

FINAL

Town of Richmond Hill Community Greenhouse Gas (GHG) Emissions Inventory Report

Prepared for achieving Milestone 5 of the
Federation of Canadian Municipalities (FCM)'s
Partners for Climate Protection (PCP) Program

Town of Richmond Hill



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Executive Summary

This report demonstrates that the Town of Richmond Hill has reduced community greenhouse gas (GHG) emissions by 19.6% per capita between 2000 and 2010. This achieves the fifth and final milestone of the Federation of Canadian Municipalities (FCM)'s Partners for Climate Protection (PCP) Program.

Air quality affects everyone in Richmond Hill. The air we breathe has an impact on our health and quality of life. Emissions, particularly from transportation and energy consumption, are linked to health risks and contribute to the release of GHGs. The Town's Environment Strategy promotes policies and actions related to reducing GHG emissions by planning for more sustainable forms of energy use and transportation.

Richmond Hill first demonstrated its commitment to taking action against climate change by joining the Partners for Climate Protection (PCP) Program in 2000. The PCP program is a partnership between FCM and International Council for Local Environmental Initiatives (ICLEI), and is a network of over 250 Canadian municipalities that have committed to reduce both corporate and community GHG emissions.

As part of this program the Town completed both corporate and community GHG emissions inventories (2000), developed its own Clean Air Local Action Plan (2004), and set targets for GHG reductions.

Corporate GHG Emissions

The Town's Local Action Plan established a corporate GHG emissions reduction target of 20% below 2000 levels by 2009 in absolute terms. The Town updated its corporate GHG emissions inventory in 2010, reporting a 33% reduction in GHG emissions, exceeding the original target. This achievement earned Richmond Hill fifth and final milestone of the FCM's PCP program for corporate emissions. Richmond Hill was recognized by FCM as the first municipality in Ontario to achieve this milestone.

Community GHG emissions

Likewise, the Local Action Plan established a community GHG emissions reduction target of 6% below 2000 levels by 2010. This report updates the community GHG emissions inventory, demonstrating a reduction of 19.6% per capita between 2000 and 2010, and an even larger decrease of 32% per capita between 2000 and 2012. As a community, the Town's population increased by 51% during this time, however net GHG emissions increased by only 2%. These per capita reductions can largely be credited to increased public transit development and ridership, changes to the Ontario Building Code that encourage energy efficiency and conservation, and the move to cleaner sources of electricity in Ontario, including the phase-out of coal fired generation. With the completion of this community GHG emissions inventory update, the Town is eligible to achieve the fifth and final milestone of the FCM's PCP program.

1.0 Introduction

This report updates the community GHG emissions inventory for 2007, 2010 and 2012 and compares them with the baseline year inventory of 2000.

1.1 The PCP Milestones

The PCP program has developed a five-milestone process in establishing GHG inventories, setting GHG reduction targets, developing local action plans, and implementing plans.

Milestone 1: Create a GHG emissions inventory and forecast

Milestone 2: Set an emissions reduction target

Milestone 3: Develop a local action plan

Milestone 4: Implement the local action plan or a set of activities

Milestone 5: Monitoring progress and reporting results

Richmond Hill already completed the first four milestones of the PCP's community GHG emissions reduction program. This report demonstrates that Richmond Hill has now achieved the fifth and final milestone.

1.2 Requirements for Milestone 5 Recognition

The requirements for achieving the Milestone 5 of the PCP program are:

- Update the community GHG emissions inventory
- Track the results of specific emissions reduction measures
- Engage stakeholders and decision-makers
- Submit the report to the FCM for fifth and final milestone recognition of the PCP program

2.0 Method

This section describes the protocol and overall approach used to complete the community GHG emissions inventory update. A separate supplementary report has been prepared to document the data collection methods, data sources, assumptions, and GHG emission calculations used in the preparation of this report (See Appendix C for Supplementary Report: Detailed Data Assumptions & Calculations).

2.1 GHG Emissions Quantification Protocol

Staff followed the PCP Protocol using the PCP Milestone Tool to calculate the Town's community GHG emissions inventory update. The PCP method is considered to be a suitable method and is widely used by municipalities participating in the PCP program.

2.2 Data Collection

The community GHG inventory involves reporting the GHG emissions from four key sectors of the community: residential, commercial & industrial, transportation, and solid waste sector. This involves collecting data related to community energy consumption, community fuel consumption, and community solid waste disposal quantities and their compositions.

Energy consumption data (electricity and natural gas) for the community was obtained from the local utility companies, Power Stream Inc. and Enbridge Gas Distribution Inc.

