Policy Direction Paper on Climate Change

Regional Official Plan Review

regional official plan 2051

January 2021

Regional Municipality of Waterloo

Executive Summary

Climate change is global problem with local causes and local solutions. The Regional Official Plan (ROP) is a key document for directing local action on climate change. The ROP is a central guiding document that provides the framework for land use planning, including growth, development, and protection of built and natural heritage assets across the Region.

The current 2015 ROP is under review to update policies and to plan for long-term population and employment growth to 2051. The current ROP provides strong direction on where and how we grow that will help us address climate change. This review provides an opportunity to update and strengthen the existing ROP policies in light of the climate emergency.

Since the industrial revolution, humans have released large amounts of greenhouse gases into the atmosphere, which trap heat and cause significant changes to the climate. If current emissions trends continue, the region is expected to get 'warmer, wetter, and wilder' – with more extreme heat, precipitation, and extreme weather events.[1] These changes will affect our health, infrastructure and buildings, natural environment, energy supply and distribution, and economy.[2]

Municipalities across the world are leading meaningful action against climate change, and Waterloo Region is one of the leading communities in Ontario working to find the best ways to address these challenges. Acting now to prepare for a low-carbon, resilient future is crucial as Waterloo Region builds a more equitable, prosperous, and sustainable community in the decades to come.

Transformative change is needed across the region to address climate change. The Region and all of the Area Municipalities have set a target to reduce community greenhouse gas emissions by 80% below 2010 levels by 2050. Land use planning is key to addressing climate change, and to achieving this transformation. Planning for long-term, sustainable growth and development is critical, since decisions about infrastructure and land uses can have implications for centuries to come.

This paper suggests three areas that must change: how we move, how we live and work, and how we build. Through applying energy and resiliency lenses to these categories, "Big Moves" are identified that highlight what must change to achieve a desired low carbon future (Section 4). It then proposes policy directions to be considered when updating the ROP to support transformative change across the community to address climate change (Section 5).

How To Read This Document

This paper proposes policy directions to be considered when updating the ROP to reduce energy use and greenhouse gas emissions, and become more resilient to a changing climate. The document contains elements to guide the region to transformative changes in how we move, how we live and work, and how we build, though "Big Move" items and policy directions to reduce energy and build resiliency in the community.

The document includes key questions for the public to provide input on the direction the Region intends to take to address climate change and meet our share of the emissions reduction obligations. There are also "What's That?" boxes that provide additional information on key terms or concepts.

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[1] University of Waterloo, Localized Climate Projections for Waterloo Region, 2015
[2] Region of Waterloo, A Community Climate Adaptation Plan, 2019

1.0 Introduction

Climate change is global problem with local causes and local solutions. Municipalities across the world are leading meaningful action against climate change, and Waterloo Region is one of the leading communities in Ontario working to find the best ways to address these challenges. Locally, the Region of Waterloo, the Cities of Cambridge, Kitchener, and Waterloo, and the Townships of North Dumfries, Wellesley, Wilmot, and Woolwich have all declared a climate emergency or climate crisis.[3] Local action is required to reduce our greenhouse gas emissions, prepare for the impacts of a changing climate, and prepare Waterloo Region to thrive in a low-carbon future. Acting now to prepare for a low-carbon, resilient future is a crucial opportunity for Waterloo Region to build a more equitable, prosperous, and sustainable community in the decades to come.

The Regional Official Plan (ROP) is a key document for directing local action. The ROP is a central guiding document that provides the framework for land use planning, including growth, development, and protection of built and natural heritage assets across the Region. The current 2015 ROP was adopted by Regional Council in 2009 and plans for growth to 2031. The ROP is under review to plan for population and employment growth to 2051. This review provides an opportunity to update and strengthen the existing ROP policies in light of the climate emergency. Policy changes to address climate change must also recognize the Region is anticipated to grow by approximately 325,000 people and 175,000 jobs from 2019 to 2051.[4] We will need to dramatically reduce our greenhouse gas emissions and energy use at the same time as our population grows by over 50%. This review builds on the existing 2015 ROP and includes a number of technical studies to inform the recommended approach for managing growth to 2051.

This paper proposes a number of policy directions to be considered when updating the ROP, in order to reduce energy use and greenhouse gas emissions, and become more resilient to changing climate. This discussion paper begins with an examination of the provincial and local policy context of the ROP with respect to climate change. It then outlines the need for transformative change to plan for a low-carbon future and prepare for the effects of a changing climate. It suggests three areas that must change: how we move, how we live and work, and how we build. It identifies the ways that the ROP can support changes at all levels in each of these areas, and ends with a set of options/ recommendations.

2.0 Existing Policy Context

2.1 Top-Down Approach, Adhering to Provincial Policies

The Region of Waterloo's Regional Official Plan must adhere to Provincial policy documents, including the Provincial Policy Statement, 2020 (PPS) and the Growth Plan for the Greater Golden Horseshoe, 2020 as consolidated (Growth Plan).

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[3] Region of Waterloo, Regional Council Meeting, October 9, 2019; City of Cambridge, Council Meeting, November 19, 2019; City of Kitchener, Council Meeting, June 24, 2019; City of Waterloo, Council Meeting, November 18, 2019; Township of North Dumfries, Council Meeting, October 28, 2019; Township of Wellesley, Council Meeting, October 8, 2019; Township of Wilmot, Council Meeting, September 23, 2019; Township of Woolwich, Council Meeting, October 1, 2019

[4] A Place to Grow: A Growth Plan for the Greater Golden Horseshoe, 2019 as amended

