TOWNSHIP OF HAVELOCK-BELMONT-METHUEN

To: Mayor Gerow and Members of Council

From: Amber Dickinson, Corporate Services Analyst

Meeting Date: October 11, 2016

Subject: Draft Climate Change Action Plan

PURPOSE:

The purpose of this Report is to present to Council the draft Township of Havelock-Belmont-Methuen Climate Change Action Plan.

RECOMMENDATION:

THAT the draft Township of Havelock-Belmont-Methuen Climate Change Action Plan Report be received for information; and

THAT feedback on the draft plan be forwarded to Melanie Kawalec, Sustainability Manager with the City of Peterborough, by Friday, October 21, 2016.

BACKGROUND:

The Township of Havelock-Belmont-Methuen adopted the Greater Peterborough Area Community Sustainability Plan in the spring of 2012. One of the recommendations in the Sustainability Plan was to create a climate action plan to reduce greenhouse gas emissions while increasing adaptation and resiliency.

This Plan began with the Township formally joining the Federation of Canadian Municipalities' Partners for Climate Protection Program.

Following confirmation of significant grants from the Federation of Canadian Municipalities Green Municipal Fund and the Ontario Trillium Foundation, the City committed the remaining $22,500 required to fund the Greater Peterborough Area Climate Change Action Plan. LURA Consulting and ICLEI Canada were hired to develop the Climate Change Action Plan on behalf of the twelve community partners.

Climate Change Action Plan

The Climate Change Action Plan (CCAP) for the Greater Peterborough Area follows the Federation of Canadian Municipalities' Partners for Climate Protection five-milestone framework. The objective of the CCAP is to reduce greenhouse gas emissions, reduce the use of fossil fuels, lower our energy consumption, and adapt to our changing climate.

The Plan will identify goals, actions and emission reduction targets that fit with and address the needs of each of the ten participating municipalities and the two First Nations within the Greater Peterborough Area. Each of the twelve partners will have their own unique plans – one for their municipal/First Nations operations and another for their broader community. For the purpose of this report, only the Township of Havelock-Belmont-Methuen data is presented.

Milestone 1 – GHG Inventory

The greenhouse gas inventory, using 2011 as the base year, was completed in November 2015. The Township of Havelock-Belmont-Methuen Corporate and Community Emissions Inventory, November 17, 2015 is attached as Attachment C.

Milestone 2 – Set Emission Reduction Target

Following extensive staff and community engagement, targets were established that were slightly more aggressive than simply meeting the Ontario Climate Change Action Plan forecast. Part of the reasons for this approach is that the Province's decision to close all coal-fired power plants provided a 6% reduction in GHG alone. This together with calculating all of the Corporate and Community projects implemented between 2011 and 2015 already provide a significant reduction in GHG.

In setting a reduction target, 6-8% is equivalent to a do nothing approach, whereas 15-20% reduction will meet some of the Provincial CCAP targets, but 30-40% reduction over baseline emission, that accommodates anticipated population growth, represents a leadership approach.

Based on the inventory, trends, and projections, GHG emission reduction targets were established for both the Community Sector and the Corporate (municipal) Sector as follows.

Community Sector	Baseline Annual Community Emissions (2011)	Community Emissions Reduction Target by 2031	Expected Annual Emissions by 2031
Township of Havelock-Belmont-Methuen	37,476 tonnes of CO_2e per year	**31% below 2011 emissions** (11,646 tonnes of CO_2e less per year)	25,830 tonnes of CO_2e per year

Corporate Sector	Baseline Annual Community Emissions (2011)	Corporate Emissions Reduction Target by 2031	Expected Annual Emissions by 2031
Township of Havelock-Belmont-Methuen	559 tonnes of CO_2e per year	**40% below 2011 emissions** (225 tonnes of CO_2e less per year)	334 tonnes of CO_2e per year

Milestone 3 – Develop the Action Plan

The action plan was modelled in partnership with the targets to ensure that a comprehensive strategy was in place to guide implementation. The actions have been aligned with the Sustainable Peterborough Plan, the Ontario Climate Change Action Plan, and the Growth Plan for the Greater Golden Horseshoe. The Greater Peterborough Area Climate Change Action Plan and Chapter 6 - the Township of Havelock-Belmont-Methuen Community and Corporate Climate Action Plans are attached as Attachments A and B, respectively.

A condition of the Federation of Canadian Municipalities Green Municipal Fund is that each of the partners must pass a Council resolution to adopt both the Community Sector and the Corporate Sector target and associated action plan.

Milestone 4 – Implement the Action Plan

Following the adoption of the Community and Corporate Targets and Action Plan, we will transition from planning to implementation. To assist with the coordination and resources associated with implementation; a CCAP Implementation Coordinator has been hired on a one-year contract through Lura Consulting. This position will be based out of the County of Peterborough, assisting the twelve partners and their communities. Further external funding will be sought to support extending this contract position.

Milestone 5 – Monitor Progress and Report Results

The CCAP Implementation Coordinator will assist with monitoring progress, tracking results and reporting out.

Ontario Climate Change Action Plan

The Greater Peterborough Area Climate Change Action Plan has been strategically aligned to match the direction set by the province in the five-year Ontario Climate Change Action Plan. By adopting our local Climate Change Action Plan this sets the Greater Peterborough Area ahead of the curve when it comes to expected changes directed by the Province in future years. It also strategically places the Township of Havelock-Belmont-Methuen and the Greater Peterborough Area in a position to be able to apply for the various funding programs proposed for 2017-2018.

Summary

The Township of Havelock-Belmont-Methuen has committed to demonstrating leadership and sustainability through the adoption of the Sustainable Peterborough Plan and now with adoption of the Townships Climate Change Action Plan. Developed as a regional collaboration, the Climate Change Action Plan provides the targets, the actions, and the approach to guide the Township of Havelock-Belmont-Methuen and the Greater Peterborough Area towards a sustainable and resilient future.

FINANCIAL IMPACT:

Although there are no budget implications with receiving and reviewing the draft Plan, there will be financial implications with the approval of the Plan, which will be reflected in future decision-making and associated capital and operating budgets. These implications will be presented through the normal budgeting process for Council's consideration and approval.

The approval of the Climate Change Action Plan will strategically position the Township and the Greater Peterborough Area ahead of the curve when it comes to anticipated changes from the Ontario Climate Change Action Plan and its associated funding opportunities.

Attachments: **Attachment A** – Greater Peterborough Area Climate Change Action Plan, September 30, 2016

Attachment B – Chapter 6 – Township of Havelock-Belmont-Methuen Community and Corporate Climate Action Plans, September 30, 2016

Attachment C – Township of Havelock-Belmont-Methuen – Corporate and Community Emissions Inventory, Milestone 1; November 17, 2015

Submitted by:

Amber Dickinson,

Corporate Services Analyst

Attachment A

sustainable Peterborough

Greater Peterborough Area Climate Change Action Plan

DRAFT September 30, 2016

LURA
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ICLEI
Local Governments for Sustainability

Acknowledgements

Climate Change Action Plan Steering Committee

Brigid Ayotte	Township of Cavan-Monaghan
David Clifford	Township of Douro-Dummer
Tom Cowie	Hiawatha First Nation
Ken Doherty	City of Peterborough/Sustainable Peterborough
Sheridan Graham	Peterborough County/Sustainable Peterborough
Stephen Hill	Trent University
Melanie Kawalec	City of Peterborough
Anca Pascalau	Sustainable Peterborough
Al Slavin	For Our Grandchildren
Liana Urquhart	Peterborough Distribution Inc.
Barb van Vierzen	Peterborough Economic Development

Corporate Stakeholder Committee

Don Armitage	Enbridge Gas Distribution
Brigid Ayotte	Township of Cavan-Monaghan
Nicole Bulgin	Township of Ontonabee-South Monaghan
David Clifford	Township of Douro-Dummer
Amber Dickinson	Township of Havelock-Belmont-Methuen
Judy Everett / Gary Geraldi	Township of North Kawartha
Denise Graham	Hiawatha First Nation
Sheridan Graham	Peterborough County
Brian Hamilton	Curve Lake First Nation
Melanie Kawalec	City of Peterborough
Gillian Lind	Hydro One
Donna Teggart	Municipality of Trent Lakes
Liana Urquhart	Peterborough Distribution Inc.
Scott Warren	Township of Selwyn
Candice White	Township of Asphodel-Norwood

Climate Change Working Group

Donna Churipuy	Cathy Mitchell
Sheridan Graham	Margo Perun
Jane Grey	Brianna Salmon
Steven Hill	Al Slavin
Atul Jain	Shawn Telford
Melanie Kawalec	Liana Urquhart
Lynda Langford	

Task Forces

To help shape the community action plan, eight task forces were convened focusing on the following topics:

- Agriculture and local food
- Economy and employment
- Energy
- Land use planning
- Natural assets and water
- People and health
- Transportation
- Waste

The task forces were comprised of 100 people representing 70 different organizations in the Greater Peterborough Area. They met four times over the course of the Plan's development, providing critical input to the steering committee and consulting team. A special thanks goes out to our task force members for their important contributions.

Consulting Team

Lura Consulting	**ICLEI Canada**	**GreenUP**
Liz Nield Jeff Garkowski James Knott Susan Hall Amanda Crompton Reuben DeBoer	Ewa Jackson Michael Dean Brian Park	Peter Hughes Cathy Mitchell Brianna Salmon

Funding Sources

Peterborough Economic Development (PED) was the project host, on behalf of Sustainable Peterborough, securing funding from the Federation of Canadian Municipalities Green Municipal Fund and from the Ontario Trillium Foundation. The City of Peterborough, being the lead municipality, contributed the required 10% contribution for this project.

Executive Summary

The climate is changing – both globally and locally – due to the greenhouse gases (GHG) in the atmosphere. Even as we work to reduce the GHGs emitted, current GHGs will still persist in the environment and continue to influence climate change and our quality of life. GHGs are naturally found in the environment, but human-caused GHGs are contributing increasingly large quantities as well. The greatest human-caused contributor is carbon dioxide (CO_2) created from the burning of fossil fuels such as coal, oil, and natural gas.

The Greater Peterborough Area (GPA) encompasses the City of Peterborough, Peterborough County and its eight member townships (Asphodel-Norwood, Cavan Monaghan, Douro-Dummer, Havelock-Belmont-Methuen, North Kawartha, Otonabee South-Monaghan, Selwyn, and Trent Lakes), as well as Curve Lake First Nation and Hiawatha First Nation. Municipalities and First Nations in the GPA have demonstrated leadership in the field of sustainability, and in 2012 each adopted the Sustainable Peterborough Plan. This plan identified a priority action with the Climate Change theme for each community to become active members of the Partners for Climate Protection (PCP) program and establish a baseline and climate action plan to reduce greenhouse gas emissions.

In 2014, these communities came together to develop a Climate Change Action Plan (CCAP), which is designed to reduce local contributions to climate change and prepare the community for present and future changes. They joined more than 250 other communities across Canada to address climate change through participation in the PCP program aimed at reducing GHG emissions from both municipal/First Nation corporate operations and community sources. The PCP program is a network of Canadian municipal governments that have committed to reducing GHGs and acting on climate change. The program uses a five-milestone framework to move municipalities towards a low-carbon future. The program has two distinct focuses:

1) Corporate sources of GHG emissions (municipal and First Nations operations); and
2) Community sources of GHG emissions.

The CCAP was developed in a cooperative and participatory manner to ensure that the goals, actions and targets included within fit the needs and requirements of all 12 community partners. A key component of the development of the CCAP has been strong engagement of all stakeholders, groups, and residents within the GPA. Accordingly, this plan is a collaborative effort across the entire GPA, and has many shared elements. A specific chapter is dedicated to each community of the GPA that outlines their individual action plan and emissions reduction targets with an overarching goal to:

- Reduce our greenhouse gas emissions;
- Reduce the use of fossil fuels;
- Lower our energy consumption; and
- Adapt to our changing climate

Contents

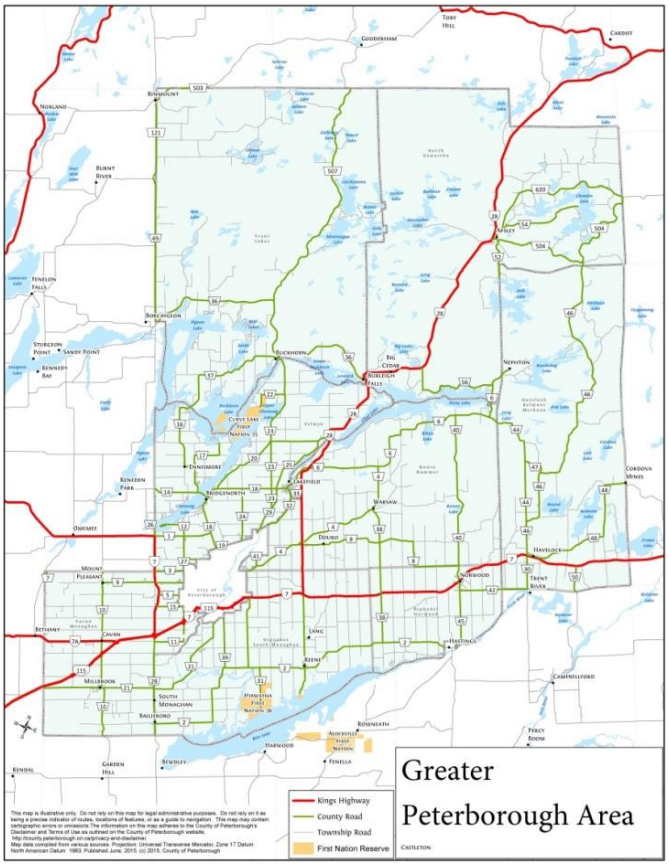
Part 1: Introduction & Overview

What is the Climate Change Action Plan?

The Greater Peterborough Area (GPA) encompasses the City of Peterborough, Peterborough County and its eight member townships (Asphodel-Norwood, Cavan Monaghan, Douro-Dummer, Havelock-Belmont-Methuen, North Kawartha, Otonabee South-Monaghan, Selwyn, and Trent Lakes), as well as Curve Lake First Nation and Hiawatha First Nation. Municipalities and First Nations in the GPA have demonstrated leadership in the field of sustainability, and in 2012 each adopted the Sustainable Peterborough Plan. This plan identified a priority action with the Climate Change theme for each community to become active members of the Partners for Climate Protection (PCP) program and establish a baseline and climate action plan to reduce greenhouse gas emissions. This priority action is what spurred developed of this Climate Change Action Plan, as well as evolving provincial, national, and global direction being more aggressive at addressing climate change.

In 2014, these communities came together to develop a Climate Change Action Plan, which is designed to reduce local contributions to climate change and prepare the community for present and future changes. This plan is a collaborative effort across the entire GPA, and has many shared elements. A specific chapter is dedicated to each community of the GPA that outlines their individual action plan and emissions reduction targets with an overarching goal to:

- Reduce our greenhouse gas emissions;
- Reduce the use of fossil fuels;
- Lower our energy consumption; and
- Adapt to our changing climate



What is the Partners for Climate Protection Program?

Development of the Climate Change Action Plan is framed around the Partners for Climate Protection program. The PCP program is a network of Canadian municipal governments that have committed to reducing GHGs and acting on climate change. In 2014, the GPA's member communities joined more than 250 other communities across Canada to address climate change through participation in the PCP program aimed at reducing GHG emissions from both municipal/First Nation operations ("corporate" emissions) and the community at large ("community" emissions).

The program uses a five-milestone framework to move municipalities towards a low-carbon future:

- **Milestone 1** – Creating a greenhouse gas emissions inventory and forecast;
- **Milestone 2** – Setting an emissions reductions target;
- **Milestone 3** – Developing a local action plan;
- **Milestone** 4 – Implementing the local action plan; and
- **Milestone 5** – Monitoring progress and reporting results.

Development of the Climate Change Action Plan for the GPA satisfied Milestones 1 to 3 and initiates Milestone 4 of the program. The GPA's member communities are committed to continuing with implementation of their individual action plans (Milestone 4) and ongoing monitoring and report (Milestone 5).

What does climate change mean to the Greater Peterborough Area?

Within this area, many people have noticed the impacts of climate change locally. Weather records show that average temperatures around the world and in the GPA are increasing. Ontario's Ministry of the Environment and Climate Change (MOECC) reports that the average annual temperature in Ontario has increased by 1.4°C over the last 60 years, and models suggest that by 2050 the average annual temperature in Ontario could increase by another 2.5°C to 3.7°C. Along with this, comes the increase likelihood of extreme weather events such as prolonged heatwaves, wind storms, and flooding. The Greater Peterborough Area has been no exception in experiencing these weather events. More of these events are projected over the coming years, which could have major implications for our natural and built systems, human health, and our local economy.

Through the development and adoption of this Climate Change Action Plan, community leaders in the Great Peterborough Area have already shown great commitment to increasing community sustainability across all ten municipalities, Curve Lake First Nation, and Hiawatha First Nation.

What is causing climate change?

The climate is changing – both globally and locally – due to the greenhouse gases (GHG) in the atmosphere. Even as we work to reduce the GHGs emitted, current GHGs will still persist in the environment and continue to influence climate change and our quality of life. GHGs are naturally found in the environment and can fluctuate in nature through events like volcanic eruptions and forest fires. Human-caused sources of GHGs are contributing large quantities into the environment. The greatest

human-caused contributor is carbon dioxide (CO_2) created from the burning of fossil fuels such as coal, oil, and natural gas.

