



Source: Dufferin County, 2021

Community Sustainability & Climate Change Resiliency Framework

Discussion Paper for Dufferin County

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1.0 Informing the Framework

1.1 Context

This Framework is informed by the objectives of the Official Plan MCR process, ensuring that the policy context for sustainability, climate change and resiliency supports provincial policy as well as influencing policy nationally and internationally.

The Intergovernmental Panel on Climate Change (IPCC) has concluded with certainty that rising greenhouse gas (GHG) emissions measured in the atmosphere as well as temperature increases around the world are the result of human influence and that the consequences are significant and detrimental on human and natural systems.¹

Mitigation measures are necessary to reduce GHG emissions causing climate change. However, climate changes are already introducing significant negative economic, social, and environmental impacts to communities. Communities must adapt to climate change to prepare for and adjust to both the current effects of climate change and predicted impacts in the future.

Local governments can play an important role in mitigating the causes of climate change and adapting to predicted challenges through local level policy and resident engagement. In Ontario, the Province of Ontario directs municipalities to reduce greenhouse gas emissions and prepare for the impacts of a changing climate through supportive land use and development patterns.

In response to provincial policy direction, municipal governments have advanced climate change action plans, strategies, emergency service planning, and communications as well as investments intended to increase resiliency and sustainability, such as asset management plans incorporating natural assets. Investments in climate change by municipal governments are also investments in the services that people want and need for social, cultural, economic, and environmental purposes.

¹ Blanco G., Gerlagh, R., Suh, S., Barrett, J., de Coninck, H.C., Diaz Morejon, C.F., Mathur, R., Nakicenovic, N., Ofosu Ahenkora, A., Pan, J., Pathak, H., Rice, J., Richels, R., Smith, S.J., Stern, D.I., Toth, F.L., & Zhou, P. (2014). Drivers, Trends and Mitigation. In *Climate Change 2014: Mitigation of Climate Change. Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Edenhofer, O., R. Pichs-Madruga, Y. Sokona, E. Farahani, S. Kadner, K. Seyboth, A. Adler, I. Baum, S. Brunner, P. Eickemeier, B. Kriemann, J. Savolainen, S. Schlömer, C. von Stechow, T. Zwickel and J.C. Minx (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA. Retrieved from https://www.ipcc.ch/site/assets/uploads/2018/02/ipcc_wg3_ar5_chapter5.pdf

1.1.1 COVID-19 Pandemic Policy Considerations

Building resiliency for communities means that outcomes from the COVID-19 Pandemic should be addressed from a policy perspective moving forward. Further discussion about what actions can be taken to include a climate change policy perspective should be considered to support proactively addressing and averting further outbreaks. This will support ensuring that the Dufferin County community is protected and well equipped in the event of future health-related outbreaks.

As the municipal government works to limit the impacts of COVID-19 and kick-start economic recovery, policy and investment priorities can create conditions for sustainable and low carbon growth and prosperity for today and in the future. For example, specific climate action can help to prevent future pandemics by protecting tree canopies, supporting agricultural practices, ensuring access to open space, reducing air pollution, and measures targeted to keeping our communities healthy.

1.2 Purpose of the Framework

Dufferin County's ("Dufferin" or "County") Community Sustainability & Climate Change Resiliency (CSCCR) Framework functions as a document in support of the Dufferin County Municipal Comprehensive Review (MCR). The intent of the CSCCR Framework is to provide policy direction for Dufferin County for a long-term approach to achieve clean growth. The Canadian Institute for Climate Choices defines clean growth as "inclusive economic growth that reduces greenhouse gas emissions, strengthens resilience to a changing climate, and improves the well-being of Canadians."

The CSCCR Framework is informed by the Lands Need Assessment to ensure that land use policies as directed through the Official Plan consider the overall demand for resources based on growth outlooks. The ongoing availability of water, energy, air, and land-based resources is essential for the sustainability of all communities. Accordingly, the CSCCR provides the County with a long-term approach to energy use management, watershed planning, and conservation of resources to increase awareness, reduce consumption and emissions, and encourage the use of energy technology and energy systems.

1.2.1 Dufferin County

Dufferin County is an upper-tier municipality located in the northwest portion of the Greater Golden Horseshoe (GGH). Comprising eight municipalities, Dufferin is home to the headwaters of five major river systems in Ontario: the Credit, Humber, Grand, Saugeen and Nottawasaga.

Dufferin County's settlement areas, Orangeville, Shelburne and Grand Valley, represent the larger historic and growing centres. Orangeville is centred within the commuter range to employment in the Greater Toronto Area (GTA). These centres are balanced with the five local rural municipalities of Amaranth, East Garafraxa, Melancthon, Mono, and Mulmur, where agriculture, tourism and recreation are predominant economic activities.

There are five Conservation Authorities that have jurisdiction over lands in Dufferin County due to its headwaters geography. Dufferin County's three urban settlement areas are nestled within the boundaries of three separate conservation authority jurisdictions. This includes: Orangeville (Credit Valley Conservation Authority), Shelburne (Nottawasaga Valley Conservation Authority) and Grand Valley (Grand River Conservation Authority). The Saugeen Valley Conservation Authority and the Toronto and Region Conservation Authority also have jurisdiction over lands in Dufferin.

Expected Dufferin County population and employment growth is outlined in the land needs assessment. This growth will place increasing pressure on energy, air, land, and other natural assets, including the headwaters, which form the basis of ecological integrity of watersheds and contribute fundamental social and economic value to Dufferin and surrounding communities. The ongoing availability of natural resources is essential for the sustainability of all communities.

1.2.2 Prioritizing Clean Growth in Dufferin County

Clean growth connects climate changes to local economic and societal ambitions, such as job creation, affordable living, and healthy populations and natural environments.² As an upper-tier municipality, with ready access to larger communities in the GTA and a mix of urban and rural communities, Dufferin County is in the unique position to implement policies that are responsive to climate change and enhance opportunities for clean growth.

In Dufferin County, the impacts of climate change are already being felt. Rising temperatures, changing weather patterns, and more extreme weather events, such as the historic 2017 flooding event, are already being experienced. For graphic representation of predicted climate changes in Dufferin County, see Appendix A.

Without intervention, climate impacts will place continued pressure on stressed and vulnerable ecosystems, as well as damage to roads, sidewalks, parks and other public

² Canadian Institute for Climate Choices. (2020). 11 Ways to Measure Clean Growth. Retrieved from https://climatechoices.ca/wp-content/uploads/2020/09/11-WAYS-TO-MEASURE-CLEAN-GROWTH_report.pdf

infrastructure, and increased public health risks due to hotter weather and increased flooding and disease.

Dufferin County is acting on climate change. In 2018, Dufferin County became part of the Partners for Climate Protection (PCP) program, joining a national network of over 350 municipalities across Canada in a commitment to reducing local GHG emissions at both the corporate and community level. By working through the PCP Milestone Framework, Dufferin County will save money in municipal operations, lower energy costs for residents and businesses, and increase investments in the local economy

Council adoption of the Dufferin Climate Action Plan in March 2021 also represents a significant stride in climate action. Continued alignment and integration of climate planning within the larger development goals of Dufferin County is necessary to reduce greenhouse gas emissions and adapt to the impacts of climate change at both the global and local level. Embedding climate change in the Official Plan through the CSCCR Framework supports institutionalization of climate action to ensure long-term accountability and continuity.

1.3 Policy Context

Understanding the current policy framework through which Dufferin County operates is important to understand provincially mandated requirements that must be included in the Official Plan with respect to climate change. This section provides an overview of relevant provincial policy as well as an analysis of current policy at the County level and in local municipal plans. This helps to understand gaps and opportunities for the MCR.

1.3.1 Provincial Policy

1.3.1.1 The Planning Act, R.S.O. (1990)

The Planning Act, R.S.O. 1990, Chapter P.13 provides the fundamental land use planning framework in Ontario. It governs the overall content and direction of Official Plans through Section 16, addressing key policy themes including the social, economic, built and natural environment of the municipality, affordable housing, and other matters. An Official Plan may also include a description of how its objectives will be achieved.

In addition to policies for land use and development, the Official Plan must also include policies and procedures for informing and obtaining the view of the public in respect of planning instruments, such as zoning by-laws, plans of subdivision, and consent applications.

The Planning Act identifies 20 matters of provincial interest that municipal councils “shall have regard to” when carrying out their responsibilities under the Planning Act (Section 2). These matters address themes of environmental protection, cultural heritage conservation, health and safety, energy efficiency, transportation and infrastructure, accessibility, affordable housing, and meeting the needs of the community. The Official Plan is the primary tool for implementing these provincial interests in a manner that is appropriate and meaningful to the County.

The Planning Act authorizes planning authorities to implement a wide variety of planning tools to guide development and direct growth within their jurisdiction. Many of these instruments, including Community Improvement Plans, Community Planning Permit Systems and others, require enabling policies in the Official Plan.

1.3.1.2 Provincial Policy Statement, 2020

The Provincial Policy Statement (PPS) provides direction on key Provincial interests related to land use planning and development in Ontario. The PPS directs municipal official plans to establish land use patterns in settlement areas that support the efficient use of land and resources through appropriate density, a mix of uses and continued intensification. These planning objectives direct policy to support climate change through transit supportive densities, efficient infrastructure, minimized impacts to air quality, energy efficiency and natural heritage.

With a greater focus on climate change in 2020, PPS now includes the following new definition of “impacts of a changing climate”:

“Impacts of a changing climate: means the present and future consequences and opportunities from changes in weather patterns at local and regional levels including extreme weather events and increased climate variability.”(Section 6)

The term is referred to with respect to preparation of County and local climate impacts or minimization of negative impacts including:

- Managing and directing land use to achieve efficient and resilient development and land use patterns (Section 1.1.1.i).
- Land use patterns in settlement areas (Section 1.1.3.2.c-d).
- Effective management of infrastructure, including sewage, water, stormwater and green infrastructure (Sections 1.6.1, 1.6.6.1.b.2 and 1.6.6.7.c).
- Long-term economic prosperity (Section 1.7.1.I).
- Energy conservation and efficiency, improved air quality and enhanced land use and development patterns (Section 1.8.1).

- Water quality and quantity of water resource systems at the watershed level (Section 2.2.1.c).
- Protecting public health and safety (Section 3.1.3).

The policies in the PPS provide strong support for several of the principles of clean growth. Part IV clearly states that the province's long-term prosperity and well-being depend on planning for strong, sustainable, and resilient communities for people of all ages.

1.3.1.3 A Place to Grow: Growth Plan for the Greater Golden Horseshoe, 2020

A Place to Grow: Growth Plan for the Greater Golden Horseshoe (the Growth Plan) is a long-term play for the Greater Golden Horseshoe. Policies of the Growth Plan regarding how land is developed, resources are managed, and public dollars are invested is based on several principles. Identified in Section 1.2.1, this includes the following:

"Integrate climate change considerations into planning and managing growth such as planning for more resilient communities and infrastructure – that are adaptive to the impacts of a changing climate – and moving towards environmentally sustainable communities by incorporating approaches to reduce greenhouse gas emissions."

Conformity with Growth Plan policy supports the development of complete streets, protection of the natural environment and agricultural resources, and low carbon strategies for agriculture, transportation and buildings. The Growth Plan includes strong language that directs communities to adapt and mitigate against climate change. Specific policy direction is outlined in Section 4.2.10:

1. Upper- and single-tier municipalities will develop policies in their official plans to identify actions that will reduce greenhouse gas emissions and address climate change adaptation goals, aligned with other provincial plans and policies for environmental protection that will include:
 - a) Supporting the achievement of complete communities as well as minimum intensification and density targets in this Plan;
 - b) Reducing dependence on the automobile and supporting existing and planned transit and active transportation;
 - c) Assessing infrastructure risks and vulnerabilities and identifying actions and investments to address these challenges;
 - d) Undertaking stormwater management planning in a manner that assesses the impacts of extreme weather events and incorporates appropriate green infrastructure and low impact development;
 - e) Recognizing the importance of watershed planning for the protection of the quality and quantity of water and the identification and protection of hydrologic features and areas;

- f) Protecting the Natural Heritage System for the Growth Plan and water resource systems;
 - g) Promoting local food, food security, and soil health, and protecting the agricultural land base;
 - h) Providing direction that supports a culture of conservation in accordance with the policies in subsection 4.2.9; and
 - i) Any additional policies to reduce greenhouse gas emissions and build resilience, as appropriate, provided they do not conflict with this Plan.
- 2. In planning to reduce greenhouse gas emissions and address the impacts of climate change, municipalities are encouraged to:
 - a) Develop strategies to reduce greenhouse gas emissions and improve resilience through the identification of vulnerabilities to climate change, land-use planning, planning for infrastructure, including transit and energy, green infrastructure, and low impact development, and the conservation objectives in policy 4.2.9.1;
 - b) Develop greenhouse gas inventories for transportation, buildings, waste management and municipal operations; and
 - c) Establish municipal interim and long-term greenhouse gas emission reduction targets that support provincial targets and reflect consideration of the goal of low-carbon communities and monitor and report on progress made towards the achievement of these targets.

Overall, the Growth Plan identifies the crucial role that municipalities play in managing and reducing Ontario's GHG emissions and supporting adaptation to the changing climate to accommodate clean growth and achieve complete communities.

1.3.1.4 Greenbelt Plan, 2017 & Associated Plans

Greenbelt Plan (2017)

The Greenbelt Plan encompasses the Niagara Escarpment Plan (2017) and the Oak Ridges Moraine Conservation Plan (2017). These plans work within the framework of the Growth Plan for the Greater Golden Horseshoe to manage population and growth with the protection of farmland and natural systems. The Greenbelt is Ontario's insurance policy for health and prosperity in a rapidly growing region.

The Greenbelt in Dufferin County is home to significant natural, rural, and agricultural systems and resources that must be protected, such as the Oak Ridges Moraine, as well as agri-business, conservation areas, and recreational opportunities.