Provincial Policy Statement, 2020:
The [Provincial Policy Statement](#) (PPS) outlines matters of Provincial interest, including managing growth, protecting the environment, and protecting public health and safety. Broadly, the PPS supports compact developments, transit and transit-supportive developments, and the efficient use of land and infrastructure. Specific to climate change, and relevant to the ROP, the PPS recognizes that addressing climate change is essential for healthy, livable, and safe communities and long-term economic prosperity.[5] The PPS also requires municipalities to address climate change through land use patterns and densities, energy efficiencies, resilient infrastructure and public facilities, greenhouse gas emission reduction, active transportation, transit, maximize urban vegetation, and preparing for extreme weather events.[6]
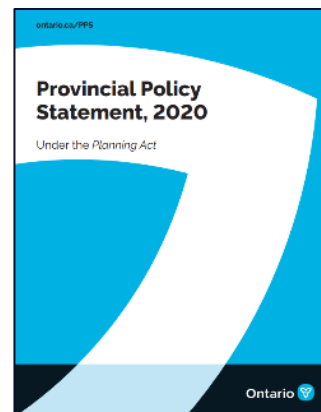
Growth Plan for the Greater Golden Horseshoe, 2020, as consolidated:
The [Growth Plan](#) provides a framework for how and where urban growth occurs in the Greater Golden Horseshoe. The Growth Plan promotes economic growth, increased housing supply, job creation and communities that are healthy, affordable, and convenient for people of all ages. Specific to climate change, the Growth Plan requires the ROP to include policies to identify actions that will reduce greenhouse gas emissions and adapt to the impacts of climate change, through:

- Developing complete communities
- Establishing minimum intensification and density targets
- Assess infrastructure risks and identifying actions and investments to address the risks
- Planning stormwater management that assesses the impacts of extreme weather events, and incorporates green infrastructure and low impact development
- Utilizing watershed planning
- Protecting the natural heritage system
- Promoting the local food system
- Supporting energy and water conservation[7]

The Growth Plan also encourages municipalities to:

- Integrate green infrastructure and appropriate low impact developments
- Establish municipal greenhouse gas emission reduction targets
- Incorporate strategies to reduce greenhouse gas emissions
- Develop greenhouse gas inventories[8]

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[5] Provincial Policy Statement policies 1.1.1i and 1.7.1k.
[6] Provincial Policy Statement policies 1.1.3.2c, 1.1.3.2d, 1.6.1, 1.6.6.1b.2, 1.6.6.7c, 1.8.1, and 3.1.3.
[7] Growth Plan for the Greater Golden Horseshoe policies 4.2.10
[8] Growth Plan for the Greater Golden Horseshoe policies 2.2.1.4g, 4.2.11

2.2 Bottom-Up Approach, Supporting Area Municipal Policies

Each municipality within Waterloo Region has policies within their Official Plans to varying degrees that address climate change. The Official Plans for Kitchener and Waterloo, for example, contain direct climate change policies, while other municipalities do not specifically reference climate change. However, there are links to climate change, through policies that direct compact, transit-supportive, complete communities and promote active transportation and transit. The urban municipalities also encourage adaptive reuse of existing buildings broadly. The Township official plans, on the other hand, have stronger policies to promote sustainable agricultural practices and local food systems. All of these policies act to reduce greenhouse gas emissions and the impact of extreme weather events.

The municipalities also generally support energy conservation efforts, through building design and orientation and the development of renewable energy sources. However, few have mechanisms to move beyond general support for energy conservation.

All municipalities also have strong policies to protect the natural environment and protect against nature disasters, such as floods. The Official Plans also generally recognized that climate change will increase the risk to human health, especially in regards to extreme weather events and air quality.

Some of the variation in climate change policies is warranted, such as the strong focus on compact developments in urban municipalities and strong agricultural policies in the Townships. However, other areas such as energy conservation and renewable energy, the integration of active transportation and land use planning, and adaptive reuse would benefit from more consistency in the ROP.

2.3 Region of Waterloo Policies

The Region actively strives to reduce greenhouse gas emissions, and has been working toward meeting incremental short-term corporate and community emissions reduction targets.

In 2018, Regional Council joined all City and Township Councils within the Region to set the community's long-term GHG reduction target: to reduce emissions 80% below 2010 levels by the year 2050. ClimateActionWR, in collaboration with the Region and its Cities and Townships, is developing a transformative 30-year strategy to achieve this goal, and a 10-year plan for the first decade.[9]

There are two other recent major Region policies that focus on climate change. The Community Energy Investment Strategy is intended to improve and sustain Waterloo Region's economic competitiveness and quality of life through the coordination of targeted energy investments, which are key to reaching ambitious GHG reduction targets. The Community Climate Adaptation Plan, approved in 2019, identifies climate-related risks to Waterloo Region (affecting health, buildings, roads and other structures, water and the natural environment), and includes 36 adaptation Actions to help our community prepare for and respond to these risks. Other key Region policies include climate change as significant components. The Regional Strategic Plan for 2019-2023 includes a "strategic imperative" to consider climate change across the Region's work.

The Regional Official Plan, 2015 includes policies that address many of the Provincial policy directions related to climate change. What follows is a chapter-by-chapter review of existing ROP policies and potential policy opportunities.

Chapter 2: Shaping Waterloo Region's Urban Communities contains strong policy direction to create complete communities that are compact and transit-supportive. This chapter also outlines the intensification and density targets. This chapter includes policies on the development of a Major Greenlands Strategy, which could help mitigate stormwater runoff; however, there is no reference to

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[9] More information is available at www.engagewr.ca/waterloo-regions-climate-action-strategy.

the impact of climate change, green infrastructure, or low impact development as mentioned in the Growth Plan, 2020.[10] This chapter also establishes the Countryside Line, which represents the long-term boundary between urban and rural areas. This boundary focuses the region's growth to urban areas, protecting the rural areas for agricultural uses and nature. This boundary can change through a Regional Official Plan Review, which is currently underway. Where the Countryside Line coincides with the Protected Countryside, the Countryside Line is considered permanent.

Chapter 3: Liveability of Waterloo Region contains an objective to mitigate climate change by conserving energy, supporting alternative and renewable energy, reducing emissions of greenhouse gases. The preambles to the Energy Conservation and Air Quality sections make the connection to climate change where energy conservation reduces greenhouse gas emissions and reduced emissions improves air quality. This chapter also commits the Region to investigate methods to increase the region's forest cover to 30%. Locally sourced material, products, and natural resources are supported to reduce greenhouse gas emissions from transport.

Chapter 4: Supporting Waterloo Region's Business Community seeks to facilitate and promote economic growth. However, this chapter only addresses climate change as a subject for the business community, other levels of government, and post-secondary institutions to research.