GHG emissions are a by-product of the actions we take in our day-to-day lives. The vast majority of these emissions are energy-related, including:

- Electricity used to power appliances, equipment and lighting;
- Natural gas used for heating; and
- Gasoline and diesel used in automobiles.

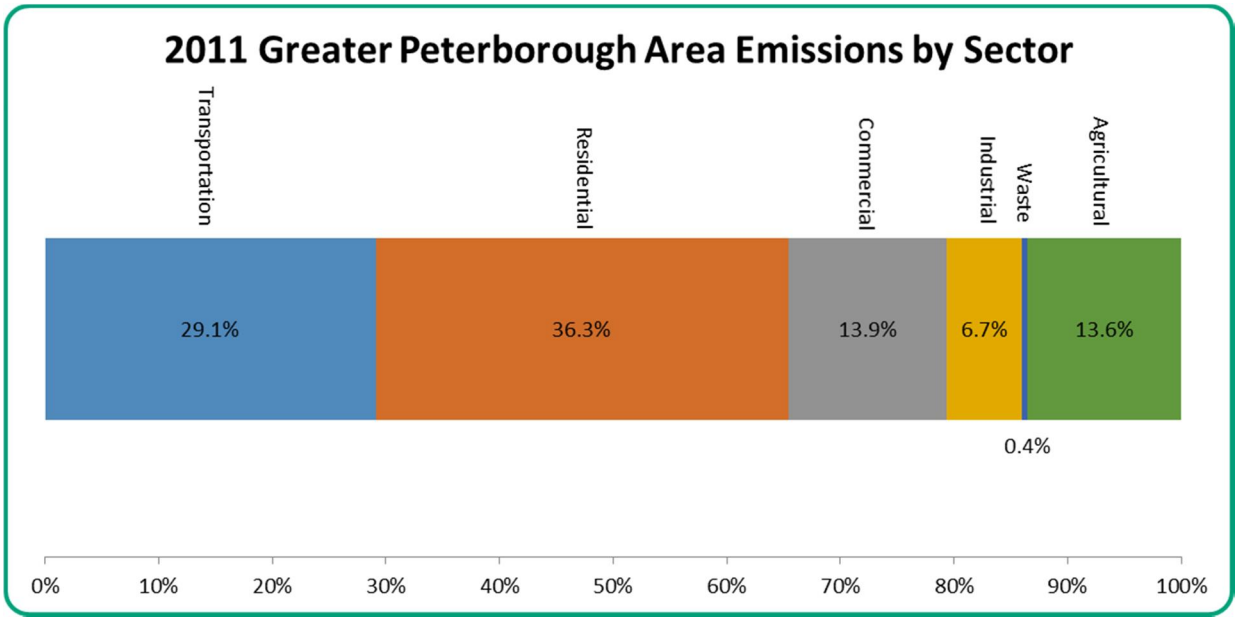
However, GHG emissions are also linked to:

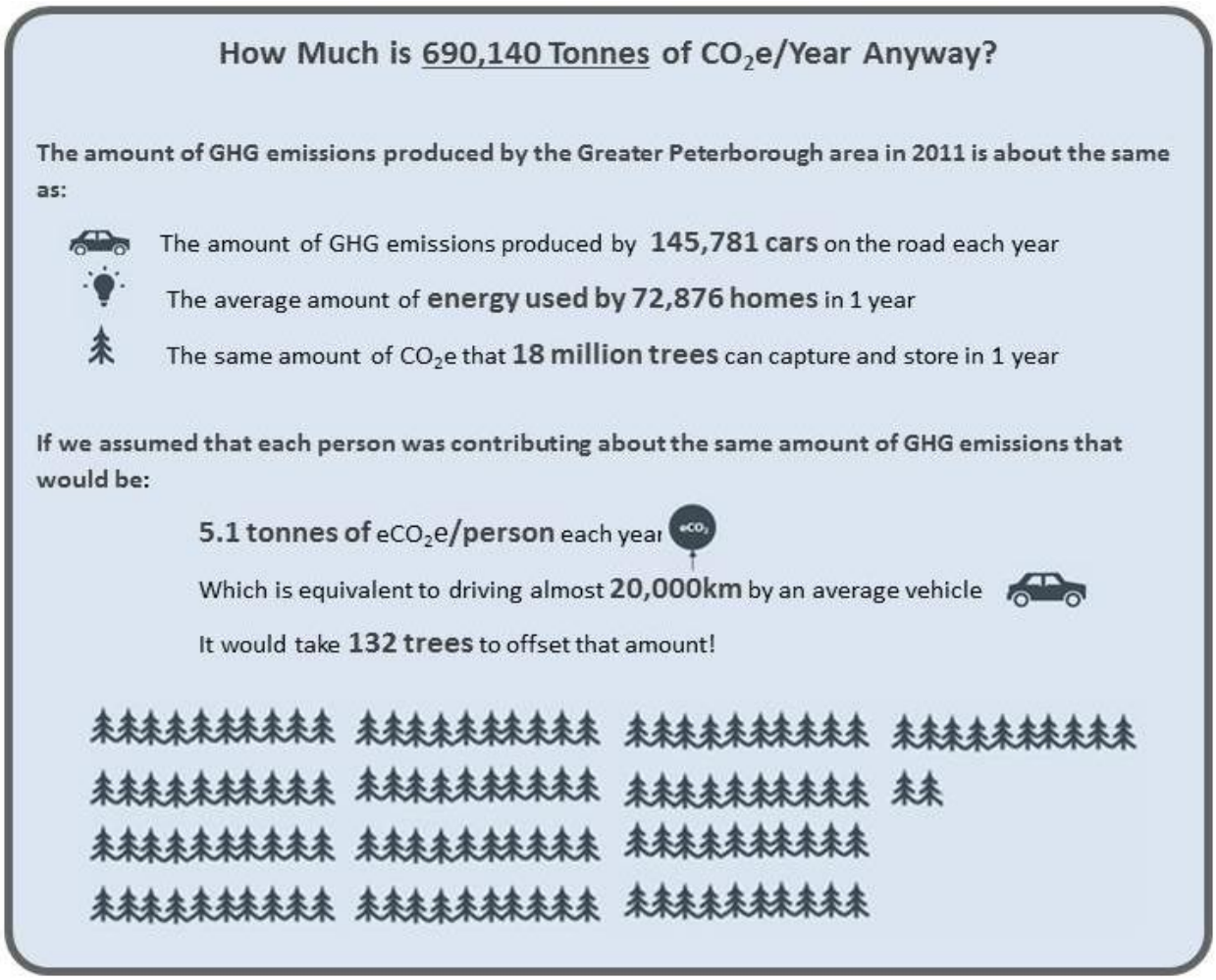
- Waste management practices (e.g. solid waste sent to landfills);
- Land-use decisions (e.g. dispersed development); and
- Agricultural activities (e.g. livestock and manure management).

Milestone 1 – What is our climate footprint?

Milestone 1 of the project was the completion of a baseline inventory of GHG emissions. This was undertaken to understand the region's climate footprint. The baseline inventory used 2011 data because 2011 was the most recent year that complete data was available, and it was the first year municipalities were required to report municipal energy consumption in accordance with the Green Energy Act 397/11.

In 2011, total GHG emissions in the Greater Peterborough Area, including the City of Peterborough, all Townships, and the two First Nations, was **690,140 tonnes of CO_2 equivalent (tCO_2e)**. Just over 3% of emissions (**22,619 tCO_2e**) can be attributed to the municipal operations of the City, County, and townships; the remainder are generated by the residents, business, and institutions in the GPA. A breakdown of these community emission are provided below. The majority of the region's emissions come from the residential sector (36.3%) and transportation (29.1%). Commercial and Industrial sources combined contribute over 20% of emissions, and the Agricultural sector contributes 13.6%).





Milestones 2 & 3 – What can we do about climate change?

The window for avoiding serious climate change impacts—heat waves, droughts, floods and storms, rising sea levels and widespread loss of plant and animal species—is shrinking. We are close to the 2°C threshold that many scientists and organizations have identified as the "safe" upper limit for global warming. In order to stay below this limit, global GHG emissions must peak and decline within the next 10 years. For developed countries like Canada, the recommendation from scientists is to reduce GHG emissions by 25-40% below 1990 levels by 2020. The national GHG reduction target for Canada is to cut emissions by 30% over 2005 levels by 2030. Provincially, the target is to reduce emissions by 37% below 1990 levels by 2030.

The types of activities that contribute to GHG emissions are influenced, to a large extent, by decisions made locally; by the businesses, schools, and industries in our community and by the people that live and work here. The majority of GHG emissions in the Greater Peterborough Area come from community sources, such as our homes, our places of work and schools, and from how we travel in and around our community. Other important sources of community emissions include the types of food we eat and where it comes from.

Municipalities, First Nations and other public agencies, such as schools and hospitals, as well as residents, business owners/operators , all have an important role in making decisions – some small and some big – that influence the community's impact on climate change. In order to take action on climate change, each of the communities in the GPA have established emission reduction targets for both their corporate/internal operations sources of GHG emission and for their community sources of GHG emissions. These targets are to reduce emissions by the year 2031 from the 2011 baseline.

Each GPA community has a "corporate" and "community" action plan that outlines how they will achieve their targets. To provide context, the plans include the following components. Further detail on the community plans are provided in Part 2 and corporate plans in Part 3. Additional details for both corporate and community plans of each GPA community are provided in community chapters (one per community).

Corporate Sector: Municipal and First Nations Internal Operations – Includes climate change considerations from the perspective of the internal operations of each municipality and First Nation in the Greater Peterborough Area. This includes GHG emissions from heating and electricity used to operate buildings, facilities, and other assets that are owned by each local government and waste generated as part of operating those facilities. It also includes GHG emissions from the operation of vehicles and equipment as well as any corporate related travel.

Community Sector – Includes climate change considerations from the perspective of the Greater Peterborough Area community. This includes how the communities are designed and how people interact and influence their surroundings. Community GHGs are typically emitted from home and business heating and electricity, transportation, and generation of waste. Climate change from a community perspective can be influenced by individuals, businesses and institutions, and various levels of government.

The following diagram shows that two focus areas of the plan and the topics that are included in each.

Corporate emissions are a subset of the overall community emissions, and highlight the contributions of local government operations to climate change. Though corporate emissions make up a relatively small amount of the overall community emissions (about 3%), taking action at the corporate level provides an opportunity for municipalities and First Nations in the GPA to demonstrate leadership in climate change action.

How does the Climate Change Action Plan relate to other initiatives?

This CCAP relates directly to a number of ongoing initiatives aimed at addressing climate change.

Sustainable Peterborough Plan

In 2010, the GPA embarked on an exciting journey – the development of an Integrated Community Sustainability Plan, coined *Sustainable Peterborough*. The vision of Sustainable Peterborough is as follows:

Caring communities balancing prosperity, well-being and nature.

The Sustainable Peterborough Plan was, and is, a collaborative endeavor by all members of the GPA to define its 25-year vision and plan for sustainability. Throughout the development of the Plan, over 2000 members of the community were engaged and one of the key themes that emerged was climate change. The goal that was defined is as follows: "We will reduce our contributions to climate change while increasing our ability to adapt to climate change conditions." The priority action under the Climate Change Theme is to become active members of the PCP program and establish a baseline and climate action plan to reduce greenhouse gas emissions. This project acknowledges that managing climate change is a priority in the GPA and extends above and beyond the priority action identified by your community.

The true understanding of the importance of collaboration, leadership, dedication, and change is captured in the Foreword of the Sustainable Peterborough Plan: "As with any 'Plan', we recognize that this is a snapshot in time of local awareness and engagement on this complicated issue. We understand that increasing global temperatures and its negative link to fossil fuel consumption challenge us to make sustainable energy choices and to increase our conservation efforts. We know that this Sustainability Plan must change and grow with our own education and commitment." This project is not only about developing a Plan that is carefully designed to fit the needs and requirements of each local government (municipalities and First Nations) – but also a Plan that continues to build on the successful engagement and collaboration that became Sustainable Peterborough.

Provincial Climate Change Action Plan

In June 2016, the Province released its five year Ontario Climate Change Action Plan to fight climate change, reduce GHG emissions, and transition to a low-carbon economy. The plan identifies a series of actions across a number of different themes and is a significant step forward in addressing climate change across the province. The actions within our CCAP align to the direction set by the province,

building upon it in our local context. Our CCAP puts the GPA ahead of the curve when it comes to expected changes coming from the province in future years.

Growth Plan for the Greater Golden Horseshoe

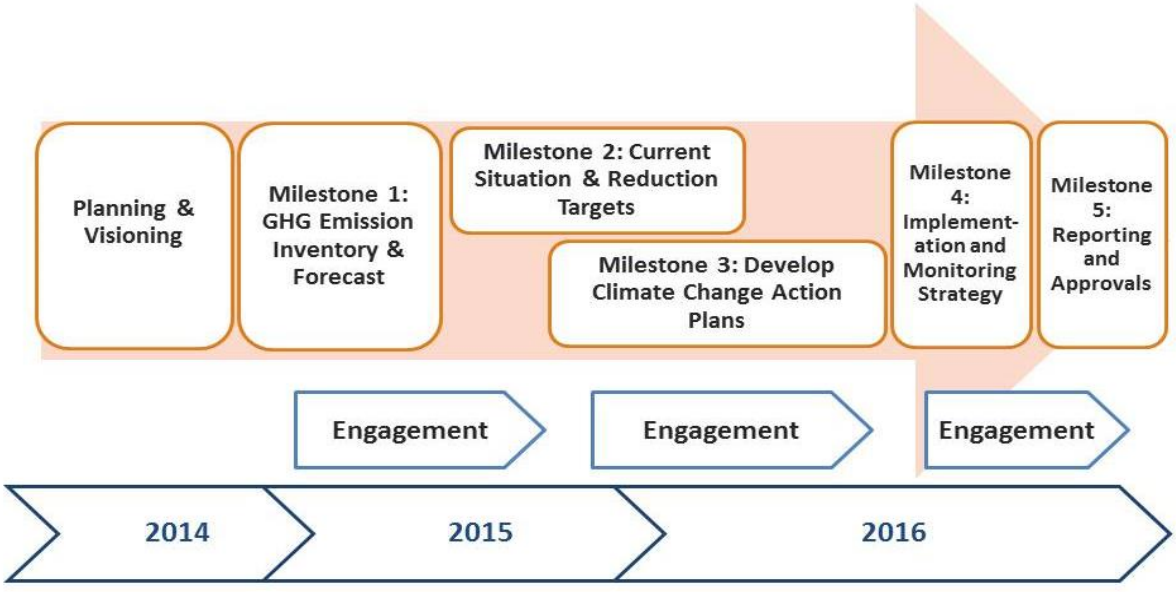
The Province of Ontario is currently undertaking a coordinated review of several key pieces of planning policy, including the Growth Plan for the Greater Golden Horseshoe. The municipalities of the GPA fall within the jurisdiction of this plan. Proposed new policies for this plan include the following:

- Upper- and single-tier municipalities will develop policies in their official plans to identify actions that will reduce greenhouse gas emissions and address climate change adaptation goals, aligned with the Ontario Climate Change Strategy, 2015 and Action Plan.
- In planning to reduce greenhouse gas emissions and address the impacts of climate change, municipalities are encouraged to:
    - develop strategies to reduce greenhouse gas emissions and to improve resilience to climate change through land use planning, planning for *infrastructure*, including transit and energy, and the conservation objectives in policy 4.2.9.1;
    - develop greenhouse gas inventories for transportation, buildings, waste management and municipal operations; and
    - establish municipal interim and long-term greenhouse gas emission reduction targets that support provincial targets and reflect consideration of the goal of net-zero communities, and monitor and report on progress made towards the achievement of these targets

By adopting this CCAP, municipalities in the GPA are well-positioned to begin implementing some of the proposed required elements of provincial planning policies.

How was the Climate Change Action Plan developed?

The development of the Climate Change Action Plan was a two year process, beginning in September 2014. The development of the plan followed a multi-phase process as demonstrated in the diagram below.



Planning and Visioning. Prior to embarking on the five phases of the project, the overall plan and vision for the project were plotted and agreed upon. This included the desired approach for undertaking the remaining phases and project objectives such as achieving broad community engagement.

Milestone 1: Greenhouse Gas Emission Inventory and Forecast. This involved collecting data on community and municipal/First Nation energy use. This data was used to calculate an estimation of GHG emissions for 2011. This 'snapshot' is referred to as the baseline year, for which all business-as-usual forecasts and emissions reductions targets are referenced against. Forecasts project future emissions based on assumptions about population, economic growth, and fuel sources. Community and corporate inventories were undertaken for each participating community.

Milestone 2: Current Situation and Reduction Targets. Following the emissions inventory and forecast, reduction targets were discussed and established. This phase of the project ran concurrently with Milestone 3, where community members, community groups and organizations, and business representatives joined in a conversation about how the GPA wants to address climate change. These conversations ultimately resulted in the reduction targets set forth in the community and corporate action plans.

Milestone 3: Develop Climate Change Action Plans. Corporate and community stakeholders were invited to join in an ongoing conversation about climate change mitigation and adaptation. This ultimately resulted in a series of strategies and actions tailored to addressing climate change across the GPA's member communities and within each municipality's and First Nation's internal operations. The actions set forth in each are directly tied to the emissions reduction targets.

