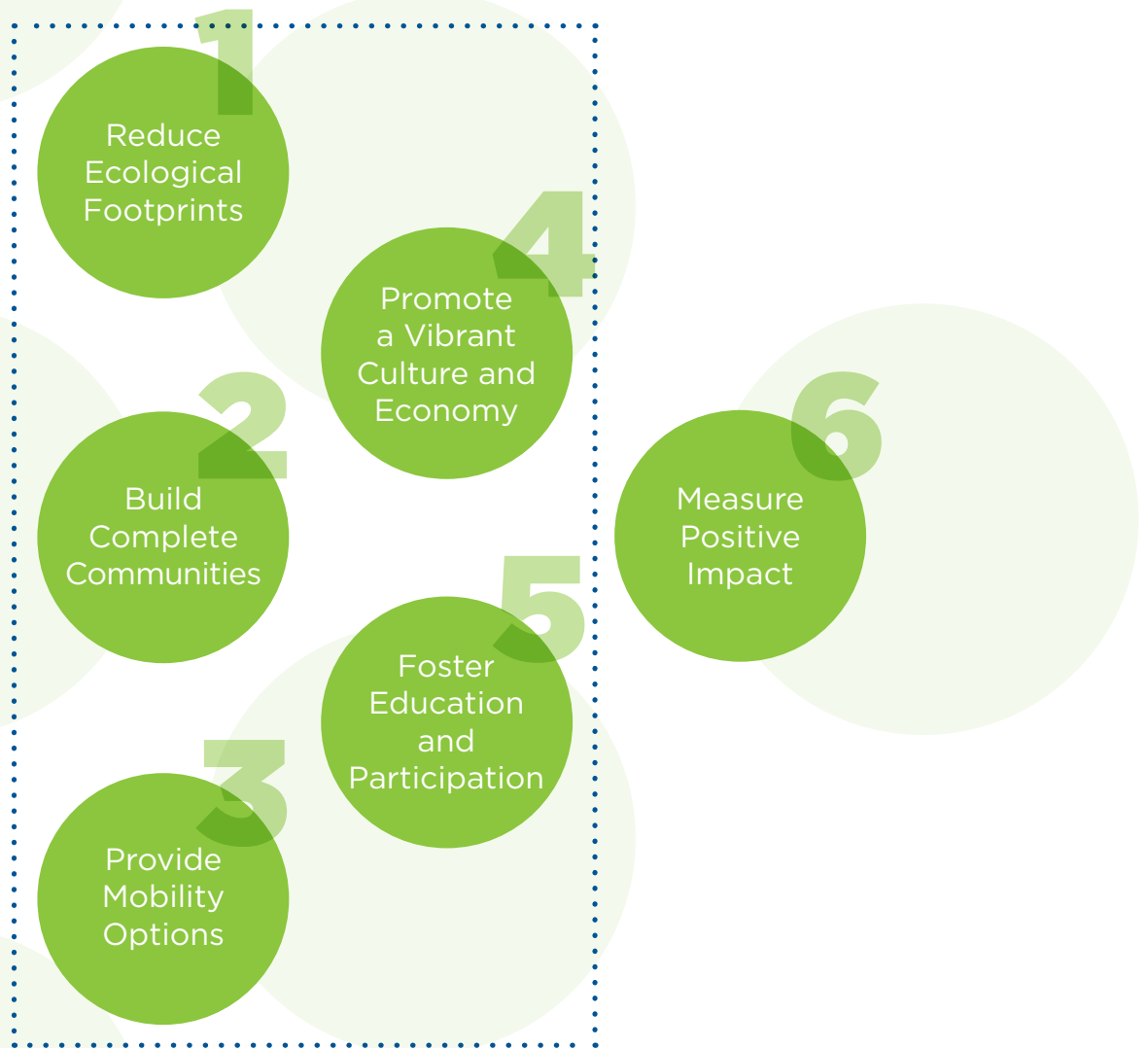
How We Get Around: Goal 3 – To ensure that the City is easy to get around with a low environmental impact.

How We Live: Goal 4 – To create a vibrant community where citizens, businesses and visitors thrive.

How We Lead: Goal 5 – To be leaders in advocacy and education on sustainability issues.

How We Operate: Goal 6 – To ensure a supportive system for the implementation of Green Directions Vaughan.

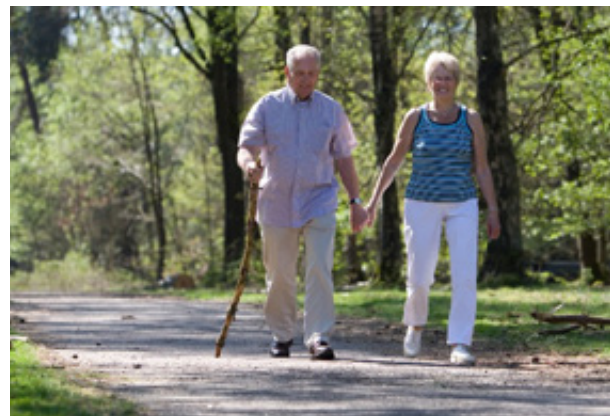
INDICATORS



The sustainability actions move the City in the direction of the overall vision established through citizen and stakeholder consultation in Green Directions Vaughan 2009. The vision is for the City of Vaughan to be a complete community that meets peoples' needs for daily living throughout an entire lifetime by providing:

- A healthy natural environment, with ample greenspace
- Convenient access to an appropriate mix of jobs and local services and a full range of housing
- Community infrastructure including educational opportunities at all levels, healthcare, socio-cultural activities, recreation and open space
- Mobility, with convenient access to public transit and the opportunity to walk and bike
- An attractive built environment
- Safety and security

Quantitative indicators also assist in tracking progress on the sustainability actions. The image above represents the goal areas of Green Directions Vaughan and demonstrates the five goal areas in which quantitative indicators have been established. For more information on Indicators refer to Chapter 8.





What We Use

Goal 1 To significantly reduce waste and the use of our natural resources

Objective 1.1



To reduce greenhouse gas emissions and move towards carbon neutrality for the City of Vaughan’s facilities and infrastructure.

Achievements

Energy efficiency of City assets, and consequent reduced greenhouse gas emissions, is a "leading by example" initiative. Progress to reduce facility energy consumption and the LED streetlight retrofit project follow program efforts in joining Partners for Climate Protection, developing the Corporate Energy Management Plan in accordance with Ontario regulations and implementing an Energy Manager Agreement with Alectra. This objective remains highly relevant considering the latest reports from the Intergovernmental Panel on Climate Change and the Paris Agreement on Climate Change ratified by the federal government.

No.	Department Lead	Sustainability Action	Theme
1.1.1	<ul style="list-style-type: none"> Facility Management Infrastructure Delivery 	Develop an energy conservation fund to verify energy and cost savings from management of corporate assets. Leverage the conservation fund to seek external grants for corporate energy savings and greenhouse gas (GHG) emissions reductions for City facilities, street lights and fleet.	<p>Energy</p> <p>Climate Resiliency</p>
1.1.2	<ul style="list-style-type: none"> Infrastructure Delivery 	Contribute to Ontario’s transformation to clean energy and low carbon communities by implementing the LED street light retrofit project and leverage the experience to evaluate alternative financing of innovative technologies in City facilities and other assets.	<p>Energy</p> <p>Climate Resiliency</p>
1.1.3	<ul style="list-style-type: none"> Policy Planning and Environmental Sustainability 	<p>Implement, maintain and update the Corporate Energy Management Plan as required by regulation and ensure annual energy reporting is publicly available.</p> <p>Updates include:</p> <ul style="list-style-type: none"> Improve City operations in part by improving data tracking to include measures for fleet and water Evaluate the use of energy audits as a tool for tracking and verifying energy consumption and cost savings Evaluate opportunities for external benchmarking, to promote peer-to-peer learning and improve operations 	<p>Energy</p> <p>Climate Resiliency</p>

No.	Department Lead	Sustainability Action	Theme
1.1.4	<ul style="list-style-type: none"> Policy Planning and Environmental Sustainability 	Implement an electric vehicle (EV) charging policy for City facilities and encourage infrastructure throughout the City to support hybrid and fully electric, alternative fuel vehicles and low-carbon mobility.	Energy Mobility Climate Resiliency
1.1.5	<ul style="list-style-type: none"> Transportation and Fleet Management Services 	Update and implement the “Green Fleet Strategy” to optimize fleet use and vehicle type, identify fuel switching for low carbon mobility and minimize environmental impacts.	Energy Climate Resiliency

Objective 1.2 To promote the reduction of community greenhouse gas emissions in the City of Vaughan.



Achievements

Changes to Provincial legislation and policy direction make climate change a matter of Provincial interest. While approval of the Municipal Energy Plan in 2016 is a key accomplishment in support of the Province’s direction towards low carbon communities, actual outcomes in the community require additional effort. The City of Vaughan is a founding member of the ClimateWise Business Network, an agency working with individual businesses in York Region to implement greenhouse gas reduction plans.

No.	Department Lead	Sustainability Action	Theme
1.2.1	<ul style="list-style-type: none"> Policy Planning and Environmental Sustainability 	Encourage alternative energy generation and distributed energy (community-based energy solutions) by businesses and citizens, by: <ul style="list-style-type: none"> identifying partnership opportunities with business, industry, utilities and agencies to reduce carbon emissions and/or reduce peak electricity loads, reviewing City by-laws to minimize, where appropriate, obstacles to the development of alternative energy sources and, where regulation is necessary, develop the necessary standards, and providing access to education about alternative financing mechanisms and grants to support community-based energy solutions. 	Energy Climate Resiliency Green Economy
1.2.2	<ul style="list-style-type: none"> Policy Planning and Environmental Sustainability 	Examine the feasibility of requiring Community Energy Plans for all major developments and redevelopment projects, including Secondary Plans, Block Plans and applications for significant development (as defined in the VOP 2010). Identify ways that Community Energy Plans can focus on implementation issues such as agency approvals, regulatory requirements and financing mechanisms.	Energy Climate Resiliency

No.	Department Lead	Sustainability Action	Theme
1.2.3	<ul style="list-style-type: none"> Policy Planning and Environmental Sustainability 	<p>In support of the Municipal Energy Plan, identify and work with partners to evaluate the community's greenhouse gas emissions and establish Vaughan as a smart energy community.</p> <p>Report on progress to implement the Vaughan Municipal Energy Plan, including:</p> <ul style="list-style-type: none"> reporting on program actions and indicators, including appropriate third-party verification, highlighting key achievements, revising the Municipal Energy Plan, as needed, to achieve GHG reductions to reflect climate targets, policy changes, technological developments, and the role of carbon offsetting, and promoting utility-sponsored energy efficiency and conservation programs. 	<p>Energy Climate Resiliency Governance</p>
1.2.4	<ul style="list-style-type: none"> Policy Planning and Environmental Sustainability 	<p>Undertake a feasibility study for the program administration of Local Improvement Charges to support energy conservation retrofits and/or renewable energy generation in private buildings.</p>	<p>Energy Climate Resiliency</p>



Objective 1.3



To support enhanced standards of stormwater management and water conservation at City facilities, and work with others to care for Vaughan's watersheds.

Achievements

The Stormwater Charge is a key accomplishment to promote appropriate maintenance of stormwater assets. Watershed planning has more prominence in the Province's growth management plan, A Place to Grow 2019. In addition, the Province's stormwater management guidelines place more emphasis on a treatment train approach to managing stormwater through measures such as low impact development and other forms of green infrastructure.

No.	Department Lead	Sustainability Action	Theme
1.3.1	<ul style="list-style-type: none"> Transportation and Fleet Management Services 	Identify best management practices to minimize salt use on hard surfaces and protect receiving watercourses from salinity increases.	Water Green Infrastructure
1.3.2	<ul style="list-style-type: none"> Environmental Services Bylaw and Compliance, Licensing and Permit Services 	In support of water quality objectives, establish a water quality monitoring program for stormwater management assets.	Water Green Infrastructure
1.3.3	<ul style="list-style-type: none"> Infrastructure Planning and Corporate Asset Management Policy Planning and Environmental Sustainability 	Identify stormwater management initiatives to protect and regenerate key watershed functions including the regulation of water quantity, the regulation of water quality and temperature, sediment and erosion control, hydrologic connectivity and habitat provision. Stormwater management will be informed by watershed planning and long-term land use planning and development forecasts.	Water Green Infrastructure
1.3.4	<ul style="list-style-type: none"> Development Engineering 	Integrate climate change considerations into guidelines for flood control and stormwater management by: <ul style="list-style-type: none"> Revising the Engineering Design Standards to incorporate low impact development and a treatment train approach to stormwater management. Incorporating Provincial requirements to have regard for climate change in Environmental Assessments. 	Water Green Infrastructure Climate resiliency

No.	Department Lead	Sustainability Action	Theme
1.3.5	<ul style="list-style-type: none"> Environmental Services 	<p>Continue to work with York Region in support of water conservation (Water for Tomorrow program), including:</p> <ul style="list-style-type: none"> optimizing water, sewer and stormwater infrastructure, undertaking life cycle assessment of infrastructure, and promoting specific measurable actions such as water-efficient landscaping and rainwater harvesting. 	<p>Water Green Infrastructure</p>
1.3.6	<ul style="list-style-type: none"> Environmental Services Development Engineering 	<p>Encourage low impact development and a treatment train approach to stormwater management through the development review process and by implementing and monitoring a stormwater rate program, including the technical and community engagement aspects and innovative pilot initiatives.</p>	<p>Water Green Infrastructure Climate resiliency</p>
1.3.7	<ul style="list-style-type: none"> Facility Management 	<p>Improve tracking of potable water use at City facilities to identify conservation opportunities and best practices, and in conjunction with the corporate energy management strategy.</p>	<p>Water Energy</p>



Objective 1.4



To reduce the amount of waste generated in City owned facilities and by Vaughan citizens, business and institutions, and procure sustainable products for the City's use.