Municipalities play a primary role in protecting the Greenbelt in the long term by managing future population growth through Municipal Comprehensive Reviews and Official Plan Reviews.

Niagara Escarpment Plan (2017)

The Niagara Escarpment Plan is encompassed within the Greenbelt Plan and works to protect farmland and natural heritage while preventing urban sprawl. The Plan complements the Growth Plan to guide growth in a manner that balances development with the protection and enjoyment of the Niagara Escarpment and the resources it supports.

The Niagara Escarpment is an important protected feature that comprises a core part of the ecosystem through Dufferin County. Dufferin County lands that are within the Niagara Escarpment Plan Area fall under the jurisdiction of the Niagara Escarpment Commission with regards to land use. This is a statutory body that operates separately from the provincial government and is mandated to protect and preserve development. Dufferin County often receives requests for comments regarding development permit applications in the Town of Mono and the Township of Mulmur. Development Permits provide opportunity for the County to consider development with a specific focus on the Escarpment landscape and environment.

Oak Ridges Moraine Conservation Plan (2017)

The purpose of the Oak Ridges Moraine Conservation Plan is to provide resource management and land use planning direction with respect to the Oak Ridges Moraine and its ecological and hydrological features and functions.

A portion of lands within Dufferin County, specifically the Town of Mono, are located within the Oak Ridges Moraine and must therefore be planned for to protect the unique conservation of environmental, geological and hydrological features that make its ecosystem vital to south-central Ontario, including:

- Clean and abundant water resources.
- Healthy and diverse plant and animal habitats.
- An attractive and distinct landscape.
- Prime agricultural areas.
- Sand and gravel resources close to market.

Generally, the Oak Ridges Moraine Conservation Plan identifies key natural heritage features and land use designations that permit various degrees of development. The land within Dufferin County that overlays the Oak Ridges Moraine is designated three different land uses according to the Oak Ridges Moraine Conservation Plan, including:

- Natural Core Areas – Protect lands with greatest concentrations of key natural heritage features which are critical to maintaining the integrity of the Moraine as a whole.
- Natural Linkage Area – Protect critical natural and open space linkages.

- Countryside Area – Provide an agricultural and rural transition and buffer between the Natural Core Areas and Natural Linkage Areas.

These three land use designations permit varying levels of development and require consideration when facilitating land use planning to protect the Moraine's ecological and hydrological features and functions.

1.3.1.5 Made-in-Ontario Environment Plan, 2018

The Made-in-Ontario Environment Plan (2018) guides provincial growth with respect to key focus areas including clean air, clean water, climate adaptation and mitigation, pollution prevention, private sector investment, energy conservation, waste reduction, and land conservation.

The plan recognizes that no single approach or solution will address environmental concerns or climate change. However, some proposed actions that have implications for municipal planning processes including:

- Reviewing land use planning policies and laws to update policy direction on climate resilience.
- Modernizing the Building Code to better equip homes and buildings to withstand extreme weather events, and to support the adoption of cost-effective energy efficiency measures.
- Reviewing the Municipal Disaster Recovery Assistance program to encourage municipalities to incorporate climate resilience improvements when repairing or replacing damaged infrastructure after natural disasters.
- Launching a provincial Carbon Trust to encourage private investment in clean technology, committing to funding of \$400 million for chosen projects over four years.
- Updating policies related to municipal wastewater and stormwater to make them easier to understand.

Action areas identified in the plan highlight provincial support for preserving and protecting the environment for future generations. The plan will be updated every four years to align with Ontario's climate change objectives. Next steps in implementation of the plan that may impact Dufferin County include but are not limited to the following:

- Continued work with the public, municipalities, First Nations, environmental groups and industry to drive strategies to better protect air quality and address unique challenges in communities by creating tailored solutions.
- Invest in several new and innovative wastewater and stormwater programs.
- Consult on a list of proposed projects and the regulation that sets out the types of projects that would be subject to the streamlined environmental assessment provisions

of the amended Environmental Assessment Act, beginning first with municipal infrastructure.

1.3.1.6 Conservation Authorities Act

Conservation Authorities are watershed-based resource management agencies that play an important role in land use planning and development processes. They are empowered by the Conservation Authorities Act (1990) to manage watersheds and flooding, protect source water and provide various environmental education programs.

Conservation Authorities ensure that development and associated activities that may impact creeks, streams or wetlands is regulated. They often function as technical advisors for municipalities. This involves the application of technical expertise to advise and guide municipalities through a range of activities, such as natural heritage systems planning or the protection of natural features.

Collaborative work between conservation authorities, Indigenous communities, and various levels of government remains imperative to facilitate a balanced approach to development and natural heritage preservation.

1.3.1.7 Ontario Building Code

The Ontario Building Code (OBC) is a regulation under the Building Code Act (1992) which sets out minimum administrative and technical requirements for new construction, renovation, and change of use of buildings. New editions or major amendments to Ontario's Building Code are generally released every five years to coincide with updates to the National Construction Codes. It is expected that the next edition of the OBC will be in effect at the end of 2023.

Currently, the OBC defines the level of performance buildings are required to meet through the Supplementary Standard SB-10, with the goal of increasing efficiency over time. For context, in 2012 the SB-10 became 15 per cent more efficient than the 2006 version, and in 2017 became 13 per cent more efficient than 2012.

Changes to the current OBC, which came into effect January 1st, 2019, have been devised to make new houses and large buildings ready to be net-zero in the future. Relative to clean growth and low carbon communities, three of the most significant changes to the OBC include:

- Adding a loading requirement to roof designs for all new large buildings to future proof for solar technologies.
- Requiring conduit on all new houses and large buildings to allow for the installation of solar photovoltaics or a solar hot water system.

Requiring all apartment buildings and condominiums to incorporate a heat or energy recovering unit as part of their ventilation systems.

1.3.1.8 Federal Canadian Net-Zero Emissions Accountability Act

The *Canadian Net-Zero Emissions Accountability Act* (the *Act*) received Royal Assent in June 2021. The *Act* is grounded in best available science and economic analysis, which indicates that getting communities to net-zero emissions within the next 30 years is essential to avert the worst impacts of climate change.

The *Act* enshrines in legislation the Government of Canada's commitment to achieve net-zero emissions from buildings and transportation by or before 2050. The *Act* establishes a legally binding process to set five-year national emissions-reduction targets for 2030, 2035, 2040, and 2045, and requires an emissions reduction plan, progress report, and assessment report for each target.

1.3.2 Upper-Tier Municipal Plans and Policy

1.3.2.1 Dufferin County Official Plan (Consolidated July 2017)

Dufferin County's existing Official Plan was approved in 2015 as a 20-year plan providing growth management and land use policy direction for Dufferin's eight local municipalities. The integration of climate change into the plan is largely discretionary. However, there are targeted opportunities for more specific policy direction and measurable outcomes in all areas of the plan.

1.3.2.2 Dufferin Climate Action Plan (2021)

The Dufferin Climate Action Plan is a strategy for the County, local municipalities, and community members to reduce greenhouse gas emissions and build climate resiliency over the next 30 years. Adopted in March 2021, the Plan was created through intensive research and community engagement and is built upon two core frameworks: low-carbon resilience, and equity and justice.

The Plan features 34 key actions under 6 focus areas identified in Figure 1.

Figure 1 - Dufferin Climate Action Plan Focus Areas



With the adoption of the Plan, the County moves through Milestone 3 of the Partner's for Climate Protection Program, as part of a network of over 350 municipalities across Canada. Moving ahead to implementation, the County will establish regular five-year Plan updates in addition to an annual report card to reflect on progress, next steps, and ensure that climate planning continues to align with community priorities.

The Plan recognizes the role of the Official Plan in recognizing and acting on climate change. The Plan includes the following actions relative to the Official Plan that will be reiterated and incorporated into the CSCCR Framework:

- Embed GDS in the Official Plan, especially as an implementation tool to achieve goals concerning sustainability, health, growth, and infrastructure management.
- Encourage the electrification of public transit vehicles and fleet vehicles.
- Plan for complete communities.
- Integration of green infrastructure and natural assets.

1.3.2.3 Dufferin County Energy Conservation and Demand Management Plan (2019)

Updated for the period of 2019-2023, the Energy Conservation and Demand Management Plan expands efforts to improve energy management objectives to include the reduction of energy consumption in public facilities, social housing units, and by fleet assets by targeted measures within the next three to five years. Energy reporting required through the plan will assist Dufferin in understanding how energy is used, where energy conservation opportunities exist, and how the County performs in relation to the plan's goals and objectives.

1.3.2.4 Dufferin County Community Risk Profile (2018)

As weather events grow in frequency and intensity, many municipalities have initiated studies to understand their vulnerabilities and risk. Understanding a risk profile is instrumental in right-focusing resource deployment. One common outcome of a vulnerability and risk assessment is a resiliency plan.

Resiliency planning recognizes that the interplay between shocks and stressors can have deleterious effects on the health and wellbeing of human and natural systems. Shocks, or extreme weather events, can amplify existing societal, economic, and environmental stressors, including barriers to education, wealth inequality, and degraded environment and ecology. This relationship often results in vulnerable populations experiencing the impacts of shock events disproportionately.

Having already completed a Community Risk Profile, the County is well situated to develop associated resiliency strategies. The Profile identifies hazards defined by their relative risk impact (high, medium, and low).

1.3.3 Lower-Tier Municipal Plans and Policy

1.3.3.1 Town of Orangeville Climate Change Adaptation Plan (In Progress) and Policy

The Town of Orangeville is in the process of developing a Climate Change Adaptation Plan. Scheduled for approval in 2021, the plan was initiated through the Town's Climate Change Adaptation Policy, which guides the Town's commitment to climate change adaptation by establishing goals and creating a plan of action to achieve the goals. Through the policy, the Town commits to integrating climate change adaptation into existing and future Town plans, procedures and operations.

The Town will use the International Council for Local Environmental Initiatives (ICLEI) Canada Building Adaptive and Resilient Communities (BARC) milestone framework for developing the Climate Change Adaptation Plan.

1.3.3.2 Town of Orangeville Sustainable Neighbourhood Action Plan (2019)

The Town of Orangeville (Orangeville) implemented the Sustainable Neighbourhood Action Plan (SNAP) in 2019 to ensure Orangeville is a thriving, green, healthy, and connected community. The SNAP outlines a vision, priority goals, strategies, and actions to guide the Town towards a sustainable future in areas such as emissions reduction, protection of the natural environment, and alternative transportation options.

Orangeville's SNAP can provide Dufferin County with direction towards urban based actions for greenhouse gas reduction strategies that are tied to active transportation, complete streets, and waste management. With respect to land use planning, the SNAP states that the Town will manage and direct land use that creates healthy, livable, and safe communities.

As the largest urban centre in Dufferin County, it is important to consider the rate of growth absorbed by Orangeville and various plans and strategies in place to balance clean growth and the natural environment. Strategies identified in the SNAP to protect and enhance the natural environment include:

- Protect, improve or restore the quality and quantity of water resources.
- Continue to provide access to safe drinking water that meets the needs of the community.
- Enhance the culture of water conservation and efficiency.
- Protect and enhance natural heritage and the urban forest.

1.3.3.3 Town of Orangeville Corporate Energy Conservation & Demand Management Plan (2014-2019)

The Corporate Energy Conservation & Demand Management Plan established a plan for the Town of Orangeville to reduce greenhouse gas emissions and energy consumption from 2012-2019. The plan established a targeted goal to reduce energy consumption by 4 per cent over the base year of 2012 by 2019.

To achieve this goal, the plan established four pillars including Pillar A: Training, Capacity Development and Awareness. In addition to consistent themes and patterns around greenhouse gas and carbon emission reduction, the plan identifies the need to build capacity among staff in order to achieve measured targets.

1.3.3.4 Town of Mulmur Community Energy Plan (2020)

The Township of Mulmur (Mulmur) is a unique rural community located in the north-east corner of Dufferin County. Mulmur is a hub for ecological activity, located on the Ontario Greenbelt with both the Niagara Escarpment and the Nottawasaga watershed overlapping its jurisdictional boundaries. The purpose of the Community Energy Plan is to develop a set of guidelines that will help the Mulmur community and its municipal government:

- Improve energy efficiency.
- Reduce energy consumption and greenhouse gas emissions.
- Study the impact of future growth on energy needs.
- Foster renewable energy production and economic development.

The Community Energy Plan will be used as a reference tool to track and compare Mulmur's energy consumption and emissions in future years and set goals for reduction of greenhouse gas (GHG) emissions with the overall goal of moving towards a more sustainable energy system while reducing climate changing GHG emissions.

The Community Energy Plan demonstrates that the Town of Mulmur is focused on mitigating against the impacts of climate change by addressing community-wide sources of GHG emissions and improving energy efficiency through a set of recommended actions to advance the Plan's general and specific goals.

1.4 Review of Best Practices

1.4.1 Review of Municipal Best Practices

This section highlights best practices reviewed to support policy formulation for Dufferin County. To further focus the scan of best practices for targeted subject areas, the review considered three major strategic directions for the County:

- Resiliency
- GHG Reduction
- Energy

The review of best practices considers municipalities across the province and within the outlying Greater Toronto Area that address climate change through land use planning. The comprehensive review of best practices is provided in Appendix D and Appendix E. This includes:

- York Region – Draft Climate Change Action Plan (2020)
- Peel Region – Climate Change Master Plan (2019)

- Durham Region – Durham Community Climate Adaptation Plan (2016)
- Prince Edward County – Official Plan (2021)
- City of Guelph – Official Plan (July 2021 Consolidation)
- City of Richmond Hill – Official Plan (August 2021 Consolidation)
- Town of Halton Hills – Official Plan (May 2019 Consolidation)
- City of Ottawa – Official Plan (2021)
- Town of Caledon – Community Climate Action Plan (2021)

Key takeaways from the best practice review are presented according to four priority areas for Dufferin County to support the development of a land use planning framework with long-term strategic goals that reduce overall GHG emissions as well as community vulnerabilities to climate change. This reflects an integrated approach to mitigate and adapt to climate change risks. Table 1 presents the priority areas and key takeaways for Dufferin County.