Chapter 5: Assessing Waterloo Region's Infrastructure Needs does not reference climate change or the risk assessment, which the Growth Plan requires to identify actions and investments to address risks to infrastructure due to climate change.

Chapter 7: The Greenlands Network opens with a preamble that relates to the maintenance, enhancement, and restoration of the natural heritage system, which is a critical component of adapting to and mitigating climate change.

There is opportunity throughout the ROP to strengthen policies by explicitly linking policies to the benefits they have on mitigating and adapting to climate change. For example, chapters 3, 5 and 7 all relate to livability which is directly related to resiliency and the healthy environment necessary to achieve this (air and quality, active lifestyle, disaster and extreme weather mitigation etc.) and the role of nature-based solutions, spaces and design principles to achieve this. There is also opportunities to strengthen existing policies and incorporate new policies in order to adhere to Provincial policies and further support Area Municipalities.

2.4 What the Regional Official Plan Can and Cannot Do
It is important to highlight what the Regional Official Plan (ROP) has the authority to direct and what it does not. The Region of Waterloo, through its Regional Official Plan, is one level of government that regulates where and how development occurs in the region. Under the authority of the Province, the ROP outlines a planned community structure, which serves as a guide for infrastructure planning and strategic investment decisions to support and accommodate forecasted population and economic growth. Other important governing bodies include the Cities and Townships (which must conform to Regional policies through their Official Plans), the Grand River Conservation Authority, and the Province of Ontario, through its policy documents outlined in Section 2.1 and the Ontario Building Code. Each of these governing bodies have a role to play in where and how the Region will grow.

The Region's role in addressing climate action will include: providing leadership; coordinating among stakeholders; developing and monitoring a clear and consistent policy framework; setting region-wide standards; and facilitating Regional and local action.

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[10] There was no reference in the 2006 Growth Plan, which the currently 2015 Regional Official Plan conforms to.

3.0 A Vision for Transformative Change

3.1 The Problem of a Changing Climate

Climate change is a global problem with local causes and local solutions. Since the industrial revolution, humans have released large amounts of greenhouse gases into the atmosphere, which trap heat and cause significant changes to the climate.

If current emissions trends continue, the average temperature in the region is expected to rise by 2 or 3°C by the 2050s. In 2020, we experience about 10 days a year with temperatures above 30 degrees Celsius, but this is expected to rise to 32 days per year by 2050 and 60 days per year by the 2080s. We also expect heavier rainfall events, more precipitation overall, and more freezing rain.[11] These changes will affect our health, infrastructure and buildings, natural environment, energy supply and distribution, and economy. [12]

Over the last few years, there has been growing recognition that climate change represents an urgent threat, and requires urgent and significant action. While changes to the climate will continue due to greenhouse gases that have already been released, there is an opportunity to prevent the worst impacts of climate change, if we act now.

To avoid more significant global harm, average global warming must be limited to 1.5°C, which would require global emissions to reach net-zero by 2050.[13] To stay below this temperature threshold, there is a limit to the total amount of greenhouse gases that can be emitted. Staying within this "carbon budget" is the challenge that we face, globally and locally.

Canadians are currently emitting much more than our share of global carbon emissions. In 2016, Canada emitted nearly 3.5 times more GHGs per person than the global average. As of 2018, Canada ranked 5th among countries for the highest emissions per person.[14] While emissions per person are lower in Waterloo Region than the national average, the region still emits approximately 1.7 times more greenhouse gases than the global average.

In response to the challenge of climate change, ClimateActionWR was formed nearly a decade ago. ClimateActionWR is a collaborative initiative run by Reep Green Solutions and Sustainable Waterloo Region, in partnership with the City of Cambridge, the City of Kitchener, the City of Waterloo, and the Region of Waterloo. Through this initiative, the cities and the Region adopted a community-wide Climate Action Plan in 2013, to reduce emissions by 6% in 2020, compared to 2010. This 6% target was based on a series of incremental changes: adjustments that had been identified that could be made to our current practices in the next few years to reduce emissions.

In the last decade, Waterloo Region made progress on a variety of action items under the Climate Action Plan, encompassing actions from municipalities, community members, organizations, and businesses across the region. By 2015, emissions had reduced by 5.2% in the region, well on our way to meeting our 2020 emissions reduction target of 6% in 2020. However, these reductions were largely the result the province's decision to remove coal fire electricity generation from the Ontario electricity system.[15] Therefore, local progress to reduce emissions have had limited effects on emissions so far.

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[11] University of Waterloo, Localized Climate Projections for Waterloo Region, 2015
[12] Region of Waterloo, A Community Climate Adaptation Plan, 2019
[13] International Panel on Climate Change, Summary for Policymakers of IPCC Special Report on Global Warming of 1.5°C Approved by Governments, 2018
[14] Union of Concerned Scientists, USA, Each Country's Share of CO2 Emissions, 2020
[15] ClimateActionWR, Our Progress, Our Path: An Update on Waterloo Region's Community Carbon Footprint, 2019

Approaches to address climate change to date have focused on incremental reductions of greenhouse gas emissions by making small changes to our activities, or making site specific adaptations that have been difficult to apply at a larger scale. To reach the necessary emissions reductions to avoid the worst impacts of climate change and stay below a global average temperature increase of 1.5C, we need more than incremental change.

3.2 Transformative Change Required, Not Business as Usual

In order to address the problems of a changing climate, we need to change our relationship with energy and our community. The same practices that created the climate emergency—such as personal automobiles powered by fossil fuels, inefficient buildings that require high energy usage to heat and cool, low density communities that are designed to use personal automobiles to complete daily activities, and the consumption of agricultural land for urban uses—cannot be relied on to get us out of it. We need a new, transformative approach to planning how we move, how we live and work, and how we construct buildings in the region.

For transformative change, we need to focus on what we want and need the community to be in 2051, and make changes today that will allow us to get there. This process is already underway. In 2018, municipal councils across Waterloo Region set a community emissions reduction target of 80% below 2010 levels, to be achieved by 2050. Reaching this target will require transformative change, and a strategy and plan to support its achievement is being developed through ClimateActionWR.