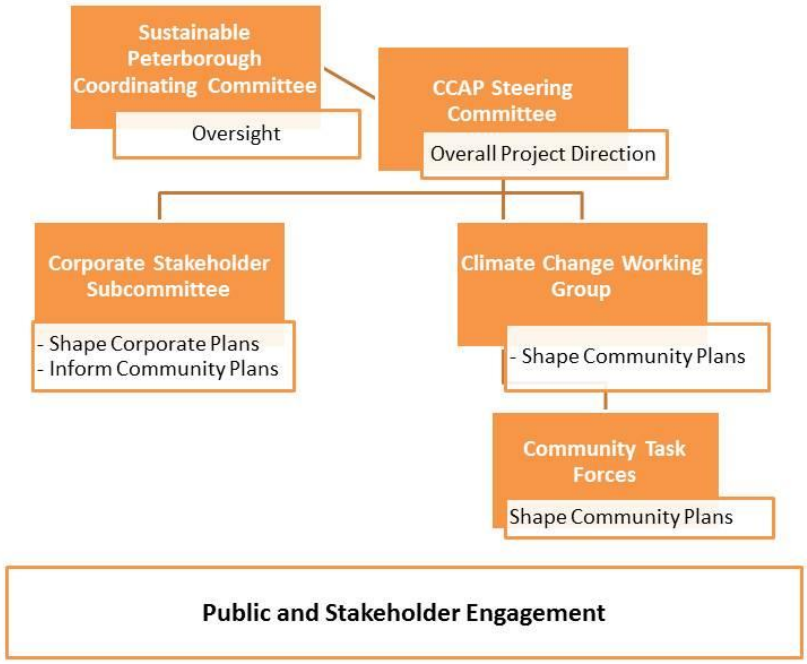
Milestones 1 to 3 have been tailored to each community in the GPA, providing specific GHG baseline inventories, reduction targets, and actions plans for both internal operations and for the broader community. Details for each community partner are provided in the community-specific chapters of this plan.

Milestone 4: Implementation and Monitoring Strategy. This phase involved a conversation about making the CCAP a reality. As part of implementation and monitoring recommendations, key municipal and First Nations partners, along with community groups and organizations, discussed ongoing oversight for the CCAP, partner engagement, ongoing engagement and communications, and monitoring and measurement. Full details of implementation can be found later in this Plan.

Milestone 5: Reporting and Approvals. This phase of the project involved presenting the CCAP to local municipal and First Nations Councils for approval and endorsement. This also includes all submissions to the Partners for Climate Protection program and reporting to the project funders.

Who was involved with developing the Climate Change Action Plan?

The CCAP was developed in a collaborative manner to ensure that the goals, actions and targets included in the Plan fit the needs and requirements of all 12 community partners (10 municipalities and two First Nations). A key component of the development of both the Community and Corporate Climate Change Action Plans has been strong engagement of all stakeholders, groups, and residents within the GPA.



Sustainable Peterborough Coordinating Committee. Provides oversight to the wider set of initiatives that fall under the Sustainable Peterborough umbrella, including the CCAP.

Climate Change Action Plan Steering Committee. Provided overall strategic direction to the consulting team and oversaw and managed the development of the CCAP. The CCAP Steering Committee was made up of representatives from the City, the County, two Townships, Hiawatha First Nation, the Greater Peterborough Economic Development Corporation, the community, and Sustainable Peterborough.

Climate Change Working Group. This pre-existing working group within the overarching Sustainable Peterborough implementation framework worked on community specific aspects of the plan with an objective of advancing climate change actions and education on the community impacts of climate change. This group involved a mix of internal and external interested parties and experts with technical and high level policy expertise in areas related to sustainability, energy and GHG emissions reduction, and climate change policy that provided advice to the consulting team on community climate change issues and engaging the community in the climate change conversation

Community Task Forces. As an extension of the Climate Change Working Group, eight Task Forces were formed to provide broader community stakeholder representation. Each Task Force represented a specific theme related to climate change:

- Agriculture and local food
- Economy and employment
- Energy
- Land use planning
- Natural assets and water
- People and health
- Transportation
- Waste

The task forces were comprised of 100 people representing 70 different organizations in the Greater Peterborough Area. They met Task Force membership was comprised of approximately 100 people representing 70 key organizations and businesses within the GPA. The role of each Task Force was to help shape the plan through more in-depth discussion on each of the perspectives over the course of developing the Plan, providing theme-specific knowledge and expertise.

Corporate Stakeholder Subcommittee. Provided input and direction on internal corporate/municipal operations and policy considerations for the 12 local government partners, as well as the local utilities. This group included representatives from each of the 12 local government partners.

Public Engagement. Engaged through the "Our Change" campaign both online and in-person. Online conversations, public events, meetings and our pop-up climate booth gave community members the opportunity to learn about climate change and the local impacts, share ideas on what they thought could be done, and help shape the plan. Activities included:

- Engaging nearly 800 GPA residents in a conversation about climate change at local community events;
- Hosting online surveys and engagement platforms such as MindMixer;
- Building capacity with a class of 40 Trent University students to conduct and lead their own engagement efforts with approximately 150 local residents and community group representatives;
- Promoting the CCAP project through Facebook, Twitter, and the Sustainable Peterborough website; and
- Advertising campaigns in GPA newspapers and other local publications.

Stakeholder Engagement. Included a broad range of community groups, organizations, agencies, and business that represent a variety of broader interests in the community. Community stakeholders were engaged through ongoing meetings and conversations to help shape the plan, ensuring a broad range of interests are represented. Activities included:

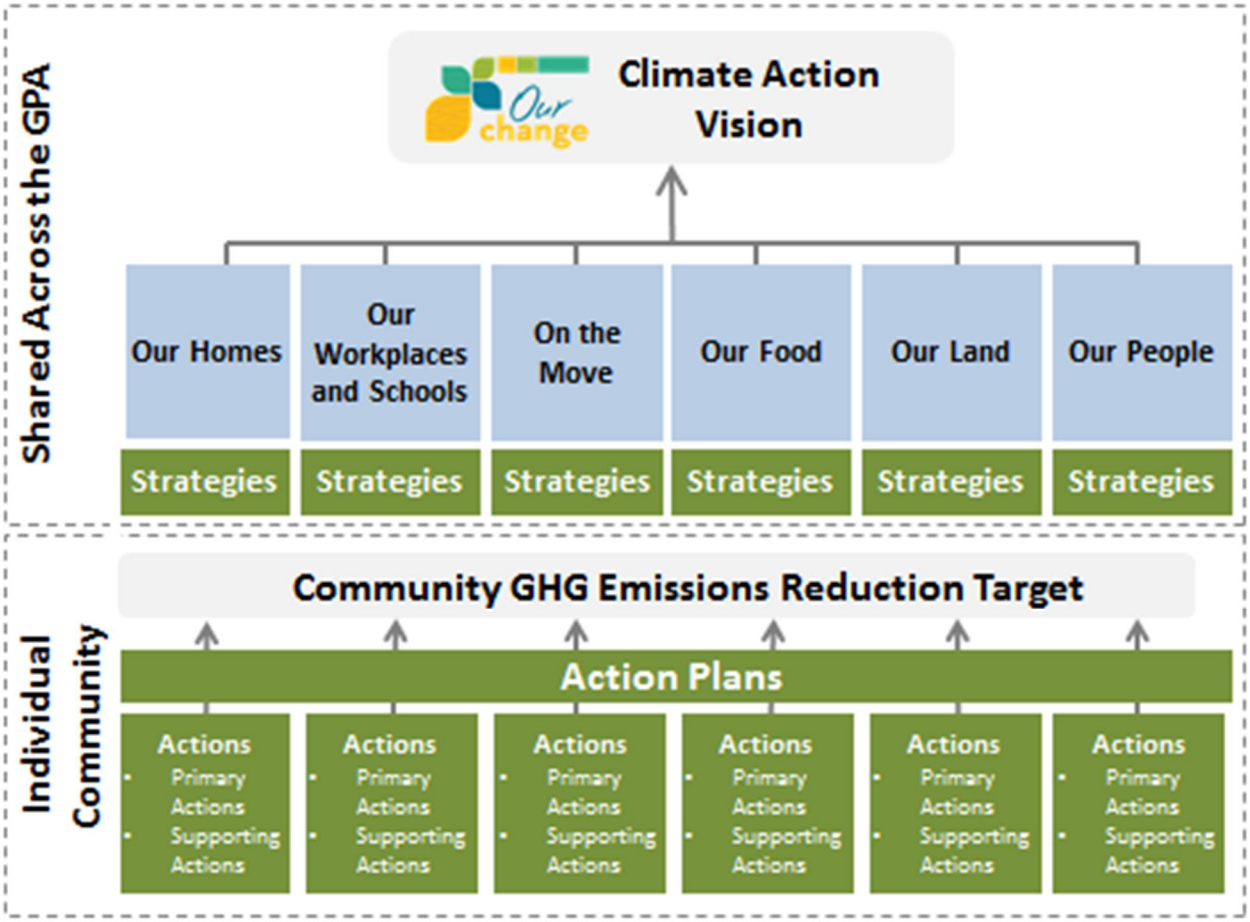
- Hosting approximately 50 meetings with local community groups and organizations;
- Hosting workshops with City and County businesses; and
- Inviting key local community groups, organizations, institutions, government agencies, and businesses to participate on the Task Forces.

Part 2: Community Sector Plans

Overview of Community Plans and Their Structure

The community CCAPs arose from collaboration with many individuals and organizations. As noted previously, the community action plans were heavily shaped by the hard work of the Task Forces, building on the broader community input. Theses Task Forces were initially formed around the existing themes areas of the Sustainable Peterborough Plan. The eight Task Forces were intentionally formed to address climate change from both the mitigation side (reduction of GHG emissions) and the adaptation side (preparing for and adapting to impacts of climate change). Task Forces worked from their eight theme areas to help develop the CCAP; however, those themes evolved into the six areas depicted below to better relate to the broader GPA community.

The following diagram presents the structure of the community climate change action plans. Shared across all municipalities and First Nations is a common vision for addressing climate change, six areas, and a total of 22 strategies for achieving the vision. Each community also has their own action plan specific to their own community. Each of these action plans outlines a target to reduce their community GHG emissions, and sets forth the actions to get there. Each of the components of the community plans are further defined below.



Vision	The vision is what we are ultimately hoping will be achieved through this CCAP. It is drawn from the climate change goal in the Sustainable Peterborough Plan, with the CCAP as the primary implementation tool for this goal. The vision is common and shared among all communities within the GPA.
Targets	The targets set forth the emissions reductions each community is planning to achieve by 2031. They are unique to each community.
Themes	Themes help organize the community plans but clustering action into understandable and relatable headings. The community CCAPs are structured by six areas each of which emerged from the input received from community members.
Strategies	Within each area is a number of strategies, helping to further shape the structure of the plan. Like the vision, these are common and shared among all communities within the GPA for the community action plans.
Primary Action	Many of the strategies are associated with a primary action, which provides further detail for how the GPA can achieve the strategy. Each community has a unique action plan that supports how it will achieve its emissions reduction target.
Supporting Actions	Are actions, initiatives, or policies that are recommended to be undertaken or developed to further support the successful achievement of each strategy.

Vision

The community vision for the Climate Change Action Plan is based on the Climate Change goal of the Sustainable Peterborough Plan.

We will reduce our contributions to climate change while increasing our ability to adapt to climate change conditions.

Emissions Reductions Targets

Emission targets for each community aim to align as closely as possible with the Canadian and Ontario reduction targets, taking the local characteristics of each community into account. The information box

on the following page provides context to emission reduction targets by showing a spectrum of reduction targets and generally what would need to be done to achieve them.

Where Do We Stand with Our GHG Reduction Targets?

The Climate Change Action Plan aims to align reduction targets with national and provincial governments within the local context of the Greater Peterborough Area. The following provides three different scenarios of GHG reduction targets and outlines general what would need to occur to achieve them.

Take No Action

Approximately 6 – 8 % reduction in emissions

Considerations

- Takes into account coal phase-out in Ontario (approx. 6.5% reduction)
- Focus on provincially driven initiatives
  - Electric Vehicle uptake and increased fuel efficiency
  - High efficiency new buildings (net-zero by 2030)
  - Renewable content in natural gas
- Some emissions reductions from livestock through changing practices (10%)

Take Some Action

Approximately 15 – 20% reduction in emissions

Considerations

- All of considerations included under "Take No Action"
- Conservative rate of retrofitting buildings (2 – 5%)
- Some fuel switching away from carbon intensive heating fuels
- Low-medium uptake of distributed solar generation (5-8%)

Show Leadership

Approximately 30 – 40% reduction in emissions

Considerations

- Broadly aligned with provincial targets (37% reduction)
- All of considerations included under "Take Some Action"
- Increased emphasis on retrofitting existing buildings (40-60% of buildings receive deep retrofits)
- More fuel switching away from carbon intensive heating fuels
- Increased uptake of distributed solar generation (15%)
- Organic diversion and waste reductions

The table below contains the baseline emissions and reduction targets for each community in the GPA. These figures are for community emissions only.

Community	Baseline Annual Community Emissions (2011)	Community Emissions Reduction Target by 2031	Expected Annual Emissions by 2031
City of Peterborough	349,743 tonnes of CO_2e per year	**39% below 2011 emissions** (136,768 tonnes of CO_2e less per year)	212,975 tonnes of CO_2e per year
Peterborough County*	335,051 tonnes of CO_2e per year	**32% below 2011 emissions** (107,140 tonnes of CO_2e less per year)	227,911 tonnes of CO_2e per year
Asphodel-Norwood	32,421 tonnes of CO_2e per year	**25% below 2011 emissions** (8,169 tonnes of CO_2e less per year)	24,252 tonnes of CO_2e per year
Cavan Monaghan	54,531 tonnes of CO_2e per year	**31% below 2011 emissions** (17,017 tonnes of CO_2e less per year)	37,514 tonnes of CO_2e per year
Douro-Dummer	48,046 tonnes of CO_2e per year	**29% below 2011 emissions** (13,746 tonnes of CO_2e less per year)	34,300 tonnes of CO_2e per year
Havelock-Belmont-Methuen	37,476 tonnes of CO_2e per year	**31% below 2011 emissions** (11,646 tonnes of CO_2e less per year)	25,830 tonnes of CO_2e per year
North Kawartha	12,128 tonnes of CO_2e per year	**38% below 2011 emissions** (4,625 tonnes of CO_2e less per year)	7,503 tonnes of CO_2e per year
Otonabee South-Monaghan	49,055 tonnes of CO_2e per year	**25% below 2011 emissions** (12,210 tonnes of CO_2e less per year)	36,845 tonnes of CO_2e per year
Selwyn	77,134 tonnes of CO_2e per year	**39% below 2011 emissions** (30,178 tonnes of CO_2e less per year)	46,956 tonnes of CO_2e per year
Trent Lakes	24,260 tonnes of CO_2e per year	**39% below 2011 emissions** (9,574 tonnes of CO_2e less per year)	14,686 tonnes of CO_2e per year
Curve Lake First Nation	4,032 tonnes of CO_2e per year	TBD	TBD
Hiawatha First Nation	1,316 tonnes of CO_2e per year	TBD	TBD

* The community emissions for Peterborough County are the sum of the community emissions for its eight member townships.

Themes

As noted above, the community action plans are framed around six areas that have evolved from the eight Task Forces. The following shows the six areas and which Task Force contributed to which theme.

Strategies

The vision, themes and targets above are supported by the municipalities and First Nations of the GPA, who all have a role to play in implementing this Plan. The following section outlines the details of the Plan's 22 overarching strategies, while the specific details applicable to each of the twelve communities that make up the GPA are provided in a dedicated plan for each of the twelve communities. These are included in the community-specific chapters and outline the following for both the community and the corporate operations of each GPA municipality and First Nation:

- *Where are we now* – a brief discussion of each community's baseline GHG emissions.
- *Where do we want to go* – specific GHG emissions reductions targets for each community.
- *How are we going to get there* – detailed descriptions for how each strategy will be implemented and what the expected impacts will be.

Our Homes

Where are we now?

In homes, energy is used for heating, cooling, lighting, hot water, appliances and devices (such as televisions and computers). The amount of energy used in a home depends on the cost of fuel, the local climate, and the home's characteristics, including its age, type and size as well as how it is constructed. Across the GPA, residential buildings account for 36% of total GHG emissions in the region and provide a significant opportunity to reduce the overall energy consumption and GHG emissions.

How are we planning to act?

Our Homes
• Build new homes to be more efficient and have a smaller environmental footprint • Help existing homes become more energy and water efficient and be more adaptable to climate risks • Reduce the amount of waste generated by residents that contribute to greenhouse gas emissions

Strategy H1: Help existing homes become more energy and water efficient and be more adaptable to climate risks	
Primary Action	Develop and implement a deep energy retrofit program focused on existing homes to achieve efficiency gains of at least 30% to 50% depending on the age and type of building.
Overview	Residential energy efficiency programs have been offered through Peterborough Utilities, Hyrdo One, Enbridge, and the Independent Electricity System Operator (IESO) in the past that have targeted HVAC system upgrades, appliance retirement, building envelope retrofits, and efficient lighting. These programs have incentivized adoption of higher energy efficient practices, but none of the previous programs have offered a whole home approach. A deep energy efficiency retrofit looks to increase the energy efficiency across the whole home including installation of high efficiency windows, adding insulation, upgrading to more efficient lighting, adding weather-stripping, updating furnaces and air conditions, installing programmable thermostats, and replacing appliances with more efficient models, etc. Deep energy retrofit programs typically offer a range of standardized packages for residents to choose from, offer a financing mechanism, and leverage available grants and incentive programs. The majority of buildings in the GPA have been built the 2012 Ontario Building Code was put in place and most likely older in age. A deep energy residential retrofit program is therefore a key strategy to shift towards a low carbon future.
Recommended Approach	The following is the recommended program approach to achieve the energy and GHG reduction objectives: • Target older houses that typically have the highest energy usage first since these homes have the most potential for improvement through retrofits.