Table 1 – Best practice review key takeaways by priority area for Dufferin County

Priority Area	Key Takeaways from Best Practice Review
Water	<ul style="list-style-type: none"> • Conduct a corporate risk scan to assess the vulnerability of water and wastewater assets. • Direct development away from natural heritage features that provide significant ecological and hydrological functions. • Encourage or require the use of low impact development, including natural features, where appropriate. • Recognize and use stormwater as an asset rather than waste. • Coordinate land use planning with conservation authorities to proactively manage watersheds and to address flooding. • Identify synergies with other water management systems and strategies to optimize and conserve water resources.
Community	<ul style="list-style-type: none"> • Conduct a corporate risk scan to assess the vulnerability of corporate and community assets and establish a path forward to ensure assets are resilient to extreme weather events and climate conditions. • Conduct resilience assessments of existing buildings and design new buildings in a manner that will promote complete communities. • Accelerate upgrades or redevelopment of civic buildings and infrastructure critical to community response and recovery.

	<ul style="list-style-type: none"> • Direction to map and design a resilient lifeline infrastructure network. • Work with vulnerable communities to increase resilience to climate change impacts.
Transportation	<ul style="list-style-type: none"> • Direction to “green” transportation fleets. • Implement transportation related GHG emission targets. • Increase use of more sustainable modes of transportation that are safe and accessible. • Conduct inventory and asset measures to inform immediate and long-term rehabilitation and capital improvements. • Promote land use patterns that encourage the use of active transportation. • Ensure equitable access to safe active and public transportation options.
Natural Environment	<ul style="list-style-type: none"> • Collaborate with conservation authorities to protect and rehabilitate the natural environment. • Develop biodiversity strategies that include forest management plans, as well as considerations to reduce risk and respond to the impacts of climate change, such as invasive species, flooding, and drier, hotter summers. • Direction to protect existing trees through incentives and partnerships and to implement tree canopy targets/strategies. • Recognize natural assets as important to infrastructure system and implement strategy to incorporate and protect assets.

- ³ Aligns and advances the City of Toronto’s overarching environmental priorities as identified in the City’s Official Plan, including⁴:
- Improve air quality and reduce the urban heat island effect.
- Reduce energy use and greenhouse gas emissions from new buildings while making buildings more resilient to power disruptions and encourage the use of renewable and district energy.
- Reduce stormwater runoff and potable water consumption.

³ City of Toronto. (2021). Toronto Green Standard, Version 4. Retrieved from <https://www.toronto.ca/city-government/planning-development/official-plan-guidelines/toronto-green-standard/>

⁴ City of Toronto. (2021). Toronto Green Standard: Overview. Retrieved from <https://www.toronto.ca/city-government/planning-development/official-plan-guidelines/toronto-green-standard/toronto-green-standard-overview/>

- Protect and enhance ecological functions, integrate landscapes and habitats, and decrease building-related bird collisions.
- Divert household and construction waste from going to landfill sites.

Several municipalities in Ontario have green development standards in place, including East Gwillimbury, Stouffville, Whitby, Pickering, Brampton, Vaughan, and Richmond Hill. While the specific requirements vary, these standards share a common kit of parts that includes:

- Enabling policies in their respective Official Plans.
- Mandatory and voluntary targets and requirements organized in compliance checklists.
- Applicant resources, including user guidebooks, glossaries, and brochures.
- Incentives, including financial and non-financial.

As a first step to creating green development standards, Official Plan policies must be established to enable their creation. By way of example, updates made to the Town of Whitby's Official Plan included the following:

The Municipality may prepare comprehensive sustainable development standards, guidelines, and by-laws, in consultation with the community and other stakeholders. These standards, guidelines, and by-laws are intended to support sustainable site design for development and redevelopment on public and private property...

And,

The Municipality will prepare sustainability performance checklists as part of sustainable development standards. Such checklists shall be used in the development review process to assess the level at which new development and redevelopment achieve the sustainable development standards and other sustainability objectives.

Creating green development standards is established as one of five priority actions in the Dufferin Climate Action Plan (2021). To advance this priority action, the Dufferin County Official Plan should be amended to include similar language to that presented above.

In addition to enabling policies, we suggest including a description of the type of the sustainability features that should be addressed by the green development standard in the Official Plan, including:

- Zero emission buildings
- Embodied carbon
- Electric vehicle infrastructure
- Water conservation

- Green infrastructure
- Waste reduction
- On-site renewable energy generation
- Natural heritage preservation and enhancement
- Active transportation
- Climate change adaptation
- Resilience by building locations

Finally, it is important to incorporate policy language that requires all new development address the green development standards through the completion of related documentation (typically a checklist and sustainability plan). For example, policy 2.4.3 in the Town of East Gwillimbury's Official Plan states the following:

...all development address the minimum standards necessary to satisfy the applicable elements outlined in the Thinking Green Development Standards to the satisfaction of the Town. To demonstrate compliance, applicants are expected to fill out and submit the Application Information Form and the Pre-Consultation TGDS Checklist as part of the Pre-Consultation Application Package, and fill out the Application Information Form and TGDS Assessment during application preparation.

An accompanying Sustainability Report is required by some municipalities, including Pickering and Whitchurch-Stouffville. A Sustainability Report provides an overview of the applicant's sustainability ambitions for a site, including a summary of the project's sustainability features, which performance tier or score the applicant is striving to achieve, how the development meets the requirements to satisfy the tier/achieve the stated score, and any innovative approaches and/or technologies that are being explored.

For a full overview of the green development standards reviewed, please see Appendix C.

1.4.1.1 Eco Footprinting

An ecological footprint (ecofootprint) is measured in terms of land area (hectares), so it can be compared to the available productive land globally to determine if the impacts of the region are beyond its fair share. It is the only metric that measures how much nature we have and how much nature we use. It measures:

- How fast nature can absorb waste and generate new resources.
- How much nature a given population needs to support their consumption, or lifestyles.

When balanced, this is referred to as living one planet lifestyles. If demand exceeds supply, it is called an ecological deficit, or overshoot.

Using Federation of Canadian Municipalities (FCM) funding, Urban Equation (working with Cora Hallsworth Consulting) completed an ecological footprint for the City of Guelph as part of project work on a local development project. The project's footprint was created using a bottom-up approach, in other words using local data to create a Consumption Based Emissions Inventory (CBEI). A CBEI combines carbon dioxide emission impacts with land use impacts. See the Baker District for more information <http://urbanequation.ca/projects/project/the-baker-district/>

Consumption based emissions includes those from the production and use of goods and services consumed in a region regardless of where those emissions occur globally. CBEI results are a better indicator of our individual impact and can demonstrate the scale to which we are off-loading emissions onto other jurisdictions.

The results of an ecological footprint can be employed to help right-focus policies and strategies. Generally, food, buildings, consumables and waste, transportation, and water have the greatest planetary impact. The proportional impact of each of these, however, changes by jurisdiction (in the case of Guelph, food and buildings had the greatest impact). Armed with this data, a local government can feel secure establishing policy direction, strategies, or plans related to building operating energy, food procurement/lifestyles, food waste and circular economies, etc. In other words, the empirical results of the ecofootprint can be used to defend and define a municipality's approach to sustainability more broadly.

Given the County's existing interest in carbon budgeting, there is a path whereby policy direction could be embedded now to allow for a future ecofootprinting exercise. With an understanding of the County's planetary impact, policies, strategies, and plans can be fine-tuned to ensure resources are allocated appropriately, and that the right stakeholders are engaged at the right time.

1.4.1.2 Circular Economies

The Ellen MacArthur Foundation, a global organization leading the transition to a circular economy, describes a circular economy as follows:

A systems solution framework that tackles global challenges like climate change, biodiversity loss, waste, and pollution. It is based on three principles, driven by design: eliminate waste and pollution, circulate products and materials (at their highest value), and regenerate nature.

It is underpinned by a transition to renewable energy and materials. Transitioning to a circular economy entails decoupling economic activity from the consumption of finite resources. This represents a systemic shift that builds long-term resilience, generates business and

economic opportunities, and provides environmental and societal benefits.

The Government of Canada recognizes the circular economy as a “different way of doing business”.⁵ In a circular economy, nothing is waste. The circular economy retains and recovers as much value as possible from resources by reusing, repairing, refurbishing, remanufacturing, repurposing, or recycling products and materials. **Error! Reference source not found.** illustrates a system diagram, which demonstrates the continuous flow of technical and biological materials through a value circle.

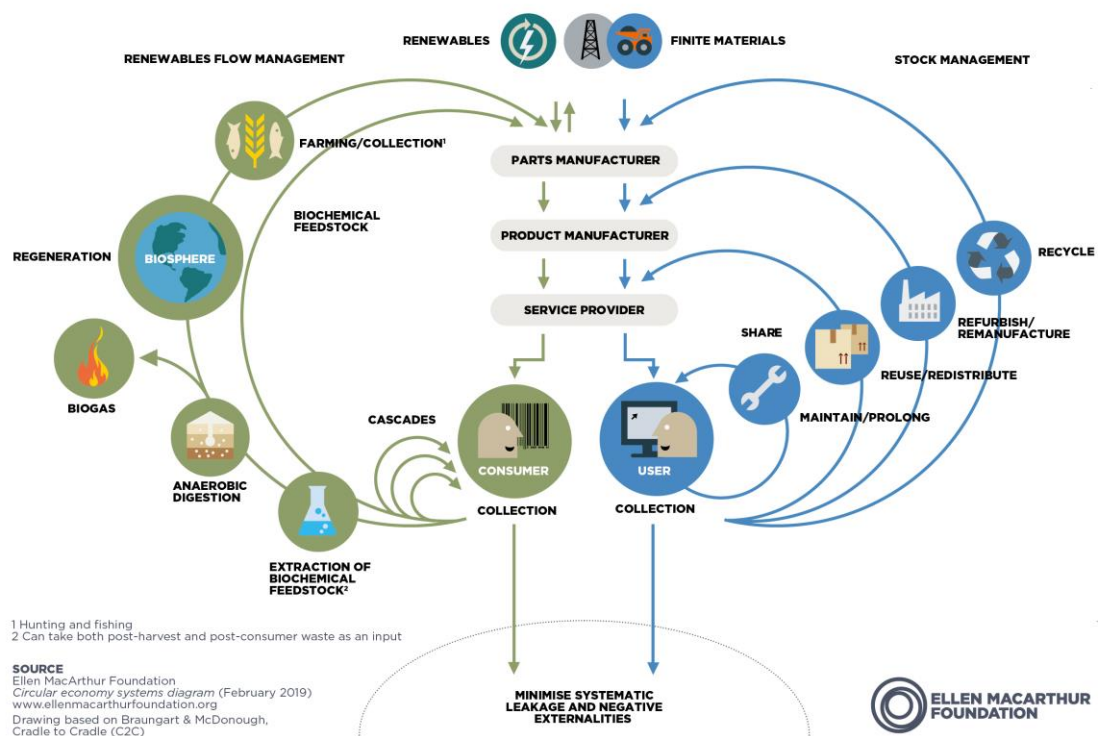


Figure 1 - Circular economy system diagram

Accelerating the transition to a circular economy is recognized as an opportunity for new jobs and environmental sustainability. As the Canadian economy rebounds from the COVID-19 downturn, the circular economy provides a framework for achieving climate action commitments and nurturing a prosperous and equitable future for residents and businesses.

⁵ Government of Canada. (2021). Circular Economy. Retrieved from <https://www.canada.ca/en/services/environment/conservation/sustainability/circular-economy.html>

To provide local governments in Canada with the knowledge and tools needed to accelerate circular economy solutions, the National Zero Waste Council, FCM, the Recycling Council of Alberta and RECYC-QUEBEC developed the Canadian Circular Cities & Regions Initiative (CCRI).

The CCRI is a one-year pilot program that will function as a venue for community members to learn and share best practices for implementing circular economy strategies and policies. Through peer-to-peer exchange and direct interaction with subject matter experts, local governments will be able to develop their own unique circular economy roadmaps for their communities.

In Ontario, the provincial government affirmed its commitment to the circular transition through the Waste-Free Ontario Act in 2016. This enacted two additional acts, the Resource Recovery and Circular Economy Act, 2016, and the Waste Diversion Transition Act, 2016. This legislation is accompanied by Ontario's Strategy for a Waste-Free Ontario: Building the Circular Economy, which lays out Ontario's vision for a circular economy and goal of a zero-waste Ontario with zero greenhouse gas emissions from the waste sector. This strategy outlines the formative actions the province will take to achieve the identified goals.

Local municipalities are crucial to a circular economy. In the Circular Economy in Cities: Project Guide by the Ellen MacArthur Foundation, communities that support a transition to a circular economy embed the following principles:

- Greater proximity between where people live, work and play.
- Traffic congestion is reduced as shared transit and active forms of transportation increases.
- Valuable land previously dedicated to roads and cars are feed for green spaces, commerce, offices, houses, and recreation.
- The layout and design of communities changes the way materials and products move.
- Rather than materials being sent to landfill or incineration, a new system of resource management makes the return, sorting, and reuse of products possible.

Examples of community programs and policy innovations across Canada that support the circular economy are highlighted in Table 2.