Land use planning is key to addressing climate change, and to achieving transformational change. Planning for long-term, sustainable growth and development is critical, since decisions about infrastructure and land uses can have implications for centuries to come.

The following figure shows the impact of municipal decision ranging from public service pricing, such as increasing parking fees, to land use planning that has the longest impact (Figure 1). As shown, the longest temporal implications are for land use and infrastructure planning decisions, which can "lock-in" behaviours and energy requirements for generations or longer.

As an example, planning decisions made over 60 years ago, to build low-density, non-grid suburban developments, which do not provide efficient travel paths or nearby destinations for pedestrians, limit our current ability to transition to a transit oriented community. These existing neighbourhoods and landscapes are very difficult to restructure into more walkable complete communities, and as a result are a long-term source for automobile use. Separating land uses, such as office, commercial and residential versus allowing for mixed-use complete communities has done the same. We have learned this from our past that it is important to consider the long-term impacts of the planning decisions that are being made today.

Figure 1: Temporal Scale of Municipal Planning Decisions Verses Implications[16]
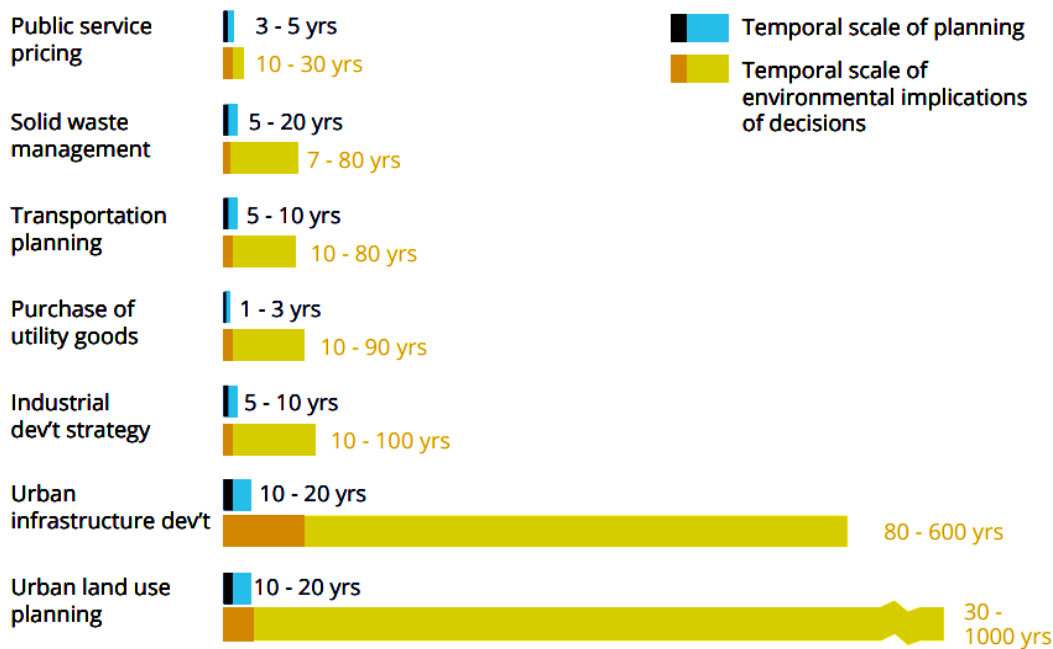
The climate crisis is deeply connected to land use. Low density communities necessitate the use of energy inefficient modes of travel such as personal automobiles, one of the leading contributor to greenhouse gases.[17] It is also less energy efficient to heat and cool single detached houses than townhouses and apartments. Low density developments also often use more land, impacting agricultural and natural lands at a higher rate. Agricultural and natural lands are important carbon sinks and for the production of local food. Inefficient low density development patterns also increase the distance food and other goods must travel.

Carbon Sink, What's That?
A carbon sink is any natural or engineered system that absorbs more carbon than it produces. This include forests, large bodies of water, and net-zero carbon buildings.

Changing how we use land can reduce greenhouse gas emissions. Using land more efficiently and intensively would minimize energy use at the same time as maintaining natural and agricultural land that can serve as carbon sinks. Doing so means accommodating more people within the same area through repurposing underutilized lots and buildings, redeveloping to existing building to accommodate more people or jobs. This would provide greater opportunity for transit and active transportation and make them a more viable option since the distance that people need to travel to meet their daily needs would be reduced. Similarly, when urban land uses need to expand into greenfield areas to accommodate urban growth, the density of these communities can be higher to reduce the areas that need to be consumed and support transit and active transportation.

Higher density communities can also be more resilient to the impacts of climate change, so long as adequate lands are maintained to ensure a balanced natural water system and to accommodate stormwater. Complete communities are more self-sufficient, less reliant on global production chains, and improve the health of resident by reducing heat island effect and improving air quality.

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[16] Government of Ontario, Community Emissions Reduction Planning: A Guide for Municipalities, 2018
[17] Ibid. and Clean Air Partnership, Community Emissions Reduction Planning: A Guide for Municipalities, 2018

Transforming our region into this type of community will require integrated changes across jurisdictions and scales to meet our climate challenges. These changes, when supported by the Regional Official Plan, will require implementation at different scales of planning, in collaboration with the Cities and Townships.

Fortunately, the changes that will help us prepare for a low-carbon future will also allow us to build a more livable, prosperous community.

3.3 Climate Lens: Energy and Resilience Lenses

A climate lens is a way to consider policies, programs, and decisions across all of these jurisdictions and scales and process and policies. In this paper, we will apply two specific climate change lenses to help us think through the transformations needed to address climate change:

➢ Energy Lens: This lens speaks primarily to climate change mitigation—eliminating the emission of greenhouse gases. The energy lens considers the type and amount of energy the community requires to function. The goal is to use less energy and use clean energy. Few energy sources are truly zero emissions, and high energy needs are difficult to meet with renewable energy sources alone. Therefore, this lens seeks to reduce the overall energy needed. This could include using energy for a shorter amount of time or using less energy over the same period. For example, to reduce emissions and energy use, we can reduce the distance a gasoline vehicle needs to travel, switch to a more fuel-efficient vehicle that uses less gasoline, take transit, or switch to a no-energy mode of travel, like walking or cycling. Any outstanding energy that we continue to need will have to be produced without fossil fuels.