Strategy H1: Help existing homes become more energy and water efficient and be more adaptable to climate risks	
	• The retrofit program would be designed specifically to offer deep energy retrofits packages, with the aim of achieving significant energy savings – in the range of 30% to 50% reductions • Look to include solar panels as part of the retrofit package. It is assumed in the model that at the time of retrofit, where feasible, 5-15% of houses will be fitted with solar PV installations.
Enabling Components	**Explore options for establishing program delivery entity** As a first step, it is recommended that program partners conduct the necessary background research into program delivery options (based on best practices) and prepare a business case for the program. The business case should include details of how the program would operate, including the establishment of an external entity with the ability to raise capital financing, community-specific program targets, marketing and retrofit delivery approaches, and financing and administration. **Enable a Local improvement Charge (LIC) mechanism to finance improvements** Recently, the province has made changes to the *Municipal Act, 2001* that allow municipalities to use local improvement charges through Infrastructure Ontario's Loan Program to fund renewable energy and energy improvements on public or private properties on a voluntary basis. The Collaboration on Home Energy Efficiency Retrofits in Ontario (CHEERIO) program[1] is implementing a pilot to assess the effectiveness of LIC financing as a tool for deep residential energy retrofits, while designing communication tools, a monitoring and evaluation framework, and sharing guidance to help achieve full-scale implementation. It is recommended that GPA municipalities use the LIC mechanism to leverage funds for the implementation of the deep energy residential retrofit program. The LIC would be applied as a specific charge to the participating owner's property tax bill that would be removed once the cost of the deep energy retrofit is recovered by the established entity. Under this model, the LIC financing is linked to the property itself, not the individual. Therefore, if the home is sold, the LIC continues with the new home owner until the full value is recovered.[2] **Leverage existing grants and incentives to finance improvements** Through the home retrofit program there is opportunity to leverage the process to receive efficiency incentives and grants currently available and those that do become available, stemming from the province's Climate Change Strategy in coming years.

[1] Clean Air Partnership, Collaboration on Home Energy Efficiency Retrofits in Ontario, 2015.
[2] LIC Primer: Using Local Improvement Charges to Finance Residential Energy Upgrades, Sonja Persram, Sustainable Alternatives Consulting Inc. for CHEERIO, 2013.

Strategy H1: Help existing homes become more energy and water efficient and be more adaptable to climate risks	
	Deep energy retrofit technical training (in partnership with Fleming College skills training and apprenticeship programs) A home retrofit program of this scale is expected to spur significant local economic activity over the next two decades. To be able to deliver a standard set of packaged deep energy retrofit packages, there is a need for adequate local training in deep energy retrofitting. There is opportunity to work in partnership with Fleming College skills training and apprenticeship programs.
Timing	• Explore energy retrofit program delivery options and develop business cases in 2017/18 • Establish delivery entity and initiate program within three years • Deliver program over next 15-20 years (as determined in business case)
Implementers	Development of business cases: City of Peterborough and Peterborough County (including the townships); engagement of utilities and other stakeholders. Program implementers to be determine through the business case.

Strategy H2: Build new homes to be more efficient and have a smaller environmental footprint	
Primary Action	Implement energy efficiency improvements to new home construction that align with improvements to the Ontario Building Code (OBC) aimed at achieving near net-zero or equivalent (0.14 to 0.24 GJ/m2) in all new buildings by 2031.
Overview	Currently the Ontario Building Code is one of the most efficient building codes in North America. Peterborough should focus on ensuring that all new buildings perform to code. As the Ontario Building Code is updated, and progressively higher efficiency standards are put in place, new construction efficiency will increase – approaching near net-zero by 2031. A net-zero energy home is a highly energy-efficient building that uses renewable technology to produce as much energy as it consumes.
Recommended Approach	Focus on ensuring that new buildings meet or exceed code. Where appropriate, work with developers to develop net-zero communities.
Enabling Components	**Ontario Building Code Adjustments** The Ontario Building Code is continuously being updated to respond to societal and technological changes that impact minimum standards for construction that protect health, safety and provide barrier-free accessibility and energy efficiency. The revised 2012 Building Code, which came into effect in 2014, instilled greater energy performance of new homes. Additional adjustments are anticipated to come into effect in January 2017. As a result those homes constructed in 2017 will consume 50 per cent less energy than homes built before 2006.[3] It is anticipated that future adjustments to the OBC will be made to continue to move towards net-zero buildings in the future. **'Solar Ready' Official Plan Updates** In light of the province's Climate Change Strategy, it is anticipated that solar

[3] Ministry of Municipal Affairs and Housing, Ontario's Modernized Building Code Improving Safety, Accessibility, 2013.

Strategy H2: Build new homes to be more efficient and have a smaller environmental footprint	
	energy in general will continue to play an important part of local energy generation and will become more commonplace in the residential sector through new requirements and Building Code adjustments. To enhance transformation, municipalities can include the requirements for new developments to be "solar ready"[4] at an appropriate time. Natural Resources Canada provides specifications for Solar Ready Guidelines which are designed to facilitate the installation of future solar thermal system or solar photovoltaic where appropriate: • A roof location of suitable size, pitch and orientation; • Labelled conduits from the mechanical room to the attic; • Extra plumbing valves and fittings on the hot water heater; • An electrical outlet for a solar tank and wall space for PV controls; and • Identified locations of future components on construction plans.[5] **Sustainable Development Guidelines and Market-based Approaches to Move Beyond Building Code** Sustainability development guidelines have been prepared for other local tier municipalities such as Pickering, Richmond Hill, Brampton and Vaughan and others. Sustainable development guidelines can offer a tool to achieve healthy, complete sustainable communities. These types of guidelines provide developers with a sustainability score based on a set of predefined metrics quantify the sustainability performance of new development projects. Typical market-based tools that can encourage development beyond code include: • Reduced development charges; • Tax rebates / reduced property taxes; • Density bonusing; • Fast-track review and approval; or • Natural gas and electric utility incentives. Sustainable development guidelines could also be considered with an emphasis on energy efficiency (and transportation) and a number of market-based tools to drive innovation in energy efficiency for new home construction.
Timing	Adjustments to Ontario Building Code expected in 2017; subsequent updates anticipated approximately every five years.
Implementers	All municipalities according to compliance with Ontario Building Code adjustments.

Strategy H3: Reduce the amount of waste generated by residents that contribute to greenhouse gas emissions	
Primary Action	Explore feasibility of capturing energy from waste (e.g. anaerobic digestion) to

[4] For example, York Region's Official Plan, 2010, Section 5.2.26 requires development to include a solar design strategy which identifies approaches that maximize solar gains and facilitate future solar installations (i.e., solar ready).

[5] Natural Resources Canada, Solar Ready Guidelines, 2013.

Strategy H3: Reduce the amount of waste generated by residents that contribute to greenhouse gas emissions	
	manage organic material and to reduce emissions of methane gas
Overview	The decomposition of organic waste produces a gas which is composed primarily of methane, a greenhouse gas that is many times more potent than carbon dioxide in terms of its global warming potential. Residential waste can typically consist of up to 40% organic material. Most residential organic material in the GPA is currently being disposed of in landfill. Numerous technologies have demonstrated successful at capturing the methane gas that is present in waste and utilizing it as an energy source.
Recommended Approach	It is recommended that the feasibility study explore a range of possible technologies that can capture the energy available in organic waste. The feasibility study should consider organic waste generated by residents of the GPA that is collected and managed by the municipalities and also the organic waste generate by the Industrial, Commercial, and Institutional sector in the GPA. Based on the outcomes of the feasibility study and the selected technology, further initiatives may be required to effectively capture the organics waste generated for treatment at the facility(ies).
Enabling Components	**Implement a source separated organics program to capture organic waste** In order to ensure appropriate collection and capture of residential organic waste, a source separated organics collection program will need to be explored to capture food waste generated by residents. These types of program have been successfully implemented full-scale and continue to operate successfully in many Ontario municipalities. **Enhance collection of leaf and yard waste materials** To supplement food waste collected from the residential sector, it may be required to enhance the collection of residential leaf and yard waste materials. **Explore IC&I organic waste capture** The Industrial, Commercial, and Institutional sector generates a significant amount of organic waste. Depending on the feasibility study, it may be necessary to accept additional organic material from the IC&I sector supplement the waste feedstock.
Timing	Explore feasibility by 2018; initiate recommended approach and supplementary programs/initiatives within 5 years of feasibility study completion
Implementers	Feasibility study: partnership between City of Peterborough and Peterborough County. Development and operation of facility(ies) as determined through the feasibility study.

Our Workplaces and Schools

Where are we now?

In workplaces and schools, the majority of energy is used for lighting, heating, cooling, water heating, and in some instances large equipment such as elevators. The amount of energy used in a workplace or school depends on similar factors to residential homes. Across the GPA, commercial buildings (retail, office space, hotels and food retail) and institutions (schools, government buildings, hospital, and long-term care facilities) along with local industry account for 21% of the total GHG emissions. As such, there is significant opportunity to reduce the overall energy consumption and GHG emissions by focusing efforts in these sectors.

How are we planning to act?

Our Workplaces and Schools
• Improve energy and water efficiency of existing buildings and business operations • Build new buildings to be more efficient and have a smaller environmental impact • Facilitate climate change friendly business operations and practices • Support local economic resilience and growth of the local green economy • Facilitate low carbon energy generation and local energy security

Strategy W1: Improve energy and water efficiency of existing buildings and business operations	
Primary Action	Work with utilities (PDI, Hydro One, Enbridge as appropriate) to deliver a coordinated robust energy retrofit program to industrial, commercial, and institutional organizations.
Overview	Commercial energy efficiency programs have been offered through Peterborough Utilities, Hydro One, Enbridge, and the IESO that address new equipment, equipment retrofit or replacement, optimization, lighting and water heating, commissioning, energy audits. These programs have incentivized adoption of higher energy efficient practices, but none have offered a deep energy approach. All public agencies such as the County, City, Townships, hospitals, and local schools are required to prepare, publicly report, and implement Energy Conservation and Demand Management plans under the Ontario Regulation 397/11 and *Green Energy Act, 2009*. In order to improve upon this and to align with best practices, robust energy retrofits for the commercial and institutional sectors are recommended.
Recommended Approach	The following is the recommended program approach to achieve the energy and GHG reduction objectives: • Increase the share of electricity in the energy mix, while reducing natural gas and other fossil fuels; • Implement efficiency measures, including retrofits and operations and maintenance, in close to half of the existing building stock.

Strategy W1: Improve energy and water efficiency of existing buildings and business operations	
Enabling Components	**Energy Performance Labelling** Energy Performance Labelling (EPL) is a low-cost tool that can help share the energy performance of any and all buildings. The MOE has indicated that it is looking to move in the direction of energy performance disclosure with proposed amendments to the *Green Energy Act, 2009* that aims to include energy performance disclosure for large buildings. It is recommended that EPLs be available on all buildings in the GPA. Some of the benefits of including EPLs on buildings are: • Transparency regarding the overall energy performance of a building when a new or existing home/building is being purchased, sold or rented; • An incentive to invest in upgrades of inefficient homes and buildings before putting the home on the market; • Increased home and building values; and • Acts as a real estate marketing tool similar to others such as WalkScore. Using the CHEERIO model as a template, the EPL should adopt the Natural Resources Canada (NRCan) EnerGuide Rating System as its performance measurement tool. In order to show leadership, all CCAP partners should display and publicize energy performance of all municipal buildings. **Community Improvement Plans** The Planning Act allows municipalities to prepare community improvement policies as part of a Community Improvement Plan (CIP). As referenced by QUEST Canada, "The policies describe plans and programs that encourage redevelopment and/or rehabilitation improvements in a designated area. Such improvements may include industrial area remediation and redevelopment, streetscape and facade improvements, refurbishing of core business areas, heritage conservation of homes or commercial buildings and, more recently, improvements in energy efficiency."[6] The City could initiate a CIP for EPD 7 to foster further energy efficiency.
Timing	Explore energy retrofit program delivery options in 2018 in conjunction with home retrofit program (Strategy H1) and initiate program within three years.
Implementers	City of Peterborough and Peterborough County (including the townships); engagement of utilities and other stakeholders. Program implementers to be determine through the business case.

Strategy W2: Build new buildings to be more efficient and have a smaller environmental impact	
Primary Action	Build new buildings to be more efficient and have a smaller environmental impact.

[6] Advancing Integrated Community Energy Planning in Ontario: A Primer, 2013. QUEST - Quality Urban Energy Systems of Tomorrow.

Strategy W2: Build new buildings to be more efficient and have a smaller environmental impact	
Overview	New commercial and institutional buildings are expected to achieve progressively higher energy efficiency through Ontario Building Code improvements.
Recommended Approach	The following is the recommended approach: • At a minimum, new commercial, industrial, and institutional construction will be fully compliant with the 2012 OBC. • New commercial, industrial, and institutional buildings would follow a similar pattern as in Strategy H2, with improvements to the OBC implemented every two-five years.
Enabling Components	**Ontario Building Code Adjustments** As with the residential sector, it is anticipated that future adjustments to the OBC will be made to continue to move towards net-zero buildings in the future. **Sustainable Development Guidelines and Market-based Approaches to Move Beyond Building Code** as identified in Strategy H2.
Timing	Adjustments to Ontario Building Code expected in 2017; subsequent updates anticipated approximately every five years
Implementers	All municipalities according to compliance with Ontario Building Code adjustments.

Strategy W3: Facilitate climate change friendly business operations and practices	
Primary Action	Support Sustainable Peterborough Business Initiative to build a toolkit for Greater Peterborough Area businesses to assist with climate change impact analysis and business continuity planning for extreme weather.
Overview	As the Greater Peterborough Area continues to experience the impacts of a changing climate businesses will experience the impacts on their operations (e.g. disruption to supply and delivery, employee access to worksites, physical impacts to weather and flooding, etc.). Business should be thinking about potential impacts to their business from climate change and can take steps to better prepare.
Recommended Approach	A business toolkit can be a self- or assisted-guidance through a process to assess business operations and their vulnerabilities to climate change, determine risks, and outline plans for preparedness.
Timing	Toolkit development to occur in 2017/18; ongoing distribution and use ongoing afterwards.
Implementers	Development of toolkit: Sustainable Peterborough through the Sustainable Peterborough Business Initiative. Ongoing engagement with businesses and distribution of toolkit to local businesses: each municipality, Chambers of Commerce, GreenUP, Peterborough Economic Development, and Sustainable Peterborough.

Strategy W4: Support local economic resilience and growth of the local green economy	
Primary Action	Support PGreenUP as a “one-stop shop” for businesses to learn about and advance sustainability through the Green Business Peterborough Program

Strategy W4: Support local economic resilience and growth of the local green economy	
Overview	The Green Business program is a partnership between GreenUP, Peterborough Utilities Group, and the Chamber of Commerce. The focus of the program is to provide a one-stop-shop for information about energy efficiency services for Peterborough region businesses.
Recommended Approach	The Green Business program was re-launched in 2016 and is currently available to businesses. Program staff are available to serve as applicant representatives for the PDI Save on Energy retrofit program, as well as provide resources and information about other energy incentive programs. The program also features a full energy audit service for businesses.
Timing	Initiate promotion in 2017 on an ongoing basis.
Implementers	Ongoing communication and engagement to inform businesses: each municipality, Chambers of Commerce, GreenUP, Peterborough Utilities, Peterborough Economic Development, and Sustainable Peterborough. Ongoing program delivery by GreenUP, Peterborough Distribution Inc., and the Chamber of Commerce.

Strategy W5: Facilitate low carbon energy generation and local energy security	
Primary Action	Conduct a regional study to explore the potential to implement local renewable energy generation and storage (institutional, commercial, industrial, and residential)
Overview	Renewable energy generation is occurring across the GPA ad-hoc and it is not currently known what the potential is to generate and store renewable energy locally. A regional study would identify the type and location of renewable energy potential.
Recommended Approach	5% of the total electricity demand in commercial and industrial buildings are to be generated by on-site renewables, which aligns with IESO's projections for Ontario's electricity supply mix by 2035.
Timing	Initiate study in 2017/18.
Implementers	Completion of study: Peterborough County, City of Peterborough, Utilities partnership

On the Move

Where are we now?

Traditional single-occupant vehicles consume large amount of fuel, resulting in further GHGs. The amount of energy used by a vehicle depend on variables such as its age, size, and fuel type. Across the GPA, transportation accounts for 25% of the total GHG emissions. By looking at ways to support active transportation, encourage alternatives to single-occupant vehicles, increase the use of public transit, and transition to lower GHG fuels, the GPA can reduce its climate impacts associated with transportation.

How are we planning to act?