Achievements

While waste diversion at City facilities has improved, it lags behind the waste diversion efforts in the broader community. Exploring changes to the City's procurement approach can promote a variety of key sustainability initiatives by including requirements of bids and proposals, such as improved waste diversion and attention to recycled and reclaimed content guidelines.

No.	Department Lead	Sustainability Action	Theme
1.4.1	<ul style="list-style-type: none"> Facility Management 	Improve waste diversion at City facilities by undertaking waste audits and waste reduction work plans in conformity with provincial legislation.	Waste
1.4.2	<ul style="list-style-type: none"> Facility Management Recreation Services 	Promote specific waste diversion initiatives in City facilities through staff education and engagement as informed by waste audits. Evaluate specific waste reduction measures in contracts, vendor agreements, and through a digital strategy to reduce paper use.	Waste Engagement Climate Resiliency
1.4.3	<ul style="list-style-type: none"> Facility Management 	Report annually on the amount of waste generated at City assets and track progress in achieving waste reduction and/or diversion such as through a review and improvement of waste management contracts.	Waste Governance
1.4.4	<ul style="list-style-type: none"> Procurement 	As a component of procurement modernization, develop green procurement guidelines that departments must consider when developing Bid documents.	Waste Governance Green Economy
1.4.5	<ul style="list-style-type: none"> Environmental Services 	Explore innovative community programs to further improve waste diversion from landfills, such as textile recycling.	Waste Climate Resiliency
1.4.6	<ul style="list-style-type: none"> Development Engineering 	Address Provincial policies regarding excess soil management and fill placement.	Waste
1.4.7	<ul style="list-style-type: none"> Infrastructure Planning and Corporate Asset Management 	Review and implement selected best practices for transportation infrastructure construction and maintenance to reduce material use, improve material re-use and recycling, improve energy efficiency, reduce greenhouse gas emissions and improve life cycle costs among other sustainability performance objectives.	Waste Climate Resiliency



How and Where We Grow

Goal 2 To ensure sustainable development and redevelopment

Objective 2.1

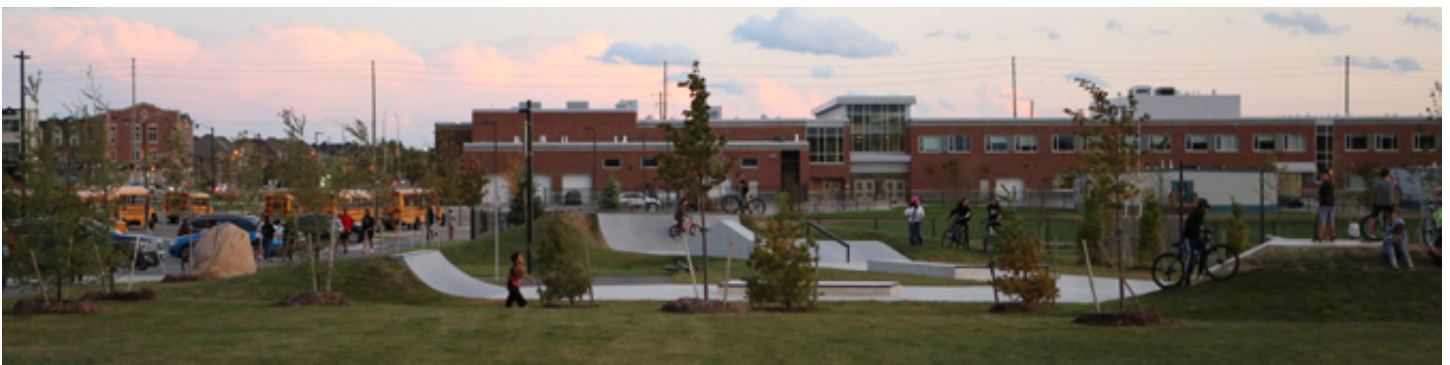


To ensure a climate resilient City and build capacity for local action on climate change.

Achievements

This new objective has a focus to develop a City-wide climate adaptation plan. The effort will align with corporate asset management and build on the completion of a vulnerability and risk assessment of the City's stormwater assets.

No.	Department Lead	Sustainability Action	Theme
2.1.1	<ul style="list-style-type: none"> Infrastructure Planning and Corporate Asset Management Policy Planning and Environmental Sustainability 	Build on the climate change risk assessment of stormwater assets to undertake a climate change adaptation and risk assessment for all City assets. Ensure existing risk assessment frameworks are considered, such as for water operations. Incorporate the climate adaptation assessment into all City master plans to inform life cycle assessment, engineering design standards, asset management and financial planning.	Climate Resiliency
2.1.2	<ul style="list-style-type: none"> Policy Planning and Environmental Sustainability 	Promote green infrastructure (e.g., street trees, stormwater ponds, LIDs, woodlands, pollinator habitat, etc.) to build resilience and mitigate the effects of climate change. Revise green infrastructure design standards, as needed, for climate adaptation.	Climate Resiliency Green Infrastructure Greenspace
2.1.3	<ul style="list-style-type: none"> Emergency Planning 	Continue to investigate climate change risk to citizen health and review the Hazard Identification Risk Assessment and its impact on the community.	Climate Resiliency Health



Objective 2.2



To develop Vaughan as a complete community with maximum greenspace and urban form that supports our expected population growth.

Achievements

The launch of the North Maple Regional Park, the Great Walks of Vaughan program, the initiative to re-establish the urban tree canopy, and the City's community gardens represent City achievements in support of this objective. Issues such as complete streets, alignment with the objectives of health agencies around the theme of "ecohealth", and attention to green infrastructure asset management are elements of this objective.

No.	Department Lead	Sustainability Action	Theme
2.2.1	<ul style="list-style-type: none"> Parks, Forestry and Horticulture Operations 	Manage and improve the urban forest, including increasing overall canopy cover, as an important element of green infrastructure and a critical asset of the City that is a community amenity, improves the health of residents, and provides ecosystem services.	<p>Greenspace</p> <p>Green Infrastructure</p> <p>Health</p>
2.2.2	<ul style="list-style-type: none"> Parks Planning Policy Planning and Environmental Sustainability Real Estate Services Legal Services 	Develop and implement a land securement strategy for parks, open spaces, trails, woodlands and other natural features, low impact development installations, and community facilities. Inventory the achievements as green infrastructure assets, as appropriate.	<p>Greenspace</p> <p>Green Infrastructure</p> <p>Health</p>
2.2.3	<ul style="list-style-type: none"> Policy Planning and Environmental Sustainability Parks, Forestry and Horticulture Operations 	Develop a natural heritage stewardship and restoration strategy that seeks to improve greenspace as community amenities and promotes ecological connectivity, habitat condition for wildlife (including through invasive species management), genetic conservation, natural heritage preservation and ecosystem services.	<p>Greenspace</p>



Objective 2.3



To create a city with sustainable built form that is compact, resilient and designed to promote citizen health.

Achievements

The City-wide Streetscape Implementation Manual, Secondary Suites policy and Sustainability Performance Metrics are accomplishments in support of sustainable built form. Changes to the Municipal Act and Ontario Building Code point to a more integrated approach to resilient infrastructure and urban development with lower ecological footprints.

Vaughan participated in Enbridge's Savings by Design program for two New Community Areas - Blocks 27 and 41, with the aim to reduce greenhouse gas emissions and achieve energy efficiency.

No.	Department Lead	Sustainability Action	Theme
2.3.1	<ul style="list-style-type: none"> Development Planning 	Implement the Sustainability Metrics as a component of the development review process to measure incremental sustainability improvements with each development application.	<p>Complete Communities</p> <p>Green Economy</p>
2.3.2	<ul style="list-style-type: none"> Policy Planning and Environmental Sustainability 	Ensure that a mix of housing types and tenures are provided in Vaughan and that housing affordability is a consideration in planning consistent with Section 7.5 Housing Options of VOP 2010 and York Region's Housing Strategy. Consider implementation of the incentives identified in the York Region Rental Housing Incentives Guideline.	Complete Communities
2.3.3	<ul style="list-style-type: none"> Building Standards 	Develop policies, guidelines, by-laws or other implementation tools that support the construction of net zero carbon buildings.	<p>Energy</p> <p>Climate Resiliency</p>
2.3.4	<ul style="list-style-type: none"> Facility Management Infrastructure Delivery 	Implement a corporate green building policy, including a green parking lot design for City facilities, to ensure LEED certification and to achieve specific performance standards for energy conservation, water conservation, commissioning and electric vehicle support, including training for operations and maintenance to ensure ongoing high performance.	<p>Energy</p> <p>Water</p> <p>Climate Resiliency</p>
2.3.5	<ul style="list-style-type: none"> Development Planning 	Evaluate the use of a development application submission related to health and community wellbeing.	<p>Health</p> <p>Complete Communities</p>
2.3.6	<ul style="list-style-type: none"> Environmental Services 	Implement inflow and infiltration (I&I) reduction actions to preserve City assets and reduce wastewater and consequent energy consumption.	<p>Water</p> <p>Energy</p>
2.3.7	<ul style="list-style-type: none"> Infrastructure Delivery 	As a "leading by example" initiative, support a treatment train approach to stormwater management and low impact development at an overall site scale.	<p>Green Infrastructure</p> <p>Water</p>



How We Get Around

Goal 3 To ensure that the City is easy to get around with a low environmental impact

Objective 3.1



To develop and sustain a network of sidewalks, paths and trails that supports all modes of non-vehicular transportation.

Achievements

The City has made progress in the creation of off-road paths and trails and the Pedestrian and Cycling Strategy update is underway. Active transportation is highlighted in the Growth Plan (A Place to Grow 2019) and has important co-benefits related to improving health and social cohesion.

No.	Department Lead	Sustainability Action	Theme
3.1.1	<ul style="list-style-type: none"> Infrastructure Planning and Corporate Asset Management Parks Planning 	Complete the update to the Pedestrian and Bicycle Master Plan, identify priority initiatives and set out an implementation framework and timelines.	Mobility Complete Communities
3.1.2	<ul style="list-style-type: none"> Development Planning Infrastructure Planning and Corporate Asset Management Infrastructure Delivery 	Plan and implement a complete streets framework and guidelines to create a safe and attractive environment for all modes of transportation.	Mobility Complete Communities
3.1.3	<ul style="list-style-type: none"> Transportation and Fleet Management Services 	Maintain non-vehicular networks, such as pedestrian and cycling pathways to support active transportation and enhance safety, accessibility and adaptability.	Mobility Complete Communities Health
3.1.4	<ul style="list-style-type: none"> Parks Planning Development Planning Parks Delivery 	Plan and implement a recreational trail network in proximity to residential communities that is accessible, desirable, safe, and which promotes outdoor active lifestyles for current and future populations.	Mobility Complete Communities Health

Objective 3.2



To develop and sustain a network of roads that supports efficient and accessible public and private transit.

Achievements

The Province has made significant investments in transit infrastructure in Vaughan that will continue for several more years. The transit hierarchy in A Place to Grow 2019 creates the opportunity for more transit-supportive development, complete streets and compact communities.

No.	Department Lead	Sustainability Action	Theme
3.2.1	<ul style="list-style-type: none"> Infrastructure Planning and Corporate Asset Management 	Develop a framework for first-mile, last-mile initiatives to promote transit use.	Mobility Complete Communities
3.2.2	<ul style="list-style-type: none"> Development Engineering Development Planning Infrastructure Delivery 	Implement a fine grain network of streets and block lengths to allow pedestrians, cyclists, transit vehicles, automobiles and goods and services vehicles to move efficiently, in accordance with City Official Plan and Master Plans.	Mobility Complete Communities

Objective 3.3



Reduce single occupant vehicle (SOV) trips by supporting active transportation, car pooling and public transit.

Achievements

The revised Transportation Master Plan has integrated options for transportation demand management and reduced parking rates are in effect in the VMC, reflecting City efforts under this objective. Reducing single occupancy vehicles remains an important outcome to improve commuter mobility and goods movement. Shared mobility options, micro-transit and driverless vehicles are not specifically noted in the action plans in Green Directions Vaughan 2019, but are being evaluated as part of the Transportation Master Plan update.

No.	Department Lead	Sustainability Action	Theme
3.3.1	<ul style="list-style-type: none"> Policy Planning and Environmental Sustainability 	Review and revise an Employee Trip Reduction/Active Transportation Strategy for City staff.	Engagement Climate Resiliency
3.3.2	<ul style="list-style-type: none"> Infrastructure Planning and Corporate Asset Management 	Collaborate with York Region and seek community partners to implement transportation demand management initiatives to reduce traffic congestion and promote transit and active transportation.	Mobility Climate Resiliency
3.3.3	<ul style="list-style-type: none"> Transportation and Fleet Management Services 	Collaborate with the School Boards and York Region Public Health to engage schools to participate in the Active School Travel Program.	Mobility Health



How We Live

Goal 4 To create a vibrant community where citizens, businesses and visitors thrive

Objective 4.1



To foster a city with strong social cohesion, an engaging arts scene, and a clear sense of its culture and heritage.