Table 2 - Examples of Circular Programs and Policy Innovations

Description	Key takeaways
Zero Waste Strategies and Targets Oxford County Zero Waste Plan	

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| <ul style="list-style-type: none"> • The Oxford County Zero Waste Plan⁶ was first established in 2016 in support of the County's commitment to achieving zero waste. • The plan was updated in 2018 as a policy and reporting document modeled from the 100 RE Building Blocks plan structure to provide guidance for policy makers, local governments and residents as an interactive toolbox for implementation and monitoring.⁷ • The plan sets the County on a long-term path to transition towards a circular economy where all resource inputs can be recycled or recovered for further use in some form. • Chapter 4 of the plan evaluates the scope of measures implemented to improve waste reduction and resource recovery. | <ul style="list-style-type: none"> • Build a culture of conservation by entrenching waste recovery and reduction into corporate practices. • Established targets supports measurable action that can be publicly reported on. |
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Clothing Diversion Strategies

City of Markham Textile Recycling Program

⁶ Oxford County. (2018). Zero Waste Plan. Retrieved from http://www.oxfordcounty.ca/Portals/15/Documents/Zero%20Waste/Reports/OC_Zero_Waste_Plan_20180627.pdf

⁷ Boselli, F., & Leidreiter, A. (2017). 100% RE Building Blocks: A practical toolkit for a sustainable transition to 100% Renewable Energy. Retrieved from <http://www.go100re.net/wp-content/uploads/2017/05/100RE-Building-Blocks.pdf>

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| <ul style="list-style-type: none"> • Waste composition audits conducted in 2012 by York Region found that textiles account for up to 5 to 7 percent of waste destined for disposal. In the City of Markham, that represented approximately 4,500 tonnes of textile waste sent for disposal per year.⁸ • With support and commitment of City of Markham Council and a matching grant of \$67,000 from the Federation of Canadian Municipalities (FCM), Markham launched its Textile Recycling Program in 2016. • Markham-owned and branded SMART bins were in place at City facilities by the end of year. • Partnerships with The Salvation Army, Diabetes Canada and STEPS for Recovery, each with extensive experience in the collection and processing of textiles, allowed Markham to expand both collection capacity and the number of planned collection points across the City. • Each organization has provided standardized, City-branded textile donation containers for placement at multiple civic facility locations, including Markham fire stations, community centers, and arenas. Select commercial developments, and over 60 multi-residential properties also host textile donation containers. • In April 2017, Markham becomes the first municipality in North America to support textile diversion by banning textile waste from curbside collection service. • Since the 2015 launch, over 120 textile donation bins had been distributed and approximately 9 million pounds of textiles have been diverted to reuse and recycling activities and away from landfill, saving residents thousands of dollars in avoided garbage collection costs and landfill disposal fees. | <ul style="list-style-type: none"> • Demonstrates it is possible to balance social, environmental, fiscal responsibility and meet the desires of residents to recycle textile waste. • Political support, funding, and responsible community partners are key to success. • Environmental approaches increase resident confidence in municipal public works initiatives and boosts civic pride. |
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Single-use Item Reduction Strategies

⁸ City of Markham. (nd). City of Markham Textile Recycling Program. Retrieved from <https://rp.ca/wp-content/uploads/IPAC-Awards-Backgrounder-Markham.pdf>

City of Barrie Single-Use Plastics Ban	
<ul style="list-style-type: none"> In 2021, the City of Barrie Council adopted a motion by City staff to develop a program to encourage local businesses and event organizers to discontinue the provision of single-use plastics at their establishments or events.⁹ Through the same motion, the City adopted a voluntary ban of single-use plastics at all City facilities and City special events. 	<ul style="list-style-type: none"> Single-use plastic initiatives at the municipal level support federal and provincial bans on similar materials. Supports opportunities to leverage local alternative material businesses. Lead by example by limiting and/or restricting single-use plastics at municipal events.
Repair Hubs	
Repair Café Toronto	
<ul style="list-style-type: none"> Repair Café Toronto¹⁰ is a grassroots, volunteer group that organizes events where neighbours help neighbours learn how to repair. Events are hosted by local community centres, branches of the Toronto Public Library and other community-based organizations. The Repair Café challenges the 'take-make-waste' mindset by encouraging individuals to appreciate the value of possessions. 	<ul style="list-style-type: none"> Repair hubs/cafes offer an opportunity to formalize the existing non-commercial repair ecosystem. Repair hubs/cafes offer learning experiences for residents to learn the value of repair over 'newness'.
Tool Lending Libraries and Sharing Centres	
York Region Lendery	

⁹ Bruton, B. (24 Feb 2021). Voluntary ban on single-use plastics gets OK from Barrie councillors. *Barrie Today*. Retrieved from <https://www.barrietoday.com/local-news/voluntary-ban-on-single-use-plastics-gets-ok-from-barrie-councillors-3454692>

¹⁰ Repair Café Toronto. (2021). Retrieved from <https://repaircafetoronto.ca/>

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| <ul style="list-style-type: none"> • York Region's Integrated Waste Management Master Plan (2013) directs the Region to support and further explore the significant waste reduction opportunities through reuse activities. • Key initiatives identified by the Region include swapping and selling events, sharing tools and other goods, and extending the life of gently used clothing. • Developed from the Integrated Waste Management Master Plan, the Lendery¹¹ is a library where residents can sign out and borrow items in the same way that they would sign out and borrow books. • A membership to the Lendery entitles residents to borrow a wide range of items including camping equipment, party supplies, small kitchen appliances, sports equipment, and tools. • The local municipalities of Newmarket and Markham host Lenderies from their public libraries in support of the Region's initiative. | <ul style="list-style-type: none"> • Offers no to low cost access to infrequently used items. • Reduces the resources used by individual consumers and the number of items sent to landfill through sharing. • Some lenderies have membership fees which provide inclusive employment opportunities within communities. |
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Circular Procurement Frameworks

City of Windsor Sustainable Purchasing Guide

¹¹ Newmarket Public Library. (2021). York Region Lendery. Retrieved from <https://www.newmarketpl.ca/en/collections/york-region-lendery.aspx>

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| <ul style="list-style-type: none"> • The City of Windsor's Sustainable Purchasing Guide¹² provides guidelines to staff that ensure purchase of goods and services that are environmental friendly. • This includes low toxicity, reduced packaging, life cycle considerations, and reduction of unnecessary/short-term purchases. • The guide provides staff with guidelines on things to consider within specifications for goods and services procured under key purchasing categories such as general building maintenance, furniture and office systems, construction, renovation and demolition, parks recreation amenities, etc. • Broadly, the specifications encourage staff to consider procuring goods and services with: highest recycled content including environmentally friendly packaging, and preference for products that have been environmentally certified by organizations such as ECOLOGO, Green Seal or GREENGUARD; low or no fumes and preferably no volatile organic compounds; product longevity including signs of durable construction and low maintenance; consider the reuse of existing furniture to avoid final disposal and purchasing new furniture from companies that demonstrate environmental responsibility in their manufacturing processes, etc. | <ul style="list-style-type: none"> • Embeds circular principles into the core of corporate strategy. • Provides overview of intervention points the municipality can use to make purchasing more circular. • Facilitates engagement with suppliers in conversation and collaborative circular partnerships. |
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Circular Food Economy Strategies

Our Food Future: Guelph-Wellington

¹² City of Windsor. (2015). Sustainable Purchasing Guide. Retrieved from https://www.citywindsor.ca/residents/environment/Documents/City%20of%20Windsor%20Environmental%20Purchasing%20Guide_FINAL.pdf

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| <ul style="list-style-type: none"> • As successful winners of Infrastructure Canada's 2019 Smart Cities Challenge, the City of Guelph and Wellington County have launched a joint initiative to become Canada's first circular food economy.¹³ • Guelph-Wellington has established three bold goals: 50% increase in access to affordable, nutritious food; 50 new circular food businesses, collaborations and social enterprises; and 50% increase in economic benefit by unlocking the value of waste. • Our Food Future has initiated several initiatives in support of the three broad goals, including a waste flow study, local food-based challenges, and a circular business accelerator. | <ul style="list-style-type: none"> • Localized approaches to circular economies can leverage existing local strengths, including businesses, markets, and talent. • Funding and partnerships from all levels of government can kick-start initiatives. |
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1.4.1.3 Equity, Human Health & Climate Change

The impacts of climate change will test the resilience of all populations. However, climate change shocks and stressors do not affect all groups in our communities equally. Climate change disproportionately impacts vulnerable and socially and/or economically marginalized populations.¹⁴ Those that have been affected by systemic vulnerabilities and inequalities (including racialized communities, lower income communities, immigrant and refugee communities, people with disabilities and/or older adults) are often at greater risk from the impacts of climate change and have the fewest resources to respond.

Being a part of a group that has been affected by systemic inequalities should not translate to less resilience to climate change. Issues of climate change, environmental and physical health, and environmental and social justice are important and complex issues that cannot be addressed separately. There is a wide spectrum of interventions available to reduce the magnitude of climate change and its impact, including policy change, mitigation and adaptation efforts, climate education, and other interventions.

As an example, the City of Ottawa's new Official Plan (approved by Council in November 2021)¹⁵ establishes "Equity" as an overarching lens through which Official Plan policy was

¹³ Our Food Future. (2021). Our Food Future: Guelph-Wellington. Retrieved from <https://foodfuture.ca/our-food-future>

¹⁴ American Public Health Association. (2021). Climate Changes Health: Vulnerable Populations. Retrieved from <https://www.apha.org/topics-and-issues/climate-change/vulnerable-populations>

¹⁵ City of Ottawa. (2021). The New Official Plan. Retrieved from <https://engage.ottawa.ca/the-new-official-plan>

developed and will be implemented. Notably, the Official Plan introduces the Ottawa Neighbourhood Equity Index, which is defined as:

The Ottawa Neighbourhood Equity Index is a tool to help residents, planners, key stakeholders and decision-makers identify disparities between neighbourhoods and tackle them in a systematic and organized way. For the purpose of the planning process, the tool provides a composite equity index score and geographically defines vulnerable areas as having 'strong equity concerns', where community-oriented projects and physical improvements can be identified.

The concept of equity and community health/wellbeing appears frequently throughout the new Official Plan. Policies that bring together equity and climate change include but are not limited to:

- **Ensure new mobility solutions facilitate seamless, multi-modal travel** – New mobility options will be the goals of the Official Plan and consistent with the City's efforts to establish walkable, 15-minute neighbourhoods and to improve equity and inclusion for all residents and visitors.
- **Provide residents with equitable access to an urban forest canopy (Section 4.8.2)** – The City will pursue an urban forest canopy cover target of 40 percent with equity as a guiding principle. To support this target, tree-planting and stewardship programs will prioritize the provision of ecosystem services, especially in support of social equity and healthy
- **Provide residents with equitable access to an inclusive greenspace network (Section 4.8.3)**
- **Establish direction for the creation of Community Improvement Plans (Section 11.3)** – The Official Plan describes Community Improvement Plans (CIPs) as important tools to address needs in neighbourhoods identified as having strong equity concerns in the Ottawa Neighbourhood Equity Index. CIPs can also be used to fulfill the City's climate mitigation and adaptation goals and targets.

The Dufferin County Diversity, Equity and Inclusion Community Advisory Committee is well suited to advise the County Council to ensure that the County applies a diversity, equity, and inclusion lens to its policies, services, and programs, including those that are related to climate change. An equity and justice lens was applied when developing the CAP supporting this approach for implementation.

1.4.2 Integrating Climate Change into Official Plans

Official Plans are the primary driving force for municipalities to establish policy direction and respond to climate change at the local level. Many municipalities have been trying to

understand how to better integrate climate change into municipal decision-making and service delivery.

In 2019, the Clean Air Partnership conducted consultation with municipal staff to identify varying perspectives regarding the integration of climate policy goals across municipal departments. To further support the CSCCR, Table 3 summarizes key takeaways from the CAP review to provide high-level guidance for the role of municipal policy in providing leadership on climate change.

Table 3 - Key Takeaways for Integrating Climate Change into the Official Plan

Key Takeaway	Description	Recommended Action(s)
Include locally specific policy language	<ul style="list-style-type: none"> The Official Plan should identify why climate action is important to the municipality and what climate change means to the municipality. 	<ul style="list-style-type: none"> Dufferin County is in a unique position to advance urban and rural climate change priorities. Policy recommendations presented in the CSCCR Framework are organized based on local priorities for the County as well as actions targeted towards the County's rural and urban communities
Integrating adaptation and mitigation actions	<ul style="list-style-type: none"> Addressing climate change calls for two approaches: mitigation and adaptation. Integrating efforts to mitigate and adapt is the most effective way to manage climate change risks. The IPCC has suggested that this approach is an efficient way of making communities more resilient over the long term by building both types of action into strategies, plans and policies. 	<ul style="list-style-type: none"> The County should support the development of a land use planning framework that reduces GHG emissions and concentrations <i>and</i> responds to actual and/or projected climate change impacts to Dufferin County's built, natural, and social systems.

Educational opportunities	<ul style="list-style-type: none"> The integration and coordination of policies related to climate change across the Official Plan can enable the municipality to bolster support from key stakeholder, mobilize scarce resources across municipal departments, and maximize opportunities to address multiple social, environmental, and economic challenges. 	<ul style="list-style-type: none"> The Official Plan should include climate change language to serve as an educational opportunity to describe synergies across different municipal systems. The Official Plan may define how climate change is approached and/or handled by the upper and single tier municipalities with relationship to each relevant OP section. Beyond the Official Plan, educational opportunities to integrate climate change into municipal decision-making and service delivery are encouraged as a larger goal overtime to facilitate inter-departmental collaboration.
Develop a Climate Change Action Plan	<ul style="list-style-type: none"> It is recommended that if a municipality does not have a Climate Action Plan, then the Official Plan should state that the municipality will develop one. 	<ul style="list-style-type: none"> Given that Dufferin County adopted the Dufferin Climate Change Action Plan in 2021, the CAP recommends integrating climate change into appropriate sections of the OP. Policy to support the CAP and policy for mitigation plans, possibilities for adaptation (e.g., priority risks and actions to address and mitigate risk). As per the PCP Program, the County is encouraged to include Official Plan policy that requires monitoring, evaluation, and reporting of the Community Climate Action Plan.