➢ Resilience Lens: This lens speaks primarily to climate change adaptation—preparing for the effects of a changing climate, especially extreme weather events. Broadly speaking, the resilience lens considers the capacity of a system to recover from difficulties, or to persist despite those difficulties. For example, how fast can the energy distribution network recover from an ice storm? Or how much freezing rain can the system handle before it fails? A resilient system is only resilient if it can adapt to handle shocks and stresses. It must be equitable so that vulnerable demographics, locations, or systems are not compromised or sacrificed when the system is handling a shock.

The energy and resilience lenses are highly connected to each other, and in practice, both have effects on climate change mitigation and adaptation. The less energy a system requires, the more resilient it generally is. For example, as the region produces more of its own clean energy, the more resilient we will be to increasing oil prices. Similarly, a more resilient community will be less likely to rely on high energy usage to recover from shocks. For example, as the region becomes more resilient to extreme weather events, it will take less energy to recover from the events.

4.0 A new way to think about climate change

The way we have taken action to date has been an incremental and piecemeal approach, which is not enough to address climate change. A new framework can allow us to think in a more transformative way as we plan to reduce greenhouse gas emissions and prepare the region for the impacts of climate change. This new framework is based on scientific research, best practices, and gaps and opportunities in the Region's current Regional Official Plan.

The framework used in this document has three categories of change: we must change how we move, how we live and work, and how we build. Each of these categories requires change at three different scales or levels: regional, local/neighbourhood, and site-specific. While some changes are needed across the entire region, other changes are local or fine-grained. Changes that must be implemented region-wide are obvious fits for the Regional Official Plan and for the Region's work in other areas. Nevertheless, the Region's planning policies and processes can influence or support the changes that will need to be led and implemented by the Area Municipalities.

The following sections cover the three categories of change, and present:

- <u>Desired Future:</u> What our community should look like in the future, thinking ahead to 2051 and beyond
- <u>Energy Lens and Resilience Lens:</u> What this desired future will look like in terms of energy and resilience
- <u>Big Moves:</u> Things we need to do to achieve this future. The policy directions, which are connected to the Big Moves, are provided in Section 5.

Section 5 will provide potential policies to implement the desired future and Big Moves, with the connection(s) to the Big Moves also provided for cross-referencing.

4.1 How We Move

Desired Future:
Most trips are taken using active transportation and all trips are taken without fossil fuels.

Energy Lens:
Active transportation, whether walking, cycling, rolling, or moving with mobility aids, is tremendously energy efficient, and generally relies on human power. Transit enables active transportation, because it allows people to make part of their trip by walking or cycling. Transit is also a crucial transportation option in its own right, and uses significantly less energy per trip than personal automobile use. Trips that cannot be taken using active transportation must be taken without fossil fuels. Electric vehicles alone cannot be relied on to decarbonize our transportation system, since electric vehicles still have high energy needs for manufacturing and operating those vehicles, as well as other environmental costs. They also require a vast road network, which requires larger amounts of energy to build and maintain. Similarly, how we plan our communities is connected to how we move around them and the energy that this requires. This will be discussed further under How We Live and Work.

> **Active Transportation, What's That?**
> Active transportation means walking, cycling, rolling or moving with mobility aids: getting around using human power. Human powered movement is the kind of travel that should be most common in the region in the future.
>
> To achieve this, public transit is crucial. For people to be able to walk, cycle, roll, or move with mobility aids for many of their trips, they need a robust public transit system that they can rely on for trips that they can't or don't want to make using walking or cycling. So supporting walking and cycling in the community requires supporting robust, frequent transit.

Resiliency Lens:
Enabling active transportation allows for a more equitable mobility system. Car dependent communities force residents to spend resources on a vehicle to have a high quality of life, and provide limited options for those who cannot drive for health or financial reasons. Fossil fuel used by vehicles also produces air pollution that makes people more vulnerable to illness. Active transportation is a much more accessible form of mobility that also improves health. In addition, active transportation is more resistant to outside shocks, such as rising fuel prices.

Big Moves:

1. **Design and build an active transportation-focused mobility system, supported by a robust transit system.**

   The current transportation network focuses on personal automobiles that require large amounts of energy. The focus of the transportation system needs to shift away from personal automobiles, and focus on sustainable ways of moving people using active transportation and transit. With active transportation and transit at the forefront of the mobility system, moving around the region will be easier, safer, and more energy efficient.

   At the local and neighbourhood level, connections must be made to the larger mobility network, in order to provide effective continuity between the neighbourhood and the broader community, including into rural areas. This ensures that neighbourhoods have a meaningful connection within their community and to the broader community, without the use of a personal automobile (Policy Directions 1 & 2).

   > **Active Transportation-Focused Mobility System, What's That?**
   > This is a system that prioritizes mobility, or moving people and goods rather than personal automobiles. This mobility system will prioritize helping people move around using their own power, on foot, on a bike, using a mobility device or on transit and focuses on making active transportation easy, safe and convenient so more people are able to choose it.

   The active-transportation mobility system will need to address current limitations to active transportation, such as ensuring options for persons with disabilities and mitigating unfavourable weather conditions. Improved connections and walkability will improve access and convenience for parents with strollers and people with mobility aids. The system should also be strengthened by broadening support for other alternative low-carbon transportation solutions such as ride sharing, autonomous and/or electric vehicles and micro-transit.

2. **Strengthen the evaluation of new developments for impact on and access to the active transportation-focused mobility system.**

   The development review process currently considers active transportation, but does not evaluate proposed development in terms of long-term future needs. Building design should assume that the majority of people in the future will access buildings by walking or cycling, rather than personal automobiles. Therefore, developments should ensure they can support future increases in walking, cycling, and other active modes of travel as more people make more of their trips using the active transportation components of the mobility system, and by minimizing or eliminating requirements for parking. (Policy Directions 3 & 4)

3. **Ensure appropriate active transportation facilities at all homes and destinations.**

   To support the transition to more people using bikes, all homes and destinations should provide secure bike parking, storage, and charging for e-bikes for residents and patrons. Businesses and institutions should provide secure bike/e-bike parking for their customers and patrons and secure bike storage for their employees. This also includes providing showers for employees to who walk, run, bike, roll or use mobility aids to get to work. (Policy Directions 3 & 4)

   > **E-Bikes, What's That?**
   > An electric bike, or e-bike, is a bicycle that have an electric motor to assist with pedalling. They are not electric motorcycles, which cannot be pedalled.