Achievements

The YMCA joint venture, the VMC Culture and Public Art Strategy and City-wide Public Art Policy implemented through specific programs and events, the development of the City-wide Urban Design Guidelines and the Older Adult Strategy represent progress towards this objective.

No.	Department Lead	Sustainability Action	Theme
4.1.1	<ul style="list-style-type: none"> Recreation Services 	Implement the Active Together Master Plan to address and promote health and wellness.	Health Greenspace Complete Communities
4.1.2	<ul style="list-style-type: none"> Economic & Cultural Development 	Develop a public art advisory panel with the mandate to increase support and promote arts and culture in Vaughan during the 2018-2022 Term of Council.	Diversity Complete Communities
4.1.3	<ul style="list-style-type: none"> Development Planning 	Prioritize maintenance and conservation of cultural heritage resources including archaeological sites, cultural heritage landscapes, built heritage resources and unique assets. Consider an engagement strategy to educate staff and residents on heritage resources in the City.	Green Infrastructure Complete Communities
4.1.4	<ul style="list-style-type: none"> Development Planning 	Prioritize placemaking and promote social cohesion through creating a well scaled, well connected city with a focus on fostering public art and culture.	Diversity Complete Communities
4.1.5	<ul style="list-style-type: none"> Recreation Services 	Track and increase partnership opportunities for non-profit and volunteer groups to meet the community's social and recreational needs and evaluate City facilities as community hubs.	Complete Communities
4.1.6	<ul style="list-style-type: none"> Corporate and Strategic Communications 	Develop a civic engagement strategy to help citizens (including youth and newcomers) become aware of, and participate in, municipal processes and community volunteer opportunities.	Engagement Diversity

No.	Department Lead	Sustainability Action	Theme
4.1.7	<ul style="list-style-type: none"> Economic and Cultural Development 	Complete the Feasibility Study on Economic Development Opportunities in the Vaughan Healthcare Centre and present findings to the Mackenzie Vaughan Hospital Precinct Task Force during the 2018-2022 Term of Council.	Green Economy Complete Communities
4.1.8	<ul style="list-style-type: none"> Facility Management Office of the Chief Human Resources Officer 	Explore opportunities for collaboration on accessibility and sustainability related initiatives.	Diversity

Objective 4.2



Ensure that the City attracts businesses and investment that will result in well-paying jobs for citizens, and contributes to a green, low carbon economy for ongoing economic growth.

Achievements

The City's support for the Innovation Park at Kortright Centre and partnership with the ClimateWise Business Network reflect progress in encouraging the green economy. The City will identify opportunities to promote businesses that demonstrate tangible sustainability successes.

No.	Department Lead	Sustainability Action	Theme
4.2.1	<ul style="list-style-type: none"> Policy Planning and Environmental Sustainability 	Work with partners to facilitate educational opportunities for smart business (i.e., cost savings) in support of the low-carbon economy.	Green Economy
4.2.2	<ul style="list-style-type: none"> Economic and Cultural Development 	Complete relevant economic development action plans and present findings and recommendations to the Economic Prosperity, Investment and Social Capital Task Force during the 2018-2022 Term of Council.	Green Economy
4.2.3	<ul style="list-style-type: none"> Economic and Cultural Development 	Continue participating with sustainability-focused organizations and groups to leverage opportunities such as sharing resources, networks and promote cost-saving efficiency programs with the desired outcome to support the growth and expansion of local companies in Vaughan's employment areas.	Green Economy

Objective 4.3



Improve community well-being through support of local food, the Agricultural System and the Agri-Food Network.

Achievements

The prominence of the Agricultural System and Agri-Food Network in A Place to Grow 2019 support creating this new objective in Green Directions Vaughan 2019. Action plans will promote agricultural viability in the Provincial Plan areas, local food, promotion of the food processing sector, and urban agriculture initiatives including community gardens. The actions under this Objective satisfy SDG 2.4, specifically.

No.	Department Lead	Sustainability Action	Theme
4.3.1	<ul style="list-style-type: none"> Policy Planning and Environmental Sustainability 	Promote agricultural viability in the Provincial Plan areas and other countryside areas in Vaughan by recognizing and encouraging land stewardship options (e.g., Environmental Farms Plans), implementing Agricultural Impact Assessments, and identifying other tools to reduce conflicts between adjacent urban and agricultural land uses.	<p>Health</p> <p>Green Economy</p>
4.3.2	<ul style="list-style-type: none"> Policy Planning and Environmental Sustainability 	<p>Implement actions from the York Region Agriculture and Agri-Food Strategy, such as:</p> <ul style="list-style-type: none"> co-operating with York Region on a Food Processing Action Plan, evaluating the feasibility of an Agricultural Community Improvement Plan (CIP) to incentivize on-farm diversification and value-added operations, and identifying specific actions to support the York Farm Fresh Organization. 	<p>Health</p> <p>Green Economy</p>
4.3.3	<ul style="list-style-type: none"> Policy Planning and Environmental Sustainability 	<p>Promote local food and encourage urban agriculture by supporting initiatives such as:</p> <ul style="list-style-type: none"> establishing community gardens and revising the Community Garden Policy, promoting plant-based eating, and investigating the support of a local food charter. 	<p>Health</p>





How We Lead

Goal 5 To be leaders in advocacy and education on sustainability issues

Objective 5.1 To share sustainable best practices and strengthen community engagement.

Achievements

Developing engaging communications will be a future effort to promote Green Directions Vaughan 2019 that promotes efforts of residents and businesses. Citizen attendance at events such as the 20-Minute Makeover and Earth Hour are evidence of the interest and motivation that can be harnessed for meaningful action.

No.	Department Lead	Sustainability Action	Theme
5.1.1	<ul style="list-style-type: none"> Office of Transformation and Strategy Policy Planning and Environmental Sustainability 	Continue to seek the advice and opinion of our citizens, businesses and partners on significant policies, plans and programs (for example, Official Plan review, Municipal Energy Plan update, citizen survey). Demonstrate leadership by hosting events and facilitating knowledge sharing workshops.	Engagement Partnerships
5.1.2	<ul style="list-style-type: none"> Policy Planning and Environmental Sustainability 	Provide education to the community on environmental issues, initiatives and City achievements and build capacity and partnerships in the local community to facilitate greater uptake of sustainability actions in schools and by residents and businesses.	Engagement
5.1.3	<ul style="list-style-type: none"> Policy Planning and Environmental Sustainability 	Undertake a feasibility study to implement a Sustainable Neighbourhood Retrofit Action Plan (SNAP) in Vaughan to improve placemaking, contribute to a healthy environment, and promote a strong community. Consider the opportunity to work on neighbourhood resilience as a response to climate change through a potential SNAP project.	Engagement Complete Communities



Objective 5.2 To strengthen the staff role as subject matter experts on sustainability matters.

Achievements

City progress is reflected in the collaboration with Partners in Project Green (funding for EV chargers and installation at JOC), the ClimateWise Business Network, and membership in the Clean Air Council. Strategic partnerships are required to implement and demonstrate progress on many sustainability initiatives.

No.	Department Lead	Sustainability Action	Theme
5.2.1	<ul style="list-style-type: none"> Policy Planning and Environmental Sustainability 	Engage in inter-government relations to ensure that the City of Vaughan participates in provincial, national and international forums and consultations, as appropriate, and collaborates with neighbouring municipalities to share best practices.	Engagement Partnerships
5.2.2	<ul style="list-style-type: none"> Economic and Cultural Development; Policy Planning and Environmental Sustainability 	Explore opportunities for partnerships and collaboration in order to advance the City mandate and to improve external funding opportunities to allow staff to execute strategic projects.	Partnerships Governance
5.2.3	<ul style="list-style-type: none"> Policy Planning and Environmental Sustainability 	Develop an environmental education strategy to familiarize staff with the provisions of Green Directions Vaughan 2019, expanding into an on-going education program.	Engagement
5.2.4	<ul style="list-style-type: none"> Policy Planning and Environmental Sustainability 	Provide support to Members of Council so they may promote the overall message in Green Directions Vaughan 2019 and champion specific actions within the Plan, to improve sustainability outcomes.	Governance





How We Operate

Goal 6 To ensure a supportive system for the implementation of Green Directions Vaughan

Objective 6.1 To fully support the implementation of Green Directions Vaughan at all levels of City operations.

Achievements

Governance considerations include department roles in accounting for actions and measuring progress, in addition to connections to over-arching corporate strategy and Service Excellence initiatives. The revised action plans in Green Directions Vaughan 2019 make it easier to report on progress and less onerous on the part of the responsible City department while improving progress reporting for stakeholders and residents.

No.	Department Lead	Sustainability Action	Theme
6.1.1	<ul style="list-style-type: none"> Policy Planning and Environmental Sustainability 	Evaluate working groups and/or a task force structure to implement Green Directions Vaughan 2019, including assessing the role of a Citizen Advisory Committee.	Governance Engagement
6.1.2	<ul style="list-style-type: none"> Policy Planning and Environmental Sustainability 	Integrate sustainability into everyday business operations by demonstrating the contribution to Green Directions Vaughan 2019 in departmental budget plans and/or Master Plans across the organization. Showcase specific initiatives highlighting the alignment of financial sustainability and environmental sustainability.	Governance Engagement
6.1.3	<ul style="list-style-type: none"> Policy Planning and Environmental Sustainability 	Demonstrate accountability by preparing an annual report to Council for the purpose of monitoring the implementation of Green Directions Vaughan 2019, including: the status of existing programs (milestones), accomplishments, trends in select quantitative indicators, new initiatives, and further opportunities.	Governance
6.1.4	<ul style="list-style-type: none"> Office of Transformation and Strategy 	Continue the City's ISO 37120 certification process and explore other environment management system or third-party verification, such as ISO 14001 (environmental management) and ISO 50001 (energy management).	Governance Engagement

A close-up photograph of a person's hand holding a small, vibrant green seedling with several leaves and a mound of dark brown soil. The background is a soft, out-of-focus green. The overall image conveys a sense of care, growth, and environmental stewardship.

GOVERNANCE FRAMEWORK AND IMPLEMENTATION



Responsibilities

Council: Green Directions Vaughan 2019 is Mayor Maurizio Bevilacqua and Members of Council's Plan. Council's approval authority will take into consideration the goal areas and sustainability actions in the Plan. In addition, individual members of Council are in a position to promote Green Directions Vaughan 2019 and champion specific actions to improve sustainability outcomes.

Environmental Sustainability team (ES team): The ES team is part of the Policy Planning and Environmental Sustainability department and works to encourage City leadership on environmental sustainability. While every Portfolio in the City is responsible for implementation of the sustainability actions, the ES team monitors progress through the implementation process.

Technical Advisory Committee (TAC): The TAC is made up of City staff and was formed to offer guidance and provide input on the sustainability actions, structure and content during the renewal of Green Directions Vaughan.

There are a number of departments responsible for implementing the sustainability actions in Green Directions Vaughan 2019 :

- Building Standards (Planning and Growth Management)
- Development Engineering (Planning and Growth Management)
- Development Planning (Planning and Growth Management)
- Economic and Cultural Development (Office of the City Manager)
- Fire and Rescue Services (Community Services)
- Environmental Services (Public Works)
- Transportation and Fleet Management Services (Public Works)
- Facility Management (Infrastructure Development)
- Infrastructure Delivery (Infrastructure Development)
- Infrastructure Planning and Corporate Asset Management (Infrastructure Development)
- Financial Planning and Development Finance (Corporate Services, City Treasurer and Chief Financial Officer)
- Human Resources Office (Corporate Services, City Treasurer and Chief Financial Officer)
- Parks Delivery (Infrastructure Development)
- Policy Planning and Environmental Sustainability (Planning and Growth Management)
- Recreation Services (Community Services)
- Transformation and Strategy
- Parks, Forestry and Horticulture Operations (Public Works)
- Parks Planning (Planning and Growth Management)



CITY STAFF



COMMUNITY



COUNCIL



MONITORING

Community: The sustainability actions in Goal 5 and Goal 6 ensure ongoing education and feedback of residents, businesses and other stakeholders. Implementation of the sustainability actions in Green Directions Vaughan 2019 requires collaboration from all members of the Vaughan community. Collective action will help achieve maximum impact at a local level.

Governance Framework

Monitoring progress of the sustainability actions demonstrates the City is accountable to maintaining Vaughan as a complete community, with a healthy natural environment, vibrant communities and a strong economy. It supports integration of sustainability into departmental business plans and

helps to define responsibility. The City’s primary role in tracking effectiveness of sustainability actions under the governance framework includes:

- Monitoring progress on sustainability actions through milestones
- Tracking results using quantitative indicators

Progress on Actions

A governance framework that uses milestones is developed for each sustainability action as shown in the example in Table 7.1 below. Milestones are key achievements to deliver project outcomes. The milestone framework is an internal gauge allowing departments to keep track of the progress of the sustainability actions assigned to them, and to simplify annual reporting to Council in a dashboard style.

