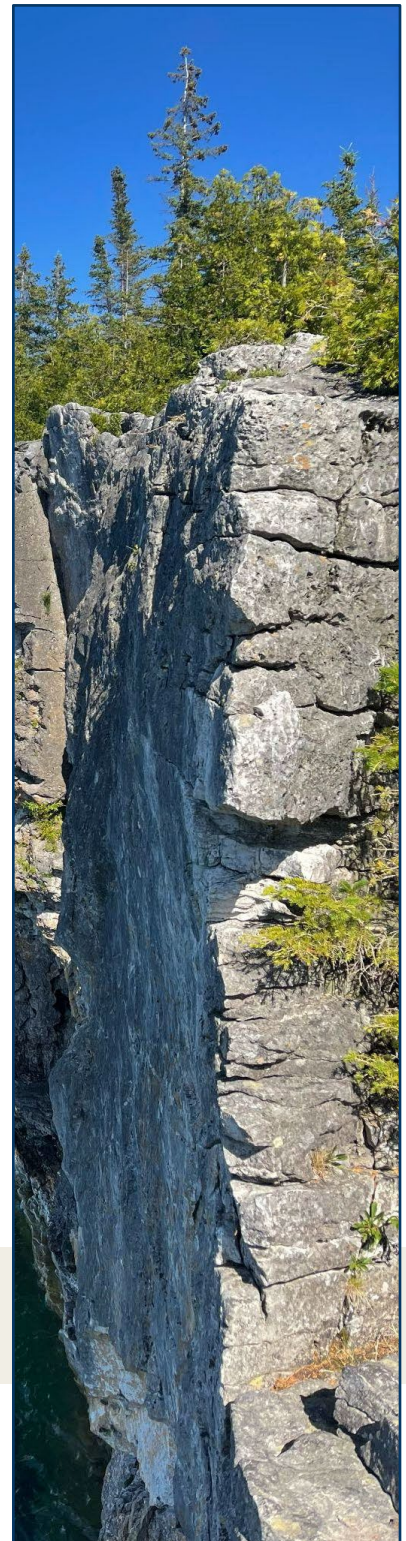
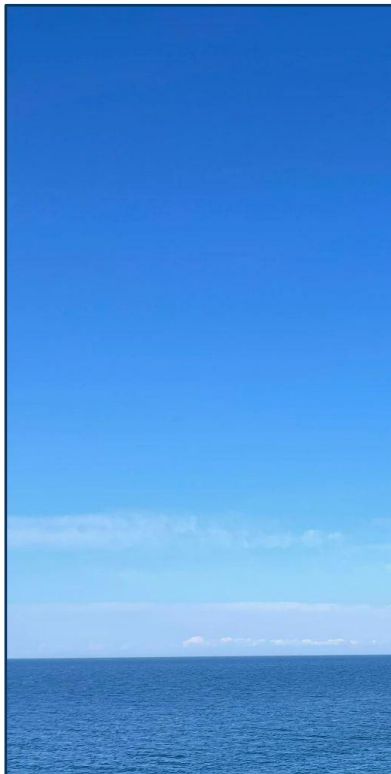


Bruce County High Performance Policies for Climate Change



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Executive Summary

Bruce County is updating its Official Plan and is looking to identify and implement policies that will help the community reduce its contribution to and minimize the impacts of climate change. In conducting this research two main objectives were used: the first, to compile a literature review and an updated jurisdictional scan of climate change policies in comparable municipalities, and the second, to complete a critical examination of policy and provide recommendations.

In conducting this research, it is acknowledged that climate change impacts are often unique and differ depending upon local features. Bruce County's proximity to Lake Huron exposes the community to several risks, including rising water levels and flooding due to increased storm severity. The County is also part of the Niagara Escarpment and these natural features may be impacted by climate change, as well as playing an important role in mitigating the impacts of climate change.

Our recommendations are structured in three sections:

1) the overall language and direction of policy. The Official Plan should use language that clearly indicates that climate change is a priority, address climate mitigation and adaptation, and point to other climate policies and plans within the County's regulatory framework where appropriate.

2) specific policies to include in the Official Plan. Specific policies we recommend for inclusion within the Official Plan are consistent with provincial guidance, impactful mitigation/adaptation policies, and relevant to Bruce County. They [include](#), Intensification, Renewable Energy, Active Transportation, Natural Sequestration, and the incorporation of Climate Projections.

3) complementary policies outside of the Official Plan. Three policy strategies and plans that are complementary to the Official Plan in addressing climate change are also discussed: Climate Action Plans, Energy Management Plans, and Climate Lens Policies.

Introduction

Bruce County is in the process of updating its Official Plan. As part of that process, it is looking to identify and implement policies that will help the community reduce its contribution to and minimize the impacts of climate change. A report from the Government of Canada found that more than 50% of Canada's greenhouse gas (GHG) emissions are within the direct or indirect influence of municipalities, through the "local management of buildings, transportation, water, waste and land-use" (Environment and Climate Change Canada [ECCC], 2022a, p. 87). The Official Plan is an important tool for guiding the sustainable development and growth of these areas within Bruce County. A previous report from the consulting firm StrategyCorp (October 2020) addressed this issue at a high level, while the aim of this project was to provide specific and actionable recommendations for policies that could be implemented within the Bruce County Official Plan.

To aid in this research, the Bruce County planning department requested the support of graduate students from the University of Guelph's Rural Planning & Development faculty, as part of the prescribed coursework for the Advanced Planning Practices course.

This project had two objectives, the results of which are detailed in this document:

1. Compile an updated jurisdictional scan of climate change policies in comparable municipalities.
2. Complete a critical examination of policy recommendations, differentiating land use planning, guidelines, and strategic planning policies.

Methodology

This research draws on a literature review and jurisdictional scan of municipal climate change policies. The literature review focused on academic and government reports on best practices for addressing climate change through land use planning. A review of the relevant provincial policies and plans was also conducted. This research helped to identify several areas where policy can be effective in addressing climate change (see **Table 1** below).

The jurisdictional scan consisted of a review of the Official Plans for the Counties of Grey, Huron, Northumberland, Simcoe, and Wellington. These municipalities are similar in terms of their geographic location and climate change vulnerability. For each municipality, their Official Plan was searched for relevant keywords, such as "climate change," "greenhouse gas emissions," "adaptation," "mitigation," and "resilience." All relevant results were collected, compiled into a spreadsheet (see **Appendix A**), and categorized based on topic and type of policy. Findings were then synthesized to understand how various topics were addressed.

Table 1. *Climate Change Policy Areas*

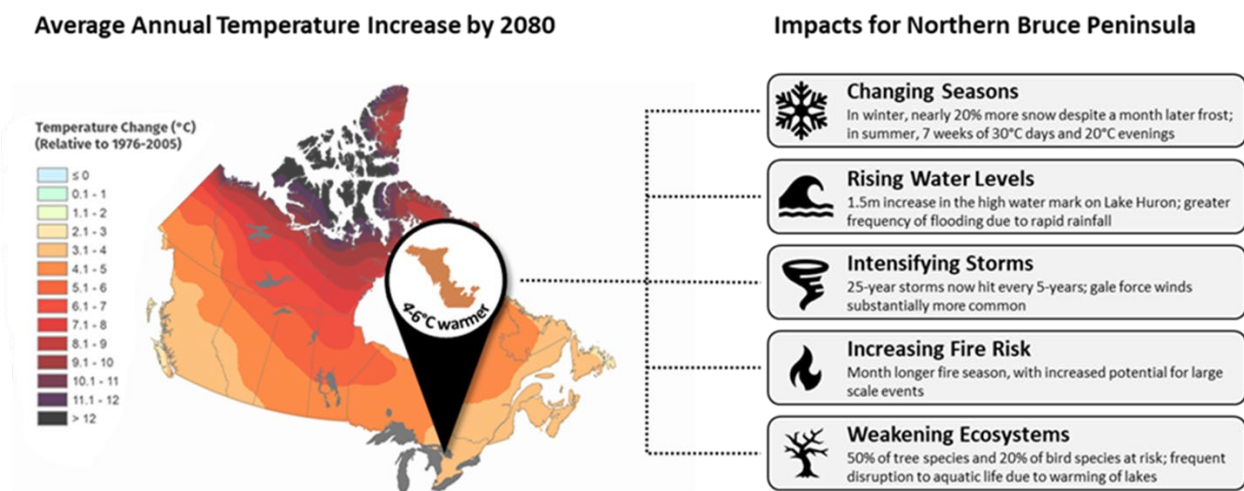
Mitigation Focused	
Policy Area	Example
Agriculture	Encourage sustainable techniques to reduce methane.
Air Quality	Target reduction in atmospheric pollutants.
Energy Efficiency	Improve energy conservation through sustainable design.
Land-Use	More density to reduce heating / transportation emissions.
Natural Heritage	Natural Heritage supports carbon sequestering.
Transportation	Support low emission transport (e.g., active transport, EVs).
Waste	Reduce organic waste; better landfill practices.
Adaptation Focused	
Policy Area	Example
Infrastructure	Building to withstand more frequent 1-in-100 years storms.
Public Health and Safety	Limit risk from increased climate-related natural hazards.
Water Management	Manage climate-related increase in water levels / rainfall.

Context

Background on Climate Change

Climate change is an increasingly significant policy concern for nations and communities across the globe, with millions already feeling its impacts. **Figure 1** illustrates several examples of predicted impacts in Bruce County. Addressing climate change involves two broad sets of actions, mitigation and adaptation, as shown in **Figure 2**.

