



**sustainable**  
Peterborough

**Peterborough Area Climate Change Action Plan**  
**Hiawatha First Nation – Community Emissions Inventory**  
**Partners for Climate Protection Milestone 1**  
January 13, 2016

 **LURA**  
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**I.C.L.E.I**  
Local  
Governments  
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# 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 Hiawatha First Nation 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. Hiawatha First Nation and Curve Lake First Nation were granted special permission to participate in the program in 2015, being the first two First Nations in Canada to be involved with the program. 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 government – 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 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.



A GHG inventory and forecast has been created for the Hiawatha First Nation community sources. The inventory consists of the following sources of GHG emissions.

- Residential
- Commercial and institutional
- Industrial
- Transportation
- Solid waste

2 Community Emission Inventory

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

Hiawatha First Nation Community Emissions Inventory

In 2011, 1,316 tonnes of CO2e were emitted by the Hiawatha First Nation community. Breakdowns of emissions by sector and source are presented visually in Figure 1 and summarized in Figure 2 below.

Fig 1. Hiawatha First Nation Community Emissions by Sector and Source

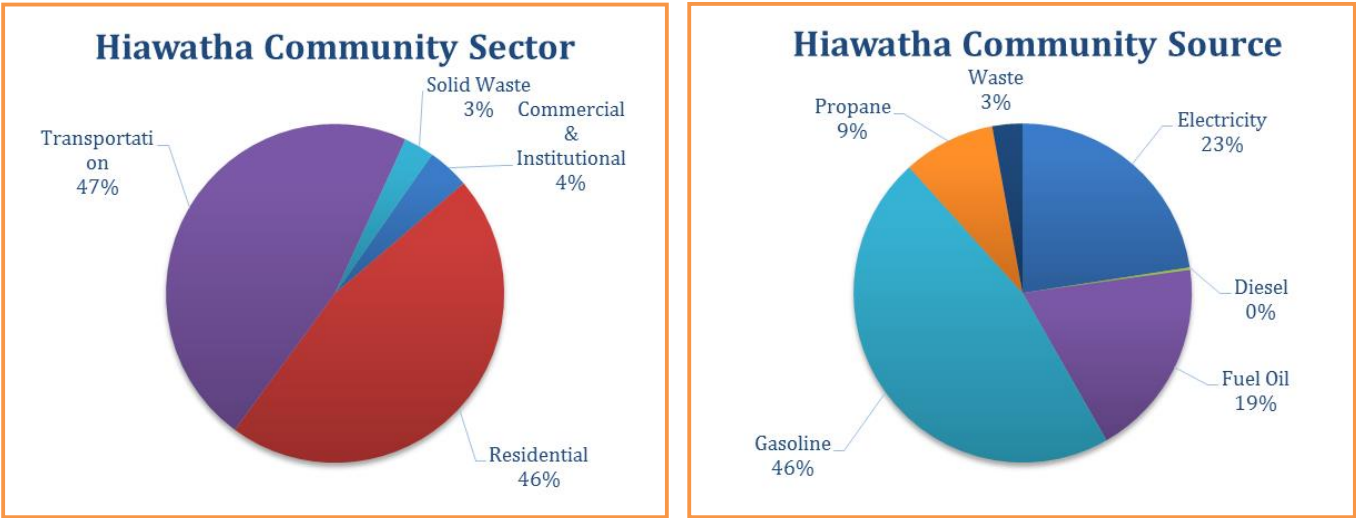


Fig 2. Hiawatha First Nation Community Tonnes CO2e by Sector and Source

Sector	Emissions (tCO2e)	Source	Emissions (tCO2e)
Residential	610	Natural Gas	0
Commercial and Institutional	53	Electricity	297
Industrial	0	Gasoline	612
Transportation	615	Diesel	3
Waste	38	Propane	116
Total	1,316	Fuel Oil	249
		Solid Waste	38
		Total	1,315

(Note: totals are not equal due to rounding)

## 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 available to the Hiawatha First Nation.

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.

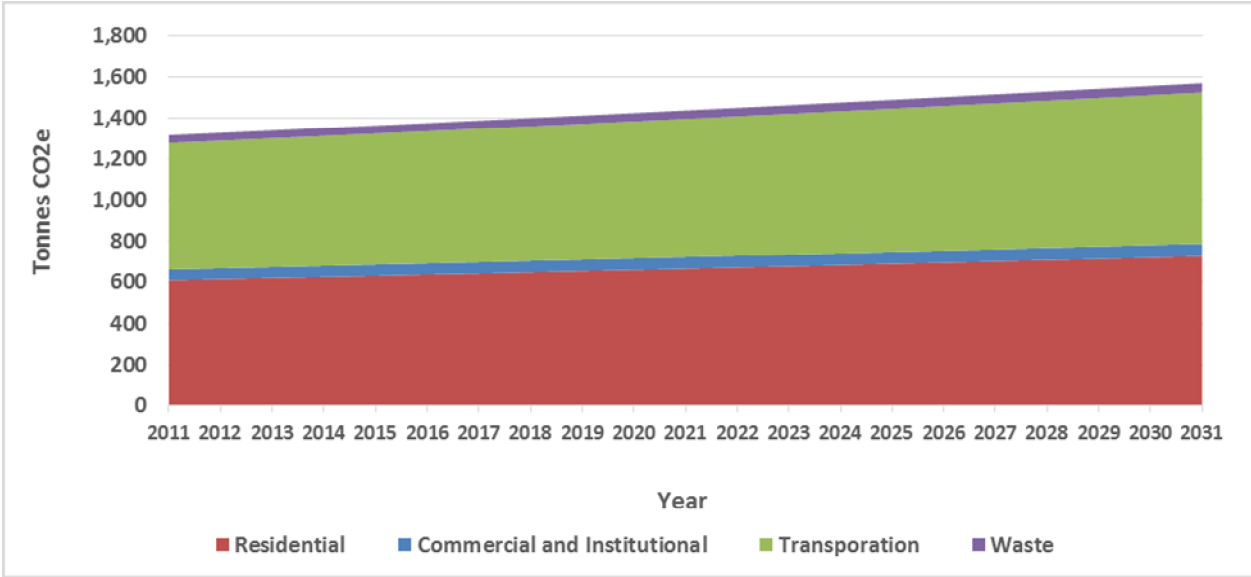
**Solid Waste** emissions were estimated by taking the quantity of waste collected at the Peterborough City and County Waste Management Facility (PCCWMF) from Hiawatha First Nation, and estimates for the waste stream and gas collection performance from PCCWMF.

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 Hiawatha First Nation Community

A business-as-usual (BAU) forecast is an estimate of annual GHG emissions into the future considered projected population growth if the community 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 Peterborough County population projections. 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 Hiawatha First Nation, community emissions are expected to grow to 1,570 tonnes CO<sub>2</sub>e by 2031. This BAU projection is presented in Figure 3 below.

Fig 3. Hiawatha First Nation Community BAU Forecast – 2011-2031



3 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.