EXAMPLE

Action	Milestone 1	Milestone 2	Milestone 3	Milestone 4
Update and implement the “Green Fleet Strategy” to optimize fleet use and vehicle type, identify fuel switching for low carbon mobility and minimize environmental impacts.	Complete baseline (instrumentation) and municipal benchmarking or jurisdictional scan (best practices).	Evaluation of options to optimize fleet use, reduce fuel consumption and reduce GHG emissions.	Proposed Strategy approved by Council and integrated into budgets.	Acquisition and maintenance underway (Fleet Services) and tracked as part of Corporate Asset Management. Progress tracked by existing departmental performance measures, including vehicle asset type and fleet fuel use.

Table 7.1. Governance framework, utilizing a milestone framework, to monitor progress of the sustainability actions.

Indicators

The City recognizes the importance of making information available to the public in a meaningful way and that high-quality data informs effective decision making. Therefore, the 24 indicators developed in 2012, used to track progress of Green Directions Vaughan 2009, have also been updated. The new indicators tell the City's sustainability story, demonstrating what is going well and where efforts need to be focused. Progress on the indicators will be made available to the public. Refer to Chapter 8 for a full description of the indicators, which are aligned with five of the six goal areas as shown in Figure 7.1

Integration and Financial Framework

As proposed in Goal 6, departments will strive to integrate sustainability into everyday business operations by demonstrating the contribution to Green Directions Vaughan 2019 in departmental budget plans and Master Plans across the organization. This includes showcasing specific initiatives that demonstrate the alignment of financial sustainability and environmental sustainability.

The ES team will work with colleagues in other departments on the financial framework for each sustainability action, as needed, to track the incorporation of the actions into City budget processes. The financial framework will consider items such as:

- Existing and amended operating/maintenance budgets
- Existing and amended capital budgets
- Employee workload/hours
- Anticipated cost savings
- Revenue generation potential
- Return on investment
- Grant/funding opportunities

Many of the sustainability actions in Green Directions Vaughan 2019 align with goals and initiatives set out in other Master Plans. This integration is financially efficient, as implementation of the actions will already be included in business plans. It also permits easier endorsement of the actions by lead departments.

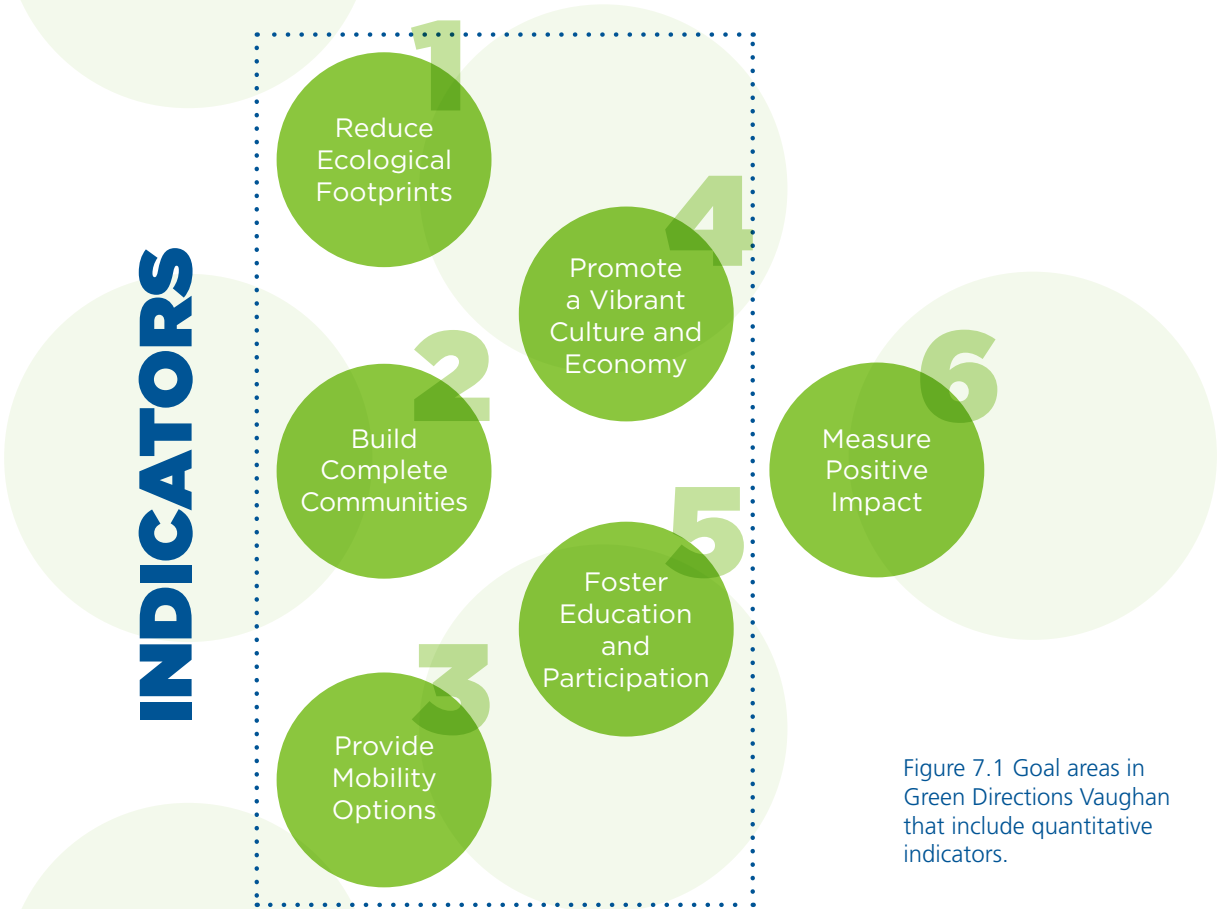


Figure 7.1 Goal areas in Green Directions Vaughan that include quantitative indicators.

A group of children are participating in a recycling activity outdoors. In the foreground, a young boy in a red and blue striped shirt is pouring water from a clear plastic bottle into a green recycling bin. The bin has a white recycling symbol on it. In the background, several other children are walking away, some carrying plastic bottles. The scene is set in a grassy field with trees in the distance. The entire image has a green tint.

**GREEN
DIRECTIONS
VAUGHAN
INDICATORS**



Green Directions Vaughan Indicators

The ability to measure progress on key indicators is critical to improving environmental outcomes and quality of life. High quality data informs effective decision-making in cities. Making such information available to the public in a meaningful way and using the findings to modify City programs supports citizen involvement in sustainability actions. GDV 2019 indicators are aligned with global and regional efforts to measure progress on sustainability.

World Council on City Dataⁱ

The World Council on City Data (WCCD), of which the City of Vaughan is a member, is leading the implementation of ISO 37120: Sustainable Cities and Communities – Indicators for City Services and Quality of Life. The standard is a set of 100 globally comparative indicators designed to aid City officials and City managers in tracking performance and benchmarking data across 17 quality of life themes. ISO 37120 is expanding to measure elements of resilience and ‘smart’ cities.

The Living City Report Cardⁱⁱ

The Toronto and Region Conservation Authority recently published an update of the Living City Report Card for 2016 to track progress of the following goals: reduced carbon, clean air, clean water, reduction of waste, sustainable land use and expanded greenspace, and healthy biodiversity. The Living City is a regional initiative and provides an opportunity for the City of Vaughan to join a regional alliance for collective action.

Aligning the Green Directions Vaughan 2019 indicators to the Living City Report Card and WCCD provides for benchmarking with other municipalities, understanding where the City of Vaughan can inform other municipalities and identifying areas of improvement for the City to contribute to regional sustainability performance.

The Indicators

In 2012, City of Vaughan Council approved 24 quantitative indicators to track progress on the implementation of Green Directions Vaughan. The indicators are grouped into 14 categories shown below (Figure 8.1) in relation to the Goals in Green Directions Vaughan.

Figure 8.1 Categories of quantitative indicators in relation to the six Goal areas of Green Directions Vaughan. Only one indicator is assigned to Goal 5 and no indicators assigned to Goal 6. The sustainability actions in these Goal areas have few indicators as they are more supportive of community and corporate outcomes, rather than directing specific outcomes.



During the GDV renewal process, three indicators were revised to allow for more accurate annual measurements. The following revisions were made:

- The percentage of low emission vehicles in the City's fleet was changed to measure actual fossil fuel consumption and consequent greenhouse gas emissions
- Proportion of the City with stormwater controls was changed to measure water quality of receiving streams from stormwater ponds

- Tree canopy cover as a proportion of urban area, generally only measured every 5 to 10 years, was changed to track the number of trees being planted annually.

The indicators are intended to be updated on an annual basis. The table on the following pages identifies the individual indicators in relation to the WCCD indicators required for reporting in accordance with the ISO 37120 standards, as well as the alignment with the United Nations Sustainable Development Goals (SDGs).

INDICATOR	Units of Measure	WCCD Indicators (ISO 37120)	Data Sources
ENERGY			
1. Total residential electricity use per capita	Kilowatt hours per person (kWh/person)	<ul style="list-style-type: none"> SDG 7 Total residential electricity energy use per capita (kWh/year) Total electricity energy use per capita (kWh/year) 	Alectra Utilities (formerly PowerStream) for community electricity consumption
2. City of Vaughan buildings energy use	Kilowatt hours per 1,000 square feet (kWh/1,000 ft ²) or Kilowatt hours per square metre (kWh/m ²)	<ul style="list-style-type: none"> SDG 7 Energy consumption of public buildings per year (kWh/m²) 	Alectra Utilities for corporate electricity consumption
CLIMATE CHANGE			
3. Total community greenhouse gas emissions	Tonnes of equivalent carbon dioxide emissions per year and per capita (tonnes eCO ₂ /year and tonnes eCO ₂ /person/year)	<ul style="list-style-type: none"> SDG 13 Greenhouse gas emissions measured in tonnes per capita Percentage of total energy derived from renewable sources, as a share of the City's total energy consumption Percentage of commuters using a travel mode to work other than a personal vehicle 	Alectra Utilities for electricity consumption; Enbridge for natural gas consumption; Kent Fuels for transportation fuel consumption.
4. Corporate greenhouse gas emissions per resident served	Tonnes of equivalent carbon dioxide emissions per person per year (tonnes eCO ₂ /person/year)	<ul style="list-style-type: none"> SDG 7 Energy consumption of public buildings per year (kWh/m²) 	Alectra Utilities for electricity consumption by asset class; Enbridge for natural gas consumption by asset class; City Transportation and Fleet Management Services for vehicle fuel consumption.

INDICATOR	Units of Measure	WCCD Indicators (ISO 37120)	Data Sources
AIR QUALITY			
5. Particulate matter (PM2.5)	Particulate matter measured in micrograms per cubic metre (PM2.5) (µg/m ³)	<ul style="list-style-type: none"> • SDG 11 • Fine particulate matter (PM2.5) concentration 	Annual air quality reports from the Ontario Ministry of the Environment, Conservation and Parks
6. City fleet vehicles fuel consumption and greenhouse gas emissions	Litres of fossil fuel consumed and calculated equivalent greenhouse gas emissions (litres/year and eCO ₂ /year)		City Transportation and Fleet Management Services for vehicle fuel consumption
7. Number of days when the Air Quality Index (AQI) is poor (AQI > 49 or AQHI > 6)	The Air Quality Index is the number of days in which air quality is measured as “poor” for at least one hour AQI > 49 before 2015 or AQHI > 6 from 2015 to present	<ul style="list-style-type: none"> • SDG 11 • Fine particulate matter (PM2.5) concentration 	Annual air quality reports from the Ontario Ministry of the Environment, Conservation and Parks
WATER USE			
8. Daily volume of water used per person in York Region	Litres per person per day (litres/person/day)	<ul style="list-style-type: none"> • SDG 6 • Total domestic water consumption per capita (litres/day) • Total water consumption per capita (litres/day) 	York Region Environmental Services department, Water Conservation and Efficiency division
STORMWATER MANAGEMENT			
9. Water Quality	Total Suspended Solids, Number of SWM Ponds Cleaned, Catch Basin Cleanouts, SWM Ponds Inspected		City of Vaughan Water Quality Monitoring Program

INDICATOR	Units of Measure	WCCD Indicators (ISO 37120)	Data Sources
SOLID WASTE			
10. Residential waste diverted from landfill	Proportion of waste diverted from landfill (per cent)	<ul style="list-style-type: none"> • SDG 12 • Percentage of the City's solid waste that is recycled • Percentage of the City's hazardous waste that is recycled • Total collected municipal solid waste per capita 	Data provided by the City's Environmental Services department and verified by Waste Diversion Ontario
11. Waste diverted from landfill in City facilities	Proportion of waste diverted from landfill (per cent)		Data provided by Facility Management based on the weights provided by the contractor for corporate waste services.
LAND USE			
12. Greenspace (Greenspace defined as publicly owned and publicly accessible)	Hectares per 1,000 people (ha/1,000 people)	<ul style="list-style-type: none"> • SDG 11 • Green areas (hectares) per 100,000 population 	Analysis of GIS data provided by multiple City departments regarding parks and open space.
URBAN FOREST			
13. Number of trees planted annually by the City and through City-sponsored public events	Number of trees planted annually (#)	<ul style="list-style-type: none"> • SDG 15 	Numbers of trees planted monitored by the City's department of Parks, Forestry and Horticulture Operations.
SUSTAINABLE BUILT FORM			
14. Building floor area certified under recognized green building programs	Floor space (square feet) of buildings certified to LEED for New Construction standards and to BOMA BEST (annual certification) (ft ²)		LEED data available online from the Canada Green Building Council. BOMA data available by request to BOMA Canada.