1.5 Summary

The background research outlined in Section 1 of this report provides a high-level overview of planning and policy support for the incorporation of climate change considerations within Dufferin County's municipal documents.

It highlights the priorities of the County, placing emphasis on four key themes, water, natural environment, communities both rural and urban and transportation. These are considered the themes the County can focus progress for Climate Change and Resiliency, aligned for Official Plan policy directions.

Based on the research, we identify the following key takeaways that support the CSCCR Framework:

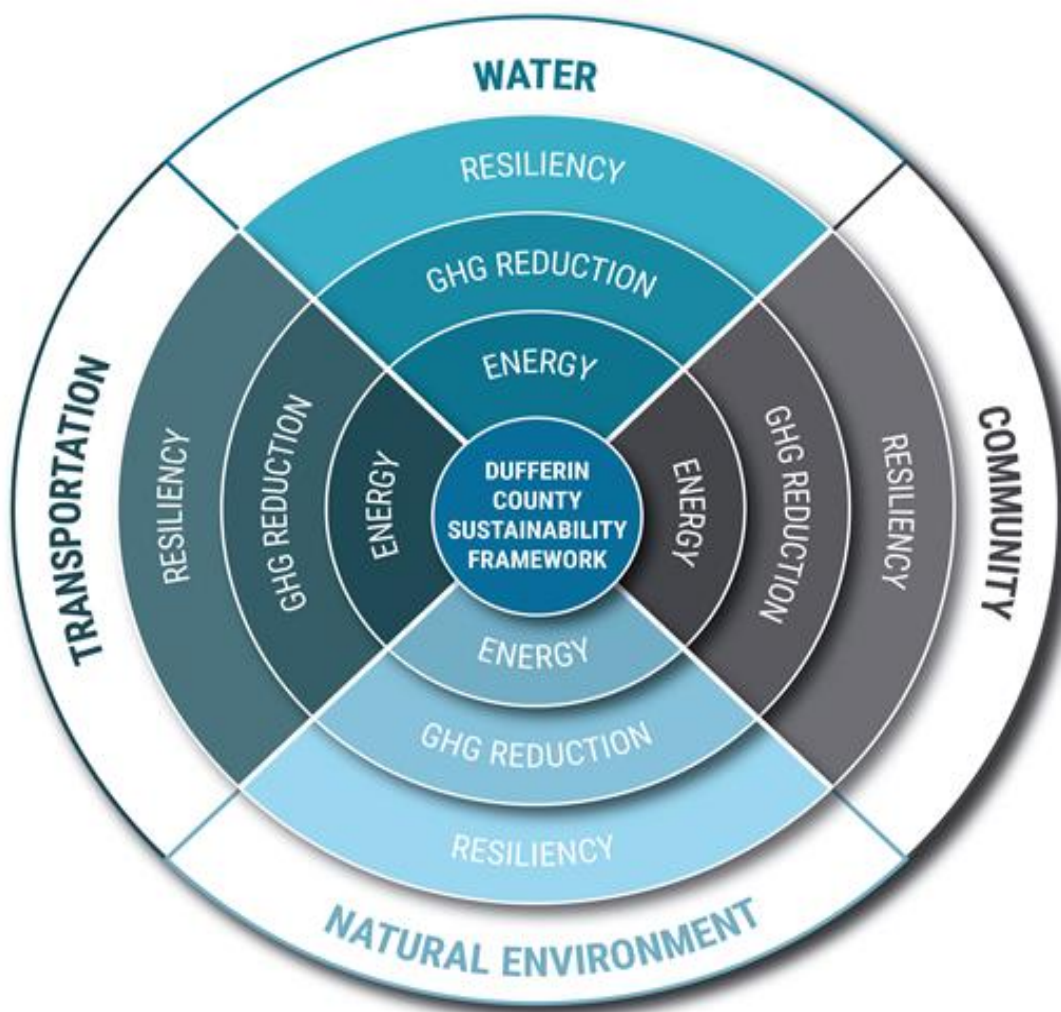
1. The need to plan and guide for anticipated growth and development while maintaining and protecting important natural features is an important priority for Dufferin County.
2. Clean growth action identified through policy and investment priorities will help to kick-start the County's economy recovery following the impacts of COVID-19.
3. Policy developed by Dufferin County and local municipal governments suggests that there are opportunities driven by urban and rural priorities to reduce GHG emissions and protect natural assets.
4. Research provided through Dufferin County's partnership with the University of Guelph will provide further direction for the County to incorporate energy planning into the updated Official Plan.
5. Based on Dufferin County's unique urban and rural landscape as well as relationship with the headwaters, Water, Transportation, Community and the Natural Environment are identified as key priority areas for Dufferin County to consider when incorporating climate change policy within the Official Plan.
6. Dufferin County is in a good position to include policy support for green development standards, a Community Energy Plan, resilience, and elements of a circular economy within the Official Plan.

2.0 The CSCCR Framework

2.1 CSCCR Framework

The graphic in Figure 3 illustrates the CSCCR Framework as informed by Dufferin County's priorities and context from Section 1.0 of this report.

Figure 2 - Climate and Resiliency Framework



The Framework will guide the County's long-term approach to energy use management, watershed planning, and conservation of resources to increase awareness, reduce consumption and emissions, and encourage the use of innovative technology and energy systems. These priorities are reflected in the approach to the framework by focusing on water, transportation, community, and the natural environment as the overarching themes which each identify a focus on resiliency, GHG reduction, and energy.

2.2 Framework Objectives

The Framework objectives are organized and presented according to strategic direction (Resiliency, GHG Reduction, Energy) and priority area (Water, Community, Transportation, and Natural Environment) for the Framework.

Overarching objectives to support the goal of low carbon communities are considered under 'County-Wide' objectives. Where objectives are unique to urban versus rural areas, they are identified and included. The terms 'Urban' and 'Rural' are used to distinguish Dufferin's urban centres (Orangeville, Shelburne and Grand Valley) from rural communities. This distinction is provided, where appropriate, to establish opportunities to leverage the rural nature of Dufferin County and the opportunities associated with this to support climate action through land use.

Table 4 – CSCCR Framework Objectives

	WATER	COMMUNITY	TRANSPORTATION	NATURAL ENVIRONMENT
RESILIENCY				
COUNTY-WIDE	<ul style="list-style-type: none"> In response to changing precipitation patterns and temperatures, water resources are protected and usage is planned. 	<ul style="list-style-type: none"> Communities integrate mitigation, adaptation, and disaster risk reduction considerations into all County and local planning. 	<ul style="list-style-type: none"> Communities have robust multi-modal transport systems in place, including infrastructure for active transportation, public transit, and evolving zero-emission vehicular technologies. 	<ul style="list-style-type: none"> Communities assess, prioritize, and mitigate the risks posed by extreme events (e.g., flooding, wildfires, etc.)

	<ul style="list-style-type: none"> • Coordinate investment in water, wastewater, and stormwater infrastructure to service future growth in a manner that ensures the longevity and resiliency of water systems. 	<ul style="list-style-type: none"> • County and local municipalities have robust strategies in place to incorporate climate change considerations for new developments, as municipalities grow and boundaries change. 	<ul style="list-style-type: none"> • EV strategy is prepared ensuring publicly accessible EV infrastructure 	<ul style="list-style-type: none"> • Natural areas and their ecological characteristics, including biodiversity, are recognized as playing a vital role in adapting to the impacts of climate change and are protected accordingly.
	<ul style="list-style-type: none"> • Water infrastructure planning is informed by watershed planning to ensure that the quality and quantity of water is maintained. 	<ul style="list-style-type: none"> • Reduce the urban heat island effect and help to protect vulnerable residents and visitors from extreme heat and other climate-related risks. 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • Protect, and enhance tree canopy and protect wetlands and other natural areas and use nature-based solutions.

	<ul style="list-style-type: none"> Stormwater management planning requires the implementation of low impact development and green infrastructure stormwater management practices in accordance with provincial requirements and guidelines. 	<ul style="list-style-type: none"> Local Indigenous knowledge, values, and planning traditions are integrated into planning processes, respecting the rights of Indigenous peoples. 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> The natural environment is protected and rehabilitated to build community resiliency to climate change.
URBAN	<ul style="list-style-type: none"> Strengthen protection of the environment with careful regard for water quality and quantity, as well as cumulative impacts, on watersheds and groundwater. 	<ul style="list-style-type: none"> Promote the design of healthy and sustainable 15-minute neighbourhoods that meet the sustainability objectives of this Official Plan. 	<ul style="list-style-type: none"> Require that all new streets accommodate a range of users. Ensure residents can easily access goods and services, even when experiencing extreme weather events caused by climate change. 	<ul style="list-style-type: none"> Protect, maintain, enhance and restore natural heritage features and areas with connection through urban areas.
	<ul style="list-style-type: none"> Consider the risk and vulnerability of infrastructure and design to withstand 	<ul style="list-style-type: none"> Enhance community resilience to ensure positive health and safety outcomes in 	<ul style="list-style-type: none"> Embed redundancy into the design of the transportation system to ensure movement is 	<ul style="list-style-type: none"> Integrate natural environment into asset

	future weather projections	the face of increasingly extreme weather events related to climate change	possible even when primary routes are damaged by extreme weather events.	management and infrastructure planning.
		<ul style="list-style-type: none"> Ensure buildings are designed to be resilient to power outages related to extreme weather events. 	<ul style="list-style-type: none"> Plan for infrastructure to support a sustainable transportation network. 	<ul style="list-style-type: none"> Support the enhancement of the natural heritage system to public health and community design.
		<ul style="list-style-type: none"> Reduce the compounding impact of the urban heat island effect on days with extreme heat. 		<ul style="list-style-type: none"> Encourage opportunities for edible landscapes, both within the public and private realm.
RURAL	<ul style="list-style-type: none"> Strengthen protection of the environment with careful regard for water quality and quantity, as well as cumulative impacts, on watersheds and groundwater. 			<ul style="list-style-type: none"> Protect, maintain, enhance and restore natural heritage features and areas with connection through urban areas.
GHG REDUCTION				

COUNTY-WIDE	•	• Waste management systems are configured to reduce GHG emissions from the transport of waste materials and their disposal.	• Prioritize a shift to energy efficient and low-carbon transportation options, include active transportation and electric vehicles.	• Strategy for tree canopy and green infrastructure to support carbon sinks
	•	• Communities are designed to support the circular economy, which minimizes the use of virgin materials, the energy used in manufacturing, and the production of waste over the full lifecycle of material goods.	• Prioritize locally sourced materials in construction to reduce transportation-related emissions.	•

		<ul style="list-style-type: none"> New and existing residential, commercial, and industrial developments have near- or net-zero energy and/or emissions profiles and avoid introducing climate vulnerabilities. 		
		<ul style="list-style-type: none"> Engage in public education regarding the minimization of GHG emissions. 		
URBAN	<ul style="list-style-type: none"> Reduce the carbon footprint of water demand. 	<ul style="list-style-type: none"> Reduce the greenhouse gas intensity of all new development through site and building design. 		<ul style="list-style-type: none"> Tree canopy and planting strategy to increase urban trees

		<ul style="list-style-type: none"> Prioritize carbon reduction action based on those parts of the County that have the greatest carbon emissions. 		
RURAL		<ul style="list-style-type: none"> Support sustainable food systems and strive to mitigate agriculturally-related emissions. 		<ul style="list-style-type: none"> Support low carbon agriculture practices.
ENERGY				
COUNTY-WIDE	<ul style="list-style-type: none"> Water reduction and conservation strategy 	<ul style="list-style-type: none"> Communities work collaboratively with utilities to facilitate energy conservation, efficiency, and the integration of distributed energy resources. This may include renewable energy and thermal technologies in systems. 		

		<ul style="list-style-type: none"> Promote a compact built form that consumes less land and includes an energy-efficient mix of land uses. 		
		<ul style="list-style-type: none"> Explore opportunities for energy-from-waste at County landfills 		
URBAN	<ul style="list-style-type: none"> Employ water reuse to create opportunities for treated wastewater. 	<ul style="list-style-type: none"> Reduce energy demand and consumption. 	<ul style="list-style-type: none"> Work collaboratively to support community and County-level energy planning. 	
		<ul style="list-style-type: none"> Deliver communities that enable peak demand reduction, resilience to power disruptions, and conserve energy. 		
RURAL		<ul style="list-style-type: none"> Enable the use of local renewable energy sources. 		

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3.0 Proposed Policy Directions

Proposed policy directions are provided for consultation as next steps in the Official Plan review process.

Table 5 – CSCCR Framework Proposed Policy Directions

	WATER	COMMUNITY	TRANSPORTATION	NATURAL ENVIRONMENT
RESILIENCY				
COUNTY-WIDE	<ul style="list-style-type: none"> Require the preparation of stormwater master plans jointly with local municipal partners and that stormwater master plans provide integrated solutions and coordination to address riverine and overland flooding issues. 	<ul style="list-style-type: none"> The County, with local municipalities collaborate on integrated mitigation, adaptation, and disaster risk reduction considerations into all County and local planning decisions. 	<ul style="list-style-type: none"> To support the movement of people, identify higher-order active transportation corridors to be the backbone of a sustainable mobility network, in collaboration with local municipalities. 	<ul style="list-style-type: none"> Establish a natural asset inventory integrated into asset planning. Local municipalities assess, prioritize, and mitigate the risks posed by extreme events (e.g., flooding, wildfires, etc.)

