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Peterborough 

Greater Peterborough Area Climate Change Action Plan
Chapter 7 – North Kawartha
Community and Corporate Climate Action Plans
September 30, 2016

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Local
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for Sustainability



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NORTH KAWARTHA

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January 13, 2017

Greater Peterborough Area Climate Change Action Plan (CCAP)

16-718

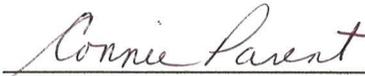
Moved by – Deputy Mayor Hutton

Seconded by – Councillor Miszuk

That the revised Greater Peterborough Area Climate Change Action Plan be adopted and that the Township of North Kawartha's portion be implemented as budgets permit through the annual budgeting process;

And further that the Township of North Kawartha's Community Sector and Corporate Sector greenhouse gas emission reduction targets of 25% and 20% respectively, and associated local action plans, be adopted and implemented as budgets permit. Carried.

Certified a true copy of Motion 16-718 passed by the Council of the Township of North Kawartha on the 20th day of December, 2016.



Connie Parent, *Dipl. M.M., CMO*
Clerk

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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.

North Kawartha's Community and Corporate Action Plans

Chapter 7 of the CCAP includes North Kawartha'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 North Kawartha. 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.

Strategy H3: Reduce the amount of waste generated by residents that contribute to greenhouse gas emissions	
Primary Action	Mitigation impact: direct Adaptation impact: none 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 <ul style="list-style-type: none"> • 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	119 tonnes of CO ₂ e/per year

Our Workplaces and Schools

Strategy W1: Improve energy and water efficiency of existing buildings and business operations	
Primary Action	Mitigation impact: direct Adaptation impact: indirect 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 60% of industrial, commercial & institutional buildings by 2031.
Supporting Actions/ Policies	Supporting Actions & Initiatives <ul style="list-style-type: none"> • 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	114 tonnes of CO ₂ e/per year

Strategy W2: Build new buildings to be more efficient and have a smaller environmental impact	
Primary Action	Mitigation impact: direct Adaptation impact: direct Implement gradual improvement in efficiency of industrial, commercial, and institutional buildings.
Primary Action Assumptions	<ul style="list-style-type: none"> • Commercial & Institutional: full electrification, and uses 30% less energy • Industrial: full electrification, and uses 60% less energy
GHG Emission Reduction Potential	72 tonnes of CO ₂ e/per year

Strategy W3: Facilitate climate change friendly business operations and practices	
Primary Action	Mitigation impact: indirect Adaptation impact: direct 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 <ul style="list-style-type: none"> 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	
Primary Action	Mitigation impact: indirect Adaptation impact: indirect 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 <ul style="list-style-type: none"> 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	
Primary Action	Mitigation impact: direct Adaptation impact: direct 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	112 tonnes of CO ₂ e/per year

Strategy M4: Help transition vehicles to use cleaner and lower greenhouse gas emitting fuel sources	
GHG Emission Reduction Potential	corporate fleets to EV 1,995 tonnes of CO ₂ e/per year

Our Food

Strategy F1: Support localization of the food system	
Primary Action	Mitigation impact: indirect Adaptation impact: indirect Undertake a community food system assessment to better understand local food production and movement within the GPA.
Supporting Actions/ Policies	<p>Supporting Policies</p> <ul style="list-style-type: none"> Update Official Plan policies to support urban agriculture and the growing, processing and distribution of locally-produced food for all residents <p>Supporting Actions & Initiatives</p> <ul style="list-style-type: none"> 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	
Supporting Actions/ Policies	Mitigation impact: indirect Adaptation impact: indirect <p>Supporting Actions & Initiatives</p> <ul style="list-style-type: none"> 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

Section 3: Corporate Action Plan

Where are we now?