Figure 1. *Impacts of Climate Change*

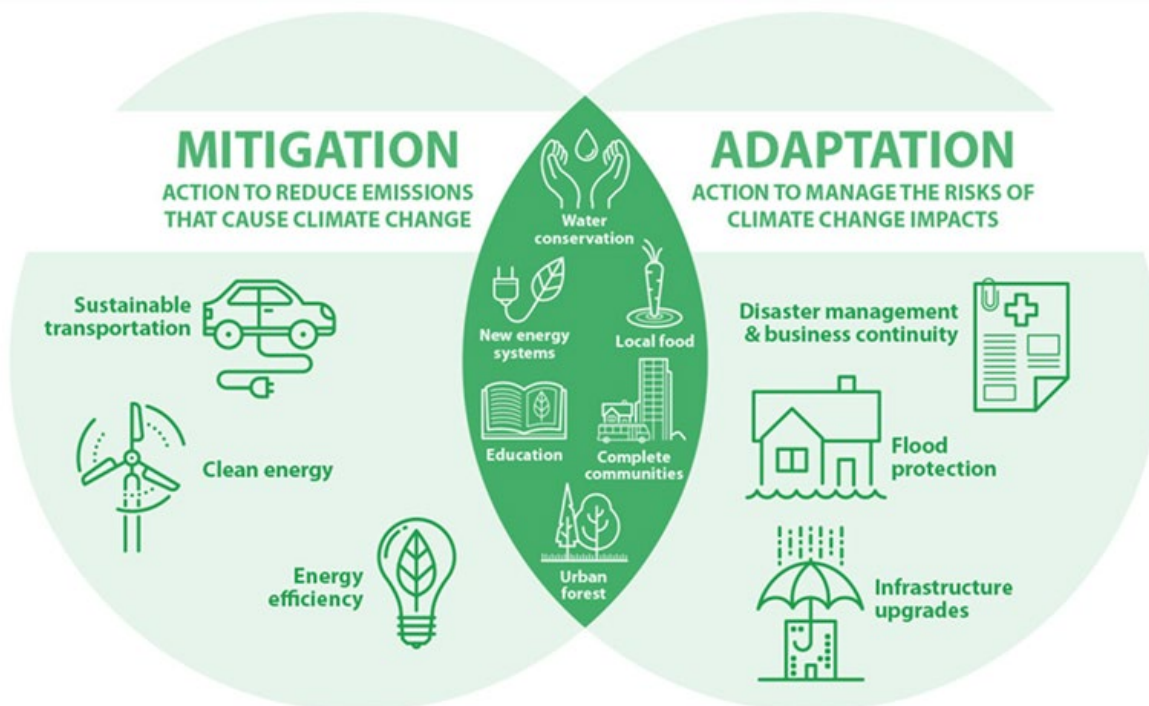


Source: *Prairie Climate Centre, Climate Atlas of Canada (2019)*.

Mitigation aims to prevent climate change by reducing the greenhouse gas (GHG) emissions from a country, region, or community, typically through energy reduction or shifting to lower-emitting sources. However, emerging practices also focus on preserving natural environments that reduce atmospheric carbon, such as forests and other wilderness areas.

By contrast, *Adaptation* recognizes that some climate change is inevitable and must be accounted for through measures to reduce potential harms. Many of these strategies focus on changes at the community or facility level to protect against specific hazards, like fires, floods, or storms, while others focus on protections for individuals, such as emergency preparedness.

Figure 2. Mitigation vs. Adaptation



Source: *Climate Adaptation Plan*, City of Guelph (2023).

Climate Change & Bruce County

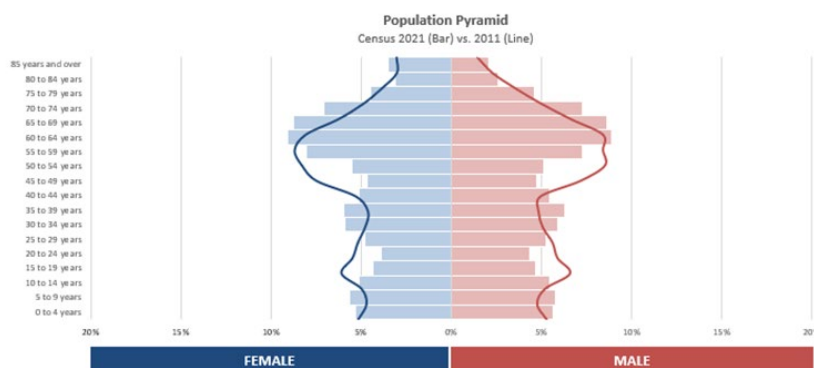
While climate change is a global crisis, its impacts are often uniquely local in nature. Understanding the distinct features of Bruce County is essential for developing appropriate policies to address climate change.

The County's physical location and characteristics are one such feature; its proximity to Lake Huron uniquely exposes the community to several climatic risks, including rising water levels and overland flooding due to the increasing intensity of storms. The Niagara Escarpment also contributes distinct physical and environmental characteristics to the area. The importance of these natural features to the culture and character of the area raise the importance of potential disruptions to the biosphere as a result of climate change.

Additionally, the region's predominantly rural nature poses challenges to both adaptation efforts (e.g., remoteness of individuals during major storm events exacerbated by climate change), and mitigation efforts (e.g., high car dependency due to geographic dispersion and limited active or public transportation options).

Demographically, Bruce County typically skews older—and increasingly so, as shown in **Figure 3**. Evidence has consistently shown that elderly populations are more vulnerable to impacts of climate change such as extreme heat, creating an important risk that must be managed.

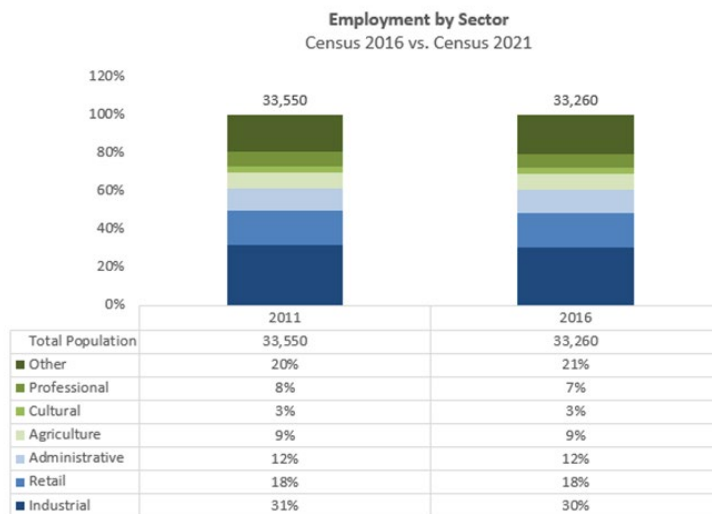
Figure 3. Demographic Profile of Bruce County



Source: *Bruce County Census Profile*, Statistics Canada (2023).

Economically, as shown in **Figure 4**, local employment is primarily in the industrial sector, which includes manufacturing, construction, and utilities, all known sources of emissions. The age, low density, and fossil fuel heating systems that are prevalent in the local housing stock also contribute to the County’s carbon footprint.

Figure 4. Economic Profile of Bruce County



Source: *Bruce County Census Profile*, Statistics Canada (2023).

Literature Review

A literature review was conducted to investigate the academic perspective on climate change and municipal policy. The purpose was to determine if research indicated any gaps and best practices in municipal policy as it relates to climate change.

The role of municipalities in addressing climate change mitigation and adaptation through policy was clear across the literature reviewed. Guyadeen & Henstra (2023) explain the importance of effectively addressing both mitigation and adaptation climate change strategies, including the long-term role of climate change plans. In evaluating climate change plans in Canada, Guyadeen et al. (2018) share three key findings: 1) plans typically prioritize mitigation over adaptation; 2) implementation, monitoring, and 3) evaluation of plans was challenging; and scholar and practitioner stakeholder engagement was given insufficient consideration. It is stated that, “rural municipal climate change planning in Ontario is in its infancy ... rural community Official Plans and strategic plans make limited mention of climate change” (Guyadeen & Henstra, 2023, p. 130).

Caldwell et al. (2021) discuss the importance of using an agricultural lens when developing municipal policies and strategies because agriculture both impacts and is impacted by climate change. Agriculture related uses are significant contributors to GHG emissions, however, along with natural heritage features, they are also important land bases for carbon sequestration (Guyadeen & Henstra, 2023; Caldwell et al., 2008). It is important that environmental values and strategies are embedded within municipal policy through Official Plans and/or policy strategies outside of the Official Plan (Caldwell et al., 2008). In addition to policy, risk assessment and forecasting is an important tool that can be used to respond and adapt to climate change as well as inform policy decisions.

Two main themes emerged from Amoroso et al. (2018) that include stormwater management and intensification, both of which have a role in Official Plans. Increased temperatures due to climate change has resulted in increased precipitation, severe storm events, flooding, drought, weather extremes, and a rising sea level, all of which impact stormwater management. The implementation of policy supporting the use of green infrastructure, such as permeable surfaces and bioswales, is an example of adaptation to climate change. Intensification and compact mixed-use community development is another key policy area that can mitigate climate change by encouraging the use of active transportation, ultimately reducing GHG emissions.

Policy Context

Planning is one of the many important tools that policy-makers in Bruce County can use to address the unique challenges of climate change. While the focus of this study is the use of the Official Plan in particular, other components of the local planning hierarchy can also provide direction.

The Planning Act, 1990

The Planning Act requires municipal councils to “have regard to... the mitigation of greenhouse gas emissions and adaptation to a changing climate,” (s. 2(s)), and more specifically, for municipalities to update their Official Plans so that they “contain policies that identify goals, objectives and actions to mitigate greenhouse gas emissions and to provide for adaptation to a changing climate, including through increasing resiliency” (s. 16(14)).