4. **Ensure appropriate infrastructure for low carbon goods movement.**

   The way goods are moving into, around, and out of communities has changed and will continue to change, largely due to online shopping and just-in-time inventory. The mobility system will need to reflect these changes, such as more large trucks on the highways and more smaller delivery vehicles in neighbourhoods. This also requires planning for the use of electric motors and alternative fuel, such as green hydrogen, for large trucks.

Specific sites need to develop in a way that ensures there is appropriate infrastructure for goods movement. Large mail or storage rooms would eliminate delivery vehicles returning undelivered parcels to the post office, which requires the recipient to make an unnecessary trip to the post office to retrieve the parcel. Industrial buildings should also be encouraged to provide charging stations for trucks. (Policy Direction 5)

5. Reduce car incentives/subsidies within developments.

Not only does the mobility system need to focus on active transportation, but personal automobiles also need to be discouraged. To encourage and support the shift to active transportation and transit, the amount of parking provided in developments needs to be reassessed and eventually partially or completely converted to serve the active transportation-focused mobility system. Shared parking, reduced parking, and paid parking could be reassessed to maximize flexibility and deemphasize the use of personal automobiles along with the increase in bicycle parking and storage. It can also mean the reallocation of road space from vehicles to other modes of travel like widened sidewalks, separated cycling lanes, and dedicated transit lanes. (Policy Direction 6)

Get Involved:

1. What do you like about these changes to How We Move? What do you not like about them?
2. Rank the Big Moves in order of importance to you.
3. Why did you rank the Big Moves in that way?
4. Have we missed something?

Respond on EngageWR.ca or via email to RegionalOfficialPlanReview@RegionOfWaterloo.ca

4.2 How We Live and Work

Desired Future:

Existing and new communities are vibrant, complete communities that provide efficiency for energy, services, transportation, and infrastructure.

Energy Lens:

Vibrant, complete communities offer most, if not all, of the daily goods and services people need within a convenient walk or bike ride. This is also known as a "15-minute neighbourhood." This reduces the energy needed to obtain daily necessities by allowing people to conveniently choose active transportation options to complete more of their trips. It also reduces the energy used by conventional vehicles by reducing the distance travelled with them. Communities that have effective green infrastructure also reduce the energy and cost required to manage and clean stormwater runoff.

> **Complete Community/15-Minute Neighbourhood, What's That?**
> A complete community/15-minute neighbourhood is an area where the daily needs of residents can be met with 15 minutes from their home by using active

Resiliency Lens:

Vibrant, complete communities are more self-sufficient, relying less on far-away destinations to meet their needs for daily goods and services. The inclusion of green infrastructure also improves health by reducing heat island effect and improving air quality.

Big Moves:

6. Intensify urban areas to support efficient infrastructure and land use, and to facilitate active transportation and transit.

Applying a climate change lens to how much land will be required to accommodate growth to 2051 will result in an ambitious intensification target. The intensification target determines how much growth is to occur within areas that are already developed. Higher intensification targets mean more efficient use of land and infrastructure, support active transportation and transit, and reduce the need to expand into agricultural areas and build new infrastructure. It also allows for the creation of more "15-minute neighbourhoods" – areas where residents can meet their daily needs within a short walk or bike ride. (Policy Direction 7)

7. Intensify beyond Urban Growth Centres and Major Transit Station Areas, by identifying the next phase of strategic growth areas in locations where there is strong access to the active transportation-focused mobility system.

The Region has comprehensive intensification plans for the Cambridge, Kitchener, and Waterloo downtown/uptown areas (also known as Urban Growth Centres) and along the existing and future ION route. Density and development should be directed to these priority areas with existing capacity first, in order to achieve the critical mass necessary for successful dense urban and transit supportive communities.

> **Intensification Corridor, What's That?**
> Corridors create a network across the region, connecting key areas together. Intensification corridors promote higher density uses along them to support frequent transit and the active transportation network.

In conjunction, intensification needs to move beyond these areas to support a comprehensive active transportation-focused mobility system and transit network across the region. Intensifying land uses along corridors provides an opportunity to enhance the active transportation and transit network along them, creating a more robust active transportation focused network. Intensification corridors also promote future convenient transit such frequent transit and light-rail transit services.

Intensification corridors should be higher density areas that support and are supported by active transportation and transit. Therefore, new intensification corridors should be located where they will connect to the active transportation-focused mobility system and planned frequent transit service, to maximize their use and provide future residents and employees with low-carbon transportation options.

These intensification corridors would support intensification throughout the broader community by facilitating 15-minute neighbourhood. Additional information on the role of intensification corridors and broad scale intensifcation across the entire region is available in the Region's Intensification Strategy. (Policy Directions 8 & 9)

8. Locate major local nodes, and key amenities and local employment areas where they can be accessed by active transportation or transit.