In 2011, 735 tonnes of CO₂e were emitted by the Township of North Kawartha’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 876 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 North Kawartha’s baseline corporate emissions (PCP Milestone 1), please see the Appendix attached to this chapter entitled *North Kawartha Corporate and Community Emissions Inventory*.

Where do we want to go?

North Kawartha is aiming to achieve a 20% reduction in its corporate GHG emissions from the 2011 baseline by 2031. This is equivalent to 149 less tonnes of CO₂e emitted per year by 2031, which would put the Township’s corporate emissions at 586 tonnes of CO₂e per year by 2031 compared to the current 735 tonnes per year.

How are we going to get there?

The following table details the strategies and actions that North Kawartha will use to achieve its corporate GHG emissions reduction target.

Township of North Kawartha 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
Implement staff behaviour change programs to reduce usage of electricity and heating in day-to-day activities		X	X	X
Establish a policy to consider highest energy efficiency as part of procurement requirements and evaluation	X	X	X	X
Continue to monitor incentive programs offered through electricity providers and natural gas providers to be leveraged for implementing energy efficiency improvements	X	X	X	X
GHG Emission Reduction Potential: In-direct GHG reductions				

Strategy 2: Enhance operational efficiency of existing buildings				
Formalize and continue to deliver an equipment preventative maintenance program on an ongoing basis (e.g. annual HVAC inspections)	X	X	X	X
Conduct regular energy audits of Township facilities on a rotational basis to identify opportunities for improved efficiency and produce annual energy report cards		X	X	X
Conduct building re-commissioning to optimize building operations where applicable			X	X
Implement a utility bill validation process to identify and correct any billing issues and variations in energy usage		X	X	X
GHG Emission Reduction Potential: 19 tonnes of CO₂e/per year				
Strategy 3: Build municipal facilities to ensure high environmental performance				
Establish a Green New Building Policy to require new municipal buildings and major renovations be built to high environmental standards		X		
Implement a full lifecycle analysis costing for new buildings or major renovations to consider the sustainability of the building over its life			X	
GHG Emission Reduction Potential: 80 tonnes of CO₂e/per year				
Strategy 4: Improve environmental performance of existing municipal facilities				
Integrated energy audits/assessments of each facility into the annual Building Condition Assessment process to identify opportunities to improve energy efficiency		X	X	X
Install programmable thermostats and occupancy sensors in all facilities where feasible		X	X	
Conduct interior and exterior lighting audit of all facilities and implement LED lighting retrofit program as warranted		X	X	X
Establish policy statement to replace appliances with Energy STAR rated appliances as needed		X		
Explore feasibility of conducting a full system retrofit of Wilson Park Community Centre		X		
Upgrade insulation/building envelope while conducting other essential building work (where feasible)			X	X
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
Converting electric hot water heaters to propane			X	X
GHG Emission Reduction Potential: 37 tonnes of CO₂e/per year				
Strategy 5: Utilize renewable energy sources				
Conduct an assessment to explore opportunities for solar photovoltaic panels and other renewable energy options at all municipal facilities		X		
Explore feasibility of an Eco Chill system at the North Kawartha Community Centre to capture waste heat from maintain in the ice surface to pre-heat the facility's hot water		X		
GHG Emission Reduction Potential: 2 tonnes of CO₂e/per year				
Fleet				
Strategy 6: Transition the municipal fleet to be more efficient and less carbon emitting				
Develop and implement a Green Fleet Strategy and replacement schedule				
<ul style="list-style-type: none"> Right sizing vehicle/appropriate vehicle class (fit-for purpose vehicles) through replacement schedule Transitioning to low emission and alternative fuel vehicles (e.g. clean diesel, advanced natural gas, ethanol, or hybrid) Use of anti-idling technology Fuel and vehicle performance monitoring 		X	X	X