On the Move
• Build an active transportation network and support active transportation • Facilitate alternatives to single-occupant vehicle use to reduce frequency of personal vehicle use • Make public transportation more appealing to increase its usage • Help transition vehicles to use cleaner and lower greenhouse gas emitting fuel sources

Strategy M1: Build an active transportation network and support active transportation	
Primary Action	Reduce vehicle trips and foster greater walking and cycling mode share through a coordination of efforts.
Overview	By making walking and cycling more attractive to residents for both commuting purposes and recreational purposes, there will be a need to drive fewer personal vehicles, decreasing the number of kilometers traveled and GHG's emitted. This also contributed to improve physical health of residents.
Recommended Approach	The following is the recommended approach: • Development of an Active Transportation Master Plan for Peterborough County as a collaboration amongst all the townships (currently under development) • Coordination of trails and other walking and cycling facilities between the City and County • Accelerated implementation the City's Short-Term and Long-Term Cycling Network • Enhancement of pedestrian and cycling facilities • Supportive land use policies that encourage higher density and walkable communities
Enabling Components	**County Active Transportation Master Plan currently under development** Peterborough County is currently developing an Active Transportation Plan that will propose a suite of initiatives to improve opportunities for active transportation. The process has also brought together the townships and the County to explore active transportation in a collaborative manner.
Timing	2016 and onwards
Implementers	City of Peterborough and Peterborough County in collaboration with all townships

Strategy M2: Facilitate alternatives to single-occupant vehicle use to reduce frequency of personal vehicle use	
Primary Action	Explore feasibility of a carpool lot network (formal and informal spaces) (in partnership with the County and other Townships).
Overview	Carpooling and other ridesharing make more efficient use of vehicles on the road, decreasing the overall kilometers travelled. A network of carpool lots and spaces across the GPA allow residents to converge at key locations to meet other residents to carpool. Reducing travel distance to individual homes to pick-up carpools increase the convenience and benefits of carpooling.
Recommended Approach	The following is the recommended approach: • Assess key locations across the GPA to identify major road convergence locations • Identify municipal and institutional lots and local business parking that would be willing identify as carpool spots • Install signage and create maps and other communication materials • Generate awareness and encourage usage of the lot network
Enabling Components	**Smart Commute and Carpool Match Systems** Smart Commute is currently available in Greater Toronto and Hamilton Area to help anyone explore their travel options. They operate a carpool program and carpool ride matching system to connect carpoolers. Numerous other carpool matching systems are readily available for use. **Ridesharing and other emerging technologies** Emerging technologies, like Uber and Lyft, have become popular across North America to connect drivers and riders, making rides more efficient and decreasing the need for car ownership for some. These types of technologies can be expected to continue developing in the future and assist with reducing single-occupant vehicle travel.
Timing	2017-2020
Implementers	City of Peterborough and Peterborough County in collaboration with all townships and willing local businesses and institutions

Strategy M3: Make public transportation more appealing to increase its usage	
Primary Actions	**City**: Expand public transit service in the City as per the City of Peterborough Public Transit Operations Review **County**: Explore feasibility and joint County-Townships delivery of County Transit services or alternative methods of public transportation as part of next County Transportation Master Plan Update.
Overview	Transportation and transit services are reviewed on a regular basis to understand usage and demand on the systems. At each review, opportunities are accessed to implement or expand service that is feasible to meet demand.
Recommended Approach	During next reviews of public transit service opportunities, enhance service where feasible aimed at increasing ridership.
Timing	Within the next five years, upon next reviews.
Implementers	City of Peterborough and Peterborough County.

Strategy M4: Help transition vehicles to use cleaner and lower greenhouse gas emitting fuel sources	
Primary Action	Support a shift in vehicle technology to Electric Vehicles (EVs).
Overview	The potential exists for a significant transformation of the auto sector as battery technologies improve, and additional EVs enter the market.
Recommended Approach	12% of all light-duty vehicles on the road by 2031 are expected to be EVs, conservatively based on the provincial EV sales target for 2025.
Enabling Components	**Improved Vehicle Efficiency** Federal and provincial standards are changing and will require new vehicles to be more efficient. Estimates suggest that new vehicles produced starting in 2017 will be as much as 50% better performing than the current average. Since the vehicle mix for the Greater Peterborough Area in 2031 will include some older vehicles and because fuel performance tends to degrade over vehicle life, it is assumed that remaining vehicles will achieve better fuel performance in 2031. **Policy direction and incentives from other levels of government** will further incent transition to EVs.
Timing	2016 and on
Implementers	Primarily auto industry responding to government and market direction; all municipalities supporting as technology becomes commonplace.

Our Food

Where are we now?

The choices we make, such as the food we eat, all have a role to play in how we impact the climate. For example, purchasing locally produced food reduces the amount of energy needed to ship it, and thus reducing GHG emissions. Additionally, wasting less food results in less organic matter being sent to landfill and less GHG emissions resulting from decomposition.

How are we planning to act?

Our Food
• Support localization of the food system • Encourage purchasing of locally produced food • Reduce the amount of wasted food

Strategy F1: Support localization of the food system	
Primary Action	Undertake a community food system assessment to better understand local food production and movement within the GPA.
Overview	A clear understanding of the agriculture and food production system in the GPA is not fully known. A more in-depth exploration of the current food production and processing capacity of the GPA can provide a better understanding of this and explore opportunities to improve the local food production and processing capacity of the GPA.
Recommended Approach	Engaging with the local agricultural and food organizations to: • Identify agricultural production and local food processing in the GPA; • Document movement of food out of and into the GPA; • Explore barriers and opportunities to further processing of food locally; and • Explore sale of locally produced/processed food and barriers and opportunities to increasing local sales.
Timing	2018-19
Implementers	Collaboration between City of Peterborough and Peterborough County, including local partners

Strategy F2: Encourage purchasing of locally produced food	
Overview	Many mechanisms and efforts are already underway to encourage the purchase of local food across the GPA. Making local food a priority and encouraging and supporting further local food purchasing can be undertaken by all communities and through support of the existing initiatives and organizations.
Recommended Approach	The following is the recommended approaches to encourage the purchase of local food: • Support local organizations to promote the marketing of locally-produced food through initiatives such as the Purple Onion Festival and Local Food Month; • Expand and promote the Farmers Market Network across the Greater Peterborough Area; and • Support and encourage farm gate sale of produce.

Strategy F2: Encourage purchasing of locally produced food	
Timing	Ongoing
Implementers	All local communities.

Strategy F3: Reduce the amount of wasted food	
Primary Action	Implement a residential awareness campaign to encourage elimination of wasted food in the home, workplaces, and schools.
Overview	Food waste from residents, businesses, and institutions is one of the major contributors to organic material being disposed of in landfill and contributing to GHG emissions. A significant proportion of food waste generated can be avoided through changes to food purchasing and preparation techniques and planning, and general awareness.
Recommended Approach	It is recommended that an awareness campaign be implemented to educate people about the amount of food that is being wasted, what it costs, and how much GHG emissions it results in. The campaign should aim to educate on ways to reduce excess food waste from the planning to eating phases, as well as alternatives to disposal of leftover food. Campaigns should be targeted and tailored to the various generators of food waste across the GPA (e.g. City residents, County residents, local businesses, schools and other institutions) with an ultimate goal of educating people and creating a culture of conservation.
Timing	County campaign in 2016; City in 2018/19
Implementers	County of Peterborough and City of Peterborough

Our Land

Where are we now?

How we use our land affects our GHG emissions and thus climate change. In turn, climate change affects our land. Through its Climate Change Action Plan and planning policy direction, the province is looking to municipalities to strengthen land use policies to better mitigate and adapt to climate change. In the GPA, an assessment of climate change risks and impacts will better help prepare for impending changes, and protecting and enhancing our natural assets in the present will help buffer against such future changes.

How are we planning to act?

Our Land
• Strengthen land use policy and the development review process to better support climate change mitigation and adaptation • Identify climate change risks and prepare for potential impacts • Protect and enhance natural assets • Facilitate best management practices for low emission farming and climate change adaptation

Strategy L1: Strengthen land use policy and the development review process to better support climate change mitigation and adaptation	
Primary Action	Establish a multidisciplinary review team to assess provincial and local land use planning legislation and tools and make recommendations to decision-makers on how to best implement an ecosystem-based approach to the development application process (partnership amongst all communities).
Overview	Evolving land use planning tools have been emerging to better implement an ecosystem-based approach to planning (e.g. sustainability guidelines and rating systems, green development standards, review committees, etc.). Similarly, provincial policy has been evolving putting a greater emphasis on climate change and ecological systems. The local GPA context needs to be explored to determine how to best implement these into the development review process.
Recommended Approach	It is recommended to establish a multidisciplinary team of professionals with experience in land use planning to: • Explore the legislative and policy framework within the Greater Peterborough Area context to better understand opportunities to enable ecosystem-based approached; • Review tools and mechanisms used by other municipalities; • Consult with interested stakeholders; and • Make recommendations to decision-makers in the GPA on best approaches to be implemented.
Enabling Components	**Growth Plan for the Greater Golden Horseshoe** Under the proposed changes to the Growth Plan for the Greater Golden Horseshoe, the City of Peterborough and Peterborough County would be required to develop policies in their official plans to identify actions that will reduce greenhouse gas emissions and address climate change adaptation goals, aligned with the Ontario Climate Change Strategy, 2015 and Action Plan.

Strategy L1: Strengthen land use policy and the development review process to better support climate change mitigation and adaptation	
Timing	Initiate review in 2017/18
Implementers	Collaboration between City of Peterborough, County of Peterborough, and townships.

Strategy L2: Identify climate change risks and prepare for potential impacts	
Primary Action	Conduct a Greater Peterborough Area-wide vulnerability assessment of expected climate change impacts (including drought and lake levels).
Overview	As the climate continues to change, local impacts can be expected in the GPA relating to precipitation, temperatures, lake levels and water temperatures, and extreme weather events. To prepare for these changes, an understanding is needed of what the local changes will be and where the GPA is most vulnerable.
Recommended Approach	The following is the recommended approach: • Assess the climate change impacts anticipated for the GPA based on recognized climate models; • Explore areas of climate change vulnerability across the GPA; • Assess the climate change risks in the GPA; • Prepare a plan to address the greatest risks associated with climate change; and • Implement the plan and monitory progress.
Enabling Components	**Great Lakes Climate Change Adaptation Project** Five GPA municipalities have received grants to participate in climate adaptation projects as part of the Great Lakes Climate Change Adaptation Project led by ICLEI Canada and supported by the Ontario Ministry of Environment and Climate Change. The purpose of the initiative is to: • Build capacity for moving from planning to action and ensure that municipal staff are better prepared to implement on-the-ground adaptation measures; • Work towards overcoming challenges related to implementation of adaptation measures; and • Create a network of adaptive communities located within the Great Lakes basin.
Timing	2017-18
Implementers	Coordination amongst all municipalities.

Strategy L3: Protect and enhance natural assets	
Primary Action	Develop and implement a Natural Heritage System Plan leveraging work of the Kawarthas Naturally Connected initiative.
Overview	Natural heritage systems planning is a strategic approach to protecting, maintaining, restoring and enhancing ecologically sustainable and resilient landscapes. The intention is to address biodiversity loss, land use change and the uncertainties of climate change to support clean air, clean water and a rich diversity of plant and animal life to sustain present and future generations. It is a systems-based approach to biodiversity conservation, which aims to establish an interconnected web of core natural areas and natural corridors.

Strategy L3: Protect and enhance natural assets	
Recommended Approach	The Natural Heritage System Plan should focus on the following: • The identification of the natural heritage systems and initiatives to protect and restore them; • Integration of natural heritage systems into ongoing thinking and planning; • Securing investment in natural heritage protection; and • Ongoing assessment and mitigation through developments (e.g. environmental impact studies).
Enabling Components	**Inventory of Natural Assets** An important part of developing a Natural Heritage Systems Plan is to understand the current system. A detailed inventory of natural assets in the Greater Peterborough Area is needed. This can be developed in association with local organizations (e.g. Conservation Authorities as they update their floodplain mapping).
Timing	2018-2020
Implementers	City of Peterborough, County of Peterborough, and townships

Strategy L4: Facilitate best management practices for low emission farming and climate change adaptation	
Overview	Low emission farming and climate adaptation planning for farms is an evolving area of focus in the agricultural field. As these practices evolve, their uptake will become commonplace.
Recommended Approach	To support farmers implement best management practices, the following is recommended: • Promote usage of Agriculture and Agri-Food Canada's no-cost Holos GHG emissions modeling tool to assist farmers in assessing their GHG emissions and exploring various farm management scenarios • Support local agricultural organizations to host local agricultural forums and training sessions to engage with farmers on how to implement climate change mitigation and adaptation related best management practices • Support local agricultural organizations to promote local participation in the Canada-Ontario Environmental Farm Program to encourage farmers to increase knowledge, conduct assessments, and develop and implement Environmental Farm Plans for their farms
Timing	Ongoing
Implementers	County and townships in association with local agricultural organizations

Our People

Where are we now?

People were central to the development of this plan, and will be central to its implementation as well. The impacts of climate change will be felt by many across the GPA, and we need to be prepared for the public health impacts that it may bring, especially with respect to vulnerable populations. Continuing efforts to increase local awareness of climate change can help to maintain the momentum necessary to continue ongoing implementation efforts. In turn, as awareness increases, opportunities for civic engagement in climate change-related issues need to increase in parallel.

How are we planning to act?

Our People
• Prepare for the health impacts associated with a changing climate • Foster a culture of climate change awareness • Encourage civic engagement around climate change

Strategy P1: Prepare for the health impacts associated with a changing climate	
Primary Action	Conduct a local community vulnerability assessment of public health impacts from climate change to identify climate risks on vulnerable populations (in partnership with all communities).
Overview	Similar to Strategy L2, expected impacts from a changing climate have an impact on human health. To prepare for these health impacts, an understanding is needed of what the most likely impacts are and how they will impact the most.
Recommended Approach	The same approach outlined for Strategy L2 applies.
Timing	2017-18
Implementers	Health Unit, City of Peterborough, County of Peterborough

Strategy P2: Foster a culture of climate change awareness	
Overview	Awareness of climate change and anticipated impacts have traditionally been limited. This has been changing as people are beginning to see the impacts of climate change and as climate change is becoming a priority. Building on this momentum and the momentum of climate change awareness gained through development of the CCAP, education and awareness should continue.
Recommended Approach	The recommended approach to continue building a culture of climate change awareness in the GPA include: • Support Sustainable Peterborough in delivering ongoing education and outreach on climate change; • Support Sustainable Peterborough and other local organizations in hosting regular events focused on climate change (speaker series, annual event, etc.); • Support Sustainable Peterborough in seeking buy-in and endorsement/support for the shared vision and goals of Community Climate Change Action Plan from existing groups and organizations in the Greater Peterborough Area; and

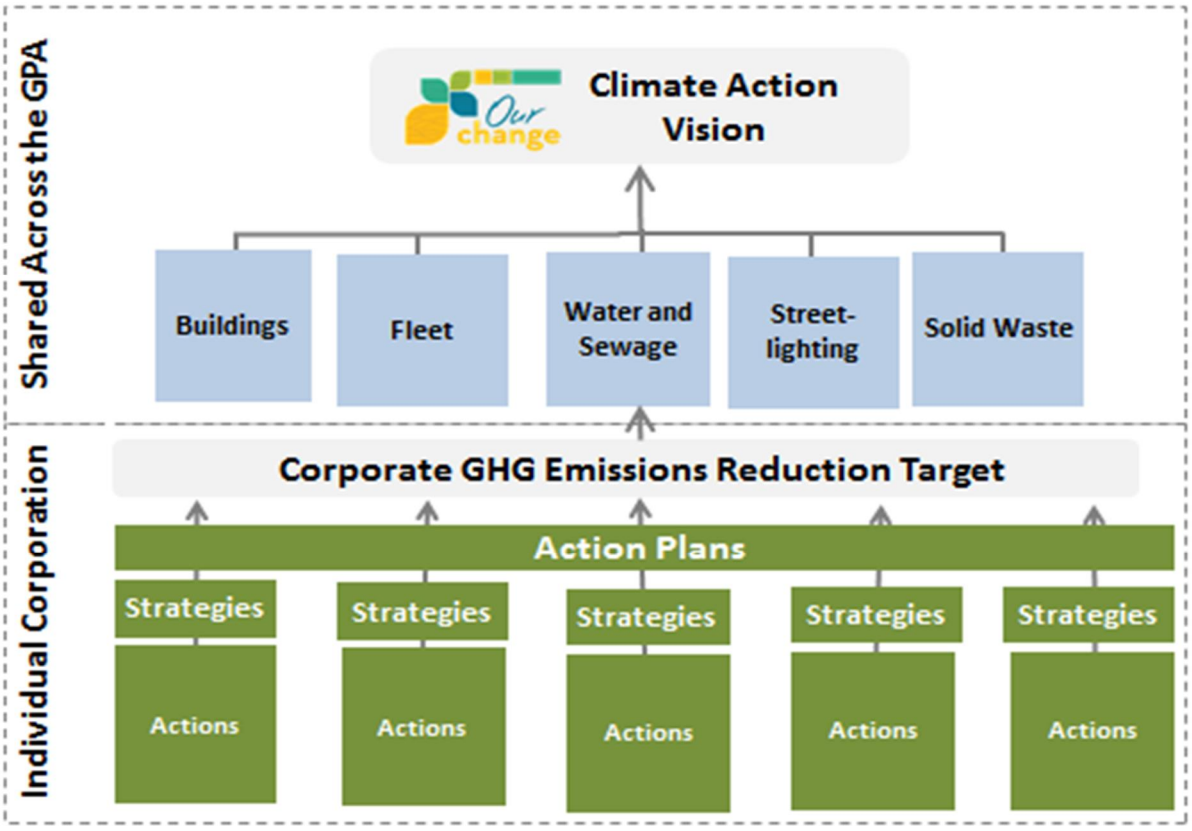
Strategy P2: Foster a culture of climate change awareness	
	• Support Sustainable Peterborough to host a community, youth, adult, and senior climate change champion through the annual Sustainable Peterborough Awards.
Enabling Components	**Our Change Campaign** The Our Change education and awareness campaign was delivered as the first phase of the CCAP project and engaged over 800 people in a discussion on what climate change is and how they have experienced the impacts of climate change. Building on the Our Change campaign, a total of approximately 1,600 people were engaged in developing the CCAP. The Our Change brand should continue to be used moving forward and the people that have participated, leveraged to continue to generate awareness of climate change and encourage action climate change.
Timing	2016 onwards
Implementers	Sustainable Peterborough and partners

Strategy P3: Encourage civic engagement around climate change	
Primary Action	Develop a charter and guidelines (engagement strategy) to foster meaningful community engagement in climate change issues and environmental stewardship (partnership amongst all communities).
Overview	There is growing interest in the climate change amongst residents of the GPA, with an interest in taking personal action to address climate change and in influencing others to take action on climate change. A charter is a commitment think and act on climate change. By developing a GPA charter on climate change, municipalities, businesses, residents, and organizations can adopt the charter and pledge their support for taking action on climate change.
Recommended Approach	The following is the recommended approach to develop the climate charter and guidelines: • Review best practices from other communities around the world to understand successful approached used elsewhere; • Engage with key community organizations and stakeholders to collaboratively develop the charter; and • Develop and adopt the charter GPA-wide and continually seek ongoing support and buy-in.
Timing	Develop charter and guidelines in 2018; implementation ongoing
Implementers	Collaboration amongst all communities

Part 3: Corporate Sector Plans – Local Government Leadership

Overview of Corporate Plans and Their Structure

CCAPs specific to each municipality's corporate operations present an opportunity for local governments to demonstrate significant leadership in the area of climate action. The corporate CCAPs are structured similarly to the community CCAPs, as follows:



Vision	The vision is what we are ultimately hoping the achieved through this CCAP. It is drawn from the climate change goal in the Sustainable Peterborough Plan, with the CCAP is the primary implementation tool for this goal. The vision is common and shared among all communities within the GPA.
Themes	The corporate CCAPs are structured by five themes that are specific to municipal corporate operations that are defined as part of the Partners in Climate Protection program.
Targets	The targets set forth the emissions reductions each municipality is planning to achieve by 2031 with respect to its internal operations. They are unique to each corporation.
Strategies	Within each theme is a number of strategies, helping to further shape the structure of the plan.