INDICATOR	Units of Measure	WCCD Indicators (ISO 37120)	Data Sources
WALKING AND CYCLING PATHS			
15. Length of walkways and cycling paths	Kilometres (km)	<ul style="list-style-type: none"> • SDG 11 • Percentage of commuters using a travel mode other than a personal vehicle 	Data provided by the department of Infrastructure Planning and Corporate Asset Management
16. Percentage of walkways and paths which are linked	Proportion (per cent)		Data provided by the department of Infrastructure Planning and Corporate Asset Management
TRANSIT			
17. Transit passenger trips per person in York Region	Number of trips per person per year (Number/person/year)	<ul style="list-style-type: none"> • SDG 11 • Annual numbers of public transport trips per capita • Kilometers of high capacity public transport system per 100,000 population • Kilometers of light passenger public transport system per 100,000 population 	York Region Transit Canadian Urban Transit Association (CUTA) fact book

INDICATOR	Units of Measure	WCCD Indicators (ISO 37120)	Data Sources
ECONOMIC ACTIVITY			
18. Level of construction activity	Value of building permits in millions of dollars (\$ millions)	<ul style="list-style-type: none"> • SDG 8 • Number of businesses per 100,000 population 	Data provided by the Building Standards department
19. Ratio of population to jobs	Number of jobs	<ul style="list-style-type: none"> • SDG 8 • Percentage of persons in full-time employment • City's unemployment rate • Youth unemployment rate 	Data provided by the department of Economic and Cultural Development
20. Number of jobs provided by Vaughan businesses	Number of jobs	<ul style="list-style-type: none"> • SDG 8 • Percentage of persons in full-time employment • City's unemployment rate • Youth unemployment rate 	Data provided by the department of Economic and Cultural Development
21. Total participant hours for recreation programs	Number of hours		Data provided by the department of Recreation Services
22. Number of stakeholders involved in different community engagements	Count of interactions for social media, website and online newsletters		Data provided by Corporate and Strategic Communications and the Office of the Chief Information Officer
CREATIVE COMMUNITY			
23. Number of cultural initiatives supported or endorsed by the City	Number of events and initiatives		Data provided by Economic and Cultural Development

INDICATOR	Units of Measure	WCCD Indicators (ISO 37120)	Data Sources
ENGAGEMENT			
24a. Number of environmentally related public outreach events held by the City of Vaughan	Number of environmental events		Data provided by the departments of Environmental Services and Policy Planning & Environmental Sustainability
24b. Number of attendees at environmental events	Number of attendees at environmental events		Data provided by the departments of Environmental Services and Policy Planning & Environmental Sustainability



New Indicators for Consideration

To track progress on the implementation of two new objectives, that address climate change adaptation and the agricultural system in Vaughan, the indicators listed below are recommended. These indicators will undergo review to determine effectiveness and data reliability.



Recommended Indicator

Intent

Proportion of agricultural land in active production (hectares and per cent)

In support of SDG 2.4 (Ensure sustainable food production) to understand constraints to agricultural production

Gross farm sales and gross farm sales per hectare (\$ and \$/hectare)

In support of SDG 2.4 (Ensure sustainable food production) to evaluate the viability of the agriculture sector. Based on York Region Agriculture and Agri-Food Update and Strategy.ⁱⁱⁱ

Percentage of agricultural land in active food production (hectares and per cent)

In support of SDG 2.4 (Ensure sustainable food production) to promote agriculture viability with an emphasis on food production. Based on Metro Vancouver, Progress toward Shaping Our Future: Baseline Annual Report.^{iv}

Percentage of properties located in high risk zones

In support of SDG 13.1 (Strengthen resilience and adaptive capacity to climate-related hazards). Based on WCCD City Data for the United Nations Sustainable Development Goals 2017.

Percentage of people at high risk to natural hazards

In support of SDG 13.1 (Strengthen resilience and adaptive capacity to climate-related hazards). Based on WCCD City Data for the United Nations Sustainable Development Goals 2017.

i. World Council on City Data. <https://www.dataforcities.org/>

ii. Toronto and Region Conservation Authority. 2016. Living City Report Card. <https://trca.ca/app/uploads/2017/02/3058-LCRC-2016-Final-WEB.pdf>

iii. The Regional Municipality of York. 2017. Agriculture and Agri-Food Sector Strategy. <https://www.york.ca/wps/wcm/connect/yorkpublic/46f81f67-26da-470d-879f-15c846daddfc/agri-strategy.pdf?MOD=AJPERES>

iv. Metro Vancouver. 2013. Shaping Our Future: Baseline Annual Report 2011-2013. <http://www.metrovancouver.org/services/regional-planning/PlanningPublications/Progress-toward-Shaping-our-Future-Baseline-Annual-Report-min.pdf>



APPENDIX A:
**MODELS OF
SUSTAINABILITY**

SUSTAINABILITY FIRST

Sustainability means we make decisions and take actions that ensure a healthy environment, vibrant communities and economic vitality for current and future generations.

ENVIRONMENTAL ETHIC

In Vaughan we lead by example as responsible stewards of our community. Our decisions entail determining the impact of our actions on the environment, weighing the social and cultural consequences and understanding any financial implications. Our actions will enhance both the natural, socio-economic and built environments.

Models of Sustainability

Public and stakeholder consultation undertaken for the approval of Green Directions Vaughan (GDV) in 2009 established a sustainability statement, environmental ethic and operating principles. These sustainability concepts continue to guide the sustainability actions of the City.

Other models of sustainability were used to inform the revision of Green Directions Vaughan, both in the selection of sustainability actions and in the way the actions are described to generate outcomes.



GUIDING PRINCIPLES

LEADERSHIP

We act as advocates for a sustainable future and support positive initiatives emerging from all sectors of society.

INNOVATION

We build upon best practices to create “Made-in-Vaughan” solutions to guide our operations and shape our plans and policies.

TRANSPARENCY

Our actions are open and traceable; we monitor and report on our progress.

ACCOUNTABILITY

We take responsibility for our actions and we build on past experience.

RESPONSIBILITY

Everyone in Vaughan has a role to play in the plan.

ENGAGEMENT

We involve our citizens and partners in decision making.

ACKNOWLEDGEMENT

Recognize the traditional territories of the Indigenous peoples who live and have lived in Vaughan.

In Canada, disclosure of sustainability issues and performance among the 200 most publicly traded companies grew by 40 per cent between 2011 and 2012, with 122 companies (61 per cent) reporting on sustainability in 2012.ⁱ



Foundational Sustainability Themes

The United Nations Sustainable Development Goals (UN SDGs), the ICLEI Montreal Commitment and Action Plan 2018-2021 and the Melbourne Principles for Sustainable Cities are foundational models of sustainability. These frameworks informed the selection of sustainability actions in GDV 2019 to ensure alignment with broader regional, national and global initiatives.

United Nations Sustainable Development Goalsⁱⁱ

The SDGs are the latest UN iteration to frame global cooperation to improve the health of people and the planet and “to promote prosperity while protecting the environment”. Aligning GDV 2019 with the UN SDGs reflects a global movement and has the advantage of leveraging the World Council on City Data to measure progress. Refer to Chapter 3 for more discussion on the UN SDGs.

The ICLEI Montreal Commitment and Action Plan 2018-2021ⁱⁱⁱ

ICLEI-Local Governments for Sustainability describes five strategic pathways in the Montreal Commitment and Action Plan 2018-2021 to implement their vision “to make sustainability a fundamental and inextricable part of all local and global development.”

Five strategic pathways are identified:

- Low emission development
- Nature-based development
- Circular development
- Resilient development
- Equitable and people-centered development.



Melbourne Principles for Sustainable Cities^{iv}

The Melbourne Principles for Sustainable Cities provide a strategic framework for action in transforming cities to sustainability. The Principles provide a foundation for the integration of international, national and local programs. The Principles were developed at an International Charrette held in Melbourne (Australia)

in April 2002, organized by the United Nations Environment Programme International Environmental Technology Centre, and the Environment Protection Authority Victoria. More than 40 experts from around the world contributed to the preparation of the Principles.

- PRINCIPLE 1 Provide a long term vision for cities based on: sustainability; intergenerational, social, economic and political equity; and their individuality.

- PRINCIPLE 2 Achieve long term economic and social security.

- PRINCIPLE 3 Recognize the intrinsic value of biodiversity and natural ecosystems and protect and restore them.

- PRINCIPLE 4 Enable communities to minimize their ecological footprint.

- PRINCIPLE 5 Build on the characteristics of ecosystems in the development and nurturing of healthy and sustainable cities.

- PRINCIPLE 6 Recognize and build on the characteristics of cities including their human and cultural values, history and natural systems.

- PRINCIPLE 7 Empower people and foster participation.

- PRINCIPLE 8 Expand and enable cooperative networks to work towards a common sustainable future.

- PRINCIPLE 9 Promote sustainable production and consumption, through appropriate use of environmentally sound technologies and effective demand management.

- PRINCIPLE 10 Enable continual improvement, based on accountability, transparency and good governance.

Operational Sustainability Approaches

The sustainability approach defined by The Natural Step informed the revision of specific GDV actions and to ensure that sustainability actions in GDV 2019:

- Identify outcomes
- Move the City in the direction of a future desired state
- Integrate easily into departmental business plans

The Natural Step^v

The Natural Step defines a sustainability approach based on the work of a network of international scientists that identified three environmental conditions needed for continuation of natural systems that sustain human society, and a fourth system condition related to social and economic considerations that drive human action.

The Four System Conditions...

In a sustainable society, nature is not subject to systematically increasing:

1. concentrations of substances extracted from the earth's crust
2. concentrations of substances produced by society
3. degradation by physical means
4. and, in that society, people are not subject to conditions that systematically undermine their capacity to meet their needs

Guided by the four sustainability principles, and using the framework of the basic system conditions, the Natural Step advocates for a 'backcasting' approach that involves describing a desired future state (e.g. zero poverty, carbon-free energy) and then identifying short-term steps that will move an organization or society in the direction of the desired outcome. "Whole-systems" thinking is central to this approach and reflects the idea that it is important to take into account all of the components of the system, how they interact and have a cause-and-effect relationship among them. This includes thinking through potential unintended consequences of actions.

- i. Chartered Professional Accountants Canada. 2013. Starter's Guide to Sustainability Reporting. <https://www.cpacanada.ca/en/business-and-accounting-resources/financial-and-non-financial-reporting/sustainability-environmental-and-social-reporting/publications/a-starters-guide-to-sustainability-reporting>
- ii. United Nations Sustainable Development Goals. <https://sustainabledevelopment.un.org/?menu=1300>
- iii. ICLEI -Local Governments for Sustainability. 2018. The ICLEI Montreal Commitment and Strategic Vision 2018-2024. Bonn, Germany. <https://worldcongress2018.iclei.org/wp-content/uploads/The%20ICLEI%20Montr%C3%A9al%20Commitment.pdf>
- iv. Melbourne Principles for Sustainable Cities. UNEP International Environment Technology Centre (http://www.melbourne.vic.gov.au/about-council/committees-meetings/meeting-archive/MeetingAgendaItemAttachments/404/6407/ESalA_51_200410140530.pdf)
- v. Natural Step. <http://naturalstep.ca/sustainability>
- vi. International Integrated Reporting Council. <http://integratedreporting.org/the-iirc-2/>
- vii. Sustainability Accounting Standards Board. <https://www.sasb.org/>

...Reworded as The Four Sustainability Principles

To become a sustainable society, we must eliminate our contributions to...

1. the systematic increase of concentrations of substances extracted from the Earth's crust (for example, heavy metals and fossil fuels)
2. the systematic increase of concentrations of substances produced by society (for example, plastics, dioxins, PCBs and DDT)
3. the systematic physical degradation of nature and natural processes (for example, over harvesting forests, destroying habitat and overfishing); and...
4. conditions that systematically undermine people's capacity to meet their basic human needs (for example, unsafe working conditions and not enough pay to live on).

Additional Sustainability Reporting Frameworks

Other sustainability reporting frameworks, as described in the Chartered Professional Accountants Canada starter guide, were consulted by City staff and include the following:

- Global Reporting Initiative
- UN Global Compact
- Carbon Disclosure Project
- Integrated International Reporting Council^{vi}
- Sustainability Accounting Standards Board^{vii}

A close-up photograph of a person's hands wearing bright yellow nitrile gloves, reaching down to pick up a clear plastic bottle from a gravelly surface. The person is wearing a green t-shirt and dark sneakers. The background is a blurred outdoor setting with green foliage. The entire image has a green color overlay.

APPENDIX B:

SUSTAINABILITY BEST PRACTICES



Sustainability Best Practices

Green Directions Vaughan 2019 (GDV 2019) uses the framework of goals, objectives and actions to direct specific efforts to achieve sustainability outcomes. Quantitative indicators were also approved in 2012 as a management tool to measure progress towards the Goals.