Provincial Policy Statement, 2020

The Provincial Policy Statement (PPS) defines the impacts of climate change as “meaning the present and future consequences from changes in weather patterns at local and regional levels including extreme weather events and increased climate variability (p.45). The PPS vision for land use planning includes efficient and compact land use patterns that optimize “the use of land, resources and public investment in infrastructure and public service facilities ... that increase the use of active transportation and transit before other modes of travel and ... permit better adaptation and response to the impacts of a changing climate” (Part IV, p.5), recognizing that this will vary between regions.

Greenbelt Plan

The Greenbelt Plan builds on the PPS to “support a thriving economy, a clean and healthy environment and social equity” (s. 1.1). This Plan emphasizes the role of complete communities and recognizes compact walkable and transit supportive communities (where feasible) will work towards greenhouse gas emission reductions and Ontario’s long-term net-zero goal (s. 1.1).

The Greenbelt Plan states that parkland, open space and trail systems “serve as an important component of complete communities and provide important benefits to support ... improved air quality and climate change mitigation” (s. 3.3), and “helps address the causes and impacts of climate change by capturing and storing carbon, recharging aquifers and protecting biodiversity and sensitive areas” (s. 3.3).

Protected Countryside Goals include “integrating climate change considerations into planning and managing the Agricultural System, Natural Heritage System and Water Resource System to improve resilience and protect carbon sequestration potential, recognizing that the Natural Heritage System is also a component of green infrastructure and ... incorporating techniques to reduce greenhouse gas emissions, and increasing the resilience of settlement areas and infrastructure within the Greenbelt” (s. 1.2.2.6). *Note: Countryside Policies do not apply to NEP*

Niagara Escarpment Plan

The Niagara Escarpment Plan (NEP) states that the escarpment contains “geological features and natural features that provide essential ecosystem services, including water storage, water and air filtration, biodiversity, support of pollinators, carbon storage and resilience to climate change” (s. 1.3). The Escarpment Protection Areas are environmentally significant, “including increased resilience to climate change through the provision of essential ecosystem services” (s. 1.4.). The NEP Development and Growth Objectives state ‘minor urban areas’ and ‘urban areas’ should “encourage reduced energy consumption, improved air quality, reduced greenhouse gas emissions (consistent with provincial targets) and work towards the long-term goals of lower carbon communities, net-zero communities and increased resilience to climate change, through maximizing opportunities for the use of green infrastructure and appropriate low impact development” (s. 1.6.8.5.5, s. 1.7.5.2, s. 1.8.5.2). The NEP Niagara Escarpment Parks and Open Space System (NEPOSS) natural areas “help mitigate and improve resilience to climate change by providing green infrastructure, capturing and storing carbon, recharging aquifers and protecting biodiversity and sensitive areas across the Escarpment” (s. 3.1).

Current approach

While Bruce County’s current Official Plan does not include any direct references to climate change, the County’s longstanding dedication to environmental stewardship and sustainable development has led to the inclusion of many policies in the Official Plan which contribute to mitigating and adapting to climate change. This includes policies directed towards environmental protection (s. 4.3), energy conservation (s. 4.11), and sustainable design elements (s. 6.5.2.10), amongst others. Recommendations within this report aim to build on these strengths.

Findings

Agriculture

Changes in climate pose risks to global food systems, which may increase risks of food insecurity. At the same time, the agricultural sector is also a major contributor to greenhouse gas emissions (ECCC, 2022a). Agricultural policies that support the sustainable development of the sector can help both in mitigating the impact of climate change, and in fostering a thriving local food system, which can buffer against potential future instability in global food systems. Despite being the source of 30% of national methane emissions, mitigation efforts in the agricultural sector can be challenging due to lack of research and cost-prohibitive infrastructure or technology requirements (ECCC, 2022b). Due to these and other factors, Canada's methane emission reduction strategy estimates only a 1% reduction in national methane emissions from the agricultural sector between 2020 and 2030.

Standard Practice

While all of the Official Plans reviewed contained agricultural policies, none of them included direct links to climate change. Bruce County's current Official Plan includes policies aimed towards sustainable agricultural development, which is on par with other municipalities reviewed.

Leading Practices

Leading practices were difficult to ascertain, as even the Government of Canada's methane reduction strategy acknowledged significant and prohibitive research and cost challenges to reducing agricultural emissions (ECCC, 2022b). The strategy noted that significant reductions in methane emissions from the agricultural sector over the past 15 years were mainly tied to increased productivity per animal and net reduction in the amount of livestock.

Relevance to Bruce County Official Plan

Due to limited research on practical and cost-effective climate change mitigation strategies for this sector, no specific policies are recommended. Official plan policies which generally support the preservation of farmland and strengthening local food systems will aid in long-term adaptation to climate-related changes in global food systems.

Air Quality

Climate change can have a significant impact on air quality, which in turn can have significant consequences for human health. Many of the policies in other sections which contribute to decreased emissions—such as the promotion of compact communities, increased active transportation, and natural heritage conservation—can also contribute to improved air quality.

Standard Practice

Air quality was minimally addressed in any of the Official Plans from comparable municipalities. A review of York Region’s Official Plan noted several policies which address air quality (see **Appendix B** for complete list):

2.3.28. To require health, environmental and air quality impact studies that assess the impact on human health for development with significant known or potential air pollutant emission levels near sensitive land uses.

Other policies required the development and adoption of “best practices in construction to mitigate climate change impacts and to reduce airborne pollutants” (s. 2.3.31), and the implementation of such practices when development occurs near “significant known air emission sources such as 400-series highways” (s. 2.3.29).

Leading Practices

As climate change research is rapidly and continuously evolving, incorporating broad policies that reference external documents can provide municipalities with increased flexibility, as supplementary documents may be periodically updated without the time-consuming process of an Official Plan amendment.

Relevance to Bruce County Official Plan

Comparable municipalities did not explicitly address air quality via Official Plan policies. However, York Region’s Official Plan, which is impacted by significant urban development, addressed air quality through several policies. One explanation for this could be that air quality policies may be more relevant where there are distinct sources of air pollutants (e.g., major highway), while rural municipalities tend to have smaller sources of emissions more dispersed throughout the region. For Bruce County, air quality can be indirectly addressed via policies in other areas that reduce air pollutants and emissions.

Energy Efficiency

Building emissions contribute ~15% of emissions in Canada, and the proportion is likely to be even higher in a rural community like Bruce County. Energy efficiency policies have the potential to reduce that amount, either by encouraging lower environmental impact uses of energy or reducing demand altogether.

Standard Practice

Most comparable municipalities incorporated some mention of energy efficiency. In general, these focused on encouraging development that was more efficient versus setting more strict standards. For example, Huron County included the following:

7.2. Settlement Patterns - Community Directions: The goal of the community is to engage in and implement leading energy efficiency practices for building and neighbourhood design, construction, and function.

Other related policies encouraged the development of renewable or other low carbon forms of energy. For example, Simcoe County included the following:

4.5.43.c Resource Conservation - Policies - Energy Conservation & Renewable Energy: Maximize, where appropriate, the use and production of alternative energy systems or renewable energy systems, such as solar, wind, biomass or geothermal energy;

Leading Practices

Communities who were more ambitious with their energy efficiency policies typically included explicit requirements for consideration by developers. For example, Grey County included:

9.13 Plans of Subdivision and Condominium: In any new applications for plan of subdivision or plan of condominium submitted to the County for approval, the proponent will need to consider and be prepared to justify ...Energy conservation and efficiency design measures such as LEED (Neighbourhood) and Low Impact Development

Other leading practices typically made reference to other municipal policies wherein more stringent energy efficiency requirements resided. For example,

Northumberland County made reference to Green Development Standards and its ambition that:

D8.3: Ensure that green development standards include, but are not limited to, the following:

- i)** Minimum standards for energy efficient building design to achieve reduced energy consumption and demand;
- vii)** Recommendations and standards for the installation of on-site renewable energy generation and energy recovery, where practicable.

Relevance to Bruce County Official Plan

Our analysis suggests that energy efficiency policies were highly relevant to the development of Official Plans like Bruce County's. In particular, energy efficiency is easiest to address and guide when buildings are initially developed, for which the Official Plan provides explicit direction. That being said, a practical approach to implementation of these principles is critical. Explicit direction around building technologies, heating systems, or other features of the built form that might result in efficiency can be overly restrictive to developers - and may have consequences for other policy goals for the county (e.g., creation of new housing supply to support affordability).

Land-Use

Policies regulating land-use—specifically, the density and form of development—have a two-fold impact on climate change. Not only do they influence building emissions, as denser construction is typically more energy efficient, but they shape transportation emissions as well, since more compact communities typically reduce the dependency on vehicular travel. As a result, land-use policies are a powerful tool for supporting climate mitigation efforts.

Standard Practice

Most municipalities studied acknowledged at minimum the connection between density and energy efficiency. For example, Wellington County stated:

7.3 Planning Approach: Land use patterns in the urban system shall be based on: **a)** densities and a mix of land uses which: **iii)** minimize negative impacts to air quality and climate change, and promote energy efficiency.

Others highlighted the influence of specific combined land uses on energy efficiency - such as the role of greenspace in reducing energy demand. Grey County stated:

7.3.2 Settlement Patterns - Community Policies & Actions: The County will require the provision of shade, either natural or constructed, to provide protection from sun exposure, mitigate urban heat island effects within our settlement areas, and reduce energy demands

Leading Practices

Leading practices acknowledged the much broader implications that additional density can have on climate change related considerations. Simcoe County in particular was a leader in this regard, highlighting:

3.5.28. Settlements - Policies - Growth management: Settlement form and building design shall consider conservation in energy, water and wastewater management, the current use or eventual introduction of public transit, the integration of paths and trails, bicycle routes, a compact and convenient design which encourages walking, the incorporation of natural heritage features and areas, public safety including the impact on policing services, and the preservation of public access to shorelines.