	<ul style="list-style-type: none"> The County coordinates investment in water, wastewater, and stormwater infrastructure to service future growth in a manner that ensures the longevity and resiliency of water systems. 	<ul style="list-style-type: none"> The County and local municipalities have robust strategies in place to incorporate climate change considerations for new developments, as municipalities grow and boundaries change. 	<ul style="list-style-type: none"> Strengthen and expand the assessment of active transportation impacts and network needs in master planning and addressed in the development review process. 	<ul style="list-style-type: none"> Natural areas and their ecological characteristics, including biodiversity, are recognized as playing a vital role in adapting to the impacts of climate change and are protected accordingly at the local and County level.
	<ul style="list-style-type: none"> Require watershed and sub-watershed studies and plans to specifically address climate change and extreme weather in the characterization of impacts and in recommendations regarding surface water, groundwater and flooding. 	<ul style="list-style-type: none"> The County pursues strategies to reduce the urban heat island effect and help to protect vulnerable residents and visitors from extreme heat and other climate-related risks. 		<ul style="list-style-type: none"> The County protects and enhances the tree canopy and protect wetlands and other natural areas and use nature-based solutions to adapt to and mitigate against climate change.

	<ul style="list-style-type: none"> Prioritize low impact development and green infrastructure stormwater management practices in accordance with provincial requirements and guidelines. 	<ul style="list-style-type: none"> Local Indigenous knowledge, values, and planning traditions are integrated into planning processes, respecting the rights of Indigenous peoples. 		<ul style="list-style-type: none"> The County supports local municipalities in protecting and rehabilitating the natural environment to build community resiliency to climate change.
URBAN	<ul style="list-style-type: none"> Strengthen protection of the environment with careful regard for water quality and quantity, as well as cumulative impacts, on watersheds and groundwater. 	<ul style="list-style-type: none"> Require planning to consider neighborhood centres to provide access to daily goods and services in support of complete/15-minute communities. 	<ul style="list-style-type: none"> Require that all new streets accommodate a range of users. Ensure residents can easily access goods and services, even when experiencing extreme weather events caused by climate change. 	<ul style="list-style-type: none"> Protect, maintain, enhance and restore natural heritage features and areas with connection through urban areas.
	<ul style="list-style-type: none"> In partnership with Conservation Authorities, the County considers the 	<ul style="list-style-type: none"> Enhance community resilience to ensure positive health and safety outcomes in 	<ul style="list-style-type: none"> Embed redundancy into the design of the transportation system to ensure movement is 	<ul style="list-style-type: none"> The County and local municipalities integrate natural environment into asset management

	risk and vulnerability of infrastructure and design to withstand future weather projections	the face of increasingly extreme weather events related to climate change	possible even when primary routes are damaged by extreme weather events.	and infrastructure planning.
		<ul style="list-style-type: none"> • Ensure buildings are designed to be resilient to power outages related to extreme weather events. 		<ul style="list-style-type: none"> • Support the enhancement of the natural heritage system to public health and community design.
		<ul style="list-style-type: none"> • Reduce the compounding impact of the urban heat island effect on days with extreme heat. 		<ul style="list-style-type: none"> • Local municipalities encourage opportunities for edible landscapes, both within the public and private realm.
		<ul style="list-style-type: none"> • Incorporate energy and resilience considerations into the selection of any future urban expansion areas. 		

RURAL	<ul style="list-style-type: none"> Strengthen protection of the environment with careful regard for water quality and quantity, as well as cumulative impacts, on watersheds and groundwater. 		<ul style="list-style-type: none"> The County sets greenfield area density targets that support frequent and reliable transit use. 	<ul style="list-style-type: none"> Protect, maintain, enhance and restore natural heritage features and areas with connection through urban areas.
				<ul style="list-style-type: none"> Integrate the provincial agricultural system approach to agriculture to create and maintain a robust agricultural industry and access to local food.
				<ul style="list-style-type: none"> Update policy permissions for agriculture, agricultural-related and on-farm diversified uses and supporting innovative practices in agriculture.
GHG REDUCTION				

COUNTY-WIDE		<ul style="list-style-type: none"> The County supports a full range of opportunities for the reduction, reuse, recycling, composting, diversion, and final disposal of waste to reduce GHG emissions from waste sector. 	<ul style="list-style-type: none"> Prioritize active transportation, transit, and alternative low-carbon transportation options in the further development of the mobility system. 	
	<ul style="list-style-type: none"> The County promote circular water opportunities. 	<ul style="list-style-type: none"> The County and local municipalities are designed to support the circular economy, which minimizes the use of virgin materials, the energy used in manufacturing, and the production of waste over the full lifecycle of material goods. 	<ul style="list-style-type: none"> Prioritize locally sourced materials in construction to reduce transportation-related emissions. 	

		<ul style="list-style-type: none">• New and existing residential, commercial, and industrial developments have near- or net-zero energy and/or emissions profiles and avoid introducing climate vulnerabilities.	<ul style="list-style-type: none">• Prioritize the identification of strategic growth areas by their potential to be served by an active transportation-focused mobility system.	
		<ul style="list-style-type: none">• Engage in public education regarding the minimization of GHG emissions.		
		<ul style="list-style-type: none">• Develop a County level eco-footprinting or carbon budget strategy.		

		<ul style="list-style-type: none"> Support the adaptive reuse of building stock and encourage the reuse/recycling of building materials in the development process. 		
URBAN	<ul style="list-style-type: none"> Reduce the carbon footprint of water demand. 	<ul style="list-style-type: none"> Set ambition intensification targets. 		
		<ul style="list-style-type: none"> Establish County OP policy to support Green Development Standards for local municipalities that address comprehensive low carbon net zero objectives 		
		<ul style="list-style-type: none"> Prioritize carbon reduction action based on those parts of the County that have the greatest carbon emissions. 		

RURAL		<ul style="list-style-type: none"> Support sustainable food systems and strive to mitigate agriculturally-related emissions. 		<ul style="list-style-type: none"> Support low carbon agriculture practices.
ENERGY				
COUNTY-WIDE	<ul style="list-style-type: none"> Employ water conservation strategy and circular water approach 	<ul style="list-style-type: none"> Require all municipalities to address climate change mitigation and adaptation through Green Development Standards, incentive programs, and/or development design guidelines. 	<ul style="list-style-type: none"> Strengthen and expand the assessment of goods movement, storage, and electric charging stations in the public realm and through the development review process. 	

		<ul style="list-style-type: none">Communities work collaboratively with utilities to facilitate energy conservation, efficiency, and the integration of distributed energy resources. This may include renewable energy and thermal technologies in systems and requiring feasibility studies.	<ul style="list-style-type: none">Direct the County, in collaboration with local municipalities and community partners, to develop an electric vehicle strategy.	
		<ul style="list-style-type: none">Promote a compact built form that consumes less land and includes an energy-efficient mix of land uses.	<ul style="list-style-type: none">Lead by example with County assets and promote and support the transition to low-carbon vehicles, including hybrid and/or electric vehicles, and supporting the development of associated infrastructure.	

		<ul style="list-style-type: none"> Explore opportunities for energy-from-waste at County landfills 		
		<ul style="list-style-type: none"> Provide direction on the location of geothermal energy to facilitate geothermal energy production in appropriate locations. 		
		<ul style="list-style-type: none"> Commit the County to evaluate how to identify and protect optimal areas for renewable energy generation. 		
URBAN	<ul style="list-style-type: none"> Employ water reuse to create opportunities for treated wastewater. 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> Work collaboratively with local municipalities to support community and County-level energy planning. 	<ul style="list-style-type: none"> Incorporate urban heat island and cooling strategies with green infrastructure and trees

		<ul style="list-style-type: none">• Deliver communities that enable peak demand reduction, resilience to power disruptions, and conserve energy.		
RURAL				<ul style="list-style-type: none">• Protect natural areas that provide cooling benefit and support reduced heat and energy needs

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Appendix A – Climate change trends and projections for Dufferin County

It is increasingly important for Canadian cities and municipalities to incorporate climate change considerations in their decision-making processes. Canada's climate is expected to become increasingly warm due to additional global greenhouse gas (GHG) emissions, with warming projected in all seasons. Other changes in climate are also projected to intensify with additional warming, such as increases in extreme heat, increases in total and extreme precipitation and declines in snow and ice cover, as reported in Environment and Climate Change Canada's Changing Climate Report 2019.

The following are future projections of temperatures, freezing conditions and precipitation specific to Dufferin County. The results are displayed from 24 climate models put together by Climatedata.ca, a collaboration between Environment and Climate Change Canada (ECCC), the Computer Research Institute of Montréal (CRIM), Ouranos, the Pacific Climate Impacts Consortium (PCIC), the Prairie Climate Centre (PCC), and HabitatSeven.¹⁶

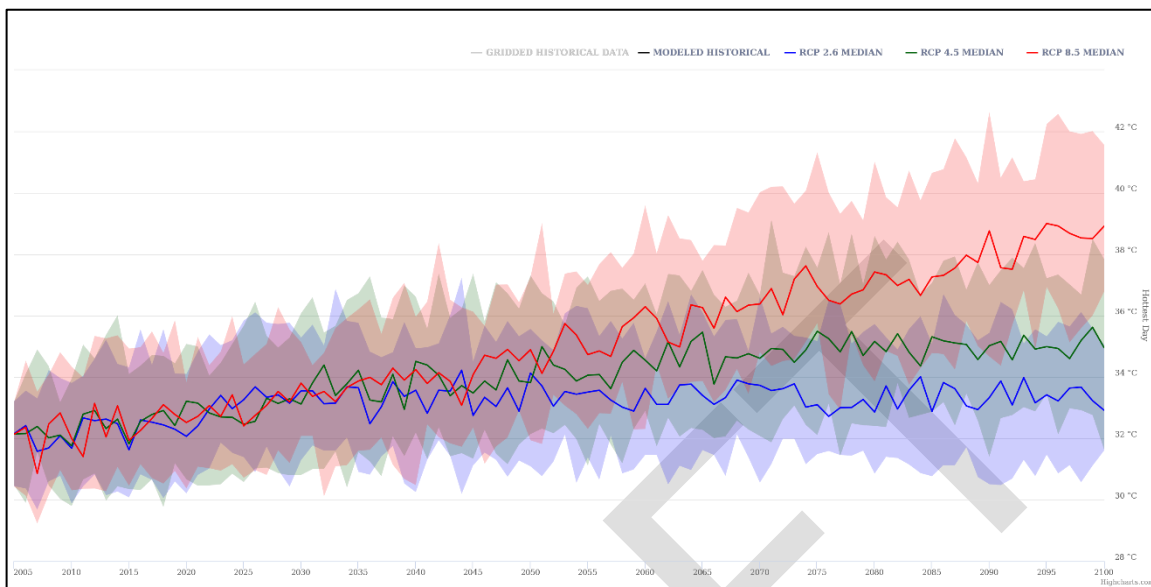
Dufferin, Ontario (1951-2100):¹⁷ For the 1951-1980 period, the annual average temperature was 5.2; for 1981-2010 it was 7.7°C. Under a high emissions scenario (RCP8.5), annual average temperatures are projected to be 7.8°C for the 2021-2050 period, 9.7°C for the 2051-2080 period and 11.3°C for the last 30 years of this century.

Average annual precipitation for the 1951-1980 period was 889 mm. Under a high emissions scenario (RCP8.5), this is projected to change by 7% for the 2021-2050 period, by 11% for the 2051-2080 period and by 15% for the last 30 years of this century.

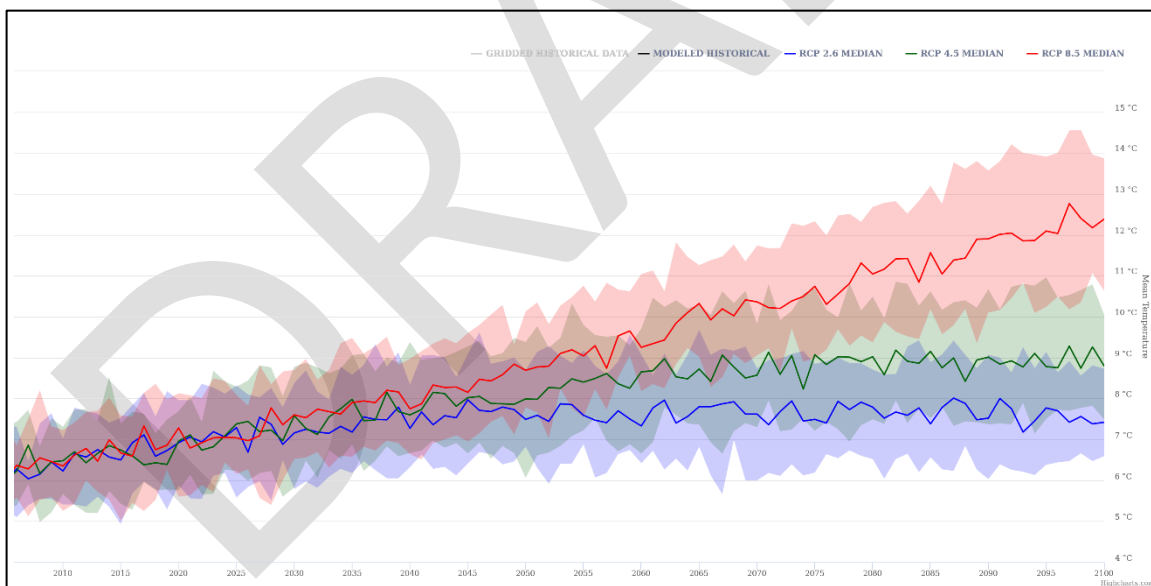
Temperature: Mean annual temperatures are very likely to increase in the County where average temperatures have been around 7.9°C over the year. As indicated in graph 1 below, the average annual temperature in the County is expected to increase to up to 14°C by 2100s, under a high emissions scenario (RCP8.5). This means that days with extremely hot temperatures may become more likely and heat waves could occur more frequently. Moreover, these warmer temperatures may lead to other changes in the climate through feedback loops, such as shifts in weather patterns, snow and ice, and even the health of plants and animals in the natural environment.