Major local nodes, identified by Local Area Municipalities, are generally intended to provide daily goods and services for the surrounding communities. These nodes should continue to be planned to support and be supported by the active transportation and transit networks. Connections to the active transportation and transit systems should be prioritized to existing major local nodes, if they do not already have them. Future major local nodes should be located where they provide good connections to these networks, to maximize their use and provide future residents and employees with low carbon transportation options. (Policy Directions 10 & 11)

9. Build new neighbourhoods and transition existing neighbourhoods and Township Urban Areas to be complete communities.

Neighbourhoods and Township Urban Areas should continue to transition towards providing for the daily goods and services of the residents. With necessary goods and services nearby, active transportation often becomes a more convenient and desirable option. This reduces the need to drive beyond the community, reducing greenhouse gas emissions. This means planning new neighbourhoods to provide these services or transition existing communities to provide these services in the future. (Policy Direction 10, 11, & 12)

10. Ensure all new communities will support frequent transit service.

Designated greenfield areas are generally vacant or recently developed areas along the edge of urban areas. Setting density targets that support the early introduction of transit in new communities is an important opportunity to immediately provide a low-carbon transportation option to new residents. This should be followed by ensuring a density that supports frequent transit service to maintain transit as a preferred transportation option. In addition, new neighbourhoods must be designed with a transit supportive urban structure that ensures efficient and seamless connectivity between homes and other destinations, and transit services. (Policy Direction 12)

11. Make energy and resilience key considerations when locating urban expansion areas.

Even with high levels of intensification and high density new community areas, the region may require additional land to accommodate growth to 2051. Therefore, the location of any additional land should be considered through a climate change lens, such as the amount of energy required to travel from the new community to major areas of employment. New community areas should be "15-minute neighbourhood," and should either be large enough to provide all the daily needs of its residents or connected to an existing community to provide needed goods and services that the existing community is lacking. (Policy Direction 13)

12. **Identify, protect and maintain a robust network of greenspaces within urban and rural areas.**

Developing an interconnected network of greenspaces is ongoing work undertaken collaboratively by the Area Municipalities. This work will be of increasing importance in the coming decades, to ensure walkable and equitable access to nature, prevent flooding, provide shade, and sequester carbon. It should facilitate the creation of micro-woodlands on remnant development parcels and rehabilitation of aggregate pits through forest cover. The Region should support this work through research and data management, for example, by monitoring tree canopy, heat maps, and biodiversity status. (Policy Direction 14, 15, & 16)

13. **Integrate green infrastructure into infrastructure planning, asset management, and site development, to both accompany and replace engineered infrastructure.**

Natural systems operate alongside human-engineered systems. Some natural systems, like waterways and wetlands, can be used instead of more expensive and less resilient human-made infrastructure for purposes like stormwater management. Other natural systems complement human-built infrastructure by providing other benefits and services, like shade, carbon sequestration, and habitats. Accounting for the function and benefits of natural assets as part of infrastructure planning and asset management makes it possible to plan for those systems just as we do for human-built infrastructure.

At a property level, green infrastructure and low impact development are often effective measures to reduce greenhouse gas emissions and be resilient to extreme weather events. (Policy Direction 17)

> **Green Infrastructure, What's That?**
> Green infrastructure is an approach that recognized the economic, environmental, and social benefits of nature and natural systems. This includes urban forests and woodlands, wetlands, bioswales, engineered wetlands and stormwater management ponds to clean and purify

> **Low Impact Development, What's That?**
> Low impact development (LID) are building design elements that contain, slow, or absorb stormwater where it falls. This includes rain gardens, rain barrels, permeable pavement, and disconnected eaves troughs.

14. **Maintain and build a robust agricultural system, to protect and enable maximal use of agricultural lands, ensure the agricultural industry has all the services and processing facilities needed to grow and distribute food, and improve local food security.**

Local food production, processing and distribution is key to increasing resilience and self-sufficiency. This reduces energy use and emissions by reducing the length of trips between farms, processing facilities, and grocery stores, or selling directly to homes and businesses. It also is more resilient to outside shocks, such as extreme weather events destroying crops elsewhere in the world, which increase local food costs. (Policy Direction 18)

> **Agricultural System, What's That?**
> An agricultural system is comprised of a group of inter-connected elements that collectively create a viable, thriving agricultural sector. It has two components:
> 1. An agricultural land base that creates a continuous productive land base for agriculture; and
> 2. An agri-food network includes features that are important to the viability of the agri-food sector such as: infrastructure and transportation networks; on-farm buildings and infrastructure; agricultural services, farm markets, distributors, and primary processing; and vibrant, agriculture-supportive communities.

Get Involved:

1. What do you like about these changes to How We Move? What do you not like about them?
2. Rank the Big Moves in order of importance to you.
3. Why did you rank the Big Moves in that way?
4. Have we missed something?

Respond on EngageWR.ca or via email to RegionalOfficialPlanReview@RegionOfWaterloo.ca

4.3 How We Build

Desired Future:

All new buildings are net-zero carbon, all existing buildings are retrofitted to be net-zero carbon, and all buildings are resilient, green buildings.

Energy Lens:

Buildings will use less energy and cleaner energy to build and operate, and in many cases will produce a surplus of energy. Net-zero carbon means that the building does not produce more carbon than it removes from the atmosphere, but in practice this means that buildings are very efficient, and waste very little energy for heating and cooling. Buildings will also need to be able to charge electric vehicles. Buildings will also be repaired and adapted for new use rather then demolished where possible, since it takes more energy to rebuild with new material than reusing an existing building.

Resiliency Lens:

Net-zero buildings are energy efficient and protect residents from rising energy prices. Buildings that produce their own energy are more resilient, since they have their own source of energy in the event of disruptions to centralized power grids or fossil fuel supply chains. Buildings are also more healthy and comfortable to live and work in, since they maintain a more consistent and comfortable temperature. Net-zero buildings preform better during extreme weather events than standard buildings.

Big Moves:

15. **Build new buildings to be net-zero carbon and have an adaptable design.**

    New buildings need to be built to be net-zero carbon, or to transition to net-zero carbon. New buildings also need to be designed to adapt, allowing for more diverse uses of those buildings as future needs change. For example, plans could be developed based on phased infill of surface parking and/or adaptation of structured parking over time. (Policy Directions 19, 20, 21, & 22)

16. **Retrofit existing buildings to eliminate emissions.**

    Since most of the buildings that exist today will exist for many decades to come, they must be retrofitted to eliminate the emissions they produce from their energy use, especially for space and water heating and cooling. A separate program outside of the ROP framework will be needed to support this action. (Policy Direction 22)

17. **Facilitate and plan for renewable energy generation and storage at appropriate locations and scales, particularly for wind, solar, and energy from waste organics.**

    Renewable energy should be generated and stored at all available scales. Individual buildings and properties can generate energy to meet their needs using solar panels, and in some cases use wind or geothermal energy. There can also be appropriate mid-size energy production through solar energy, biomass or geothermal for business parks, industrial sites or institutions, for example.