Actions	Each of the strategies have a number of actions outline to help achieve them. Actions are identified as short-term (1-4 years), medium-term (5-9 years), and long-term (10+ years). Each community has a unique set of actions that supports how it will achieve its emissions reduction target.

Vision

We will reduce our contributions to climate change while increasing our ability to adapt to climate change conditions.

Emissions Reductions Targets

The table below contains the baseline emissions and reduction targets for each of the GPA's municipality and First Nation's corporate operations.

Community	Baseline Annual Corporate Emissions (2011)	Corporate Emissions Reduction Target by 2031	Expected Annual Emissions by 2031
City of Peterborough	15,129 tonnes of CO_2e per year	**40% below 2011 emissions** (5,989 tonnes of CO_2e less per year)	9,140 tonnes of CO_2e per year
Peterborough County	1,752 tonnes of CO_2e per year	**26% below 2011 emissions** (460 tonnes of CO_2e less per year)	1,292 tonnes of CO_2e per year
Asphodel-Norwood	592 tonnes of CO_2e per year	**28% below 2011 emissions** (158 tonnes of CO_2e less per year)	434 tonnes of CO_2e per year
Cavan Monaghan	646 tonnes of CO_2e per year	**29% below 2011 emissions** (190 tonnes of CO_2e less per year)	456 tonnes of CO_2e per year
Douro-Dummer	433 tonnes of CO_2e per year	**32% below 2011 emissions** (139 tonnes of CO_2e less per year)	294 tonnes of CO_2e per year
Havelock-Belmont-Methuen	559 tonnes of CO_2e per year	**40% below 2011 emissions** (225 tonnes of CO_2e less per year)	334 tonnes of CO_2e per year
North Kawartha	735 tonnes of CO_2e per year	**27% below 2011 emissions** (198 tonnes of CO_2e less per year)	537 tonnes of CO_2e per year
Otonabee South-Monaghan	498 tonnes of CO_2e per year	**25% below 2011 emissions** (125 tonnes of CO_2e less per year)	373 tonnes of CO_2e per year
Selwyn	1,450 tonnes of CO_2e per year	**40% below 2011 emissions** (560 tonnes of CO_2e less per year)	890 tonnes of CO_2e per year
Trent Lakes	825 tonnes of CO_2e per year	**26% below 2011 emissions** (216 tonnes of CO_2e less per year)	609 tonnes of CO_2e per year
Curve Lake First Nation	(in progress)	TBD	TBD
Hiawatha First Nation	(in progress)	TBD	TBD

Themes

The corporate CCAPs are structured by five themes that are specific to municipal corporate operations that align with the requirements of the Partners for Climate Protection program. They include:

- Buildings;
- Fleet;
- Water and sewage;
- Streetligting; and
- Solid waste.

Strategies

The vision, themes and targets above are supported by the municipalities of the GPA, who all have a role to play in implementing this Plan. Within each of the five corporate themes are a number of strategies that will guide the way towards achieving the emissions reduction targets. The strategies apply to each of the municipalities where applicable.

Theme	Strategies
Buildings	• Institutionalize energy efficiency and low carbon thinking into the organization • Enhance operational efficiency of existing buildings • Build municipal facilities to ensure high environmental performance • Improve environmental performance of existing municipal facilities • Utilize renewable energy sources
Fleet	• Transition the municipal fleet to be more efficient and less carbon emitting
Water and sewage	• Enhance operational efficiency of the water services system
Streetlighting	• Improve energy efficiency of the streetlighting system
Solid waste	• Reduce the amount of organic waste generated through municipal operations

Part 4: Implementation – Milestones 4 & 5

Implementation of the Community Climate Change Action Plan will be gradual and ongoing process over the next 20+ years. It will require the support and dedication of all local governments involved, as well as local organizations, businesses, and residents to fully achieve. The local governments have an opportunity to demonstrate their leadership by reducing emission from their own operations. As many initiatives of the CCAP are collaborative in nature, offering shared opportunities to implement amongst multiple partners, working together is paramount.

The following three sections provide an overview of the recommended approaches to support implementing the CCAP, based on success factors identified to implementing community-based plans across Canada. The Climate Change Coordinator will assist each local government work together to implement their plans.

Oversight

Sustainable Peterborough

Sustainable Peterborough will continue to oversee implementation of the Climate Change Action Plan in collaboration with the member communities.

CCAP Steering Committee

The CCAP Steering Committee should be continued, or a new one formed, with membership consisting of representatives from each of the City, County, and First Nations, and be complemented with representation from NGOs and businesses alike.

Corporate Stakeholder Committee

The Corporate Stakeholder Committee, consisting of representatives from each of the local governments and local utilities, should continue to meet, with quarterly meetings being the recommended approach moving forward. This committee should discuss the ongoing implementation of their respective plans, look for opportunities for partnerships and to leverage resources, secure funding, and other such matters.

Climate Change Working Group

The Climate Change Working Group of Sustainable Peterborough should also continue to provide advice and direction into the CCAP, with a lens towards ongoing climate-related projects and the exploration of funding opportunities as they arise. Membership of this group could be broadened to include more experts in the area of climate change adaptation.

Climate Change Coordinator

A Climate Change Coordinator has been hired with funding from the City of Peterborough and Peterborough County to work with each of the local governments on implementing the CCAP; to help explore collaborative opportunities and ensure sharing of knowledge and experiences. The coordinator

will work closely with Sustainable Peterborough, the CCAP Steering Committee, the Corporate Stakeholder Committee, and the Climate Change Working Group.

Ongoing Engagement and Communication

Ongoing engagement of key stakeholders is an important to keep people engaged in the climate change discussion and informed on progress of implementing the CCAP. The Task Forces formed to develop the CCAP should continue to meet on an annual basis.

A communication strategy will be needed to support the rollout of the CCAP, and should be developed by the CCAP Steering Committee and the Climate Change Coordinator upon adoption of the CCAP. It should include key messaging and communications approaches for the general public, local governments (employees and leaders), community groups and organizations, and local businesses. It should include areas such as reporting, annual meetings, online presence (website and social media), traditional media, leverage existing networks and organizations, presence at events, and ongoing meetings of the Task Forces.

Monitoring and Measurement

To monitor and measure the CCAP, progress should be tracked against the emission reduction targets contained within the plan. Corporate and community emissions data will be needed to track progress and re-revaluate targets. The CCAP coordinator will assist local governments to use the PCP Tool to input corporate data on an annual basis. A complete inventory of community emissions should be competed every five years, with the next inventory occurring in 2019.

Progress reporting on the actions within the community and corporate CCAPs should be done annually for corporate GHG emissions and more in-depth at time of completing the community re-inventory. Highlights of progress should also be reported annually as part of the existing Sustainable Peterborough report card.

Annual reporting of corporate advancements of the CCAPs should be led by the Climate Change Coordinator and the Corporate Stakeholder Committee. These annual reports should be presented to councils. The report should include a status for each action as well as brief commentary on what was achieved with respect to the action and what will be happening next.

Funding

Sustainable Peterborough and the GPA communities have been successful at leveraging the Sustainable Peterborough Plan and the collaborative structure of Sustainable Peterborough to secure funding for various sustainability initiatives, including development of the CCAP. These funding opportunities should continue to be sought to assist with implementation of the CCAP, particularly opportunities that arise as a result of the Province's Climate Change Action Plan in coming years. Implementation of the CCAP should also be integrated into annual municipal and First Nations budgeting processes.

Attachment B

sustainable Peterborough

Greater Peterborough Area Climate Change Action Plan

Chapter 6 – Havelock-Belmond-Methuen Community and Corporate Climate Action Plans

September 30, 2016

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Local Governments for Sustainability

Contents

Section 1: Introduction and Overview

Greater Peterborough Area Climate Change Action Plan

In 2014, the Greater Peterborough Area's (GPA) member communities joined more than 250 other communities across Canada to address climate change through participation in the Partners for Climate Protection (PCP) program aimed at reducing GHG emissions from both municipal/First Nation corporate operations and community sources.

As part of the PCP program, the Climate Change Action Plan sets a course to reduce local contributions to climate change and prepare communities for present and expected changes that will occur as a result of climate change. This plan represents an integrated approach to dealing with some of the most important issues related to the sustainability of our diverse region. The overall objective of the CCAP is to reduce our greenhouse gas emissions through a reduction in fossil fuel use and lowering our energy consumption, and to better prepare for our changing climate. The Plan identifies strategies, actions, and emission reduction targets that fit with and address the needs of each municipality and First Nation within the GPA. This regionally coordinated approach will ensure that we act together to safeguard the health of our residents and ensure the stability of our local economic and natural resources against impacts related to climate change.

Climate Change Vision

In 2010, the GPA embarked on an exciting journey – the development of an Integrated Community Sustainability Plan, coined *Sustainable Peterborough*. Within the Sustainable Peterborough Plan, climate change was identified as one of the eleven key theme areas of focus. Each community of the GPA is working together to collectively achieve the following vision, as originally identified as the climate change goal in the Sustainable Peterborough Plan:

We will reduce our contributions to climate change while increasing our ability to adapt to climate change conditions.

Havelock-Belmont-Methuen's Community and Corporate Action Plans

Chapter 6 of the CCAP includes Havelock-Belmont-Methuen's Community (Section 2) and Corporate (Section 3) Action Plans. Both of these build on the overarching components outlined in the main CCAP, but provide greater detail specific to Havelock-Belmont-Methuen. They both include the following:

- *Where are we now* – a brief discussion of community and corporate baseline GHG emissions.
- *Where do we want to go* – GHG emissions reductions targets for the community and corporation.
- *How are we going to get there* – actions that the community and corporation will take to achieve its emissions reduction targets.

Section 2: Community Action Plan

Where are we now?

In 2011, 37,476 tonnes of CO2e were emitted by the Township of Havelock-Belmont-Methuen community. Based on the projected growth for the Township of Havelock-Belmont-Methuen, community emissions are expected to grow to 44,646 tonnes CO2e by 2031 if nothing is done to reduce GHG emissions. For further details on the Havelock-Belmont-Methuen's baseline community emissions (PCP Milestone 1), please see the Appendix attached to this chapter entitled *Havelock-Belmont-Methuen Corporate and Community Emissions Inventory*.

Where do we want to go?

The Havelock-Belmont-Methuen community is aiming to achieve a 31% reduction in its GHG emissions from the 2011 baseline by 2031. This is equivalent to 11,646 less tonnes of CO2e emitted per year by 2031, which would put the Township's community emissions at 25,830 tonnes of CO_2e per year by 2031 compared to the current 37,476 tonnes per year.

How are we going to get there?

The following tables detail the strategies and actions that Havelock-Belmont-Methuen will use to achieve its community GHG emissions reduction target. Further detail on each strategy is provided in the main *Climate Change Action Plan* document.

Our Homes

Strategy H1: Help existing homes become more energy and water efficient and be more adaptable to climate risks	
	Mitigation impact: direct Adaptation impact: direct
Primary Action	Develop and implement a comprehensive multi-year deep energy retrofit program focused on existing households to achieve efficiency gains of at least 30% to 50% depending on the age and type of building.
Primary Action Assumptions	Implement retrofits in 60% of the residential housing stock by 2031.
GHG Emission Reduction Potential	3,335 tonnes of CO2e/per year

Strategy H2: Build new homes to be more efficient and have a smaller environmental footprint	
	Mitigation impact: direct Adaptation impact: direct
Primary Action	Implement gradual improvement in new building stock efficiency aimed at achieving near net-zero or equivalent (0.14 to 0.24 GJ/m2) in all new buildings by 2031.
Primary Action Assumptions	Results in full electrification of energy end uses.
Supporting Actions/ Policies	**Supporting Policies** • 'Solar Ready' Official Plan Updates
GHG Emission Reduction Potential	994 tonnes of CO2e/per year

Strategy H3: Reduce the amount of waste generated by residents that contribute to greenhouse gas emissions	
	Mitigation impact: direct Adaptation impact: none
Primary Action	Explore feasibility of capturing energy from waste (e.g. anaerobic digestion) to manage organic material and to reduce emissions of methane gas (County and City partnership).
Supporting Actions/ Policies	**Supporting Actions & Initiatives** • Implement a "less waste challenge" to encourage reduction in waste generation, with a particular focus on food waste • Review efficiency of waste collection program and implement changes to reinforce diversion programs and reduce collection truck emissions
GHG Emission Reduction Potential	295 tonnes of CO2e/per year

Our Workplaces and Schools

Strategy W1: Improve energy and water efficiency of existing buildings and business operations	
	Mitigation impact: direct Adaptation impact: indirect
Primary Action	Work with utilities (PDI, Hydro One, Enbridge as appropriate) to deliver a coordinated deep energy retrofit program to industrial, commercial, and institutional organizations.
Primary Action Assumptions	Implement retrofits in 80% of commercial & institutional buildings, and 100% of industrial facilities by 2031.
Supporting Actions/ Policies	**Supporting Actions & Initiatives** • Encourage local businesses to participate in energy benchmarking through the use of Energy Star Portfolio Manager provided through Natural Resources Canada • Work with the Building Owners and Managers Association (BOMA) to expand their Operator Training program to the Greater Peterborough Area (County and City partnership)
GHG Emission Reduction Potential	1,205 tonnes of CO2e/per year

Strategy W2: Build new buildings to be more efficient and have a smaller environmental impact	
	Mitigation impact: direct Adaptation impact: direct
Primary Action	Implement gradual improvement in efficiency of industrial, commercial, and institutional buildings.
Primary Action Assumptions	• Commercial & Institutional: full electrification, and uses 30% less energy • Industrial: full electrification, and uses 60% less energy
GHG Emission Reduction Potential	374 tonnes of CO2e/per year

Strategy W3: Facilitate climate change friendly business operations and practices	
	Mitigation impact: indirect Adaptation impact: direct
Primary Action	Support Sustainable Peterborough Business Initiative to build a toolkit for Greater Peterborough Area businesses to assist with climate change impact analysis and business continuity planning for extreme weather.
Supporting Actions/ Policies	**Supporting Actions & Initiatives** • Engage with businesses and institutions to implement corporate sustainability initiatives aimed at reducing greenhouse gas emissions (County and City partnership) • Work with institutions and businesses to support implementation of food waste reduction and/or diversion (County and City partnership)
GHG Emission Reduction Potential	Impact on GHG emissions nominal

Strategy W4: Support local economic resilience and growth of the local green economy	
	Mitigation impact: indirect Adaptation impact:in direct
Primary Action	Support Peterborough GreenUP as a "one-stop shop" for businesses to learn about and advance sustainability through the Green Business Peterborough Program.
Supporting Actions/ Policies	**Supporting Actions & Initiatives** • Explore opportunity and locations to establish a local eco business zone or "Partners in Project Green" program to share resources amongst businesses and encourage green industries (County and City partnership) • Support the Greater Peterborough Chamber Of Commerce to establish a business leadership and mentorship program to support energy and climate leadership amongst businesses as part of the Peterborough Business Excellence Awards
GHG Emission Reduction Potential	Impact on GHG emissions nominal