In fact, their Official Plan takes it even further - being the only one surveyed that set explicit targets for this issue:

3.5.24. Settlements - Policies - Growth management: The average County-wide intensification target is 32 percent

Relevance to Bruce County Official Plan

Similar to energy efficiency, land-use planning appears highly relevant to the Official Plan's focus on climate change. Unlike some other areas, the tools needed to encourage compact, dense, transit-oriented development are explicitly linked to the typical role of Official Plans.

Infrastructure

Climate change is leading to the disrepair of infrastructure and is predicted to threaten the integrity of infrastructure in Canada due to increased temperatures and more severe/unpredictable weather events (CICC, 2021). Active transportation can mitigate the impacts of climate change by reducing greenhouse gas emissions

through the reduction in vehicle use. Active transportation infrastructure such as multi-use pathways (walking, cycling, etc.), and bike lanes are important to ensure safe and efficient travel through non-vehicular means. Green development practices such as sustainable design (including EV chargers, energy efficiency, sustainable construction practices) and encouraging compact development forms also work to mitigate the impacts of climate change.

Standard Practice

Climate change adaptation was addressed through infrastructure policy in numerous comparable municipalities. Standard practices included encouraging the creation of active transportation infrastructure and encouraging compact and complete community design. For example, Huron County included:

7.3.9.1. Development design will incorporate active transportation (e.g. walking and cycling) and will consider energy efficiency and air quality with respect to building design and transportation.

4.3.1. Encourage compact, mixed-use development that incorporates compatible employment uses to support liveable and resilient communities.

Leading Practices

Develop performance checklists for prioritizing development that supports active transportation or intensification. Encourage green technology and construction methods for new construction and redevelopments. Examples include:

Simcoe County: 3.5.28. Settlement form and building design shall consider conservation in energy, water and wastewater management, the current use or eventual introduction of public transit, the integration of paths and trails, bicycle routes, a compact and convenient design which encourages walking and the incorporation of natural heritage features and areas. **4.8.46.** The County and local municipality will ensure, whenever feasible, the provision of facilities to encourage active transportation, and to address the needs of safety and convenience of pedestrians and cyclists when constructing or reconstructing public facilities.

Northumberland County: D8.3 - Green Development Standards

iii) Green building material requirements to promote durability and reduce the heat island effect;

iv) Requirements for Dark Sky compliant practices for exterior lighting;

v) Requirements for waste reduction, reuse and recycling in the construction process.

Relevance to Bruce County Official Plan

Infrastructure policy can address climate change through numerous avenues which include, adaptation techniques (e.g., construction methods aimed at withstanding more extreme weather events), encouraging the use of green development standards and green building technologies (e.g., performance checklists, sustainable design, & LEED), the development of EV charging stations, and encouraging compact forms of development and active transportation through ‘complete communities’.

Natural Heritage

Natural heritage systems provide climate change benefits through mitigation by the removal of carbon dioxide from the atmosphere, and through adaptation by preventing erosion and aiding in reducing air temperatures (GIOC, 2021). The protection of natural heritage systems is an important way municipalities can support climate change mitigation and adaptation.

Standard Practice

Comparable municipalities focus on maintaining or improving natural heritage areas. Examples include:

Simcoe County: 4.5.43. d) Maximize the use of existing natural areas and newly planted vegetation to reduce the urban heat island effect.

Northumberland: D1.1 c) Maintain, improve and where possible restore the health, diversity, size and connectivity of natural heritage features, hydrologically sensitive features and related ecological functions.

Leading Practices

Support the acquisition of land with significant natural heritage features for conservation. Set minimum targets for ecological and hydrological restoration. Northumberland County included:

D1.1 e) ensure that only land uses that maintain, improve, or restore the ecological and hydrological functions of the natural heritage and hydrological features are permitted. **f)** encourage the acquisition of land that is the site of

significant natural heritage features by public authorities for conservation purposes.

C5 Oak Ridges Moraine f) development and site alteration shall be prohibited within key natural heritage features and hydrologically sensitive features.

Relevance to Bruce County Official Plan

Natural heritage is an important consideration and can mitigate the impacts of climate change through carbon sequestering. Comparable municipalities make minimal connections between natural heritage and climate change. This issue may be better addressed through policies and strategies outside of the Official Plan.

Public Health & Safety

Climate change increases risk to human health through increased incidences of natural hazards, including extreme heat waves, and increased frequency and severity of hurricanes or flooding. Those who are most vulnerable to the effects of climate change including, people with physical or mental disabilities, seniors, and people who are homeless or precariously housed, are also likely to have the least personal resources to adapt to its effects. In addition to the risk to human health, infrastructure is also at increased risk of damage which poses safety risks.

Standard Practice

While most of the Official Plans included goals around public health, none of the Official Plans reviewed contained policies which aimed to directly impact public health. Perth County's Official Plan includes "policies to ensure safe development from natural and human-made hazards as impacted by climate change" (s. 3.8). York Region includes:

2.3.32. To work with local municipalities and agencies to develop tools and strategies to mitigate and prevent potential impacts of climate change that may increase risks associated with natural hazards.

Leading Practices

Similar to Air Quality, policy around public health and natural hazards may benefit from the flexibility of referencing external documents which can more easily be updated to accommodate evolving research.

Relevance to Bruce County Official Plan

While population health is an important concern for all levels of government, at a municipal level these issues may be better addressed through other policies and strategies beyond the Official Plan.

Transportation

Climate change is predicted to cause damage to roads and railway infrastructure disrupting travel through the deterioration of pavement due to rising heat, increased rainfall, and disruptions to the ‘typical’ freeze-thaw patterns (CICC, 2021). The impacts of floods, high winds, and increased precipitation create more hazardous travel conditions (CICC, 2021). The deterioration of transportation infrastructure will impact safety, and substantially impact associated maintenance costs (CICC, 2021). Active transportation can decrease the pressure on transportation infrastructure, encourages healthier lifestyles, and mitigates the impacts of climate change. Grey County’s Official Plan states, “active transportation provides an opportunity for communities to reduce their carbon footprint” (s. 7.13).

Standard Practice

Comparable municipalities encourage the creation of active transportation infrastructure. Examples include:

Huron County: 3.2. Active transportation including walking, cycling and their corresponding trails, lands and paths are encouraged. **3.3.8.** The County will plan for a safe, energy efficient transportation system.

Northumberland County: C1.2.1 h) Implement street designs that provide for pedestrian, cycling and other non-motorized modes of transportation to help create more healthy and complete communities.

Leading Practices

Encouraging the development of active transportation systems by requiring and supporting the development of local Active Transportation Plans. Examples include:

Huron County: 7.3.9.1. Development design will incorporate active transportation (e.g. walking and cycling) and will consider energy efficiency and air quality with respect to building design and transportation.

Simcoe County: 4.8.45. When considering secondary plans and development applications the County and local municipalities shall pursue the connection

of trails and/or bicycle facilities among local municipalities and beyond County boundaries and require the dedication of land for such use in accordance with the Planning Act. **4.8.47.** With cooperation and support from the County, local municipalities shall develop a municipal Active Transportation Plan as background information to inform the local municipal official plans for primary settlement areas.

Relevance to Bruce County Official Plan

Transportation policy can mitigate the impacts of climate change through Official Plan policy and through the development of Active Transportation Plans which serve to encourage non-motorized forms of transportation by implementing safe, and efficient active transportation networks.

Waste

Methane contributes to approximately 30% of global warming, and in Canada, waste is one of the three largest contributors to methane emissions (ECCC, 2022b). Methane emissions from waste in landfills is projected to be reduced by 45% through mitigating actions (ECCC, 2022b). Key actions include diverting biodegradable waste such as food, yard waste, paper and wood away from landfills (ECCC, 2022b).

Standard Practice

Waste was minimally addressed beyond standard waste disposal in comparable municipalities.

Leading Practices

The Grey County Official Plan contains a section dedicated to responsible waste management and reduction with respect to climate change. Grey County includes:

8.10 - Managing Our Waste

- 4)** In addition to waste diversion, the County encourages strategies that would reduce potential waste (e.g. packaging and advertising materials) from entering households and places of business.
- 8)** The County and local municipalities will consider implementing the Food and Organic Waste Policy Statement issued under the Resource Recovery and Circular Economy Act, 2016 ... including the development and implementation of education programs aimed at preventing food waste.

Relevance to Bruce County Official Plan

While waste is related to climate change and may be used as a mitigation strategy, comparable municipalities incorporated more general goals pertaining to waste with the exception of the Grey County Official Plan which dedicated a section to waste (s. 8.10). This category may be addressed through an Official Plan or through policy and strategy guidelines outside of the Official Plan.

Water Management

Many of the key risks emerging from climate change relates to water. Intensifying storms, greater in-land flooding, and changing water levels all pose risks to municipalities that are growing in ways not yet fully understood.

Standard Practice

Each municipality studied acknowledged the importance of managing water resources. Wellington County's language was representative in this regard:

4.9.4 Policy Direction: ensure land use decisions promote water conservation efforts and support the efficient use of water resources;

Many also highlighted the role that the Official Plan played in managing the risks associated with water. For example, in the case of Northumberland, the focus was on ensuring water quality and safety:

D2.2 Restriction on Development and Site Alteration: The study [required under this official plan] should take into consideration the existing water quality of the water body, surface water run-off, impact and loadings of phosphorous from septic systems, type of soils, stormwater management and nature of vegetation.

Some municipalities attempted to set expectations around what level of risk / water level projections to use, but these often didn't include climate considerations and were instead based on historical data. For example, in Simcoe County:

3.3.19. General Development Policies - Storm Water Management:

Control post-development run-off rates to the County right-of-way to the pre-development condition for the 1:2 year through 1:100 years design storm event or Hurricane Hazel storm (1954)/Timmins storm flooding hazard limit, whichever is greater;

Leading Practices

Very few of the municipalities evaluated acknowledged climate change as part of their considerations around water management. In part this is due to their reliance on provincial policies guiding the management of water resources, but it may also demonstrate a lack of awareness of the growing risks due to climate exchange.