Retail fuel sales data was obtained from Kent Marketing Services Limited to quantify the GHG emissions from vehicles operated in Richmond Hill, except GO Transit. The vehicle kilometer travelled (VKT) method was considered as an alternative method to determine the vehicular fuel consumption but was later ruled out due to uncertainty associated with the data in determining the VKT. Diesel consumption data for GO Transit (Bus & Train) was provided by Metrolinx.

Richmond Hill's residential solid waste (garbage) disposal quantity to landfill site was obtained from the York Region and its composition from the waste composition studies conducted by the Town. Richmond Hill's Commercial & Industrial (C&I) waste disposal quantity to landfill site was derived from Statistics Canada's Waste Management Industry Survey Report¹, using the ratio of disposal quantities of residential and non-residential waste mentioned in the report. The composition of Richmond Hill's C&I waste disposed to landfill site was derived from the 2004 composition of disposed IC&I waste in Ontario², assuming it to be representative for Richmond Hill's C&I waste to landfill site for all of the inventory years. The Methane commitment (MC) method was used to quantify GHG emissions from waste disposed to landfill site due to anaerobic decomposition of waste, assuming that the methane is captured in the landfill site with a 75% methane recovery factor. The inventory update does not include the GHG emissions from the waste disposed to incinerator facilities (the calculator was not available in the PCP tool at the time of inventory update).

The population of Richmond Hill for the inventory years was determined from the census data and population growth rates.

3.0 Results - Community GHG Emissions Inventory & Trends

This section presents the community GHG emissions updates for 2007, 2010 and 2012 and compares them with the baseline inventory of 2000. It also presents the overall and sector-specific trend of emissions over time. Annual emissions are expressed in absolute and per capita terms for trend analysis.

¹ Waste management Industry Survey: Business and Government Sectors – 2008.

² IC&I Waste Diversion in Ontario (December, 2006).

3.1 Baseline Inventory (The 2000 Report)

The 2000 community GHG emissions inventory established the baseline inventory. Table 1 presents the summary of the breakdown of the GHG emissions by sector expressed in absolute terms, per capita terms, and percent of total community emissions, as presented in the 2000 Report.

3.2 New Baseline Inventory

The baseline inventory was reviewed during this inventory update and was re-established. The 2000 Report used the vehicle kilometer travelled (VKT) method for the transportation sector emissions. The VKT method was initially considered for the inventory updates, however, due to uncertainty associated with the VKT numbers determined from a limited annual average daily traffic (AADT) data (6 days/year worth of data) on a small segment length of roads in Richmond Hill (~10% of the total road length in Richmond Hill), this method was later rejected. Instead, the retail fuel sales data was used for the inventory updates, after consultation with ICLEI. The retail fuel sales data was also used for the baseline year to re-determine the GHG emission from the transportation sector, for consistency purposes. The GHG emission quantification methods used in the 2000 Report for other sectors remained unchanged.

Using the 2001 census of Richmond Hill population (132,030) and the annual growth rates between 2001 and 2006 (4.65%), the baseline year population was re-determined as 126,168, as opposed to 135,833 reported in the 2000 Report.

The newly established baseline inventory presented in Table 1 was used for comparing the emissions from all of the inventory years. The table shows that the transportation sector was the largest contributor to community GHG emissions in the baseline year, accounting for 40% of community total emissions, followed by residential sector, C&I sector, and solid waste sector.

Table 1: Summary of New Baseline Inventory

Sector	Baseline Inventory (The 2000 Report)			Re-established (New) Baseline Inventory		
	Absolute GHG Emissions (tCO ₂ -eq)	Per Capita GHG Emissions (tCO ₂ -eq/PE)	Percent of Total (%)	Absolute GHG Emissions (tCO ₂ -eq)	Per Capita GHG Emissions (tCO ₂ -eq/PE)	Percent of Total (%)
Residential	338,758	2.49	42.1%	338,758	2.68	31.6%
C&I	309,342	2.28	38.5%	309,342	2.45	28.9%
Transportation	161,914	1.19	20.1%	429,170	3.40	40.0%
Solid Waste	-5,657	-0.04	-0.7%	-5,657	-0.04	-0.5%
Total	804,357	5.92	100%	1,071,613	8.49	100%

3.3 Overall Trends

This section presents the overall community GHG emissions over time and compares them with the newly established baseline inventory.

Table 2 shows that Richmond Hill's population increased by 51.2% from 2000 to 2012, from 126,168 to 190,749. The table further shows that the total energy consumption increased by 25.1% in absolute terms but decreased by 17.3% in per capita terms from 2000 to 2012.