Strategy W5: Facilitate low carbon energy generation and local energy security	
	Mitigation impact: direct Adaptation impact: direct
Primary Action	Conduct a regional study to explore the potential to implement local renewable energy generation and storage (institutional, commercial, industrial, and residential).
Primary Action Assumptions	Solar PVs are to generate 5% of the electricity demand in IC&I and residential buildings, while 6% of the natural gas consumed in all buildings are to come from renewable sources by 2031.
GHG Emission Reduction Potential	397 tonnes of CO2e/per year

On the Move

Strategy M1: Build an active transportation network and support active transportation	
	Mitigation impact: direct Adaptation impact: none
Primary Action	Reduce vehicle trips and foster greater walking and cycling mode share through a coordination of efforts.
Primary Action Assumptions	Active transportation in the County is expected to focus on recreational opportunities and a nominal shift in modal split is expected. Development of the Active Transportation Master Plan is currently underway.
Supporting Actions/ Policies	**Supporting Actions & Initiatives** • Develop a Complete Streets Policy and Guidelines, including consistent sidewalk requirements and guidance on paved shoulders/cycle lanes
GHG Emission Reduction Potential	Impact on GHG emissions nominal

Strategy M2: Facilitate alternatives to single-occupant vehicle use to reduce frequency of personal vehicle use	
	Mitigation impact: direct Adaptation impact: none
Primary Action	Explore feasibility of a carpool lot network (formal and informal spaces) (in partnership with the County and other Townships).
Primary Action Assumptions	Carpooling, or travel as a passenger in a vehicle, to increase by 3% by 2031.
Supporting Actions/ Policies	**Supporting Actions & Initiatives** • Work with businesses and schools to implement preferred parking for carpoolers
GHG Emission Reduction Potential	150 tonnes of CO_2e/per year

Strategy M3: Make public transportation more appealing to increase its usage	
	Mitigation impact: direct Adaptation impact: none
Primary Action	Explore feasibility and joint County-Townships delivery of County Transit services or alternative methods of public transportation as part of next County Transportation Master Plan Update.
Primary Action Assumptions	Feasibility to be determined after next Transportation Master Plan Update
GHG Emission Reduction Potential	Non-quantifiable with available information

Strategy M4: Help transition vehicles to use cleaner and lower greenhouse gas emitting fuel sources	
	Mitigation impact: direct Adaptation impact: none
Primary Action	Support a shift in vehicle technology to Electric Vehicles (EVs).
Primary Action Assumptions	15% of all vehicles on the road in 2031 are to be EVs.
Supporting Actions/ Policies	**Supporting Actions & Initiatives** • Install electric vehicle charging stations for public usage • Support local organizations to work with local businesses to transition

Strategy M4: Help transition vehicles to use cleaner and lower greenhouse gas emitting fuel sources	
	corporate fleets to EV
GHG Emission Reduction Potential	4,786 tonnes of CO2e/per year

Our Food

Strategy F1: Support localization of the food system	
	Mitigation impact: indirect Adaptation impact: indirect
Primary Action	Undertake a community food system assessment to better understand local food production and movement within the GPA.
Supporting Actions/ Policies	**Supporting Policies** • Update Official Plan policies to support urban agriculture and the growing, processing and distribution of locally-produced food for all residents **Supporting Actions & Initiatives** • Continue to expand the network of community gardens throughout the Greater Peterborough Area and engage the broader community in the value of gardening • Support local organizations to provide community skill sharing programs to increase awareness among community members on how to grow, process, and store food • Support local organizations in training, facilitating access to land and promoting successful entrepreneurship of new farmers and food business to increase the production and processing, distribution and retailing of local food
GHG Emission Reduction Potential	Impact on GHG emissions nominal

Strategy F2: Encourage purchasing of locally produced food	
	Mitigation impact: indirect Adaptation impact: indirect
Supporting Actions/ Policies	**Supporting Actions & Initiatives** • Support local organizations to promote the marketing of locally-produced food through initiatives such as the Purple Onion Festival and Local Food Month • Expand and promote the Farmers Market Network across the Greater Peterborough Area • Support and encourage farm gate sale of produce
GHG Emission Reduction Potential	Impact on GHG emissions nominal

Strategy F3: Reduce the amount of wasted food	
	Mitigation impact: direct Adaptation impact: none
Primary Action	Implement a residential awareness campaign to encourage elimination of

Strategy F3: Reduce the amount of wasted food	
	wasted food in the home, workplaces, and schools.
Primary Action Assumptions	Reduce the proportion of wasted food in the waste stream by 11% by 2031.
GHG Emission Reduction Potential	55 tonnes of CO2e/per year

Our Land

Strategy L1: Strengthen land use policy and the development review process to better support climate change mitigation and adaptation	
	Mitigation impact: indirect Adaptation impact: direct
Primary Action	Establish a multidisciplinary review team to assess provincial and local land use planning legislation and tools and make recommendations to decision-makers on how to best implement an ecosystem-based approach to the development application process (partnership amongst all communities).
Supporting Actions/ Policies	**Supporting Policies** • Integrate climate change policies into Official Plans • Continue to implement land use policy that supports building complete communities that are mixed-use, compact, and higher density to achieve intensification targets outlined in the Provincial Growth Plan **Supporting Actions & Initiatives** • Sustainability metrics tool to predict, measure and report the sustainability performance (including GHG emissions) of proposed developments focusing on the built environment, mobility, natural environment, and infrastructure and buildings (e.g. Richmond Hill/Vaughan/Brampton) • Continue/enhance education opportunities on the need for increased housing density and implications related to climate change at all points of contact with decision-makers, stakeholders, and the public
GHG Emission Reduction Potential	Non-quantifiable with available information

Strategy L2: Identify climate change risks and prepare for potential impacts	
	Mitigation impact: none Adaptation impact: direct
Primary Action	Conduct a Greater Peterborough Area-wide vulnerability assessment of expected climate change impacts (including drought and lake levels) (coordinated amongst all communities).
Supporting Actions/ Policies	**Supporting Actions & Initiatives** • Adopt the Low Impact Development Stormwater Management Planning and Design Guide (CVC/TRCA) for landscape-based stormwater management planning and low impact development stormwater management practices • Update engineering design standards to improve climate change

Strategy L2: Identify climate change risks and prepare for potential impacts	
	readiness of new infrastructure by taking a green infrastructure approach first and increasing flood standards to a 200-year storm standard rather than the current 100-year standard
GHG Emission Reduction Potential	None

Strategy L3: Protect and enhance natural assets	
	Mitigation impact: indirect Adaptation impact: direct
Primary Action	Develop and implement a Natural Heritage System Plan (City and County with Townships).
Supporting Actions/ Policies	**Supporting Policies** • Place restrictions on cutting down trees on private property and/or a tree replacement policy • Update Official Plan policies to require greater buffers around wetlands to protect them from surrounding land uses **Supporting Actions & Initiatives** • Support and promote local Conservation Authorities' tree planting programs to encourage planting trees on public and private property • Support local Conservation Authorities to deliver planting and restoration projects at strategic high priority areas with climate ready species
GHG Emission Reduction Potential	Non-quantifiable with available information

Strategy L4: Facilitate best management practices for low emission farming and climate change adaptation	
	Mitigation impact: indirect Adaptation impact: direct
Supporting Actions/ Policies	**Supporting Actions & Initiatives** • Promote usage of Agriculture and Agri-Food Canada's no-cost Holos GHG emissions modeling tool to assist farmers in assessing their GHG emissions and exploring various farm management scenarios • Support [local agricultural organizations] to host local agricultural forums and training sessions to engage with farmers on how to implement climate change mitigation and adaptation related best management practices • Support [local agricultural organizations] to promote local participation in the Canada-Ontario Environmental Farm Program to encourage farmers to increase knowledge, conduct assessments, and develop and implement Environmental Farm Plans for their farms
GHG Emission Reduction Potential	2,519 tonnes of CO2e/per year[1]

[1] Total reduction potential per year based on uptake of anaerobic digesters (biogas), enteric fermentation reduction, changing manure management practices, and adopting best practices for soil management.

Our People

Strategy P1: Prepare for the health impacts associated with a changing climate		
	Mitigation impact: none	Adaptation impact: direct
Primary Action	Conduct a local community vulnerability assessment of public health impacts from climate change to identify climate risks on vulnerable populations (in partnership with all communities).	
Supporting Actions/ Policies	**Supporting Actions & Initiatives** • Establish a protocol for extreme weather alerts and flooding updates	
GHG Emission Reduction Potential	None	

Strategy P2: Foster a culture of climate change awareness		
	Mitigation impact: indirect	Adaptation impact: indirect
Supporting Actions/ Policies	**Supporting Actions & Initiatives** • Support Sustainable Peterborough and other local organizations in hosting regular events focused on climate change (speaker series, annual event, etc.) • Support Sustainable Peterborough in seeking buy-in and endorsement/support for the shared vision and goals of Community Climate Change Action Plan from existing groups and organizations in the Greater Peterborough Area • Support Sustainable Peterborough to host a community, youth, adult, and senior climate change champion through the annual Sustainable Peterborough Awards	
GHG Emission Reduction Potential	Impact on GHG emissions nominal	

Strategy P3: Encourage civic engagement around climate change		
	Mitigation impact: indirect	Adaptation impact: indirect
Primary Action	Develop a charter and guidelines (engagement strategy) to foster meaningful community engagement in climate change issues and environmental stewardship (partnership amongst all communities).	
Supporting Actions/ Policies	**Supporting Actions & Initiatives** • Support Sustainable Peterborough to establish a youth advisory committee on climate change to empower youth to take action on climate change	
GHG Emission Reduction Potential	Impact on GHG emissions nominal	

Decarbonization of the Electric Grid

Since the baseline year of 2011, the Province of Ontario has taken steps to reduce the GHG emissions associated with the electrical grid. For example, it closed all of its coal-fired power plants. This in turn will result in significant GHG Emission Reduction Potential for the Havelock-Belmont-Methuen community, totalling 4,708 tonnes of CO2e/per year.

Section 3: Corporate Action Plan

Where are we now?

In 2011, 559 tonnes of CO2e were emitted by the Township of Havelock-Belmont-Methuen's corporate operations. The business-as-usual forecast for the corporate operations is based on annual growth rates derived from official population projections. Emissions from corporate operations are projected to increase to 667 tCO2e per year by 2031 if the Township continued to operate as it did in the baseline year without taking any actions to reduce GHG emissions. For further details on the Havelock-Belmont-Methuen's baseline corporate emissions (PCP Milestone 1), please see the Appendix attached to this chapter entitled *Havelock-Belmont-Methuen Corporate and Community Emissions Inventory*.

Where do we want to go?

Havelock-Belmont-Methuen is aiming to achieve a 40% reduction in its corporate GHG emissions from the 2011 baseline by 2031. This is equivalent to 225 less tonnes of CO2e emitted per year by 2031, which would put the Township's corporate emissions at 334 tonnes of CO_2e per year by 2031 compared to the current 559 tonnes per year.

How are we going to get there?

The following table details the strategies and actions that Havelock-Belmont-Methuen will use to achieve its corporate GHG emissions reduction target.

Township of Havelock-Belmont-Methuen Corporate Action Plan	**Timeframe**			
	Underway or Complete	Short (1-4 years)	Med (5-9 years)	Long (10+ years)
Buildings				
Strategy 1: Institutionalize energy efficiency and low carbon thinking into the organization				
Implement employee training for energy efficiency		X	X	X
Establish an Energy Conscious Procurement Policy to consider highest energy efficiency as part of procurement requirements and evaluation		X	X	
Monitor incentive programs offered through electricity and natural gas providers to be leveraged for implementing energy efficiency improvements		X	X	X
GHG Emission Reduction Potential: In-direct GHG reductions				
Strategy 2: Enhance operational efficiency of existing buildings				
Continue to implement energy management plan and update regularly (every five years)	X	X	X	X
Implement a building/facility assessment tool/process to explore opportunities for improved efficiency (e.g. annual facility walk through)			X	
Conduct building re-commissioning to optimize operations		X	X	X
GHG Emission Reduction Potential: 6 tonnes of CO2e/per year				

Strategy 3: Build municipal facilities to ensure high environmental performance				
Establish an Environmental Building Policy to require new municipal buildings and major renovations be built to high environmental standards			X	
Install electric vehicle charging stations at new facilities for public use if feasible			X	X
GHG Emission Reduction Potential: 13 tonnes of CO2e/per year				
Strategy 4: Improve environmental performance of existing municipal facilities				
Conduct energy audits/assessments of each facility to identify opportunities to improve energy efficiency		X		
Install programmable thermostats and occupancy sensors in all facilities where feasible		X	X	
Implement an interior and exterior LED lighting retrofit program in remaining all facilities where feasible	X	X	X	X
Replace appliances with Energy STAR rated appliances as needed		X	X	X
Continue to upgrade insulation/building envelope while conducting other essential building work (where feasible)	X	X	X	X
Continue to replace windows and doors with high efficiency according to replacement schedule/need			X	X
Replace mechanical equipment with high efficiency according to replacement schedule/need		X	X	X
GHG Emission Reduction Potential: 20 tonnes of CO2e/per year				
Strategy 5: Utilize renewable energy sources				
Continue to seek and implementing opportunities for solar photovoltaic panels and other renewable energy options at all municipal facilities			X	X
GHG Emission Reduction Potential: 5 tonnes of CO2e/per year				
Fleet				
Strategy 6: Transition the municipal fleet to be more efficient and less carbon emitting				
Develop and implement an Environmental Fleet Strategy and replacement schedule • Sizing of appropriate vehicle/equipment class for intended use/purpose through replacement schedule • Transitioning to electric vehicles (as technology becomes available) and low emission and alternative fuel vehicles (e.g. clean diesel, advanced natural gas, ethanol, or hybrid) • Purchase and use of anti-idling technology • Fuel and vehicle performance monitoring			X	X
Implement an operator training and education program (e.g. eco driving and use of anti-idling technology)			X	X
Formalize and continue with preventative maintenance program for vehicles and equipment	X	X	X	X
GHG Emission Reduction Potential: 177 tonnes of CO2e/per year				

Water & Sewage				
Strategy 7: Enhance operational efficiency of the water services system				
Upgrade remaining mechanical equipment as per replacement schedule	X	X	X	X
Continue to deliver preventative maintenance program	X	X	X	X
Continue to deliver operator training and education program	X	X	X	X
Continue to monitor and track energy performance	X	X	X	X
GHG Emission Reduction Potential: 46 tonnes of CO2e/per year				
Streetlighting				
Strategy 8: Improve energy efficiency of the streetlighting system				
Implement LED street lighting and parking lot lighting replacement program	X	X		
GHG Emission Reduction Potential: 0.25 tonnes of CO2e/per year				
Solid Waste				
Strategy 9: Reduce the amount of organic waste generated through municipal operations				
Continue to participant in the office waste reduction and diversion initiatives	X	X	X	X
Implement the collection of organic waste from Township offices and manage in backyard composters		X	X	
Conduct a corporate waste audit to understand waste composition and identify opportunities for improvement			X	
Develop and implement a corporate Environmental Procurement Policy to consider the purchase of products that minimize the consumption of waste/water and are more environmentally friendly			X	
Develop and implement a corporate Waste Conscious Event Policy			X	
GHG Emission Reduction Potential: 4 tonnes of CO2e/per year				

Decarbonization of Electricity Grid

Since the baseline year of 2011, the Province of Ontario has taken steps to reduce the GHG emissions associated with the electrical grid. For example, it closed all of its coal-fired power plants. This in turn will result in significant GHG Emission Reduction Potential for Havelock-Belmont-Methuen's corporate emissions, totalling 61 tonnes of CO2e/per year.

Attachment C

sustainable Peterborough

Peterborough Area Climate Change Action Plan

Township of Havelock-Belmont-Methuen – Corporate & Community Emissions Inventory

Partners for Climate Protection Milestone 1

November 17, 2015

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Local Governments for Sustainability

1 Introduction and Overview

Greater Peterborough Area Climate Change Action Plan

Sustainable Peterborough is developing a Climate Change Action Plan (CCAP) for the Greater Peterborough Area to reduce local contributions to climate change and prepare the community for present and expected changes that will occur as a result of our changing climate. This Plan represents an integrated approach to dealing with some of the most important issues related to the sustainability of this diverse region. The overall objective of the CCAP is to reduce greenhouse gas (GHG) emissions, reduce the use of fossil fuels, lower energy consumption, and adapt to changing climate.

The Plan will identify goals, actions, and emission reduction targets that fit with and address the needs of each municipality and First Nation within the Greater Peterborough Area. This report summarizes the baseline greenhouse gas emissions for the Township of Havelock-Belmont-Methuen, both from corporate operations and from community sources to satisfy Milestone 1 of the Partners for Climate Protection (PCP) Program.

Partners for Climate Protection Program

The PCP program is a network of Canadian local governments that have made a commitment to reduce GHG emissions and act on climate change. Administered by the Federation of Canadian Municipalities, the program has over 225 local and regional governments participating. The City of Peterborough joined the program in December 2000. The County of Peterborough and the eight Townships have all joined in 2014 and 2015.