Huron County's Official Plan demonstrates leading practice in this regard, drawing an explicit connection between the issues:

7.3.8 Settlement Patterns - Community Policies & Actions: All new development will address stormwater management in a manner that recognizes heavy rainfall events are expected to increase in frequency and intensity as a result of climate change. Stormwater solutions must be appropriate for the existing municipal stormwater infrastructure, recognizing that demands will likely increase. Low impact development, green infrastructure and on-site retention and infiltration of stormwater are encouraged.

Relevance to Bruce County Official Plan

Water management is relevant to Bruce County given its proximity to the Great Lakes Basin. Though many of the tools for addressing the water-related impacts of climate change are outside of the scope of Official Plans - they may feature more prominently in emergency management or asset management plans, for example - by controlling where development occurs the Official Plan has some role in ensuring that the new and emerging risks are considered.

Recommendations

Through our review of the case studies and other best practice documents developed by leading think tanks or advocacy organizations, it became clear the degree to which Official Plans should incorporate climate change policies remains extensively debated. While Official Plans have the ability to influence both climate mitigation and adaptation, it is not the only tool available. In certain cases, it may even be counterproductive to incorporate climate change considerations in Official Plans, creating conditions that are improperly balanced with other community objectives or creating the need for time-consuming Official Plan amendments (Clean Air Partnership, 2020).

With this context in mind, our recommendations for Bruce County are structured into three sections, each elaborated in the section below:

1. Overall language & direction
2. Specific policies to be included
3. Other complementary county policies

1. Overall language & direction

In addition to specific guidelines and policies, an Official Plan sets the tone for the goals and objectives of the community. It serves as an opportunity to communicate with residents, businesses, and visitors about what the community values and prioritizes. In doing so, it also provides broad guidance to staff and others on how to balance competing priorities in municipal decision-making.

The Official Plan should make clear that climate change mitigation and adaptation is a priority for the community. This is important to ensure alignment to provincial-level policy frameworks (e.g, the Provincial Policy Statement) as well as county-level policies and legislation. It should also make clear to readers that it focuses on the land-use-related aspects of climate change and refer readers to other climate policies and plans where appropriate. This avoids the perception that certain strategies have been “missed” within the Official Plan when they have simply been dealt with elsewhere in the County’s regulatory framework.

The Official Plan need not go so far as to set explicit targets for climate change, such as properties at risk or emissions reduced, but instead leave these to other more focused policies and plans. Instead, it should convey the County’s intention to reduce its exposure and contribution to climate change.

2. Specific policies to be included in the Official Plan

Our review of best practices suggests that the Official Plan should address several components of climate mitigation and adaptation explicitly. This report explored a wide range of options, but ultimately settled on five specific areas that are (1) consistent with provincial guidance, (2) substantially impactful on climate mitigation or adaptation, and (3) relevant to Bruce County's unique circumstances.

Intensification involves increasing housing density to reduce the energy intensity of buildings, thus impacting their contribution to climate change. Higher density also reduces vehicular emissions by making active transportation options more feasible. The Official Plan should make explicit that member municipalities must direct a significant portion of their commercial and residential growth to their primary settlement areas to achieve this aim.

Renewable Energy is critical to the resiliency of the local energy grid, which allows for diversification away from higher emitting sources (e.g., provincial grid and building-level propane or oil-based heating) towards cleaner electricity. The Official Plan should include explicit policy language that permits renewable energy throughout the county, while acknowledging that this permissiveness must still account for externalities like impact on wildlife and natural areas.

Active transportation is one of the ways to address the largest source of emissions in Bruce County: vehicular travel. Though active transportation is highly relevant in the built areas, it is less relevant for remote or less connected portions of the community, so policy must acknowledge feasibility and practicality wherever active transit routes (e.g., pedestrianized streets, bicycle lanes) are recommended.

Natural sequestration policies acknowledge the important role that agricultural and wilderness areas play in removing and storing atmospheric carbon. Policies that explicitly protect these areas from development not only ensures their carbon sequestration potential is maintained, but may support other policy aims, for example intensification via forcing more development into already settled areas.

Finally, incorporating **climate projections** into all infrastructure and community plans is crucial to prepare for the inevitability of climate change. As the climate crisis unfolds, many historical projections for flood levels, fireplains, and other hazards will be rendered obsolete for planning purposes. The Official Plan should acknowledge this with explicit direction to municipalities that their plans incorporate the latest climate science and that it is regularly updated as that science evolves.

Specific recommendations on policy language and potential measurements for each of the areas detailed above are included in **Appendix C**.

3. Other complementary County policies

The Official Plan is not the only relevant document for municipal climate change considerations; Bruce County may consider developing other related strategies and plans to effectively address climate change.

Climate Action Plans are often the overarching tool used by staff and councils to guide efforts on climate change. These plans typically identify a wide range of strategies beyond land-use to address both mitigation and adaptation, including incentives or community mobilization strategies. Several lower-tier municipalities in the County already have such plans, including Huron-Kinloss and Northern Bruce Peninsula. The County could utilize existing frameworks from organizations such as the Federation of Canadian Municipalities to develop their own plan.

Energy Management Plans are often a part of Climate Action Plans, though their needs and focus can be distinct. These plans will look at the specific energy systems that supply a community and its fit for purpose with the impact of population or economic growth on demand. For climate change purposes, these plans will help determine the carbon contribution of the community's energy sources, considering trade-offs between natural gas, propane, or electric systems, for example. While land-use planning in Official Plans will influence the propagation of different energy systems—and, in particular, local energy generation—Energy Management Plans will stray into numerous other fields such as building codes, taxation incentives, and infrastructure development.

Climate Lens Policies are a nascent but growing approach to managing climate change at a municipal level. Like Official Plans, they provide overarching guidance to councils, staff, and the community regarding climate change. However, in the case of the Climate Lens, their reach covers the full breadth of municipal decision making. These policies are frequently used as a “check” on all recommendations, including budgets, procurement, staffing, and so on, to ensure that climate has been properly considered. They can be a powerful complement to climate policies in Official Plans.

Conclusion

The impacts of climate change are felt globally, highlighting the importance of implementing policy addressing mitigation and adaptation. Local communities are unique and as a result are each impacted by and impact climate change differently. Bruce County is seeking to identify and implement policies that will help the community reduce its contribution to climate change, as well as reduce the impact of climate change on the County. A jurisdictional scan of climate change policies in comparable municipalities was conducted (see **Appendix A**), and a critical examination of policy recommendations differentiating land use planning, guidelines, and strategic planning policies was compiled. The jurisdictional scan revealed that while most comparable municipalities do address climate change, few do so in a targeted and specific manner. The critical review of policy recommendations and best practices indicated that while Official Plans can influence climate mitigation and adaptation, some policy belongs in plans and strategic guidelines outside of the Official Plan.

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Appendix A

Climate Change Policy Benchmark Database

Municipality	Category	Policy Type	Section	Policy
Grey County	General	Guideline	7.13 Climate Change	<i>The proper construction, maintenance, and upgrading of infrastructure is essential in maintaining its capacity to function currently and under the effects of climate change.</i>
Grey County	General	Guideline	7.13 Climate Change	<i>Monitoring the impacts of climate change on our systems, for example the natural heritage system, will allow us to adjust management activities, to best maintain their integrity and resiliency.</i>
Grey County	General	Guideline	7.13 Climate Change	<i>Under climate change, the risks associated with natural hazards may change and this should be considered as we plan for the future.</i>
Grey County	General	Guideline	7.13 Climate Change	<i>Encourage reduction of building demolition waste through the adaptive reuse of older and existing building stock.</i>
Grey County	General	Guideline	7.13 Climate Change	<i>Promote retrofits for energy efficiency in built heritage structures while maintaining their cultural integrity.</i>
Grey County	General	Guideline	7.13 Climate Change	<i>Mixed use development and housing intensification allows for more efficient use of existing and planned infrastructure and should be encouraged.</i>
Grey County	Energy Efficiency	Guideline	3.2 Economic objectives	<i>7) Consider energy conservation when assessing private and public sector proposals.</i>
Grey County	Energy Efficiency	Guideline	9.16 Community Improvement Plans	<i>Community Improvement Areas are intended to achieve one or many of the following objectives: i) To promote energy efficiency and sound environmental design;</i>
Grey County	Energy Efficiency	Land-use	3.4 General Policies Affecting Settlement Area Land Use Types	<i>16) Settlement form and building design must consider conservation in energy, water and wastewater management, the current use or eventual introduction of public transit, the integration of paths and trails, bicycle routes, a compact and convenient design which encourages walking, the incorporation of natural heritage features and areas, public safety including the impact on crime prevention, and the preservation of public access to shorelines.</i>