Table 2 and Figure 1 illustrate that although the absolute emissions were more in all of the inventory years than in baseline year, a decreasing trend was observed over time. However, in per capita terms the emissions decreased consistently over time by 4.2%, 19.6%, and 32.6%, in 2007, 2010, and 2012, respectively, relative to baseline year (see Figure 2).

Table 2: Community Energy Consumption vs. GHG Emissions

Year	Population	Absolute Energy Consumption (GJ)	Per Capita Energy Consumption (GJ/PE)	Absolute GHG Emissions (tCO ₂ -eq)	Per Capita GHG Emissions (tCO ₂ -eq/PE)
2000 (Baseline)	126,168	16,585,573	131.46	1,071,613	8.49
2007	166,091	22,730,588	136.86	1,352,058	8.14
2010	180,475	22,233,515	123.19	1,232,383	6.83
2012	190,749	20,726,585	108.66	1,092,128	5.73

Figure 1: Absolute Community GHG Emissions vs. Target

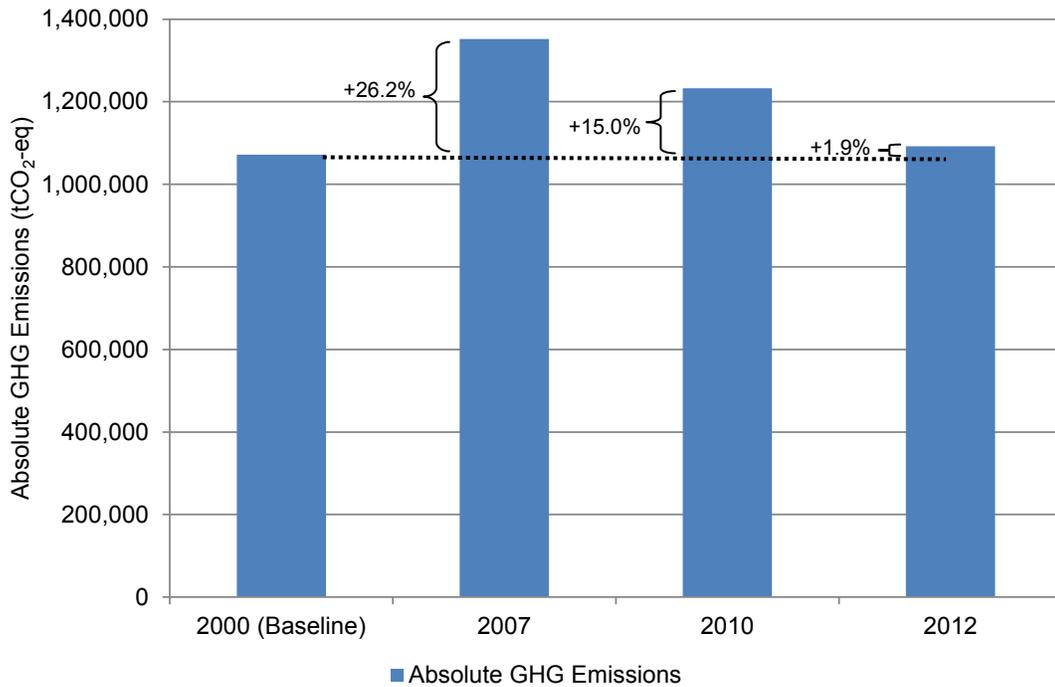
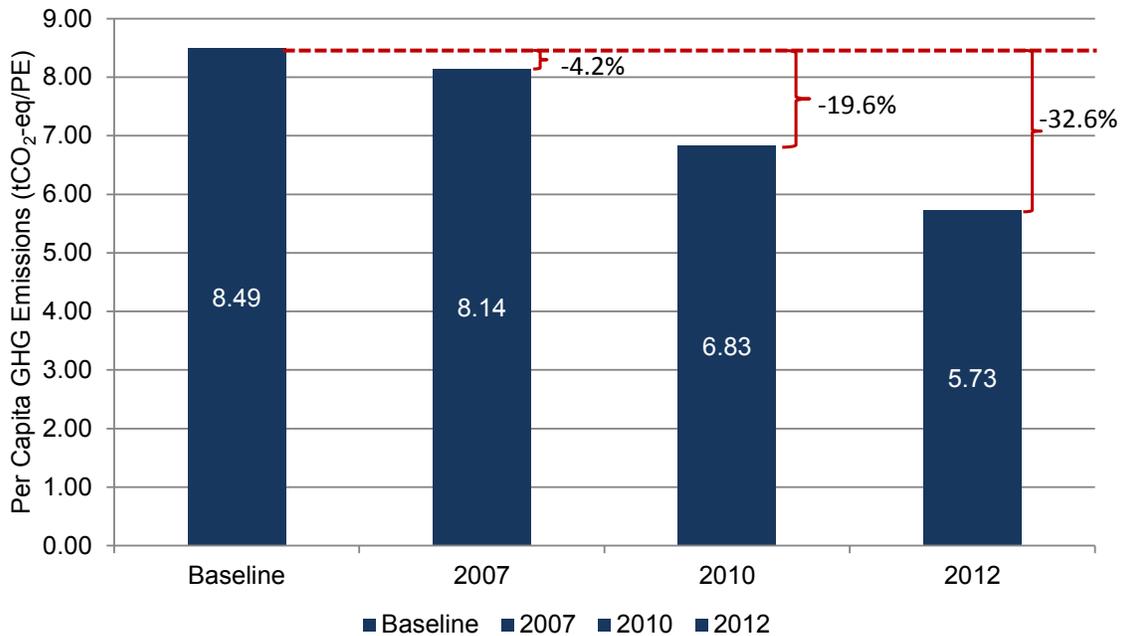