Implement an operator training and education program (e.g. eco driving and anti-idling)	X	X	X	
Formalize and continue with preventative maintenance program for vehicles and equipment	X	X	X	X
GHG Emission Reduction Potential: 93 tonnes of CO₂e/per year				
Streetlighting				
Strategy 8: Improve energy efficiency of the streetlighting system				
Retrofit all street lighting and parking lot lighting to LED	X			
GHG Emission Reduction Potential: 2 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
Continue to collect organic waste from Township offices and manage in backyard composters	X	X	X	X
Conduct a corporate waste audit to understand waste composition and identify opportunities for improvement		X	X	
Develop/formalize a corporate waste diversion target and strategy		X		
Develop and implement a corporate green procurement policy		X		
Develop and implement a green 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 North Kawartha’s corporate emissions, totalling 55 tonnes of CO₂e/per year.



Peterborough Area Climate Change Action Plan
Township of North Kawartha – Corporate and Community Emissions Inventory
Partners for Climate Protection Milestone 1
November 17, 2015



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 North Kawartha, 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 identify 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 North Kawartha: 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
<ul style="list-style-type: none"> • Buildings • Streetlighting • Water and sewage treatment • Municipal fleet • Solid waste 	<ul style="list-style-type: none"> • 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 North Kawartha 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 North Kawartha Corporate Emissions Inventory

In 2011, 735 tonnes of CO₂e were emitted by the Township of North Kawartha’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 North Kawartha Corporate Emissions by Sector and Source



Fig 2. Township of North Kawartha Corporate Tonnes CO₂e by Sector and Source

Sector	Emissions (tCO ₂ e)
Buildings	412
Fleet	313
Water & Sewage	0
Streetlighting	5
Solid Waste	5
Total	735

Source	Emissions (tCO ₂ e)
Natural Gas	0
Electricity	119
Gasoline	102
Diesel	211
Propane	291
Fuel Oil	7
Solid Waste	5
Total	735

Corporate Operations Data Summary

Energy consumption for **buildings** was determined using actual billed electricity and heating fuel data provided by the municipality. **Fleet** fuel consumption was based on actual consumption data for litres of gasoline and diesel provided by the municipality. Energy consumption for **streetlighting** was based on data for the year 2013, however, the portfolio of streetlights in the community and their hours of operation were similar in 2011.

Solid Waste emissions are estimated assumptions about the total volume of waste produced yearly at North Kawartha buildings.

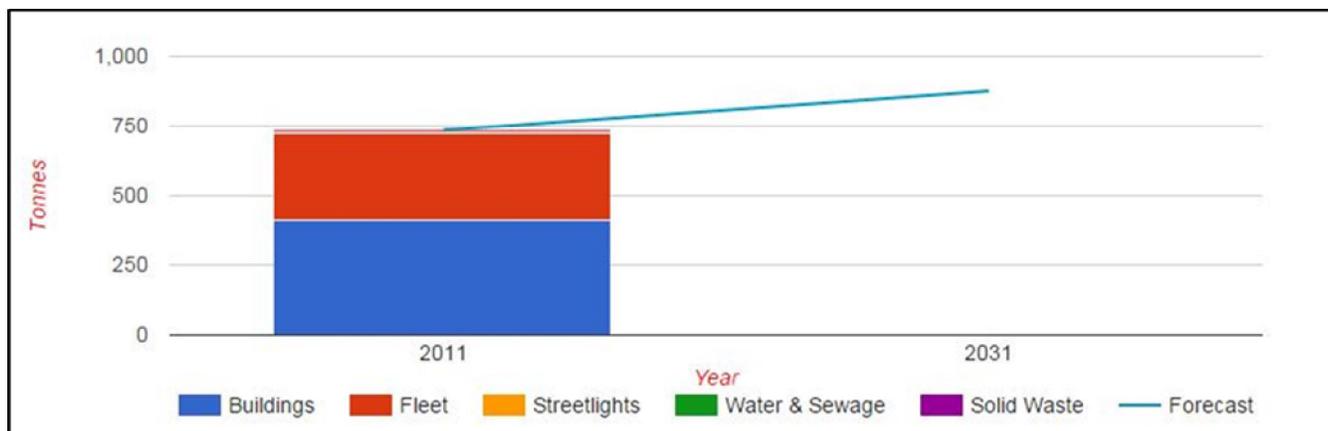
North Kawartha has no municipal water infrastructure, so there are no emissions for **Water and Sewage**.