Grey County	Energy Efficiency	Land-use	9.13 Plans of Subdivision and Condominium	<p><i>In any new applications for plan of subdivision or plan of condominium submitted to the County for approval, the proponent will need to consider and be prepared to justify the following:</i></p> <p><i>1) The layout of the proposed plan with regard to matters of:</i></p> <p><i>f) Energy conservation and efficiency design measures such as LEED (Neighbourhood) and Low Impact Development,</i></p>
Grey County	Energy Efficiency	Land-use	1.4.1 Our Opportunities	<p><i>4) Farmland Protection In order to protect our farmland, we need to direct most non-agricultural development to our settlement areas. It will be essential to ensure we promote compact growth that will enable Grey County's communities to save money on infrastructure and operating costs. Compact communities reduce energy consumption, decrease air emissions, allow for quality mobility choices and significantly reduce consumption of prime agricultural lands</i></p>
Grey County	Land-use	Land-use	4.3 Our Community - 1. Healthy Environment	<p><i>The County, along with all local municipalities shall consider the following healthy planning policies as an integral part of review for all Planning Act applications: - The County will require the provision of shade, either natural or constructed, to provide protection from sun exposure, mitigate urban heat island effects within our settlement areas, and reduce energy demands. We want to promote shade and UVR (Ultraviolet Radiation) protection within our communities.</i></p>
Grey County	General	Land-use	7.13 Climate Change	<p><i>Green technologies and construction methods will be used whenever possible and feasible for new construction and the replacement of civic infrastructure.</i></p>
Grey County	General	Land-use	8.9.2.2 Stormwater Management	<p><i>2) Applicants may be required to submit studies or information relating to: d) Considering climate change and the increase of intensive storm events on the impact and design of the storm water management facilities</i></p>
Grey County	Energy Efficiency	Land-use	3.4 General Policies Affecting Settlement Area Land Use Types	<p><i>3) Local official plans, secondary plans, plans of subdivision and condominium plans shall ensure a proper and orderly street pattern facilitating safe motor vehicle, bicycle and pedestrian travel, efficient use of services, and a variety of housing and development opportunities within Settlement Area land use types. Consideration should also be given to the orientation of the streets and dwelling units in order to ensure energy efficiency, convenient access to retail facilities, schools, recreational facilities, and services via motor vehicle, bicycle and pedestrian travel. Street design and layout should also promote healthy community design.</i></p>

Grey County	General	Strategic	7.13 Climate Change	<i>Climate change is considered by many to be the world's biggest challenge in the coming century. Grey County's weather is already changing and will continue to change. We can expect that there will be more frequent snow squalls, more extreme rain and flooding events, and warmer summer temperatures. We must take action to adapt to and mitigate the effects of a changing climate. This will include making greater efforts to protect and to enhance the resiliency of our natural, built, and social environments. This Plan has been written with this objective in mind. Additionally, the County of Grey will work towards creating a Climate Change Action Plan that will coordinate the County's efforts to embrace and facilitate resilient, sustainable development to mitigate the effects of climate change within our communities. The County can become more resilient to climate change. Our efforts to adapt can also help Grey County remain affordable and economically competitive. The emerging green economy will provide significant opportunities for creative solutions, innovation, and job growth.</i>
Grey County	General	Strategic	7.13 Climate Change	<i>Parks and open spaces provide opportunities to increase tree canopy and woodland cover across the County.</i>
Grey County	General	Strategic	7.13 Climate Change	<i>Active transportation provides an opportunity for communities to reduce their carbon footprint.</i>
Grey County	General	Strategic	1.4.1 Our Opportunities	<i>9) Climate Change Adapting to a changing climate requires taking action to protect our natural, built, and social environments. How can we plan our County to mitigate impacts on climate change and reduce the negative impacts expected from extreme weather conditions? What strategies do we need to develop to achieve greater resiliency, safety, and wellbeing? It will be important to consider climate change when planning for the future and to promote development that is environmentally sustainable.</i>
Grey County	General	Strategic	5.5 Forestry Uses	<i>In addition to the County's Forest Management By-law (or any successors thereto), and the Natural Grey sections of this Plan, the following County policies shall guide forestry in the County: 11)The County will investigate the use of County owned forests for forest carbon management and the potential for these forests to be used for carbon sequestering.</i>
Grey County	Infrastructure	Strategic	8.9 Services, Utilities, Broadband and Other Technology Considerations	<i>Access to affordable utilities such as water, sewers, natural gas, and hydro is crucial to the health and financial wellbeing of our residents and businesses. The movement of data and information within and beyond the County is another important consideration for the future of Grey County. There have also been a number of technological advances in transportation over the years that we need to be aware of and plan for including drones, driverless cars, and alternative energy vehicles such as electric cars.</i>

Grey County	Waste Management	Strategic	8.10 Managing Our Waste	<i>9) With respect to food waste, ways of achieving options to disposal will be encouraged in the following order of priority: a) Source reduction; b) Diversion to food banks, soup kitchens, and shelters; c) Diversion to animal feed; d) Use for fuel conversion and energy recovery; e) Composting;</i>
Huron County	General	Guideline	7.3.9.3.a. Settlement Patterns - Community Policies & Actions	<i>The County will support measures and activities to address climate change through greenhouse gas reduction or sequestration;</i>
Huron County	General	Guideline	7.3.9.3.b. Settlement Patterns - Community Policies & Actions	<i>Local Official Plans will include goals, objectives, & actions to mitigate greenhouse gas emissions and provide for adaptation to changing climate, including increased resiliency; and</i>
Huron County	General	Guideline	7.3.9.3.c. Settlement Patterns - Community Policies & Actions	<i>All development will include considerations of climate change mitigation and adaptation measures.</i>
Huron County	Energy Efficiency	Guideline	7.3.9.3. Settlement Patterns - Community Policies & Actions	<i>Development and redevelopment will be encouraged to consider energy efficient construction techniques and incorporate energy efficient design principles and materials (e.g. LEED, Passivhaus (Passive House), and EnergyStar)</i>
Huron County	Energy Efficiency	Land-use	2.3.16. Agriculture - Community Policies & Actions	<i>Renewable energy systems such as wind, solar and biomass facilities may be permitted in agricultural areas</i>
Huron County	General	Land-use	7.3.9.1. Settlement Patterns - Community Policies & Actions	<i>Development design will incorporate active transportation (e.g. walking and cycling) and will consider energy efficiency and air quality with respect to building design and transportation. Active transportation will be encouraged by</i>

Huron County	Energy Efficiency	Land-use	3.3.13. Community Services - Community Policies & Actions	<i>Alternative energy systems and renewable energy systems shall be permitted throughout the County. Opportunities for the development of district energy should be provided, where feasible, to accommodate current and projected energy needs.</i>
Huron County	Land-use	Land-use	7.3.2 Settlement Patterns - Community Policies & Actions	<i>To respond to aging population, the need for more affordable housing and the need to address climate change, measures, such as additional dwelling unit policies, will be contained in local Plans to encourage more compact housing forms and densities that are affordable to low and moderate income households, to accommodate an aging population and to create more compact, walkable neighbourhoods.</i>
Huron County	Water Management	Land-use	7.3.8 Settlement Patterns - Community Policies & Actions	<i>All new development will address stormwater management in a manner that recognizes heavy rainfall events are expected to increase in frequency and intensity as a result of climate change. Stormwater solutions must be appropriate for the existing municipal stormwater infrastructure, recognizing that demands will likely increase. Low impact development, green infrastructure and on-site retention and infiltration of stormwater are encouraged.</i>
Huron County	Agriculture	Strategic	2.3.13. Agriculture - Community Policies & Actions	<i>Stewardship by local landowners is encouraged to support the wise management of the agricultural and water resources and contribute to the protection, restoration and management of natural areas and the health and integrity of the environment.</i>
Huron County	Energy Efficiency	Strategic	3.2 Community Services - Community Directions	<i>The community recognizes the importance of local renewable and alternative energy sources, and maximizing energy conservation. Renewable energy production provides economic and environmental benefits to Huron County and its residents, and along with other efforts, helps to address climate change</i>
Huron County	Energy Efficiency	Strategic	4.3.1. Economy - Community Policies & Actions	<i>The maintenance, enhancement and coordination of physical infrastructure such as water, sewer, road, rail, port, marina, air, electric vehicle charging stations and communication services such as internet and wireless technologies are critical for the economy's growth.</i>
Huron County	Energy Efficiency	Strategic	4.3.1. Economy - Community Policies & Actions	<i>Encourage compact, mixed-use development that incorporates compatible employment uses to support liveable and resilient communities; and</i>
Huron County	Energy Efficiency	Strategic	4.3.10. Economy - Community Policies & Actions	<i>Economic activity will have regard for efficient energy practices, new technologies, public health and sustainability of the community and natural systems.</i>

Huron County	Land-use	Strategic	7.2. Settlement Patterns - Community Directions	<i>The goal of the community is to engage in and implement leading energy efficiency practices for building and neighbourhood design, construction, and function.</i>
Huron County	Transportation	Strategic	3.2 Community Services - Community Directions	<i>Active Transportation including walking and cycling, and their corresponding trails, lanes and paths, are encouraged</i>
Huron County	Transportation	Strategic	3.3.8. Community Services - Community Policies & Actions	<i>The County will plan for a safe, energy efficient transportation system.</i>
Northumberland County	Agriculture	Guideline	D1.11 Agricultural Uses	<i>Nothing in this plan is intended to limit the ability of agricultural uses to continue in areas that are the site of a natural heritage feature.</i>
Northumberland County	Infrastructure	Guideline	D8.2 Performance Checklists	<i>d) Performance checklists may be used when reviewing planning applications, including applications for plan of subdivision, Official Plan and zoning by-law Amendment, and site plan control, to determine how each development proposal will assist in achieving the sustainability objectives and policies of this Plan and the policies of the local Official Plan. e) To assist in the review of an application, proponents of development and redevelopment may be required to submit a Sustainability Design Brief that addresses the sustainability objectives and policies of this Plan and the policies of the local Official Plan. f) The approval authority may also use performance checklists to prioritize the development of certain areas. The intent of prioritizing certain types or locations of development is to assist in providing components of community building that will contribute to the goal of creating healthy and complete, sustainable communities. For example, these components could include proposed development that provides critical infrastructure and densities in intensification areas, servicing infrastructure to employments areas or district energy to a secondary plan area.</i>
Northumberland County	Land-use	Guideline	A2 Guiding Principles	<i>3. To direct most forms of development to urban areas where full services are available and to support the efficient use of land and infrastructure to meet the needs of present and future residents and businesses and ensure that an adequate supply of land and housing choices are available for present and future residents.</i>