¹⁶ Climate Data Canada. (2021). About Climatedata.ca. Retrieved from <https://climatedata.ca/about/#about-BBCAQV2>

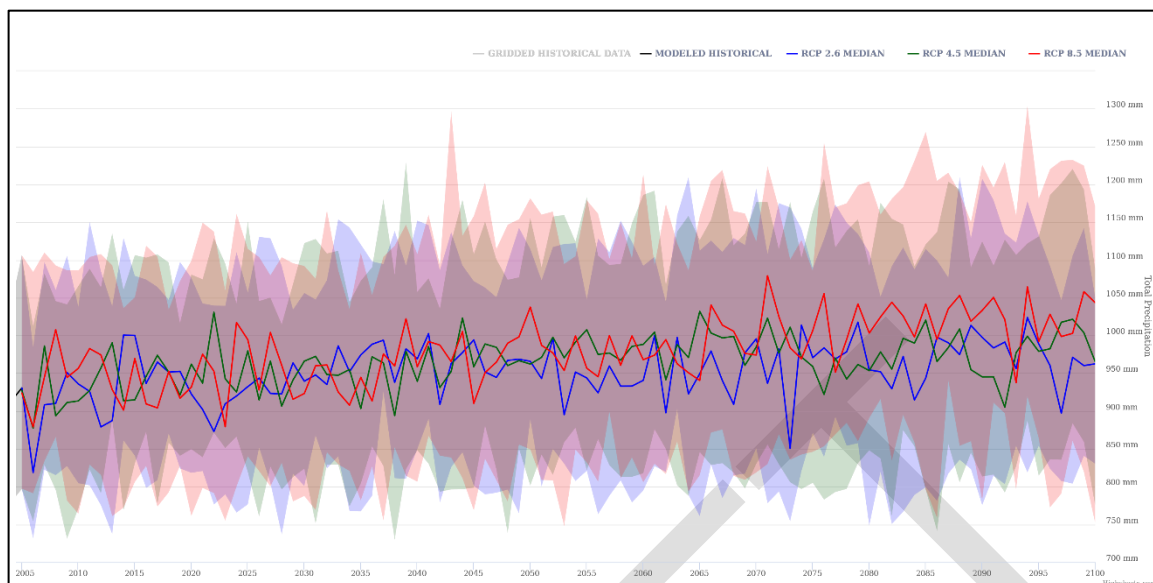
¹⁷ Climate Data Canada. (2021). Annual Values for Dufferin, ON. Retrieved from https://climatedata.ca/explore/location/?loc=FEQQZ&location-select-temperature=tx_max&location-select-precipitation=rx1day&location-select-other=frost_days



Graph 1: Maximum Temperatures, Dufferin, Ontario (2010-2100)



Graph 2: Mean Average Temperatures, Dufferin, Ontario (2010-2100)



Graph 3: Total Precipitation, Dufferin, Ontario (2010-2100)

Appendix B – Dufferin County Community Risk Profile

Dufferin County Community Risk Profile (2018)			
Summary of Risks according to Hazard Identification and Risk Assessment			
Risk Impact	Hazards		
	Natural	Technological	Human-Caused
High	<ul style="list-style-type: none"> • Flooding • Snowstorm/blizzard • Cold wave • Ice storm • Forest/wildland fire • Tornado • Heatwave 	<ul style="list-style-type: none"> • Fixed site and transportation HAZMAT • Energy supply emergency • Critical infrastructure failure 	<ul style="list-style-type: none"> •
Medium	<ul style="list-style-type: none"> • Geomagnetic storm • Lightning • Windstorm • Erosion • Drinking water emergency • Earthquake • Freezing rain • Human health emergency • Food emergency 	<ul style="list-style-type: none"> • Transportation incident - air • Building/structural collapse 	<ul style="list-style-type: none"> • Cyber attack
Low	<ul style="list-style-type: none"> • Hail • Pest infestation • Hurricane • Drought/low water • Food • Land subsidence 	<ul style="list-style-type: none"> • Oil/natural gas emergency • Rail and road transportation incidents • Nuclear facility emergency • Radiological emergency • Dam failure 	<ul style="list-style-type: none"> • Sabotage • Special event • Terrorism • Civil disorder

Appendix C – Municipal Green Development Standards Review

Town of East Gwillimbury Thinking Green! Development Standards				
Overview	Policy Context	Targets and Requirements	Tools and Incentives	Applicant Resources
<ul style="list-style-type: none"> Thinking Green! Development Standards (TGDS) measures fall under three key theme areas that cover a range of elements of a development application, including those internal and external to both buildings and sites. The TGDS Program challenges thinking around sustainability to extend beyond the building envelope. The targets are organized into three 	<ul style="list-style-type: none"> The policy imperative for adhering to TGDS is set out in East Gwillimbury's Official Plan; policy 2.4.3 requires that all development address the minimum standards necessary to satisfy the applicable elements outlined in the Thinking Green Development Standards to the satisfaction of the Town. To demonstrate compliance, applicants are expected to fill out and submit the Application Information Form and the Pre-Consultation TGDS 	<ul style="list-style-type: none"> The TGDS measures are organized into three tiers: level 1 represents the minimum expectations of the Town; level 2 represents an improved standard; and level 3 represents the optimal achievement. At a minimum, applications are expected to achieve all level 1 requirements, and two level 2 targets under each theme or one level 3 target under each theme. Level 1 requirements align with policies in 	<ul style="list-style-type: none"> Applicants are expected to fill out a pre-consultation TGDS checklist as part of the pre consultation application. There are checklists for both Draft Plan of Subdivision and Site Plan applications. Per the Official Plan, the Town will explore possible incentives programs designed to reward sustainable community design and development. Such incentives may include priority consideration for development approvals, 	<ul style="list-style-type: none"> User Guide Application Information Form Checklists TGDS Assessment

themes: Protection and Enhancement of the Natural Environment, Conservation of Energy and Water, and Designing for Complete and Connected Communities.	Checklist as part of the Pre-Consultation Application Package, and fill out the Application Information Form and TGDS Assessment during application preparation.	East Gwillimbury's Official Plan related to the protection and enhancement of the natural environment, conservation of energy and water, and design of complete and connected communities.	funding support through available government programs, and other reasonable measures designed to offset additional development costs associated with the Town's sustainable development requirements.	
City of Pickering <u>Sustainable Development Guidelines</u>				
<ul style="list-style-type: none"> The Guidelines represent a vision for community development aimed at reducing the ecological footprint of homeowners and promoting healthy and liveable neighbourhoods. The Guidelines are intended to apply to all new development – residential and employment for 	<ul style="list-style-type: none"> Per Official Plan policy 16.5A, the sustainable development report, or checklist, describing the sustainable measures being implemented in the development, including but not limited to initiatives related to energy efficiency, water efficiency, building materials, indoor air quality, landscaping, stormwater management and construction waste must 	<ul style="list-style-type: none"> The Pickering SDG are divided into mandatory (those required by way of provincial, regional, and local policy) and optional categories. All new development must meet at least a rating of "Level 1", with some minor exceptions. Level 1, in this case, is defined as achieving all required elements, plus a minimum number of points from optional 	<ul style="list-style-type: none"> The Pickering SDG are enumerated in a non-interactive checklist format that outlines the targets and measures associated with levels 1, 2, and 3. Proponents of projects who demonstrate achievement of Level 1 through the checklist receive recognition by the City. Other cited benefits of meeting Levels 2 or 3 include marketing 	<ul style="list-style-type: none"> City of Pickering Sustainable Development Guidelines

infill, redevelopment and new designated urban areas.	be submitted at the time of application for an official plan amendment, zoning by-law amendment, draft plan of subdivision, and draft plan of condominium approval.	guidelines depending on application type (neighbourhood vs. plans of subdivision, site plans, rezoning, and building permits).	opportunities and possible access to provincial/federal or other green funds.	
Town of Halton Hills <u>Green Development Standards</u>				
<ul style="list-style-type: none"> The Green Development Standards apply within the Town's urban boundaries to applications for new low-rise residential, low-rise non-residential, and mid to high-rise development of all types. Renovations, alterations and development consisting of less than four residential lots are subject to 	<ul style="list-style-type: none"> The Halton Hills Official Plan contains policy requiring compliance with the Green Development Standards; policy C19.1 notes that a development application will only be deemed to have met the Town's sustainability goals if it meets the requirements of the Green Development Standards adopted by Council, and as amended from time to time, to provide detailed direction for the 	<ul style="list-style-type: none"> The Green Development Standards comprise required and voluntary points, depending on the criteria. Proponents must meet a minimum required point threshold (the number depends on type of project). Using a LEED-like approach, the criteria are rated on both the significance of the environmental benefits and the difficulty or 	<ul style="list-style-type: none"> The Town has produced checklists for low-rise residential, low-rise non-residential, and mid to high-rise (any use) projects. While the Town does not directly offer incentives for achieving higher performance, it does encourage applicants to contact Halton Hills Hydro, Union Gas and the Ontario Power Authority regarding current energy incentive programs. 	<ul style="list-style-type: none"> Green Development Standards Study Green Development Standards Information Guide

<p>existing requirements.</p> <ul style="list-style-type: none">• The Green Development Standards will apply Town-wide to new planning applications including zoning by-law amendments, draft plans of subdivision, site plan applications that involve new development of four or more residential lots or units or more than 100 square metres of new industrial, commercial, or institutional uses.	<p>implementation of this policy.</p> <ul style="list-style-type: none">• It is expected that applicants will engage with staff early in the pre-application process to maximize green benefits.	<p>cost associated with implementation.</p> <ul style="list-style-type: none">• The checklists criteria are organized into seven categories: energy conservation, water conservation and quality, community design, air quality, innovation and other green features, waste management, and communication.		
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City of Burlington

Sustainable Building and Development Guidelines (draft)

<ul style="list-style-type: none"> The Sustainable Building and Development Guidelines (SBDG) will serve as a comprehensive checklist of various sustainable design, construction and operation approaches, and will be used as a tool to assess the sustainable features of development applications. Once completed, the checklist will act as a tool to encourage voluntary update of sustainable design and planning practices, as well as highlight the required 	<ul style="list-style-type: none"> The applicant will be made aware of the guidelines and checklist at the pre-consultation meeting. The checklist will be identified on the Pre-consultation Form and any required supporting documentation will be identified. 	<ul style="list-style-type: none"> Applicants need to comply with the items identified as “required,” which align with municipal policies already in place, but are encouraged to consider voluntary items. Voluntary measures, if selected, should appear on application materials, but there is no requirement to achieve any additional stretch beyond what is already mandated. The criteria have been organized into eight sections: site design; transportation; natural environment; water conservation and quality; energy; waste and building materials; maintenance, 	<ul style="list-style-type: none"> Applicants will be expected to fill out and submit a checklist demonstrating adherence to, at a base level, the required criteria of the SBDG. In order to incent deeper sustainability outcomes, Burlington is developing unique “carrot” measures, including an Urban Design Awards program that will include sustainable building awards, given out to those projects achieving the greatest number of voluntary guidelines. Additionally, the voluntary guidelines may be used in Section 37 under the Planning Act. 	<ul style="list-style-type: none"> NA
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sustainability measures as codified in Burlington's Official Plan, Zoning By-law, and other city by-laws.		monitoring, and communication; and innovation.		
Town of Whitchurch Stouffville <u>Sustainable Development Guidelines</u>				
<ul style="list-style-type: none"> The Sustainable Development Guidelines are used as a tool for staff to determine and assess the sustainable features of development applications. The Guidelines have been prepared in the form of a checklist that enumerates the various types of project design 	<ul style="list-style-type: none"> Whitchurch Stouffville's Official Plan (OP) was amended to include policy language that requires completion of a Sustainability Report as part of development application, which demonstrates that new development is carried out in conformity with the OP. In addition, applicants are expected to complete and submit the Sustainable 	<ul style="list-style-type: none"> The SDG checklist provides a score to applicants with two levels of performance: minimum required and bonus level, with the caveat that no points can be awarded for building or site features already required by the Ontario Building Code. Each item in the checklist is awarded a point total; depending on the type of 	<ul style="list-style-type: none"> If the bonus level target is achieved, applicants may be considered for a bonus in height and density, or other considerations, up to the discretion of staff. 	<ul style="list-style-type: none"> Checklist and associated explanation of items

<p>features that are considered in the evaluation process.</p> <ul style="list-style-type: none">• The Guidelines are applicable for plans of subdivision and site-specific applications, including rezoning and site plan, and have been organized into three themes: community design, buildings, and energy and water.	<p>Development Guideline Checklist prior to the Pre-Consultation meeting.</p> <ul style="list-style-type: none">• The checklist will be discussed at the Pre-Consultation Meeting and based on this review; the applicant will prepare a Sustainability Report addressing the matters identified by staff checking of the "Explanation Required" column on the checklist.	<p>development application, point thresholds have been established for "required" and "bonus level."</p> <ul style="list-style-type: none">• The subdivision design criteria are organized around a series of categories, including community design; energy, water, and waste; and general.• The site level design criteria are also related to a number of topics, including site/community design; buildings; energy and water; and general.		
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Cities of Brampton, Vaughan, and Markham and the Town of Richmond Hill The Sustainability Metrics Program

<ul style="list-style-type: none"> • The Sustainability Metrics program, implemented as part of the review of development applications, has been developed to create a City with a sustainable built form. • Together, the Cities of Vaughan and Brampton, and the Town of Richmond Hill, created the Sustainability Metrics as a tool to achieve healthy, complete, sustainable communities. • The tool presents users with an overall sustainability score by using a set of Metrics to 	<ul style="list-style-type: none"> • Developers are required to complete their GDS process with their first filing identifying the metrics they chose to implement as part of their development. • Developers choose the metrics but they are required to achieve a minimum points threshold (municipality allocates points to each sustainability metric) for their application. • Applicants are expected to submit a sustainability score and summary letter with submissions. 	<ul style="list-style-type: none"> • Brampton, Richmond Hill, and Vaughan have all instituted three levels of sustainability related to the sustainability score achieved. • Brampton and Vaughan have defined these levels as bronze, silver, and gold, whereas Richmond Hill defines them as good, very good, and excellent. • Brampton and Vaughan use the metrics program for draft plan of subdivision, site plan, and block plan applications, whereas Richmond Hill only uses it for draft plan of subdivision and site plan applications. 	<ul style="list-style-type: none"> • While there are no incentives at the municipal level, applicants are encouraged to explore High Performance New Construction (Save on Energy) and Savings by Design Green Building Initiative (Enbridge Gas Distribution) incentives. 	<ul style="list-style-type: none"> • Guidebook and Glossary • Metrics Table • Sustainability Scoring Tool • Sustainability Scoring Tool Manual
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quantify the sustainability performance of new development projects.		<ul style="list-style-type: none">• In all three municipalities, applicants are expected to achieve the base level performance, however defined, for their application to be considered.		
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Appendix D – Review of climate actions pursued by upper- and single-tier municipalities in Ontario