Figure 2: Per Capita Community GHG Emissions vs. Target

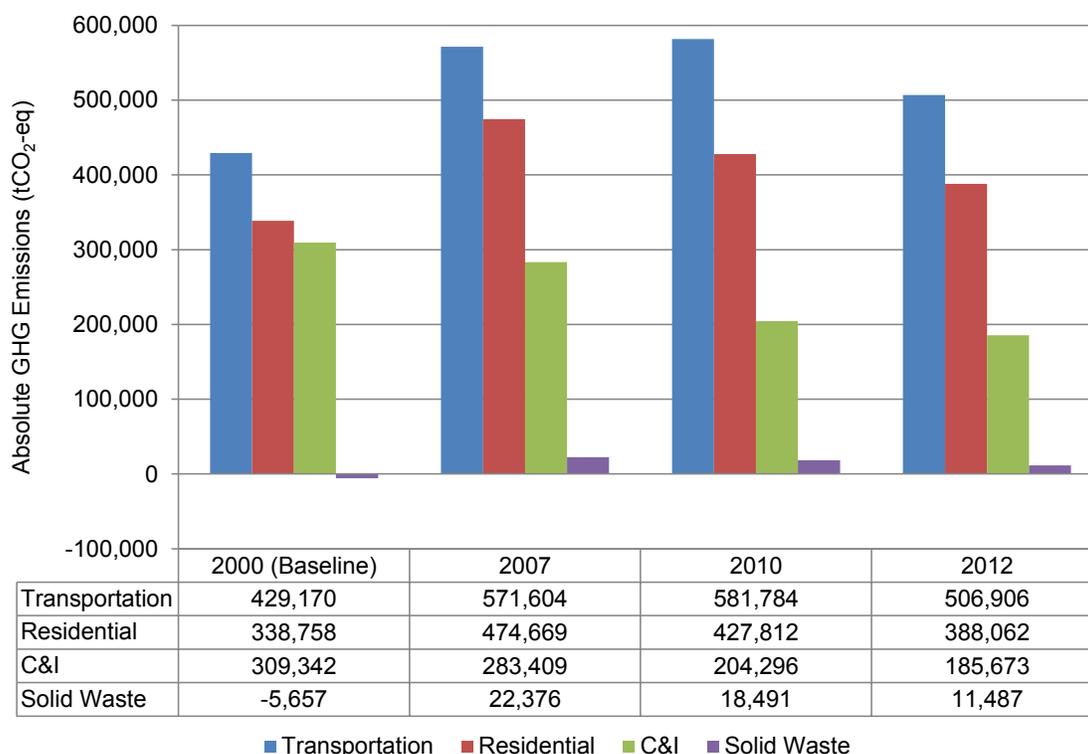


3.4 Trend by Sector

Figure 3 illustrates that the transportation sector represented the largest contributor to community GHG emissions in all of the inventory years, followed by residential sector, commercial & industrial sector, and solid waste sector. The

C&I sector decreased GHG emissions each and every year following the baseline year. The residential sector and solid waste sector emissions showed a decreasing trend from 2007 onwards. The transportation sector GHG emissions started declining from 2010 onwards. The sector-wide trend is discussed in the following sections.