The Climate Change Action Plan is following the PCP's five-milestone framework for the reduction of greenhouse gas emissions (i.e. climate mitigation). The five-milestone framework is a performance-based model used to guide communities to reduce GHG emissions. Once a milestone is completed, the community – typically led by the local municipality – submits their material to the PCP program for a technical review and approval. To prepare the Climate Change Action Plan, the following 5 milestones will be completed:

1. Establish a GHG inventory and forecast
2. Set emission reduction targets
3. Develop Climate Change Action Plans
4. Implement the local action plans
5. Monitor progress and report on results

Milestone 1 – GHG Inventory and Forecast

A greenhouse gas inventory brings together data on community and municipal sources of greenhouse gas emissions to estimate emissions for a given year. For the Greater Peterborough Area Climate Action Plan, 2011 has been selected as the baseline year. Establishing a baseline is a useful tool to identified areas for improvement, inform development of a GHG reduction action plan, estimate cost savings from reductions, and serve as a reference point to track improvements. Associated with the baseline GHG inventory is also a forecast that projects future emissions based on assumptions about population, economic growth and fuel mix.

Two separate GHG inventories and forecasts have been created for the Township of Havelock-Belmont-Methuen: one for municipal corporate operations and one for community sources. The inventories consist of the following sources of GHG emissions.

Corporate Operations Inventory	Community Inventory
• Buildings • Streetlighting • Water and sewage treatment • Municipal fleet • Solid waste	• Residential • Commercial and institutional • Industrial • Transportation • Solid waste

Details of each inventory are provided in Sections 2 and 3 of this report.

2 Township of Havelock-Belmont-Methuen Corporate Emission Inventory

The Corporate inventory tracks emissions from municipal operations. The criteria for including emissions in the corporate inventory relies on the concept of *operational control*, and requires the municipality to report all emissions from operations over which it has control.

Township of Havelock-Belmont-Methuen Corporate Emissions Inventory

In 2011, 726 tonnes of CO2e were emitted by the Township of Havelock-Belmont-Methuen's corporate operations. Breakdowns of emissions by sector and source are presented visually in Figure 1 and summarized in Figure 2 below.

Fig 1. Township of Havelock-Belmont-Methuen Corporate Emissions by Sector and Source

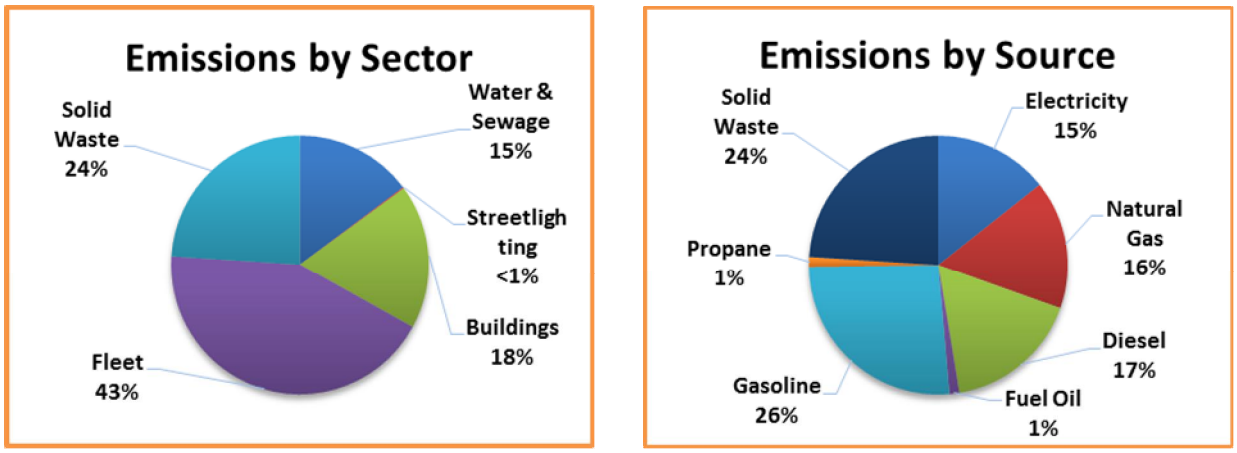


Fig 2. Township of Havelock-Belmont-Methuen Corporate Tonnes CO2e by Sector and Source

Sector	Emissions (tCO2e)
Buildings	132
Fleet	312
Water & Sewage	107
Streetlighting	1
Solid Waste	174
Total	**726**

Source	Emissions (tCO2e)
Natural Gas	117
Electricity	104
Gasoline	190
Diesel	123
Propane	9
Fuel Oil	9
Solid Waste	174
Total	**726**

Corporate Operations Data Summary

Energy consumption for **Buildings, Streetlighting** and **Water and Sewage** were determined using actual billed electricity and natural gas consumption for those sectors provided by the Township of Havelock-Belmont-Methuen. Fuel Oil is also based on actual consumption data from the municipality. Data on fuel consumption by the municipal **Fleet** was available as actual litres consumed per vehicle.

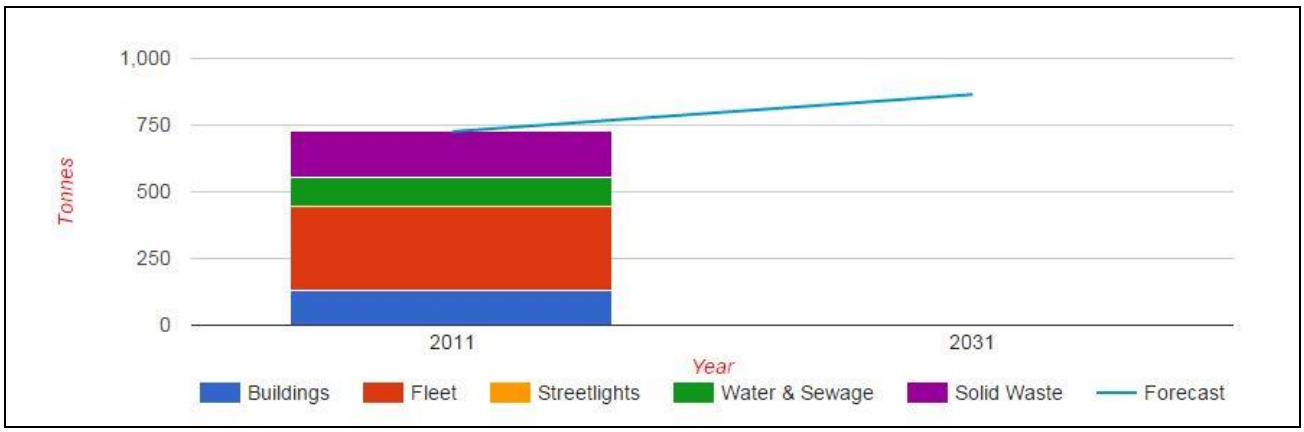
Solid Waste emissions are estimated using data on waste stream composition and volume and landfill management data for the landfill active in the Township of Havelock-Belmont-Methuen in 2011 – this data was obtained from the town.

All **emissions coefficients** are derived from Canada's *National Inventory Report*, in line with PCP methodologies, and electricity emissions factors reflect the carbon intensity of Ontario's electricity grid for 2011.

Business-As-Usual Forecast for Township of Havelock-Belmont-Methuen Corporate Operations

A business-as-usual (BAU) forecast is an estimate of annual GHG emissions into the future considered projected population growth if the Township continues to operate exactly is it did in 2011 (i.e. if nothing is done to reduce emissions). The BAU forecast for the corporate operations is based on annual growth rates derived from official population projections. It was assumed that municipal operations would increase with population growth – this aligns with standard PCP methodology for creating BAUs. Corporate emissions for 2031 are projected to increase to 865 tCO2e by 2031.

Fig 3. Township of Havelock-Belmont-Methuen Corporate BAU Forecast – 2011-2031



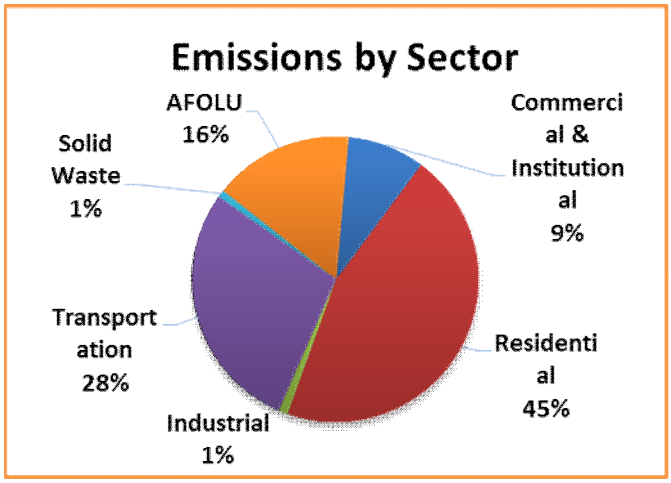
3 Community Emission Inventory

The Community inventory tracks emissions from all community sources, including electricity use and heating in homes and businesses, transportation, waste generation, and agricultural production. The municipality may or may not have a direct influence over any of these emissions.

Township of Havelock-Belmont-Methuen Community Emissions Inventory

In 2011, 28,419 tonnes of CO2e were emitted by the Township of Havelock-Belmont-Methuen community. Breakdowns of emissions by sector and source are presented visually in Figure 4 and summarized in Figure 5 below.

Fig 4. Township of Havelock-Belmont-Methuen Community Emissions by Sector and Source



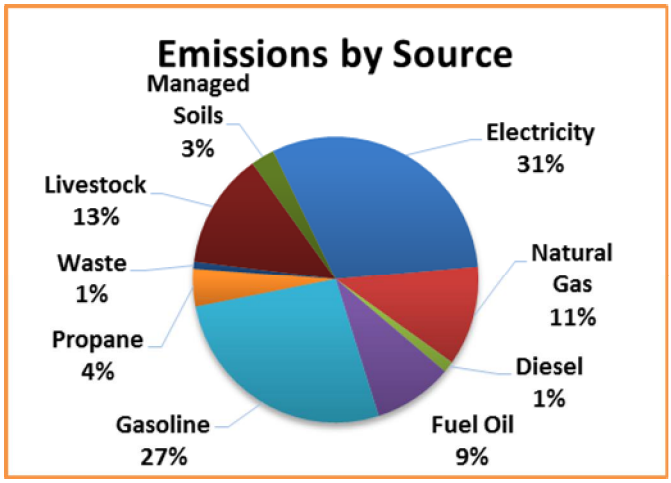


Fig 5. Township of Havelock-Belmont-Methuen Community Tonnes CO2e by Sector and Source

Sector	Emissions (tCO2e)
Residential	12,901
Commercial and Institutional	2,489
Industrial	299
Transportation	8,016
Waste	231
Agriculture Forestry and Other Land Uses	4,483
Total	**28,419**

(Note: totals are not equal due to rounding)

Source	Emissions (tCO2e)
Natural Gas	3,209
Electricity	8,763
Gasoline	7,618
Diesel	362
Propane	1,225
Fuel Oil	2,554
Solid Waste	231
Livestock	3,725
Managed Soils	759
Total	**28,445**

Community Data Summary

For emissions from stationary energy (residential, commercial and institutional, and industrial), where possible energy consumption was based on actual metered energy consumption data provided by local utilities. **Electricity** consumption data was provided by Peterborough Utilities Group, **Natural Gas** consumption data was provided by Enbridge.

For **Fuel Oil** and **Propane,** no real consumption data could be acquired. As a result, consumption was estimated by taking the number of households not heated with Natural Gas and allocating those to electric heating, propane, and heat oil respectively based on Natural Resources Canada (NRCAN) averages for heating fuel type for Ontario and information about the structure of the heating fuel market in Peterborough County. Once households had been allocated to each fuel type, total consumptions were estimated using average consumption rates for those fuel types by household for Ontario. No estimates of Fuel Oil and Propane consumption for non-residential categories could be determined.

Estimates for **Transportation** fuel consumption were based on a resident activity/ vehicle kilometers travelled (VKT) model where total VKT's were estimated using household surveys of daily trip length conducted by Transportation Tomorrow. Once a model of VKT's was derived, fuel consumption was estimated by allocating

kilometers across a vehicle mix derived from actual vehicle registration data provided by the Clean Air Partnership, and average fuel consumption rates for those vehicle types derived from NRCAN. The result was a model of Gasoline, Diesel, and Propane consumption for the Transportation sector. Because the transportation model is based on resident activity surveys, it does not include emissions from the commercial sector or non-automobile emissions (water travel and air travel), these are areas for future improvement.

Solid Waste emissions were estimated by taking the quantity of waste collected at the Peterborough City and County Waste Management Facility (PCCWMF) from the Township of Havelock-Belmont-Methuen, and estimates for the waste stream and gas collection performance from PCCWMF. The proportion of the Township of Havelock-Belmont-Methuen's waste that went to the local landfill is not counted here in order to avoid double counting with the corporate inventory.

Due to the rural nature of the project area for the GPA CCAP, a model of emissions from **Agriculture, Forestry, and Other Land Uses (AFOLU)** has been created. Because data on land use change was not available for 20 years prior to the baseline year, no estimates for emissions from land use change have been reported here, however in future inventories it is anticipated that such estimates will be able to be created based on the baseline statistics for land use created for this project.

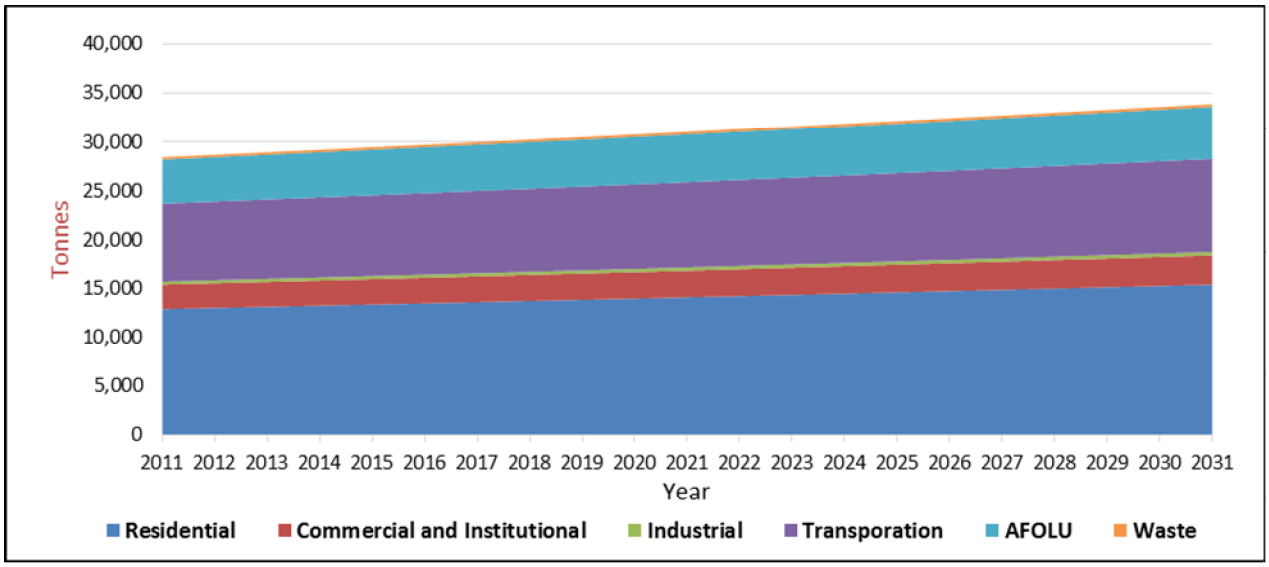
Emissions from **Managed Soils, Enteric Fermentation, and Manure Management** are based on a number of sources. Activity data for the sector are based on Statistics Canada data on the composition of livestock and crops in the Township of Havelock-Belmont-Methuen's agricultural sector. Emissions factors for animal types, manure management systems, and crops are based on estimates derived from Canada's National Inventory Report. Efforts have been made to be as comprehensive as possible, however, in some cases data to estimate emissions from certain sources was unavailable. Future improvements could be made with the help of more complete data, however, it is believed that all major emissions sources have been identified. In particular, estimates of emissions from enteric fermentation and manure management have a high degree of confidence.

All **emissions coefficients** are derived from Canada's *National Inventory Report*, in line with PCP methodologies. Electricity emissions factors reflect the carbon intensity of Ontario's electricity grid for 2011.

Business-As-Usual Forecast for the Township of Havelock-Belmont-Methuen Community

A business-as-usual (BAU) forecast is an estimate of annual GHG emissions into the future considered projected population growth if the Township continues to operate exactly is it did in 2011 (i.e. if nothing is done to reduce emissions). The Community BAU forecasts are based on annual growth rates derived from official population projections in the Growth Plan. In line with PCP protocol methodologies, emissions for residential and transportation sectors were assumed to increase with population growth, while commercial, institutional, and industrial emissions were assumed to increase with projected employment growth. Based on the projected growth for the Township of Havelock-Belmont-Methuen, the BAU forecast would have emissions grow to 33,882 tonnes CO2e by 2031. This BAU projection is presented in Figure 6 below.

Fig 6. Township of Havelock-Belmont-Methuen Community BAU Forecast – 2011-2031



4 Next Steps

Completion of the Milestone 1 baseline inventories is the first step in the Greater Peterborough Area Climate Change Action Plan. Next steps involve identifying opportunities to reduce GHG emissions based on the inventories and prepared itemized action plans with estimated GHG reductions and costs and establishing reduction targets. Actions identified in the action plans will be done in collaboration with the eleven other local governments in the Greater Peterborough Area to explore efficiencies and cumulative impacts. Ideas for actions will be based on best practice research, public input, and ongoing meetings with 80+ community organizations and stakeholders.