Northumberland County	Land-use	Guideline A1 Vision	<i>In order to accommodate expected growth, it is the intent of the County through this Official Plan to foster and require the development of a range and mix of uses in appropriate locations to support the establishment of complete communities in the County, where most of the daily needs of the residents and employees within the community can be met. In doing so, every effort must also be made to plan for a more healthy community, where residents and employees are encouraged to lead more healthy lifestyles as a result of the provision of a range and mix of uses, recreational amenities and open space areas.</i>
Northumberland County	Transportation	Guideline A2 Guiding Principles	<i>To establish an integrated transportation system that safely and efficiently accommodates various modes of transportation including trains, automobiles, trucks, and public transit, cycling and walking.</i>
Northumberland County	Energy Efficiency	Guideline D8.3 Green Development Standards	<p><i>Green development standards are intended to recognize the importance of and support sustainable site and building design in both the public and private realms. It is a policy of this Plan to:</i></p> <ul style="list-style-type: none"> <i>a) Encourage the development of green development standards, in consultation with the development industry, to ensure the sustainability goals and policies of this Plan and local Official Plans are addressed through development applications;</i> <i>b) Encourage all new municipal buildings and projects to meet the minimum standards necessary to satisfy the applicable required elements outlined in the green development standards;</i> <i>c) Ensure that green development standards include, but are not limited to, the following:</i> <ul style="list-style-type: none"> <i>i) Minimum standards for energy efficient building design to achieve reduced energy consumption and demand;</i> <i>vii) Recommendations and standards for the installation of on-site renewable energy generation and energy recovery, where practicable.</i>
Northumberland County	Energy Efficiency	Guideline F6 Community Improvement Plans	<i>Promoting energy efficiency and sound environmental design.</i>
Northumberland County	Infrastructure	Guideline D8.3 Green Development Standards	<ul style="list-style-type: none"> <i>iii) Green building material requirements to promote durability and reduce the heat island effect;</i> <i>iv) Requirements for Dark Sky compliant practices for exterior lighting;</i> <i>v) Requirements for waste reduction, reuse and recycling in the construction process;</i>

Northumberland County	Infrastructure	Land-use	C1.3 General Land Use Objectives for Rural Settlement Areas	<i>i) To encourage street design, parkland and an open space system that provides for pedestrian, cycling and other non-motorized modes of transportation to help create more healthy and complete communities; and,</i>
Northumberland County	Natural Heritage	Land-use	D1.1 Natural Heritage Resources-Objectives	<i>c) Maintain, improve and where possible, restore the health, diversity, size and connectivity of natural heritage features, hydrologically sensitive features and related ecological functions; e) Ensure that only land uses that maintain, improve or restore the ecological and hydrological functions of the natural heritage and hydrologic features are permitted; f) Encourage the acquisition of land that is the site of significant natural heritage features by public authorities for conservation purposes;</i>
Northumberland County	Natural Heritage	Land-use	C5 Oak Ridges Moraine	<i>f) Development and site alteration shall be prohibited within key natural heritage features and hydrologically sensitive features and their related minimum vegetation protection zone as identified by the Table in Part III of the Oak Ridges Moraine Conservation Plan. In accordance with the policies of the Oak Ridges Moraine Conservation Plan, conservation and resource management, transportation, infrastructure and utilities and low-intensity recreational uses may be permitted.</i>
Northumberland County	Land-use	Land-use	C1.2.2 Commercial Areas	<i>b) Encourage and promote development that combines commercial, residential and other land uses to facilitate the more efficient use of urban land and the establishment of a pedestrian environment;</i>
Northumberland County	Water Management	Land-use	D2.4 Stormwater Management	<i>b) In order to control flooding, ponding, erosion and sedimentation and to protect water quality and aquatic habitat or other natural habitat which depend on watercourses and other water bodies for their existence, stormwater management plans shall be required for any new development consisting of more than four lots or for commercial or industrial developments with large amounts of impervious area. Stormwater management will be undertaken in accordance with Ministry of Environment and Climate Change (MOECC) Guideline “Stormwater Management Planning and Design Manual, 2003. d) The development of naturalized stormwater management facilities, constructed with gentle slopes is promoted, and should be designed in accordance with the Ministry of the Environment and Climate Change guidelines.) The development of naturalized stormwater management facilities, constructed with gentle slopes is promoted, and should be designed in accordance with the Ministry of the Environment and Climate Change guidelines.</i>
Northumberland County	Water Management	Land-use	D8.3 Green Development Standards	<i>vi) Requirements for the application of stormwater management at the site level to maximize infiltration and reduce phosphorus loading</i>

Northumberland County	Transportation	Land-use	E2 Transportation	<i>e) Promote public transit, cycling and walking as energy efficient, affordable and accessible forms of travel; f) Protect transportation corridors to facilitate the development of a transportation system that is compatible with and supportive of existing and future land uses; j) Encourage the development of a walking and cycling trail system within the open space system that is accessible to the public utilizing trails, paths, streets and other public open spaces;</i>
Northumberland County	Water management	Land-use	D8.3 Green Development Standards	<i>ii) Minimum standards for water conservation in all buildings, and landscaping and maintenance;</i>
Northumberland County	Infrastructure	Strategic	C1.2.1 Residential Areas	<i>h) Implement street designs that provide for pedestrian, cycling and other non-motorized modes of transportation to help create more healthy and complete communities</i>
Northumberland County	Transportation	Strategic	D8.1 Health Impact Assessments	<i>a) Physical activity and pedestrian mobility is addressed in project designs that are safe and convenient for persons using all modes of travel regardless of age or ability;</i>
Northumberland County	Water Management	Strategic	D2.1 Water Resources Policies	<i>f) Planning for efficient and sustainable use of water resources, through practices for water conservation and sustaining water quality.</i>
Northumberland County	Water Management	Strategic	D2.2 Restriction on Development and Site Alteration	<i>c) Large development proposals (i.e. greater than 5 lots, resort/condominium development) in unserviced shoreline areas must be supported by the Ministry of the Environment and Climate Change guidelines. This is to ensure water quality protection. The study should take into consideration the existing water quality of the water body, surface water run-off, impact and loadings of phosphorous from septic systems, type of soils, stormwater management and nature of vegetation.</i>
Northumberland County	Water Management	Strategic	D1.12.1 Protection of Watercourses	<i>b)The County encourages the regeneration of natural areas near watercourses and the protection of headwater areas for maintaining natural hydrological processes within a watershed. d) In all cases where development is proposed adjacent to a watercourse, the approval authority shall be satisfied that the proposed development can be safely accommodated without there being a negative impact on the features and functions of the watercourse and its associated valley corridor.</i>
Northumberland County	Water Management	Strategic	D2.2 Restriction on Development and Site Alteration	<i>b) Mitigative measures and/or alternative development approaches may be required in order to protect, improve or restore sensitive surface water features, sensitive ground water features, and their hydrologic functions.</i>

Northumberland County	Energy Efficiency	Strategic	E2.5 Energy Supply	<i>b) Planning authorities should promote renewable energy systems and alternative energy systems, where feasible, in accordance with provincial and federal requirements.</i>
Simcoe County	Agriculture	Strategic	3.5.28. Agriculture - Objectives	<i>To promote a sustainable local food system that enhances opportunities for food, agriculture and agriculture-related businesses and/or producers to deliver products locally</i>
Simcoe County	Air Quality	Land-use	3.3.19. General Development Policies - Emissions	<i>Where a land use change is proposed that is likely to adversely affect existing uses or be adversely affected by existing uses, a feasibility study that assesses the impacts of odour, noise, vibration, particulates, or other emissions may be required in accordance with appropriate provincial government guidelines</i>
Simcoe County	Air Quality	Guideline	3.3.19. General Development Policies - Emissions	<i>Major facilities, such as utility and transportation facilities and corridors, airports, sewage treatment facilities, waste disposal sites, industrial installations, and mineral aggregate operations, and sensitive land uses shall be appropriately designed, buffered, and/or separated from each other in accordance with Provincial standards and guidelines to prevent unacceptable adverse effects from odour, noise, vibration, and other contaminants.</i>
Simcoe County	Energy Efficiency	Strategic	4.5.43.c Resource Conservation - Policies - Energy Conservation & Renewable Energy	<i>Maximize, where appropriate, the use and production of alternative energy systems or renewable energy systems, such as solar, wind, biomass or geothermal energy; and</i>
Simcoe County	Natural Hazards	Guideline	4.5.43.c Resource Conservation - Policies - Flood Plains	<i>Local municipalities shall consider the potential impacts of climate change that may increase the risk associated with natural hazards</i>
Simcoe County	Natural Heritage	Strategic	4.5.43.d Resource Conservation - Policies - Energy Conservation & Renewable Energy	<i>Maximize the use of existing natural areas and newly planted vegetation to reduce the urban heat island effect.</i>

Simcoe County	Land-use	Land-use	3.1.1. Growth Management - Strategy	<i>Direction of a significant portion of growth and development to settlements where it can be effectively serviced, with a particular emphasis on primary settlement areas</i>
Simcoe County	Land-use	Strategic	3.5. Settlements - Objectives	<i>To develop a compact urban form that promotes the efficient use of land and provision of water, sewer, transportation, and other services</i>
Simcoe County	Land-use	Land-use	3.5.6. Settlements - Policies - Growth management	<i>Municipalities with primary settlement areas will, in their official plans, focus and direct a significant portion of its population and employment forecasted growth to the applicable primary settlement areas while considering growth in other settlement areas through local growth management studies as per Section 3.5.8.</i>
Simcoe County	Land-use	Land-use	3.5.23. Settlements - Policies - Growth management	<i>The compact development of settlements as stated in Section 3.5.2 shall be based on specific density targets for local municipalities in Simcoe County. Accordingly, it is a policy of this Plan that development on designated Greenfield areas will be planned to achieve a minimum density target of residents and jobs</i>
Simcoe County	Land-use	Land-use	3.5.24. Settlements - Policies - Growth management	<i>The average County-wide intensification target is 32 percent</i>
Simcoe County	Land-use	Guideline	3.5.28. Settlements - Policies - Growth management	<i>Settlement form and building design shall consider conservation in energy, water and wastewater management, the current use or eventual introduction of public transit, the integration of paths and trails, bicycle routes, a compact and convenient design which encourages walking, the incorporation of natural heritage features and areas, public safety including the impact on policing services, and the preservation of public access to shorelines.</i>
Simcoe County	Water Management	Guideline	3.3.19. General Development Policies - Storm Water Management	<i>Control post-development run-off rates to the County right-of-way to the pre-development condition for the 1:2 year through 1:100 years design storm event or Hurricane Hazel storm (1954)/Timmins storm flooding hazard limit, whichever is greater;</i>
Simcoe County	Transportation	Strategic	3.1.4. Growth Management - Strategy	<i>Encouraging more businesses within the County providing jobs to County residents helps achieve an overall complete community within Simcoe County and supports environmental objectives such as reducing distances travelled to work thus setting up the basis of future transit supportive employment nodes.</i>