Figure 3: Absolute Community GHG Emissions - Overall Trend by Sector



3.4.1 Transportation Sector

Transportation sector represented the largest contributor to Richmond Hill’s community GHG emissions in all of the inventory years (see Figure 3). All vehicles (except GO Transit) contributed significantly (>99.5%) to transportation sector emissions, with gasoline being the dominant component (over 95%) of the transportation sector energy consumption and GHG emissions in those years.

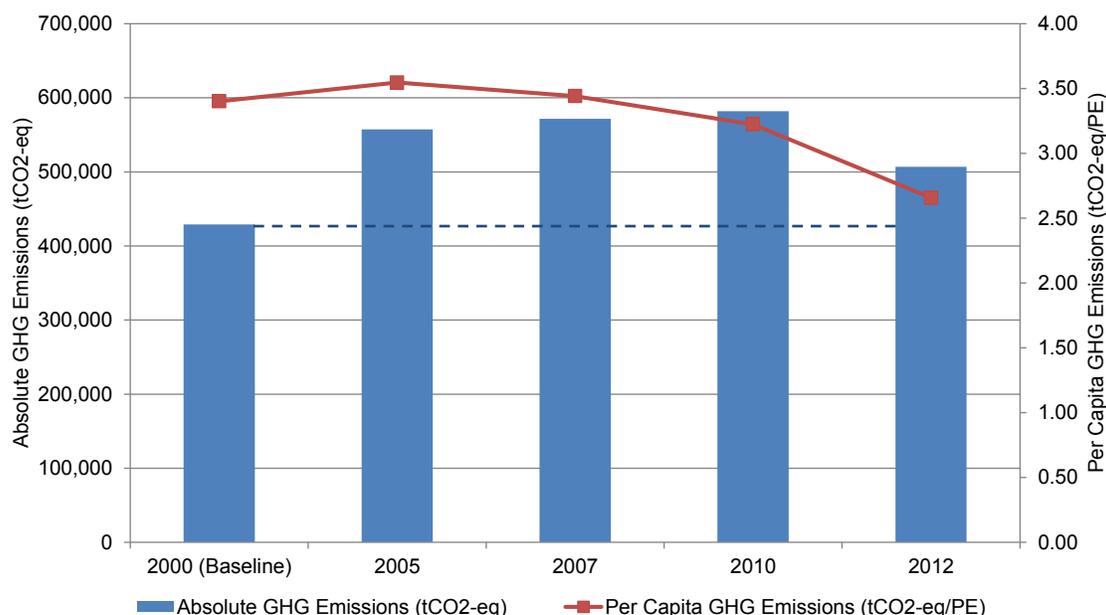
The fuel consumption and associated GHG emissions in absolute terms showed an increasing trend until 2010, and then decreased afterwards. The increase in fuel consumption could be attributed to increased population of the Town. However, a decreasing trend was observed in per capita terms for both from 2005 onwards (see Table 3 and Figure 4). This could primarily be attributed to improved sustainable transportation practices through measures such as Smart Commute Initiatives, York Region Rapid Transit Plan etc. The 2011

Transportation Tomorrow Survey (TTS) from York Region revealed that the transit trips per person increased by 43% in York Region from 2001 to 2011.

Table 3: Fuel Consumption vs. GHG Emissions (Transportation)

Year	Population	Absolute Fuel (Energy) Consumption (GJ)	Per Capita Fuel (Energy) Consumption (GJ/PE)	Absolute GHG Emissions (tCO ₂ -eq)	Per Capita GHG Emissions (tCO ₂ -eq/PE)
2000 (Baseline)	126,168	6,008,665	47.62	429,170	3.40
2005	157,144	7,991,766	50.86	557,320	3.55
2007	166,091	8,194,831	49.34	571,604	3.44
2010	180,475	8,341,271	46.22	581,784	3.22
2012	190,749	7,689,234	40.31	506,906	2.66

Figure 4: Absolute vs. Per Capita GHG Emissions (Transportation)



3.4.2 Residential Sector

The residential sector represented the second largest contributor to Richmond Hill's community GHG emissions in all of the inventory years (see Figure 3).

The residential energy consumption in absolute and per capita terms increased from baseline year to 2007, and then decreased afterwards (see Table 4). The energy consumption increased by 45.2% in absolute terms but decreased by 4.0% in per capita terms from 2000 to 2012. Natural gas was the primary source of energy in the residential sector (~79%), and also primary contributor to residential sector GHG emissions in all of the inventory years (67.9% in 2000, 78.9% in 2007, 83.2% in 2010 and 86.5% in 2012).