As with Green Directions Vaughan 2009, it was determined not to specify measurable and time-bound targets in GDV 2019. Nevertheless, some quantitative targets do exist in Council-endorsed plans, such as the Municipal Energy Plan (e.g., 22 per cent decrease in CO₂ emissions from the 2013 baseline by 2031) and Vaughan Official Plan 2010

(e.g., “at least 35 per cent of housing units in the Vaughan Metropolitan Centre satisfy the criteria for affordable housing”; by 2031, “an overall transit modal split of 30 per cent during peak periods is targeted for the City as a whole”).

The sustainability best practices compiled here represent recommended or endorsed targets in both the public and private sectors. This will inform ongoing implementation of the sustainability actions in GDV 2019 and can inform the revision of related City plans, such as the strategic plan, Vaughan Official Plan 2010 and various infrastructure master plan documents.

Sustainability Best Practices Related to Goal 1 - What we use

Climate Mitigation

More than 180 governments have ratified the Paris Agreement on Climate Change 2015. The Pan-Canadian Framework on Clean Growth and Climate Change (Government of Canada 2016) is Canada's response to the obligations of the Paris Agreement and climate challenge.



Select Greenhouse Gas (GHG) Emissions Reduction Best Practices

Global GHG emissions in 2030 need to be approximately 25 per cent and 55 per cent lower than in 2017 (global emissions were 53.5 GtCO₂e in 2017) to put the world on a least-cost pathway to limiting global warming to 2°C and 1.5°C respectively.

[UNEP Emissions Gap Report 2018](#)

In model pathways with no or limited overshoot of 1.5°C, global net anthropogenic CO₂ emissions decline by about 45 per cent from 2010 levels by 2030, reaching net zero around 2050.

[Intergovernmental Panel on Climate Change 2018](#)

Canada's "Nationally Determined Contribution" submission to the Paris Accord sets a goal "to achieve an economy-wide target to reduce its greenhouse gas emissions by 30 per cent below 2005 levels by 2030."

[UN Paris Agreement on Climate Change](#)

Canadian GHG emissions are projected to be 742 Mt in 2030 under the December 2016 emissions projections (Environment and Climate Change Canada). Canada's target is 523 Mt.

[Pan-Canadian Framework on Clean Growth and Climate Change](#)

GHG emissions reduction targets: 15 per cent below 1990 levels by 2020; 37 per cent below 1990 levels by 2030; 80 per cent below 1990 levels by 2050.

[2016 Ontario Government Climate Change Action Plan](#)

Reduce greenhouse gas emissions by 30 per cent below 2005 levels by 2030

[2018 Made-in-Ontario Environment Plan](#)

Interpretation for the City of Vaughan

The City of Vaughan's Municipal Energy Plan identifies a target to reduce GHG emissions by 22 per cent below 2013 levels by 2031, or from about five tonnes of carbon dioxide equivalent (CO₂e) emissions per person per year in 2013 to four tonnes CO₂e emissions per person per year by 2031. An interpretation of the more ambitious targets in the 2016 Ontario Climate Change Action Plan and UNEP Emissions Gap Report 2018, which is the low-risk scenario from a climate and environmental perspective, suggests a CO₂e emissions target of below two tonnes per person per year by 2030 for the City of Vaughan.

Municipal Commitments

Renewable Cities, a program of the Simon Fraser University's Morris J. Wosk Centre for Dialogue in Vancouver, Canada, tracks Canadian cities with a 100 per cent renewable energy commitment. The following municipalities are identified by Renewable Cities:

British Columbia - Vancouver (2015),
Victoria (2016), Saanich (2017), Nelson
(2018); Ontario - Oxford County (2015);
Prince Edward Island - Charlottetown (2019).

The Sierra Club 100 per cent Commitments identifies over 90 US cities, counties and states that have made commitments to transition to 100 per cent clean, renewable energy.

Non-government Sector Commitments

The RE100 is a global initiative of The Climate Group, an international not-for-profit organization based in England, and CDP (formally known as the Carbon Disclosure Project), a not-for-profit charity that runs a disclosure system for organizations to manage their environmental impacts. Companies joining RE100 set a public goal to source 100 per cent of their global electricity consumption from renewable sources by a specified year. They disclose their electricity data annually, and RE100 reports on their progress. Globally, over 190 companies have committed to 100 per cent renewable energy.



Stormwater Management

Stormwater management, how rainfall is directed to safeguard health and property, is primarily the responsibility of municipalitiesⁱ. In urban areas, precipitation falling on hard surfaces create more and faster moving runoff, which can cause several issues, including:

- flooding during rain storms and snow melt
- erosion and sedimentation, which can damage a stream's ecosystem and is expensive to manage
- pollutants to be carried into nearby lakes, rivers and streamsⁱⁱ

The wide range of social and environmental benefits related to stormwater management include:

- ensuring safety of residents through flood control and protecting drinking water sources
- protecting groundwater quality to support watershed functions
- reducing pollution entering streams
- restoring natural variation in stream flows
- promoting the use of surface and ground waters for both human and ecological needs

The stormwater best practices compiled below pertain to only a narrow function of the overall stormwater management responsibilities in urban areas.

Between 2009 and 2016, 48 Canadian municipalities reported 671 floods that resulted in damage, with over 66,000 private properties affected



Select Stormwater Management Best Practices

The Runoff Volume Control Target (RVCT) for Ontario be based on the management of the geographically specific 90th percentile event. The 90th percentile event is the rainfall event whose precipitation total is less than or equal to 90 percent of all daily rainfall events on an annual basis.

For both the Humber River and Don River, control post-development peak flows to pre-development levels for all storms up to and including the 100-year storm (i.e. 2, 5, 10, 25, 50 and 100-year storms).

[Draft Runoff Volume Control Targets. Recommendations prepared for the Ontario government.](#)

[TRCA Stormwater Management Criteria](#)

Interpretation for the City of Vaughan

The City's stormwater system currently includes more than 1,000 kilometres of pipes, more than 18,000 catch basins and 143 stormwater ponds. The City is taking steps to lessen the impacts of climate change with a long-term plan for managing the potentially damaging effects of stormwater. The City's review of the Integrated Urban Water Master Plan will evaluate best practices to manage stormwater runoff as close to the source as possible through techniques such as infiltration, evapotranspiration, harvesting, filtration and detention of stormwater.

Municipal Commitments

The City of Philadelphia, Pennsylvania, is a recognized leader in promoting green infrastructure for stormwater management as part of the city's 25-year, \$2.5 billion Green City, Clean Waters plan to manage stormwater and protect watersheds. The goal of Philadelphia's Green City, Clean Waters plan is to reduce runoff and overflow pollution volume by 80 per cent by 2036. The city uses the revenue generated from a stormwater rate to fund a variety of activities including maintaining pipes and inlets. The revenue is also used to implement stormwater management and stream restoration projects. Philadelphia created two stormwater grant programs that provide funding or rebates to property owners or contractors: the Stormwater Management Incentives Program and the Greened Acre Retrofit Program. The city has also created two online apps: The Stormwater Parcel Viewer lets users explore land parcels on an interactive map to determine impervious area; and the Credits Explorer lets users install virtual stormwater management practices to see how much stormwater fees can be reduced on non-residential properties.

As of June 2016, the City of Philadelphia has more than doubled its five-year pollution reduction targets. It has also established more than 837 "greened acres," which represents a more than 5.7 billion litre reduction in stormwater runoff and combined sewer overflows during a typical year of rainfall. "Greened acres" use tools like rain gardens and stormwater tree planters to manage runoff from hard surfaces.

In addition to the City of Vaughan, it is reported in Water Canada (Tovilla 2017) that nine Ontario



municipalities have implemented a stormwater rate to fund the municipal stormwater conveyance, quality, and flow control services, including the building of reserves for future infrastructure: Aurora, Kitchener, London, Markham, Mississauga, Ottawa, Richmond Hill, St. Thomas and Waterloo.

Non-government Sector Commitments

Green Roofs for Healthy Cities, through their Awards of Excellence program, recognizes leading development projects that integrate green infrastructure, such as: Bridgepoint Active Healthcare (Toronto) that incorporates a green roof for patient recovery; Mountain Equipment Coop head office (Vancouver) which re-uses rainwater through a green roof and treats stormwater through rain gardens; and Trent University for their rooftop urban farm.

Water Conservation

The Great Lakes holds around twenty per cent of the world's surface freshwater supply (Sterner et al. 2017). With such abundance, it may be difficult to see the urgency in water conservation in Ontario. In addition to direct demand for potable water, however, land use development and climate change are impacting Ontario's freshwater resources.

Municipalities save both money and energy when their water customers, such as households and

businesses, use water efficiently. It is especially important to reduce outdoor water use, e.g., lawn watering, which creates a large summer peak in municipal water demand. This peak demand from urban areas usually occurs at the same time as peak agricultural water demand, and when streamflow rates and soil moisture levels are at their lowest (Environmental Commissioner of Ontario 2017).

Select Water Conservation Best Practices

The residential water consumption rate is 150 litres per capita per day (LCD) by 2051.

York Region Long Term Water Conservation Strategy, 2011

Interpretation for the City of Vaughan

Vaughan's water consumption is around 200 litres per person per day. The City will continue to support York Region's Long-Term Water Conservation Strategy towards a residential water consumption rate of 150 litres/capita/day. For example, the City's water meter replacement project will improve customer service, support the City's "Smart City" initiative, and support water conservation efforts.

Municipal Commitments

The 2017 report of the Environmental Commissioner of Ontario on the water-energy nexus identifies best-practice water usage in select municipalities, including Copenhagen, Denmark (108 litres/capita/day in 2010), Hamburg, Germany (110 litres/capita/day in 2006), and Nantes, France (122 litres/capita/day in 2008). By comparison, average Ontario residential water use is about 200 litres/capita/day.

The City of Guelph relies 100 per cent on groundwater supply for municipal water. Water conservation programs have helped to reduce residential water consumption to about 140 litres/capita/day (ECO 2017).



Non-government Sector Commitments

The Coca Cola Company (2018) has set a target to improve water efficiency by 25 per cent over 2010 levels by 2020. TCCC was using 2.7 litres of water to make 1 litre of product in 2004. At the end of 2017, TCCC was using 1.92 litres of water to make 1 litre of product, with the goal to reduce it to 1.7 litres of water by 2020.

Waste Reduction and Landfill Diversion

The City of Vaughan provides recycling and waste services to residential properties across the City, including the collection of blue box recycling, green bin organics, garbage (known as residual waste), leaf and yard waste (including Christmas trees), and appliance and metal recovery items.



Select Waste Reduction and Landfill Diversion Best Practices

Ontario-wide 30 per cent waste diversion rate by 2020, 50 per cent diversion rate by 2030, and 80 per cent diversion rate by 2050

166,000 estimated tonnes of waste reduced by 2031.

28 kilogram per capita waste generation rate reduction per person

Strategy for a Waste-Free Ontario, 2017, Government of Ontario

York Region SM4RT Living, 2013

Interpretation for the City of Vaughan

The City supports York Region's SM4RT Living Plan (Integrated Waste Management Master Plan), and the goals of the Reuse, Repair and Repurpose Strategy, November 2013. Landfill diversion rates have increased from 55 per cent in 2011 to 66 per cent in 2016 and additional programs are planned to continue the diversion rate improvements. The Waste-Free Ontario Act, proclaimed in 2016, will result in further changes to practices to promote the circular economy and landfill diversion.

Municipal Commitments

Nearly 400 European cities have taken on the challenge of the Zero Waste Master Plan, joining a movement initiated and supported by Zero Waste Europe member organizations. The Zero Waste Cities program is supported by a network of zero waste non-governmental organizations (NGO's) working on all aspects of zero waste practice, including covering the implementation of separate collection and reuse centres, to the pay-as-you-throw (PAYT) collection mechanisms and deposit return schemes, with a range of specializations in between.

Several US cities have declared zero waste goals. For example, Fort Collins, Colorado has set a 75 per cent diversion rate by 2020 and a 90 per cent diversion rate by 2025.

The Zero Waste International Alliance definition has been adopted by: Arkadelphia, AR; Austin, TX; Burbank, CA; Glendale, CA; Oakland, CA; Oceanside, CA; Palo Alto, CA; and Telluride, CO.

Non-government Sector Commitments

CBCI Canada is a joint venture of Green Business Certification Inc. (GBCI) and the Canada Green Building Council (CaGBC) to administer environmental certifications. One such accreditation is the TRUE Zero Waste certification system, which enables facilities to define, pursue and achieve their zero waste goals. Riverside Natural Foods in Vaughan and Cintas Distribution Centre in Mississauga are TRUE certified facilities.

Subaru Indiana became the first auto plant in the United States to become a zero waste facility. The facility found markets for all but about 5 per cent of their waste by-products, the remaining (e.g., dashboards and carpet) being incinerated by Covanta Energy Solutions (Guynup 2017).

Sustainability Best Practices Related to Goal 2 – How and where we grow

Compact and Complete Communities

The Province's growth plan, A Place to Grow (2019) addresses urban sprawl. It promotes the achievement of complete communities, where people of all ages and abilities can conveniently access most of the necessities for daily living and prioritizes intensification to make efficient use of land. Building compact neighbourhoods provides for housing options and ensures amenities are close while allowing natural areas and agricultural lands to be conserved.



Select Built Form Best Practices for Urban Areas

Density in Urban Growth Centres - 200 residents and jobs combined per hectare. The Vaughan Metropolitan Centre is Vaughan's urban growth centre.