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 North Kawartha 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 as 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. Emissions from corporate operations is projected to increase to 877 tCO₂e per year by 2031, compared to 735 tCO₂e per year in 2011. This BAU projection is presented in Figure 3 below.

Fig 3. Township of North Kawartha 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 North Kawartha Community Emissions Inventory

In 2011, 11,820 tonnes of CO₂e were emitted by the Township of North Kawartha community. Breakdowns of emissions by sector and source are presented visually in Figure 4 and summarized in Figure 5 below.

Fig 4. Township of North Kawartha Community Emissions by Sector and Source

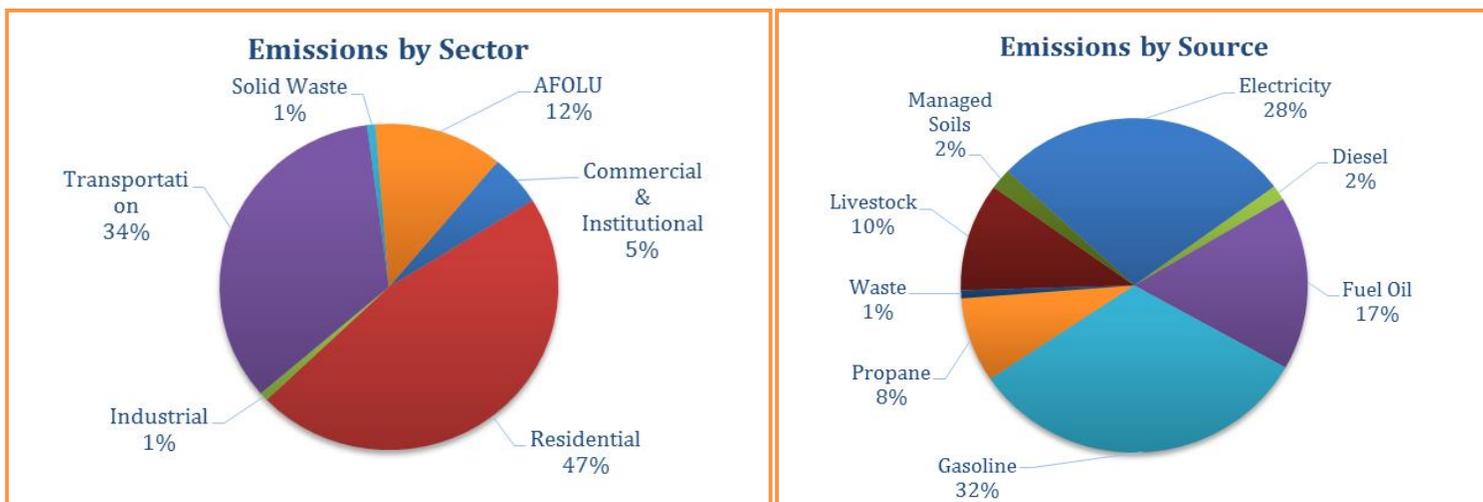


Fig 5. Township of North Kawartha Community Tonnes CO₂e by Sector and Source

Sector	Emissions (tCO ₂ e)
Residential	5,521
Commercial and Institutional	596
Industrial	99
Transportation	4,046
Waste	93
Agriculture Forestry and Other Land Uses	1,465
Total	11,820

Source	Emissions (tCO ₂ e)
Natural Gas	0
Electricity	3,309
Gasoline	3,834
Diesel	170
Propane	966
Fuel Oil	1,983
Solid Waste	93
Livestock	1,233
Managed Soils	232
Total	11,820

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 Hydro One. There is no Natural Gas service in North Kawartha.