As illustrated in Table 4 and Figure 5, the residential GHG emissions in absolute and per capita terms increased from 2000 to 2007 and decreased from 2007 to 2012. The GHG emissions increased by 14.6% in absolute terms but decreased by 24.2% in per capita terms from 2000 to 2012.

The decrease in GHG emissions from 2007 onwards can be attributed to:

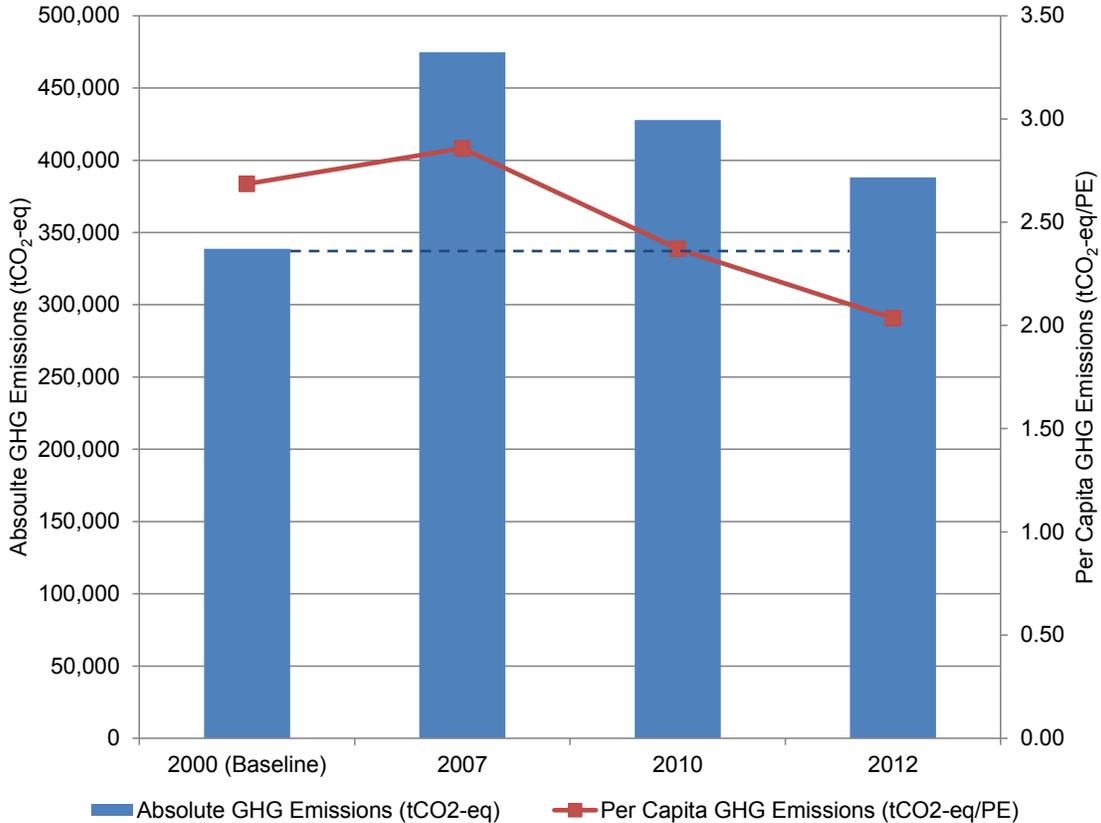
- A decrease in natural gas consumption during milder winters from 2007 onward³
- Improvements in Ontario's fuel mix used to generate electricity
- Improved energy efficiency of household appliances, lighting and building envelope as a result of changes to Ontario's Building Code
- The impact of energy conservation programs offered over time by various organizations (e.g. Home Energy Efficiency Retrofit Grants, ENERGY STAR Qualified Products Grant, etc.).

Table 4: Energy Consumption and GHG Emissions (Residential)

Year	Absolute Energy Consumption (GJ)	Per Capita Energy Consumption (GJ/PE)	Absolute GHG Emissions (tCO ₂ -eq)	Per Capita GHG Emissions (tCO ₂ -eq/PE)	Percent Change Relative to Baseline Year Per Capita Emissions (%)	Percent Change Relative to Baseline Year Per Capita Energy Consumption (%)
2000 (Baseline)	5,881,256	46.6	338,758	2.68	0.0%	n/a
2007	9,264,744	55.8	474,669	2.86	6.4%	19.7%
2010	9,223,999	51.1	427,812	2.37	-11.7%	9.6%
2012	8,537,780	44.8	388,062	2.03	-24.2%	-4.0%

³ A decreasing trend in annual heating degree days (HDDs) was observed from 2007 onwards, reportedly 3794.2 in 2007, 3561.9 in 2010 and 3314.2 in 2012 (Data source: <http://climate.weather.gc.ca/climateData>). HDD represents the number of degrees that a day's average temperature is below 18° Celsius, the temperature below which buildings need to be heated.