Regional Municipality of York <u>Climate Change Action Plan (2020 Draft)</u>	
<p>York Region has developed a range of climate change-related plans since 2016 to address corporate and community mitigation and adaptation efforts. In 2020, York Region released the Climate Change Action Plan where vulnerability assessments of public infrastructure were conducted to help establish specific climate targets. The plan will inform policy updates for York Region's Official Plan review</p> <p>The Region will integrate various elements of the Climate Action Plan into the updated Official Plan. This will include consideration for sustainable natural environments, healthy communities, economic vitality, urbanization, agricultural and rural areas, and servicing populations.</p>	
Water	<ul style="list-style-type: none"> • Corporate risk scan to assess vulnerability of water and wastewater assets. • Guidance for Official Plan policies to support watershed planning and water resource systems protection.
Community	<ul style="list-style-type: none"> • Corporate and community perspectives integrated into one comprehensive plan. • Identification of municipal service areas/assets at risk performed to understand potential climate hazards and impact on municipal assets. • Farmers may need to adjust operations as some crops could no longer be grown in York Region.
Transportation	<ul style="list-style-type: none"> • Transportation networks may face additional challenges due to road closures or difficult driving conditions. • Increase the use of more sustainable modes of transportation, such as walking, cycling and transit, and community adoption of electric and low-emissions vehicles.
Natural Environment	<ul style="list-style-type: none"> • Correlation between natural heritage sites and moderating climate change impacts. • Tree canopy cover targets for urban forests. • Watershed targets and objectives.

Regional Municipality of PeelClimate Change Master Plan (2019)

The Region of Peel Climate Change Master Plan (2019) is the Region's roadmap for reducing greenhouse gas emissions and building a more resilient community through the management of Regional assets, infrastructure and service delivery in the Region through to 2030. The master plan provides decision-makers with 20 actions and 66 activities which set forth the direction to achieve the Region's climate change desired outcomes.

The primary goal of the Plan is to mitigate against and adapt to the effects of climate change. Specifically, the master plan establishes a target to reduce corporate greenhouse gas emissions by 45 per cent by 2030, relative to 2010 levels. Of note, the plan links emission reductions to financial, health, social and quality of life, and environmental benefits.

Water	<ul style="list-style-type: none"> • Implementing energy efficiencies within water and wastewater systems. • Synergies with other regional water management strategies to optimize and conserve water resources. • Direction to implement actions of the Wastewater Energy Security Strategy and Water Efficiency Strategy. • Assess infrastructure for risks associated with extreme weather events.
Community	<ul style="list-style-type: none"> • Key focus on ensuring Regional assets are resilient to extreme weather events and climate conditions. • Recommends implementation of Climate Change Engagement Strategy to achieve the Plan's objectives. • Convene coalition of emergency social service and health agencies to identify gaps and needs to deliver services in the context of climate change, specifically during extreme events. • Install or improve cooling solutions (passive and active) for buildings which are currently or are projected to be vulnerable to overheating. • Ensure the Region's insurance policy provides coverage for increasing climate related risks.
Transportation	<ul style="list-style-type: none"> • Direction to "green" the fleet. • Synergies with Region's Transportation Strategy. • Transportation targets achieved in part through promotion of existing active transportation initiatives.

	<ul style="list-style-type: none"> • Assess infrastructure for risks associated with extreme weather events. • Develop a Climate Change Adaptation Management Tool for Transportation and Infrastructure Planning.
Natural Environment	<ul style="list-style-type: none"> • Direct action to identify, protect and expand green infrastructure. • Direction to develop Green Infrastructure Management Plan and tree planting and management program.
Regional Municipality of Durham <u>Community Climate Adaptation Plan (2016)</u>	
<p>The Durham Community Climate Adaptation Plan (2016) is Durham Region's plan to prepare the community for climate change and extreme weather. The plan includes 18 proposed programs to address local adaptation measures to protect the community and infrastructure from the changing climate.</p> <p>The plan focuses on updating public infrastructure to be resilient to the climate of today and through until 2050. This adaptation plan is the sister document to the Region's Community Climate Change Local Action Plan (2012). The Local Action Plan is the Region's mitigation plan focused on reducing greenhouse gas emissions.</p>	
Water	<ul style="list-style-type: none"> • Specific actions to address riverine flooding, including proactive management of watershed. • Policy support for collaboration with Conservation Authorities to protect watershed resources.
Community	<ul style="list-style-type: none"> • Implementing Durham Climate Resilience Standards for New Buildings. • Adaptation policy for existing buildings, including resilience assessments.
Transportation	<ul style="list-style-type: none"> • Direction to improve performance of roads under extreme heat. • Recommendation to implement a program to ensure culverts and bridges can withstand storm events. • Recommendation to conduct inventory and asset measures to inform rehabilitation and capital improvements.

Natural Environment	<ul style="list-style-type: none"> • Unique “no regrets” approach, meaning any action taken to protect natural environments is positive. • Recommendation to develop a working group to oversee natural environment adaptations.
Prince Edward County <u>Official Plan (2021)</u>	
<p>Prince Edward County Council adopted the new Official Plan in February 2021 and approval from the Ministry of Municipal Affairs and Housing was received in July 2021. The new Official Plan replaces the previous plan, which was over 20 years old and now considers climate change through policies across the plan. Notably, the Official Plan directs the County to identify adaptation and mitigation measures through the development and implementation of a Climate Change Action Plan aimed at improving municipal resilience to changing environmental stresses.</p>	
Water	<ul style="list-style-type: none"> • Promote and provide leadership in sustainable forms of development, green building technologies and green infrastructure investment to conserve and protect the quality of water resources (surface water, wetlands, recharge areas).
Community	<ul style="list-style-type: none"> • Engage in public education regarding the minimization of GHG emissions, improving air quality and conservation of water, soil and energy. • Through community improvement planning, address climate change mitigation and adaptation by encouraging building retrofits for energy efficiency, renewable and district energy systems, water conservation, and low impact development strategies.
Transportation	<ul style="list-style-type: none"> • Promote and provide leadership in sustainable forms of development, green building technologies and green infrastructure investment to support walking, cycling, and public transportation. • Support and encourage green design initiatives that enhance opportunities for active transportation by providing mixed-use development and developing or expanding active transportation facilities.
Natural Environment	<ul style="list-style-type: none"> • Promote and provide leadership in sustainable forms of development, green building technologies and green

	infrastructure investment to protect the natural heritage system, including habitats that support biodiversity.
City of Guelph <u>Official Plan (2018)</u>	
<p>Envision Guelph, the City of Guelph's Official Plan (2018), is the City's overarching policy document that sets out a course for the desired development of Guelph to 2031. The Official Plan establishes a framework to retain and improve the quality of life for residents of the City of Guelph. The plan envisions a shift in focus to creating a complete community and recognizes the relationship between patterns of development, quality of life, and economic competitiveness. Specifically, the Official Plan sets strategic goals focused on sustainability and supports the quadruple bottom line – ecological, social, cultural, and economic.</p>	
Water	<ul style="list-style-type: none"> • Stormwater runoff is identified as an important resource rather than a waste product. • Policy language encourages the use of low impact development, including rainwater harvesting, green roofs, and vegetated swales.
Community	<ul style="list-style-type: none"> • Policy aimed at designing the built environment in a manner that will promote sustainable, healthy, active living. • Contemplates energy demand reduction and renewable and/or alternative energy systems.
Transportation	<ul style="list-style-type: none"> • Specific policy to support a transportation system that will offer a balance of transportation choices with financial and environmentally friendly design. • Requires all new plans to evaluate the degree to which they contribute towards achievement of transportation demand management objectives.
Natural Environment	<ul style="list-style-type: none"> • Environment first approach identified. • Specific policy direction regarding endangered and threatened species, habitat protection, tree canopy cover, watersheds and subwatersheds, and natural heritage features in urban settings.
City of Ottawa <u>Official Plan (2021)</u>	

The City of Ottawa's Official Plan provides a vision for the future growth of the city and a policy framework to guide the city's physical development. In 2019, the City of Ottawa began a multi-year process to develop a new Official Plan, which was approved by City Council in November 2021.

Climate change is central to the new Official Plan. Section 2.2 of the Official Plan identifies 'Cross Cutting Issues'. This section highlights policy goals that require implementation policies that span multiple themes and fall under a number of other City policies, plans, by-laws, and operational and other practices. This includes energy and climate change.

Water	<ul style="list-style-type: none"> • The Official Plan aims to build resilience to future flood risks and increased stormwater runoff. This is promoted through the use of low impact development stormwater management features where feasible to manage smaller, frequent rainfall events. • Recognition of the need to prepare for extreme events, including heavy rains and freezing rain. • Surface parking lots will be designed to incorporate low impact development measures for stormwater management, where feasible. • Restrict or limit development and site alteration near surface water features and groundwater features. • Keep watercourses in a natural state while managing erosion, slope stability and flooding concerns.
Community	<ul style="list-style-type: none"> • Implementation of climate-related policies that support an equity and inclusion lens that examines how people are affected differently by climate change and considers the needs of the vulnerable. • Policies in the Official Plan aim to reduce the urban heat island effect and help protect the vulnerable from extreme heat. • Promote the development of 15-minute neighbourhoods.
Transportation	<ul style="list-style-type: none"> • Prioritize a shift to energy efficient transportation modes to address the contribution to emissions from transportation. • To support transformation to low carbon transportation options, land use patterns and mobility considerations will require sustainable transportation infrastructure.

Natural Environment	<ul style="list-style-type: none">• The County recognizes the contribution of all natural features and areas to the health of the environment.• Established target of no net loss of forest cover and wetlands in rural areas.• Provide residents with equitable access to an urban forest canopy.• Provide residents with equitable access to an inclusive Urban Greenspace network.
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Appendix E – Review of climate actions pursued by lower-tier municipalities in Ontario

Town of Caledon <u>Community Climate Change Action Plan (2021)</u>	
<p>The Community Climate Change Action Plan (2021) is the Town of Caledon's plan to reduce greenhouse gas emissions and prepare the Town for the impacts of climate change. The Town is currently updating the plan to include actions and strategies for reducing community-wide greenhouse gas emissions and improving adaptive capacity and resiliency of the community to cope with and adapt to climate change until 2050.</p>	
Water	<ul style="list-style-type: none"> • Encourages use of water heating systems as an alternative to fossil fuels. • Recognized relationship between Peel District School Board's environmental policy and water management.
Community	<ul style="list-style-type: none"> • Promotion of building audits and retrofits through government incentives. • Frequent correlation with Ontario Building Code to support residential building standards.
Transportation	<ul style="list-style-type: none"> • Actions to reduce targeted GHG emissions include development of transportation demand management marketing strategy and incentives for residents to alternative modes of transportation.
Natural Environment	<ul style="list-style-type: none"> • Informed by the Region of Peel's Urban Forest Strategy. • Programs span across urban and rural properties, including tree planting. • Partnerships with residential land owners key to protecting and enhancing tree canopy.
Town of Halton Hills <u>Official Plan (2019)</u>	

Town of Halton Hills Official Plan (2019) provides the basis for supporting the Town's character, diversity, civic identity, rural lifestyle, natural and cultural heritage in a way that optimizes positive impact on quality of life. Through the lens of sustainability, as outlined in A2.11.1, this means promoting community development that assures a high quality of life for present and future generations. To this end, the Official Plan provides strategy objectives related to water, community features, transportation, and the natural environment.

Water	<ul style="list-style-type: none"> All commercial, industrial, institutional, recreational, and residential development proposals must be supported by the Stormwater Management report. and conserve water resources.
Community	<ul style="list-style-type: none"> Directs energy conservation practices to multiple factors that contribute to healthy communities. Specific direction to encourage and promote energy conservation through specific forms of development.
Transportation	<ul style="list-style-type: none"> Encourage alternative modes of transportation, specifically walking and cycling in urban areas where appropriate.
Natural Environment	<ul style="list-style-type: none"> See the Halton Hills Green Development Standards.

City of Richmond Hill Official Plan (2018)

The City of Richmond Hill focuses on using the Official Plan as a tool to communicate the risks that climate change impacts pose to the municipality. To inform policy direction, the City undertook a Corporate Climate Change Risk Scan to identify municipal climate risks and prioritize initiatives that address the highest risks.

The Official Plan is supported by a Climate Change Framework. This is an umbrella document that outlines the City's climate change mandate and direction for applying the climate change lens across the municipality.

Water	<ul style="list-style-type: none"> Direction for development dictated by proximity to Oak Ridges Moraine, specifically to preserve and protect the
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	ecological and hydrological integrity of key natural heritage features and functions.
Community	<ul style="list-style-type: none"> • Direction from upper-tier (York Region) to incorporate sustainable design. • Policy direction to develop and implement Sustainable Design Criteria.
Transportation	<ul style="list-style-type: none"> • Direct policy link between transportation system and greenhouse gas emission reductions. • Support for clean air initiatives and air quality protection.
Natural Environment	<ul style="list-style-type: none"> • Direction to collaborate with Conservation Authorities in order to protect natural environmental systems over the long-term. • Official Plan updates looking to include comprehensive zoning bylaw to achieve tree canopy targets.