    Even if a lot of energy can be generated on-site, there will continue to be a need for large-scale renewable energy generation at appropriate locations. Therefore, the region needs to facilitate and plan for them. Due to the region's geography, solar energy and energy from waste organics are the most promising sources of industrial-scale renewable energy in the region. (Policy Directions 23, 24, & 25)

18. **Design communities to facilitate/require community energy considerations.**

    Decisions made about the design of communities, such as through secondary plans or plans of subdivision, can plan for local energy production. This can involve orienting buildings so sunlight warms the buildings in the winter and breezes cool the buildings in the summer, or to maximize

the energy gained from solar panels installed on rooftops. Communities can also be developed around small- or mid-scale renewable energy production, district energy systems, and/or to incorporate energy storage. (Policy Directions 25, 26, & 27)

19. **Adaptively reuse a high percentage of existing buildings by conserving heritage buildings, reducing incentives to demolish buildings, and salvaging materials for reuse.**

Existing buildings took large amounts of energy to create, including the associated greenhouse gas emissions. In an effort to reduce energy use and emissions for building, buildings should be reused or repurposed where possible, especially where new buildings would not provide substantially more opportunity for intensification or efficiency. Reusing and repurposing existing structures often requires far less carbon than demolishing the building, removing the rubble, and inputting new building material. De-incentivizing demolitions would encourage the reuse of buildings. (Policy Direction 27)

Get Involved:

1. What do you like about these changes to How We Move? What do you not like about them?
2. Rank the Big Moves in order of importance to you.
3. Why did you rank the Big Moves in that way?
4. Have we missed something?

Respond on EngageWR.ca or via email to RegionalOfficialPlanReview@RegionOfWaterloo.ca

5.0 How the Regional Official Plan Can Support Change

There are number of ways the Regional Official Plan can implement or support the Big Moves described in Section 4. Below are policy directions the ROP could take to further address climate change at different scales.

5.1 How We Move Policy Directions

1. Identify higher-order active transportation corridors to be the backbone of a sustainable mobility network, in collaboration with the Area Municipalities. (Big Move 1)
2. Prioritize active transportation, transit, and alternative low-carbon transportation options in the further development of the mobility system. (Big Move 1)
3. Require that active transportation plans to accommodate the long-term modal shift to active transportation and transit be completed as part of secondary planning exercises. (Big Moves 2 & 3)
4. Strengthen and expand the assessment of active transportation impacts and network needs in the development review process. (Big Moves 2 & 3)
5. Strengthen and expand the assessment of goods movement, storage, and electric charging stations in the development review process. (Big More 4)
6. Direct the Region, in collaboration with Area Municipalities and community partners, to develop an electric vehicle strategy. (Big Move 5)

5.2 How We Live and Work Policy Directions

7. Set an ambitious intensification target. (Big Move 6)
8. Identify an expanded set of intensification areas/corridors beyond Urban Growth Centres and Major Transit Station Areas. (Big More 7)
9. Prioritize the identification of strategic growth areas by their potential to be served by an active transportation-focused mobility system. (Big Move 7)
10. Require more neighbourhood centres be planned to provide access to daily goods and services, to support complete/"15-minute communities". (Big Moves 8 & 9)
11. Require Major Local Nodes to be connected to an active transportation-focused mobility system. (Big Moves 8 & 9)
12. Set greenfield area density targets that support frequent transit. (Big Moves 9 & 10)
13. Incorporate energy and resilience considerations into the selection of any future urban expansion areas. (Big Move 11)
14. Facilitate the identification, protection and management of a robust network of greenspace in urban areas. (Big Move 12)
15. Support Area Municipalities in creating, protecting and maintaining greenspaces. (Big Move 12)
16. Facilitate the creation of micro-woodlands and rehabilitation of aggregate pits through forest cover. (Big Move 12)
17. Prioritize green infrastructure solutions in infrastructure planning, asset management, and site development. (Big Move 13)
18. Integrate the provincial agricultural system approach to agriculture to create and maintain a robust agricultural industry. (Big Move 14)

5.3 How We Build Policy Directions

19. Require an energy model in the development planning process. (Big Move 15)
20. Explore opportunities to prioritize development applications that incorporate significant energy conservation and/or reduction of greenhouse gas emissions. (Big Move 15)
21. Require, when feasible, the development of adaptive buildings that are flexible to future needs (Big Move 15)
22. Require all municipalities to address climate change mitigation and adaptation through Green Development Standards, incentive programs, and/or development design guidelines. (Big Moves 15 & 16)
23. Commit the Region to evaluate how to identify and protect optimal areas for renewable energy generation. (Big Move 17)

24. Provide direction on the location of geothermal energy to facilitate geothermal energy production in appropriate locations. (Big Moves 17)
25. Require plans of subdivision to maximize orientation for passive and rooftop solar (Big Moves 17 & 18)
26. Require that community energy plans be completed as part of secondary planning exercises, including consideration of energy generation, distribution, and storage. (Big Move 18)
27. Discourage demolish permits when large building could be feasibly reused/repurposed or incorporated into a new development. (Big Moves 18 & 19)

Get Involved:

1. What do you like about these proposed policy directions? What do you not like about them?
2. Rank the top five policy directions that are the most important to you.
3. Why did you rank the policy directions in that way?
4. Have we missed something?

Respond on EngageWR.ca or via email to RegionalOfficialPlanReview@RegionOfWaterloo.ca

6.0 Conclusion & Next Steps

The Regional Official Plan has is a guiding document that directs how and where the region will grow. It therefore plays a leading role in transformative change to address climate change. Through including the policy directions outlined in Sections 4 and 5, the ROP would support the creation of a more energy efficient and resilient community. In doing so, the region is our part to limit the increase in global temperatures and its associated significant global harm.

Waterloo Region will continue to work with the Cities and Townships within its jurisdiction to implement the above policy direction in the ROP. In doing so, the Region will consider the public input to the "Get Involved" questions related the Big Moves and policy directions. Ultimately, the ROP will be updated with additional and/or stronger policies to address climate change.