Figure 5: Absolute vs. Per Capita GHG Emissions (Residential)



3.4.3 Commercial & Industrial (C&I) Sector

The commercial & industrial (C&I) sector represented the third largest contributor to Richmond Hill’s community GHG emissions in all of the inventory years (see Figure 3).

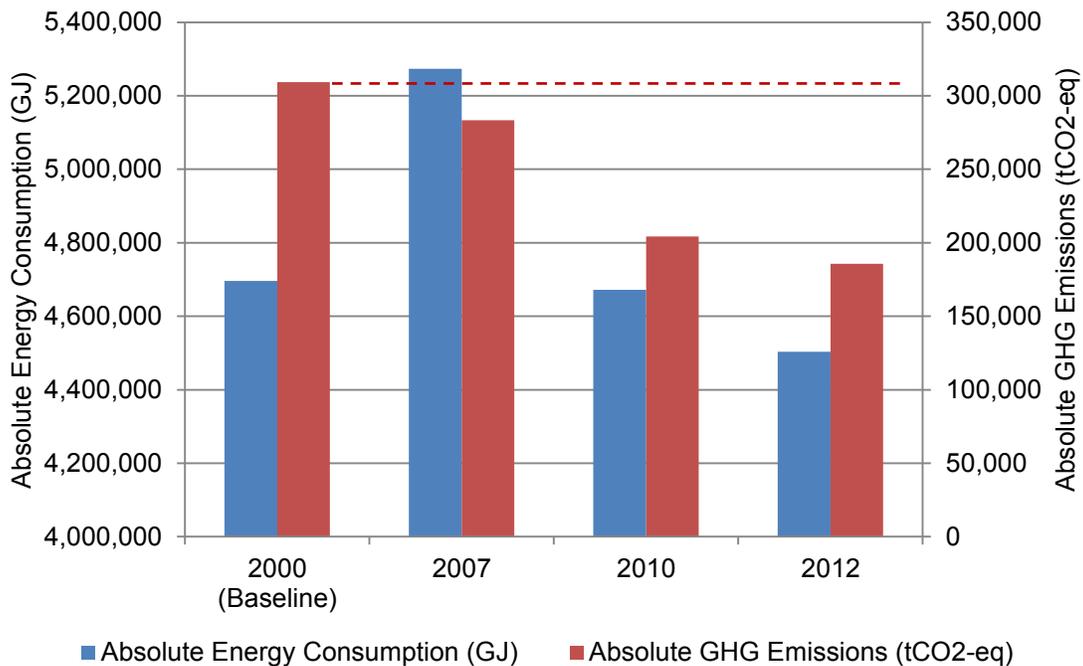
The C&I sector energy consumption increased from baseline year to 2007 (by 12.3%) and then decreased (by 14.6%) from 2007 to 2012 (see Table 5 & Figure 6). However, there was a 4.1% reduction in energy consumption from 2000 to 2012. Natural gas was the primary source of energy in the C&I sector in all of the inventory years. The C&I sector absolute GHG emissions decreased consistently from baseline year such that a 40.0% reduction was observed from 2000 to 2012.

Similar to the residential sector, the decrease in GHG emissions can be attributed to milder winters, Ontario’s improved fuel mix for generating electricity and changes to Ontario’s Building Code. Programs such as Enbridge Commercial & Industrial Energy Efficiency Incentive Program may also have had an impact.

Table 5: Energy Consumption and GHG Emissions (C&I)

Year	Absolute Energy Consumption (GJ)	Absolute GHG Emissions (tCO ₂ -eq)	Percent Change	
			Relative to Baseline Year Absolute Energy Consumption (%)	Relative to Baseline Year Absolute GHG Emissions (%)
2000 (Baseline)	4,695,655	309,342	n/a	n/a
2007	5,273,873	283,409	12.3%	-8.4%
2010	4,671,998	204,296	-0.5%	-34.0%
2012	4,503,284	185,673	-4.1%	-40.0%

Figure 6: Energy Consumption vs. GHG Emissions (C&I)



3.4.4 Solid Waste Sector

Solid waste sector represented the smallest contributor (~2%) to Richmond Hill’s community GHG emissions in all of the inventory years (see Figure 3). Solid waste (garbage) from the commercial & industrial sector was the largest contributor to the solid waste sector GHG emissions (>76%) in those years.