[A Place to Grow 2019](#)

Density in Major Transit Station Areas - Major Transit Station Areas on priority transit corridors or subway lines will be planned for a minimum density target of:

[A Place to Grow 2019](#)

1. 200 residents and jobs combined per hectare for those that are served by subways;
2. 160 residents and jobs combined per hectare for those that are served by light rail transit or bus rapid transit; or
3. 150 residents and jobs combined per hectare for those that are served by the GO Transit rail network.

Affordable Housing

That a minimum 25 per cent of new housing units across the Region be affordable.

[York Region Official Plan, Policies 3.5.6 and 3.5.7](#)

A minimum of 35 per cent of new housing units in Regional Centres and key development areas is to be affordable, offering a range of affordability for low- and moderate-income households.



Interpretation for the City of Vaughan

The City's official plan, Vaughan Official Plan 2010 (VOP 2010) directs the development of compact and complete communities and VOP 2010 must conform to the York Region Official Plan and Provincial policies. The Region and Provincial direction regarding urban growth and environmental protection are considered minimum standards.

VOP 2010 meets the targets identified above for the Urban Growth Centre densities and affordable housing:

- "growth within the Provincially-designated Urban Growth Centre area shall be planned to meet or exceed the requirement for a density of 200 people and jobs per hectare" (Policy 2.2.5.2)
- 25 per cent of all new housing units in Vaughan, 35 per cent in Key Development Areas, are required to be affordable (Policy 7.5.1.2 a. and b.)
- at least 35 per cent of housing units in the Vaughan Metropolitan Centre (Policy 2.2.5.4) and Concord GO Centre – Secondary Plan (Part B - Policy 3.1.3) satisfy the criteria for affordable housing

Municipal Commitments

The Regional Municipality of York is the provincially designated Housing Service Manager in York Region and supports affordable housing through the local planning policy framework and assisted housing programs.

The Federation of Canadian Municipalities (FCM) has been a leader in advocating for affordable housing nation-wide. FCM played an important role in the development of the Federal government's National Housing Strategy (CMHC) released in November 2017.

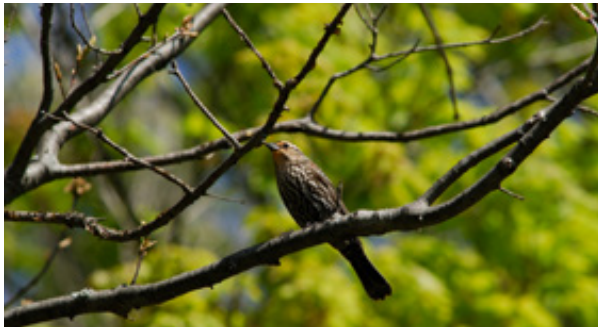
Non-government Sector Commitments

Habitat for Humanity Canada ("Habitat") is one of the most recognized non-government organizations providing affordable housing across the country. Habitat coordinates volunteers to help build and rehabilitate safe, decent and affordable homes, including single-family and multi-unit houses. The families who partner with Habitat pay an interest-free mortgage geared to their income and volunteer 500 hours with Habitat. As Habitat homeowners pay off their mortgage, the funds are invested into a revolving fund, which is used by the local Habitat to build more homes for low-income families in the community.

York Region supports additional affordable housing providers in the City of Vaughan, including the Hesperus Fellowship Village, Reena, Friuli Benevolent Corporation, and St. Peter's Seniors Residence Woodbridge Inc., Branch 414 Legion Village Non-Profit Housing and OHR Somayach Residential Centre Inc. (cited in the Report to Council of June 27, 2017, Item 1, Report No. 24, of the Committee of the Whole, Working Session, which was adopted without amendment by the Council of the City of Vaughan on June 27, 2017).

Biodiversity

Biodiversity is not just associated with wildlife habitat. Natural and semi-natural places in cities improve people's health (EcoHealth Ontario 2017) and is a sought-after community amenity. Urban ecosystems also provide billions of dollars' worth of ecological services to cities. Implementing new green infrastructure and restoring natural spaces within urban areas has a clear economic return on investment for municipalities (ICLEI Canada).



Select Biodiversity Best Practices

By 2020, at least 17 per cent of terrestrial and inland water, and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscapes and seascapes

By 2020, ecosystem resilience and the contribution of biodiversity to carbon stocks has been enhanced, through conservation and restoration, including restoration of at least 15 per cent of degraded ecosystems, thereby contributing to climate change mitigation and adaptation and to combating desertification.

By 2020, at least 17 per cent of terrestrial areas and inland water and 10 per cent of marine and coastal areas of Canada are conserved through networks of protected areas and other effective area-based measures.

By 2020, at least 17 per cent terrestrial and aquatic systems are conserved through well-connected networks of protected areas and other effective area-based conservation measures.

Target 11 of the Aichi Biodiversity Targets, UN Convention on Biological Diversity

Target 15 of the Aichi Biodiversity Targets, UN Convention on Biological Diversity

2020 Biodiversity Goals and Targets for Canada

Ontario Biodiversity Strategy



WWF-Canada's Living Planet Report 2017. From 1970 to 2014, half (451 of 903) of monitored wildlife species in Canada declined in abundance. This is true for all wildlife groups: Approximately half of the mammals (54 per cent), fish (51 per cent), birds (48 per cent), and amphibians and reptiles (50 per cent) included in the analysis exhibited declining trends during this time.

For the half of monitored species with declining trends, the Living Planet Index shows, on average, a decline of 83 per cent, from 1970 to 2014.

Interpretation for the City of Vaughan

Natural areas in Vaughan are mapped in VOP 2010 as the Natural Heritage Network and includes woodlands, wetlands and valleylands. These natural areas cover over 6,000 hectares, about 20 per cent of Vaughan's land area, and half of which are secured as publicly-owned lands by the City or the TRCA.

However, only 11 per cent of Vaughan's land area comprises woodlands and only about 1 per cent are wetlands. This means that over half of the lands identified in the Natural Heritage Network are sites such as open fields, meadows and successional habitat. Many of these areas are located in valleys or small streams that occur on agricultural lands and represent an opportunity for ecological restoration and habitat enhancement. There are also City-owned lands not recognized as part of the Natural Heritage Network, such as North Maple Regional Park, that provide opportunities for targeted natural areas restoration that is aligned with passive recreational uses, such as hiking and cycling.

Municipal Commitments

The Town of Aurora in York Region assessed the value of environmental features (natural assets) in a 2013 study. This provides a baseline database for the Town to help inform and understand the potential cost of land use decisions in terms of ecosystem services.

The Town of Gibsons, British Columbia, has prepared a sophisticated natural capital evaluation as part of their asset management plan. The Town has four main objectives in considering natural as well as engineered assets:

1. Managing risk by ensuring that Gibsons has a clear understanding of what services they receive from natural assets, such as flood prevention, provision of drinking water and rain water management, and what it would cost to replace the natural asset with an engineered alternative if the assets were degraded or destroyed.
2. Saving costs by managing natural assets in a way that will provide services at lower cost and in perpetuity.
3. Maintaining healthy ecosystems as a result of sound asset management strategies.
4. Managing the asset to provide services for future development without degrading the condition.

Non-government Sector Commitments

A 2018 paper in the peer-reviewed journal, Conservation Biology, provides the findings of evaluating sustainability reports of the top 100 of Fortune 500 companies for biodiversity accountability (Addison et al. 2018). While 31 companies made clear biodiversity commitments, only five were specific, measurable and time bound. Nine companies provided quantitative indicators to verify the magnitude of their activities (e.g., area of habitat restored). No companies reported quantitative outcomes, making it difficult to evaluate actual progress on any biodiversity achievements.

A Vaughan Term of Council Priority (2014-2018) was to “re-establish the urban tree canopy”

Urban Forest and Tree Canopy

The ecosystem services and health benefits provided by trees and forests have been well-documented and include oxygen production, pollutant removal, shade provision and cooling effects through evapotranspiration. A Special Report by TD Economics (2014) calculated the value of the City of Toronto’s urban forest to be about \$7 billion (\$700 per tree) and provides \$8 per tree in environmental benefits. This works out to about \$125 in household savings per year.

Forest or woodland cover refers to canopy cover provided by stands of trees that are greater than 0.2 hectares in size. Overall tree canopy cover includes forests and individual trees that may occur in boulevards, parks and private lots.

Select Forest and Tree Canopy Best Practices

30 per cent forest cover at the watershed scale is the minimum forest cover threshold. This equates to a high-risk approach that may only support less than one half of the potential species richness, and marginally healthy aquatic systems.

[Environment Canada, How Much Habitat is Enough?](#)

40 per cent forest cover at the watershed scale equates to a medium-risk approach that is likely to support more than one half of the potential species richness, and moderately healthy aquatic systems.

50 per cent forest cover or more at the watershed scale equates to a low-risk approach that is likely to support most of the potential species, and healthy aquatic systems.

The proportion of the watershed that is forest cover and 100 metres or further from the forest edge should be greater than 10 per cent.

[Environment Canada, How Much Habitat is Enough?](#)

For York Region:

- recommended range of woodland cover is 25 per cent by 2031;
- recommended range of total canopy cover is 35 per cent by 2031 and 40 per cent by 2051.

[York Region Forest Management Plan 2016](#)

For Vaughan:

- recommended range of woodland cover is 14 per cent to 17 per cent;
- recommended range of total canopy cover is 25 per cent to 35 per cent.

According to a national analysis by U.S. Forest Service researchers David Nowak and Eric Greenfield, a 40 to 60 per cent urban tree canopy is attainable under ideal conditions in forested states. Twenty per cent in grassland cities and fifteen per cent in desert cities are realistic baseline targets, with higher percentages possible through greater investment and prioritization.

[American Forests](#)



Interpretation for the City of Vaughan

At 11 per cent woodland cover currently in Vaughan, meeting York Region’s recommended best practice for Vaughan of 14 per cent to 17 per cent woodland cover is achievable but will require a concerted effort. This is equivalent to planting trees on about 800 hectares to 1,600 hectares of land and much of this restoration can be located in parts of existing valleys that are currently open fields, meadows and successional habitat.

The City’s recent tree canopy inventory will set a baseline for targeted improvements in street tree and other small-scale planting projects. Total tree canopy cover is about 17 per cent and has been impacted by the last ice storm and tree deaths from the invasive Emerald Ash Borer. Individual tree and small-stand tree planting can emphasize boulevard planting for “green streets”, provide shade in parks, and reduce the urban heat island effect in heavily built-up areas.

Municipal Commitments

A sample of Ontario municipalities illustrates similar tree canopy cover targets to those recommended in the York Region Forest Management Plan 2016:

- Guelph – 40 per cent
- London - achieve tree canopy targets of 28 per cent by 2035 and 34 per cent by 2065 subject to annual budget approval
- Markham – 30 per cent tree canopy and vegetation coverage City-wide
- Ottawa – 30 per cent
- Toronto – 40 per cent within 50 years



Non-government Sector Commitments

Forests Ontario helped over 4,000 landowners with woodland restoration projects under the 50 Million Tree program.

The TD Forests program, an initiative of the TD Bank group, was launched in 2012 to help conserve critical forest habitats. Since then, the program has helped the Nature Conservancy Canada protect more than 15,000 hectares of forest land in southern Canada.

Tree Canada and the Canadian National Railway Company (“CN”) partner to deliver over a half million dollars every year to fund community greening projects. In 2018, 25 communities were awarded grants of up to \$25,000 each.

Green Building

The green construction sector continues to grow in expertise and influence in order to reduce the environmental footprint of buildings. This is a response to the known impacts of building

construction and operations on the environment and people. The Whole Building Design Group (WBDG) provides a useful list of available sustainable product and green building standards and certifications

25-40%
of all
ENERGY
USE



20%
of all
WATER



30-40%
of
GREENHOUSE
GAS EMISSIONS



30-40%
of
SOLID WASTE
GENERATION

Select Green Building Best Practices

Federal, provincial, and territorial governments will work to develop and adopt increasingly stringent model building codes, starting in 2020, with the goal that provinces and territories adopt a “net-zero energy ready” model building code by 2030.

Pan-Canadian Framework
on Clean Growth and
Climate Change

Require that the majority of new buildings in Vancouver have no operational greenhouse gas emissions by 2025 and that all new buildings have no greenhouse gas emissions by 2030.

City of Vancouver Zero
Emissions Building Plan

Federal and provincial grants allow Canadian towns to become net-zero energy towns. Town of Raymond, Alberta has achieved net-zero energy for municipal operations by operating all nine municipal buildings and all street lights with solar power. Parry Sound aims to reduce greenhouse gas emissions by 30 per cent of 2005 emissions by 2030 and eventually generating as much energy as it consumes.

Town of Raymond, Alberta
and Town of Parry Sound,
Ontario



Interpretation for the City of Vaughan

Vaughan's Sustainability Performance Metrics (the "Metrics") measures the sustainability contribution of every development application. Exterior design elements such as landscaping, pedestrian connections, lighting and solar orientation are the focus of the Metrics. Energy efficiency and water conservation are recognized in the Metrics and the City is evaluating incentives to emphasize these performance goals in green building projects.