For **Fuel Oil** and **Propane**, no real consumption data could be acquired. As a result, consumption was estimated by taking the number 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. These estimates contain a high level of uncertainty and should be revised if better data can be acquired from local heating fuel providers.

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 North Kawartha, and estimates for the waste stream and gas collection performance from PCCWMF.

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.

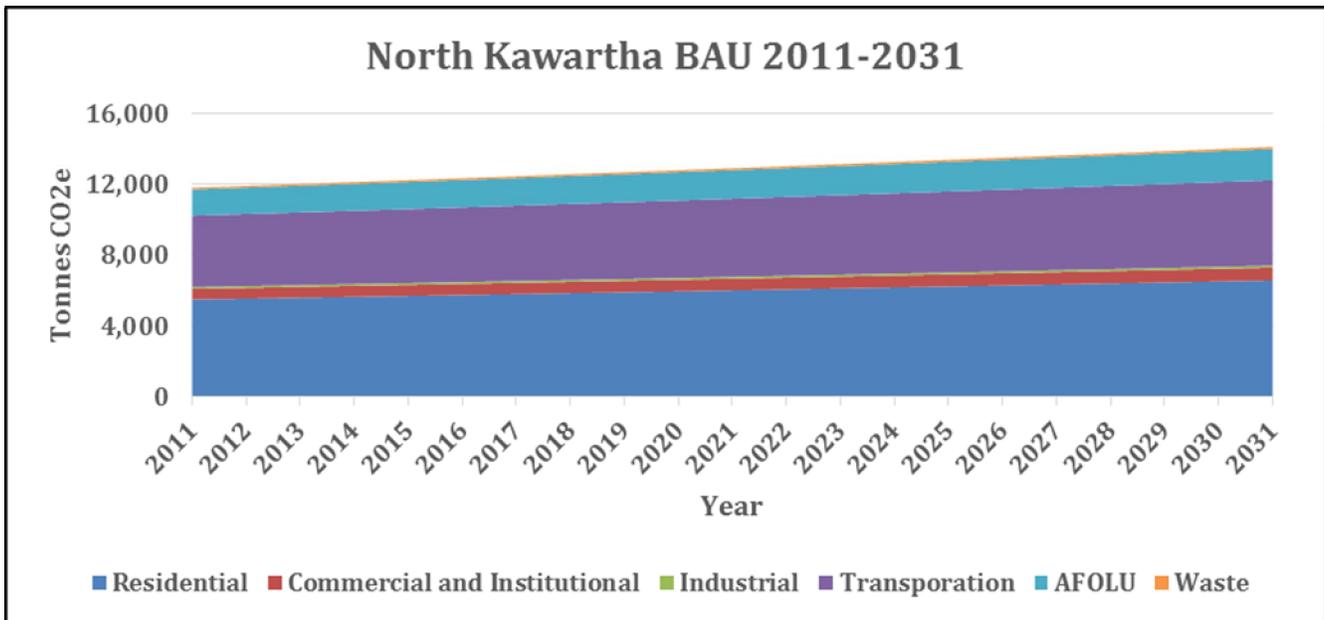
Emissions from **Managed Soils, Enteric Fermentation, and Manure Management** are based on a number of sources. Activity data for the sector are based on Statistics Canada data on the composition of livestock and crops in Trent Lakes's agricultural sector. Statistics Canada aggregates data for Trent Lakes with North Kawartha – these have been separated in this model using data on relative quantities of farm land in each community.

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.

Business-As-Usual Forecast for Township of North Kawartha 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 as 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 North Kawartha, community emissions are expected to grow to 14,106 tonnes CO₂e by 2031. This BAU projection is presented in Figure 6 below.

Fig 6. Township of North Kawartha 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.