Simcoe County	Transportation	Strategic	3.2.12.b Growth Management - Framework	<i>Provides for enhanced transportation opportunities for pedestrians and cyclists</i>
Simcoe County	Transportation	Strategic	3.2.12.c. Growth Management - Framework	<i>Provides for densities and land use patterns supportive of transit service where planned to be available in the future;</i>
Simcoe County	Transportation	Guideline	4.8.45. Transportation - Policies	<i>When considering secondary plans and development applications, the County and local municipalities shall pursue the connection of trails and/or bicycle facilities among local municipalities and beyond County boundaries and require the dedication of land for such use in accordance with the Planning Act</i>
Simcoe County	Transportation	Guideline	4.8.46. Transportation - Policies	<i>The County and local municipality will ensure, whenever feasible, the provision of facilities to encourage active transportation, and to address the needs, safety and convenience of pedestrians and cyclists when constructing or reconstructing public facilities</i>
Simcoe County	Transportation	Strategic	4.8.47. Transportation - Policies	<i>With cooperation and support from the County, local municipalities shall develop a municipal Active Transportation Plan as background to inform the local municipal official plans for primary settlement areas which should include, as a minimum</i>
Simcoe County	Transportation	Guideline	4.8.49. Transportation - Policies	<i>Bicycle and pedestrian paths shall generally be parallel to but separated from the travelled portion of the roadway along existing and planned County Roads and utility corridors, parks and green spaces. Where required and feasible, County Roads shoulders may be adapted to provide safe cycling routes between settlement areas and other major activity nodes</i>
Simcoe County	Transportation	Guideline	4.8.58. Transportation - Policies	<i>The County will, in conjunction with local municipalities and GO Transit, establish Transit Service Areas and Plans to address such issues as:</i>
Simcoe County	Transportation	Strategic	4.8.59. Transportation - Policies	<i>The County, in conjunction with local municipalities, will work with the Cities of Barrie and Orillia to expand existing transit services to adjacent municipalities and communities within the County, where feasible and appropriate</i>
Wellington County	Water Management	Guideline	4.9.4 Policy Direction	<i>n) ensure land use decisions promote water conservation efforts and support the efficient use of water resources;</i>

Wellington County	Natural Hazards	Land-use	2.2 Our Commitment to the Future	<p><i>Over the next twenty years County Council commits to pursue planning policies which achieve the following objectives:</i></p> <p><i>2.2.15 Protect, restore or, where feasible, improve the diversity, connectivity and ecological functions of natural heritage features and areas such as wetlands, environmentally sensitive areas, streams and valley lands, woodlands, areas of natural and scientific interest, discharge and recharge areas and other open space areas; 2.2.18 Promote a natural heritage systems approach to watershed management that includes protecting the County’s Greenlands System and public health and safety.</i></p>
Wellington County	Land-use	Land-use	7.3 Planning Approach	<p><i>Land use patterns in the urban system shall be based on: a) densities and a mix of land uses which: iii) minimize negative impacts to air quality and climate change, and promote energy efficiency.</i></p>
Wellington County	Energy Efficiency	Strategic	2.2 Our Commitment to the Future	<p><i>Over the next twenty years County Council commits to pursue planning policies which achieve the following objectives: 2.2.22 Promote energy efficient land use and servicing decisions; 2.2.25 The County recognizes the need for increased energy supply to be promoted by providing opportunities for energy generation facilities, and supports the use of renewable energy systems and alternative energy systems, where feasible and appropriate.</i></p>
Wellington County	Energy Efficiency	Strategic	4.12 Community Improvement	<p><i>4.12.3 Identifying Areas Councils shall consider the following criteria in the designation of Community Improvement Project Areas: g) there is a need to remediate brownfields, improve the energy efficiency of buildings, or provide affordable housing;</i></p>
Wellington County	Infrastructure	Strategic	2.2 Our Commitment to the Future	<p><i>Over the next twenty years County Council commits to pursue planning policies which achieve the following objectives: 2.2.13 Provide the infrastructure required to accommodate growth in an environmentally and fiscally responsible manner;</i></p>
Wellington County	Natural Hazards	Strategic	2.2 Our Commitment to the Future	<p><i>Over the next twenty years County Council commits to pursue planning policies which achieve the following objectives: 2.2.17 Prevent, eliminate or minimize the risks to public health or safety and to property caused by natural hazards;</i></p>
Wellington County	Land-use	Strategic	8.3 Residential	<p><i>8.3.2 Objectives Wellington has set the following objectives for residential development: i) to encourage residential developments which incorporate innovative and appropriate design principles which contribute to public safety, affordability, energy conservation and that protect, enhance and properly manage the natural environment;</i></p>
Wellington County	Waste Management	Strategic	2.2 Our Commitment to the Future	<p><i>Over the next twenty years County Council commits to pursue planning policies which achieve the following objectives: 2.2.23 Ensure responsible waste management practices, which emphasize waste reduction, reuse and recycling.</i></p>

Wellington County	Water Management	Strategic	2.2 Our Commitment to the Future	<i>Over the next twenty years County Council commits to pursue planning policies which achieve the following objectives: 2.2.14 Maintain clean water, clean air and a healthy, diverse and connected Greenlands system;</i>
Wellington County	Water Management	Strategic	3.3 Guiding Growth	<i>Wellington has the following objectives for growth: to support a culture of conservation, including water, energy and cultural heritage conservation, air quality protection and integrated waste management.</i>

Appendix B

York Region Official Plan

Municipality	Category	OP Section	Policy	Policy Type
York	Air Quality	2.3.28	To require health, environmental and air quality impact studies that assess the impact on human health for development with significant known or potential air pollutant emission levels near sensitive land uses.	Land use
York	Air Quality	2.3.29	That appropriate mitigation measures to reduce and prevent exposure to air pollutants will be incorporated in community, building and site design near significant known air emission sources such as 400-series highways.	Guideline
York	Air Quality	2.3.31	To work with local municipalities and the building industry to develop and adopt best practices in construction to mitigate climate change impacts and to reduce airborne pollutants.	Guideline
York	Air Quality	2.3.36	That York Region and local municipalities develop, implement and periodically update sustainable development programs to achieve: i. Enhanced indoor air quality	Guideline

Appendix C

Potential Policy Language and Measurements

Policy Language	Rationale	Measurement
<p>Intensification <i>Municipalities will direct a significant portion of their commercial and residential growth to their primary settlement areas</i></p>	<ul style="list-style-type: none"> Increased housing density directly impacts and reduces the energy intensity of buildings – thus impacting their contribution to climate change Additional density also reduces vehicular emissions by making active transportation options more feasible 	<p>Overall density = County population / settlement area</p>
<p>Renewable Energy <i>Renewable energy generation will be permitted and promoted throughout the county in accordance with provincial and federal requirements</i></p>	<ul style="list-style-type: none"> Supports resiliency of the local energy grid and diversification away from higher emitting sources Consistent with numerous other municipalities seeking to diversify energy sources Aligns to other levels of government direction that certain areas are inappropriate 	<p>Renewable Energy Growth = Percentage change in local renewable energy generated</p>
<p>Active Transport <i>Ensure, whenever feasible, the provision of facilities to encourage active transportation, and to address the needs, safety and convenience of pedestrians and cyclists</i></p>	<ul style="list-style-type: none"> Transportation is the largest source of emissions for rural municipalities like Bruce County Active transportation is highly relevant in the built areas, though is less relevant for remote / less connected portions of the community 	<p>Active Transport Infrastructure = Percentage change in KMs of infrastructure (i.e., sidewalks, bike lanes)</p>
<p>Natural Sequestration <i>Preserve the community's existing inventory of greenspace, natural areas, and farmland in order to maximize its carbon sequestration potential.</i></p>	<ul style="list-style-type: none"> Farm and wilderness areas play an important role in the carbon cycle (i.e., the natural process by which atmospheric carbon is removed and stored in soil or biological materials). Policies that explicitly protect these areas ensures their carbon sequestration potential is maintained and supports other policy aims as well (e.g., forces more development to be in already settled areas). 	<p>Sequestration Coverage = Percentage of county land area covered by carbon sequestering areas (i.e., greenspace, farm land, natural areas)</p>
<p>Climate Projections <i>All plans for community infrastructure and the establishment of environmentally protected zones shall be developed using the latest available climate change projections for flooding, fire, and other hazards.</i></p>	<ul style="list-style-type: none"> As the climate crisis unfolds, many historical projections for flood levels, fireplains, and other hazards will be rendered obsolete for planning purposes. OP should acknowledge this with the explicit direction to municipalities that their plans incorporate the latest climate science - and that it is regularly updated as that science evolves. 	<p>Compliance = % of zoning boundaries / asset management plans utilizing recent climate projections</p>