Municipal Commitments

C40 is a network of the world's megacities committed to addressing climate change. Among other commitments, sustainable community design and green building declarations of C40 cities include fossil-fuel-free streets, advancing towards zero waste and net zero carbon buildings. The C40 pledges include:

- transitioning to Fossil-Fuel-Free Streets by procuring only zero-emission buses from 2025 and ensuring a major area of the city is zero emission by 2030
- advancing towards zero waste cities by (1) reducing the municipal solid waste generation per capita by at least 15 per cent by 2030

compared to 2015 and (2) reducing the amount of municipal solid waste disposed to landfill and incineration by at least 50 per cent by 2030 compared to 2015 and increase the diversion rate away from landfill and incineration to at least 70 per cent by 2030.

- enacting regulations and/or planning policy to ensure new buildings operate at net zero carbon by 2030 and all buildings by 2050

Non-government Sector Commitments

Leadership in Energy and Environmental Design (LEED) is one of the most recognized green building certifications. There are over 3,600 LEED certified buildings in Canada.

The World Green Building Council established the Net Zero Carbon Buildings Commitment in 2018. The goal of the Commitment is for businesses and organizations across the world that have signed the commitment "to take advanced climate action by setting ambitious targets to eliminate operational carbon emissions from their building portfolios by 2030".

Sustainability Best Practices Related to Goal 3 – How we get around

Sustainable Transportation

The City of Vaughan’s Transportation Master Plan, A New Path, describes sustainable transportation as an approach emphasizing the “promotion of public transit and alternative modes of travel, optimization of existing roads and overall reduction in the need to travel.” Low emission vehicles, including electric vehicles, can be a form of sustainable transportation, but does not necessarily address traffic congestion.

A sustainable transportation system is described more broadly in the Metrolinx 2041 Regional Transportation Plan that:

- is aligned with land use, and supports healthy and complete communities
- will provide safe, convenient and reliable connections, and support a high quality of life, a prosperous and competitive economy, and a protected environment

Select Transit and Active Transportation Best Practices

The Region will plan to provide transit service so that the distance to a transit stop in the Urban Area is within 500 metres of 90 per cent of residents, and within 200 metres of 50 per cent of residents

York Region Official Plan, Policy 7.2.25

Achieve an overall transit modal split of 30 per cent during peak periods in the Urban Area, and 50 per cent in the Regional Centres and Corridors by 2031

York Region Official Plan, Policy 7.2.26

Overall transit modal split of 30 per cent during peak periods is targeted for the City as a whole and a transit modal split of 50 per cent is targeted for the Vaughan Metropolitan Centre and the Regional Intensification Corridors by 2031. A 40 per cent transit modal split during peak periods is targeted for all other Intensification Areas by 2031.

Vaughan Official Plan 2010, Policy 4.1.1.2

To encourage the provision of transit service within 500 metres of at least 90 per cent of residences and the majority of jobs, and consistent with approved York Region Transit service standards and guidelines, and within 200 metres of at least 50 per cent of residents in the Urban Area.

Vaughan Official Plan 2010, Policy 4.2.2.14

Increase the sustainable mode share to 50 per cent

Region of Peel Sustainable Transportation Strategy

Increase the 2011 AM peak walking trips from 50,000 to 90,000 by 2041

Region of Peel Sustainable Transportation Strategy

Increase the 2011 AM peak cycling trips from 2,000 to 20,000 by 2041

Federal, provincial and territorial governments will work with industry and stakeholders to develop a Canada-wide zero-emission vehicles strategy

Pan-Canadian Framework on Clean Growth and Climate Change

Make zero-emission technology commercially viable by 2025

Drive to Zero Pledge – Federal Government



Interpretation for the City of Vaughan

The 2011 Transportation Tomorrow survey data for the City of Vaughan indicated that approximately 14 per cent of all trips by Vaughan residents were made by sustainable modes. Based on the 2016 Transportation Tomorrow survey data, the proportion of sustainable trips increased to approximately 16 per cent.

Municipal Commitments

The City of Vaughan's Transportation Master Plan and VOP2010 identify a city-wide transit modal split target of 30 per cent by 2031.

Non-government Sector Commitments

The Smart Commute workplace program helps inform employers and commuters about their commute choice and encourages them to try more efficient options. In 2014, Smart Commute worked with 340 workplaces employing more than 730,000 commuters in the region. Smart Commute offices (Transportation Management Associations or TMAs) work with employers to develop tailored employee travel programs. TMAs offer a range of commute services to support carpooling, shuttles, alternative work arrangements (e.g., telework, compressed work week, flex hours etc.), walking, cycling programs and transit use.

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Water Conservation

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APPENDIX C:
GLOSSARY

Glossary

The following themes are assigned to each sustainability action to help identify and describe the outcome. Sustainability actions may incorporate more than one theme, demonstrating the alignment within and between environmental, social and economic sustainability actions.

Themes	Definition
Climate Resiliency	Climate Resiliency is assigned to sustainability actions that address climate mitigation (reducing greenhouse gas emissions) and/or climate adaptation (better protecting against climate change impacts).
Energy	Energy is assigned to sustainability actions that indicate measures to reduce energy consumption, support energy conservation and encourage alternative energy generation.
Mobility	Mobility is assigned to sustainability actions that improve how citizens and goods move around in the City of Vaughan, including public transit and modes of active transportation.
Green Infrastructure	Green Infrastructure is assigned to sustainability actions that enhance living green infrastructure, such as street trees, bioswales, woodlands, wildlife habitat and parks.
Water	Water is assigned to sustainability actions that indicate measures to conserve water, reduce runoff, and enhance the standards of stormwater management.
Waste	Waste is assigned to sustainability actions that aim to reduce the amount of waste generated and improve diversion from landfills.
Green Economy	Green Economy is assigned to sustainability actions that move the City toward becoming low carbon, resource efficient and socially inclusive while maintaining a strong economy.
Complete Communities	Complete Communities is assigned to sustainability actions that improve the accessibility of homes, jobs, schools, community services, parks and recreation facilities.
Greenspace	Greenspace is assigned to sustainability actions that maximize tree canopy, parks, trails, wildlife habitat, woodlots and open spaces.
Health	Health is assigned to sustainability actions that aim to improve the health of residents, including physical and mental well-being.
Diversity	Diversity is assigned to sustainability actions that support and improve art, culture and social cohesion.
Governance	Governance is assigned to sustainability actions that include a measure of accountability, reporting and tracking progress by the Corporation of the City of Vaughan.

Glossary

Themes

Definition

Engagement

Engagement is assigned to sustainability actions that encourage staff and citizen education and involvement in initiatives.

Partnerships

Partnerships is assigned to sustainability actions that build collaboration in the community and with businesses and stakeholders to achieve a common goal.

Terms

Definition

Active Transportation

Active transportation is any form of human-powered transportation. It includes walking, cycling, wheeling, in-line skating, skateboarding, ice skating, etc. It can also involve combining modes such as walking/cycling with public transit.

Source: Vaughan Transportation Master Plan 2013, "A New Path".

Built Environment

Built environment refers to anything in the physical environment that is human-created. It includes buildings, parks, neighbourhoods, transportation systems, energy systems, agricultural lands and street design.

Sources : <https://opha.on.ca/What-We-Do/Workgroups/Built-Environment.aspx>

<https://www.toronto.ca/city-government/data-research-maps/research-reports/public-health-past-significant-reports/reports-on-built-environment-human-health>

Carbon Neutrality

Carbon neutrality refers to achieving net-zero carbon emissions by balancing a measured amount of carbon released with an equivalent amount sequestered or offset. The best practice(s) for organizations and individuals seeking carbon neutral status are to avoid creating carbon emissions first, so that only the unavoidable emissions are offset.

Glossary

Terms

Definition

Climate Change

Climate change refers to a change in the state of the climate that can be identified (e.g., by using statistical tests) by changes in the mean and/or the variability of its properties and that persists for an extended period, typically decades or longer. Climate change may be due to natural internal processes or external forcings such as modulations of the solar cycles, volcanic eruptions and persistent anthropogenic changes in the composition of the atmosphere or in land use. Note that the Framework Convention on Climate Change (UNFCCC), in its Article 1, defines climate change as: ‘a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods.’ The UNFCCC thus makes a distinction between climate change attributable to human activities altering the atmospheric composition and climate variability attributable to natural causes.

Source: IPCC, 2018: Annex I: Glossary [Matthews, J.B.R. (ed.)]. In: Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty [Masson-Delmotte, V., P. Zhai, H.-O. Pörtner, D. Roberts, J. Skea, P.R. Shukla, A. Pirani, W. Moufouma-Okia, C. Péan, R. Pidcock, S. Connors, J.B.R. Matthews, Y. Chen, X. Zhou, M.I. Gomis, E. Lonnoy, T. Maycock, M. Tignor, and T. Waterfield (eds.)]. In Press

CO₂

Carbon Dioxide. While it does occur naturally, it is the most prominent greenhouse gas in the atmosphere and is released as a result of the burning of fossil fuels, such as coal, oil and natural gas.

Complete Communities

A community where residents, businesses and visitors thrive and homes, jobs, schools, community services, parks and recreation facilities are easily accessible. Complete communities provide:

- A healthy natural environment, with ample greenspace
- Convenient access to an appropriate mix of jobs and local services and a full range of housing
- Community infrastructure including educational opportunities at all levels, healthcare, socio-cultural activities, recreation and open space
- Mobility, with convenient access to public transit and the opportunity to walk and bike
- An attractive built environment
- Safety and security

Glossary

Terms

Definition

Green Procurement

The act or process of acquiring goods and services in an environmentally and socially sustainable manner that benefits local economies, the environment and communities. Goods and services obtained in this manner minimize their impact upon the environment and promote local community and economic development.

Greenhouse Gas (GHG)

Gas that contributes to the capture of heat in the Earth's atmosphere. Carbon dioxide is the most prominent GHG. It is released into the earth's atmosphere as a result of the burning of fossil fuels such as coal, oil or natural gas. GHGs are widely acknowledged as contributing to climate change.

Source: Achieving Balance: Ontario's Long-Term Energy Plan. 2013)

Green Infrastructure

Natural and humanmade elements that provide ecological and hydrological functions and processes. Green infrastructure can include components such as natural heritage features and systems, parklands, stormwater management systems, street trees, urban forests, natural channels, permeable surfaces, and green roofs.

Source: Provincial Policy Statement. 2014. Ministry of Municipal Affairs and Housing

Integrated Community Sustainability Plan

A long-term plan, developed in consultation with community members, that provides direction for the community to realize sustainability objectives, including environment, culture, social and economic.

Leadership in Energy and Environmental Design (LEED)

LEED is a rating system which uses specific energy, environmental design and sustainable development criteria to assign points to buildings that demonstrate vision and innovation in environmental friendly design features and development processes. The rating system was created by the World Green Building Council and is currently administered in Canada by the Canadian Green Building Council. The ratings include: LEED certified, LEED Silver, Gold and Platinum

Local Improvement Charge

Municipalities, through local improvement charges, have the ability to recover the costs of capital improvements made on public or privately owned land from property owners who will benefit from the improvement. O. Reg. 586/06 (Local Improvement Charges (Priority Lien Status) made under the Municipal Act, 2001, was amended by O. Reg. 322/12, and O. Reg. 596/06 (Local Improvement Charges (Priority Lien Status) made under the City of Toronto Act, 2006, was amended by O. Reg. 323/12. These amendments address:

- municipal flexibility to undertake different types of capital works as a local improvement, including, but not limited to renewable energy, energy efficiency and water conservation capital works;
- flexibility for municipalities to enter into agreements with willing private land owners to undertake local improvements on private property and recover the cost from owners; and,
- alternative methods of apportioning the costs of local improvements on private property beyond a charge based on frontage.

Source: Vaughan Municipal Energy Plan: Plug into a Smart Energy Future.

Glossary

Terms	Definition
Master Plan	Long range plan that determines community goals and guides how the City of Vaughan will meet these goals.
The “Plan”	Green Directions Vaughan, the City’s community sustainability plan. The new Plan refers to Green Directions Vaughan 2019.
Principles of Reconciliation	Treaties, agreements and other constructive arrangements between Indigenous peoples and the Crown intended to be acts of reconciliation based on mutual recognition and respect and a starting point or the Crown to engage in partnership
Renewable Energy	Energy derived from sources that do not deplete natural resources. Examples include solar, wind and geothermal.
Single Occupancy Vehicle (SOV)	A motor vehicle occupied by only one person.
Stormwater Management	The process of using technologies and techniques, including ecological restoration and volume control, to reduce flooding and minimize hazards under major storm events and reduce pollution loading and runoff into water bodies. Stormwater management ensures that harmful chemicals and pollutants do not end up in Vaughan’s drinking water supply and do not harm fish, animals, insects and natural areas.
Sustainability	In Vaughan, sustainability means we make decisions and take actions that ensure a healthy environment, vibrant communities and economic vitality for current and future generations.
Transportation Demand Management	An umbrella term that includes many different ways of managing traffic demands, especially those methods that allow a transportation system to meet the demands of traffic or reduce the actual demand itself, whether the demand is from automobiles, pedestrians, cyclists, etc., by the introduction of one or more transportation services and/or programs. This may include, rideshare programs, tele-commuting, bike/transit integration, public bike systems and transit improvements. <small>Source: Vaughan Transportation Master Plan 2013 , “A New Path” .</small>
Tree Canopy	The total area of trees to where the leaves or outermost branches extend. It typically refers to the upper layer or habitat zone of a tree(s).





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