- Commercial & Industrial Waste

As shown in Table 6, the quantity of C&I solid waste disposed to landfill site and associated GHG emissions decreased consistently from 2005 onwards⁴ (a 68.6% reduction in emissions observed from 2005 to 2012). This indicates that the diversion rate of C&I solid waste from landfill is increasing over time.

Table 6: Solid Waste Generation vs. GHG Emissions (C&I)

Year	Solid Waste (garbage) Disposed to Landfill Site (tonnes)	Absolute GHG Emissions (tCO ₂ -eq)
2005	61,895	29,245
2007	39,895	18,850
2010	31,323	14,800
2012	19,459	9,194

- Residential Waste

As illustrated in Table 7, the quantity of residential waste disposed to landfill site and associated GHG emissions decreased from 2005 onwards both in absolute and per capita terms. The solid waste disposal quantity and associated GHG emissions decreased by 68.6% and 74.8%, respectively, from 2005 to 2012. The drop in the quantity of solid waste to landfill site is attributed to increasing residential solid waste diversion rate from landfill site over time (58.0% in 2012, 56.9% in 2010, 54.6% in 2007, and 27.4% in 2005), and the transfer of disposed waste to incinerator facilities after 2007 (one in 2010, and two in 2012). The reduction in GHG emissions is attributed to the drop in the quantity of waste to landfill site and reduction in the organic waste (food waste) disposed to landfill site over time (28.9% in 2006, 19.5% in 2010 and 15.7% in 2012).

Table 7: Solid Waste Generation vs. GHG Emissions (Residential)

	Solid Waste (garbage) Disposed to Landfill Site (tonnes)	Absolute GHG Emissions (tCO ₂ -eq)	Per Capita GHG Emissions from Solid Waste Disposal (tCO ₂ -eq/PE)
2005	38,592	9,117	0.058
2007	24,875	3,526	0.021
2010	19,530	3,691	0.020
2012	12,133	2,293	0.012

⁴ A total GHG emission from the solid waste sector was reported in the 2000 Report with no breakdown provided for C&I waste and residential waste.

4.0 Local Action Plan (LAP) Measures

Various measures were listed in the Town's Local Action Plan (LAP) to reduce community energy use, waste disposal and associated GHG emissions. The measures applied to all four sectors of the community. Generally speaking, measures applied at the federal and provincial level were most impactful, although Richmond Hill's efforts to plan locally for sustainable transportation, energy conservation and waste reduction contributed to these successes.

A list of LAP measures and comments about their role in reducing GHG emissions can be found in Appendix A.

5.0 Stakeholder Engagement and Consultation

Stakeholder engagement and consultation was conducted during the preparation of Richmond Hill's Environment Strategy. One of the key focus areas for stakeholder consultation was Air Quality, which included greenhouse gas emissions.

The consultation process involved, among many things, engaging stakeholders and decision-makers in our community about the issue of climate change and GHG emissions. The consultation ranged from an on-line survey and public/stakeholder workshops, to one-on-one interviews with Councillors and senior staff. It also included community outreach programs to engage individuals not available to attend a workshop event.

Appendix B presents a section on Air Quality from the Consultation Report prepared during the development of Richmond Hill's Environment Strategy.

6.0 Conclusions

Air quality affects everyone in Richmond Hill. The air we breathe has an impact on our health and quality of life. Emissions, particularly from transportation and energy consumption, are linked to health risks and contribute to the release of greenhouse gases. The Town's Environment Strategy promotes policies and actions related to sustainable energy and sustainable transportation within the jurisdiction of a local municipality. Richmond Hill has the ability to influence local air quality and take responsibility for reducing air pollution caused by our own activities.

One way in which Richmond Hill demonstrates its commitment to action against climate change is by participating in the Partners for Climate Protection (PCP) Program. As part of this program, the Town completed a community GHG emissions inventory in 2000, developed a local action plan, and set a reduction target of 6% below 2000 levels by 2010. This report updates the Inventory and demonstrates that the Town's community GHG emissions have increased by 15% overall, but decreased by 19.6% per capita between years 2000 to 2010;

increased by 2% overall, but decreased by 32.6% per capita between years 2000 and 2012.

Although absolute emissions have increased by 2%, the Town's population has increased by 51.2% during the same timeframe (2000 to 2012). This means that on an individual basis, community members have reduced their emissions by 32.6% per person, a significant accomplishment. This achievement earned the Town the fifth and final milestone of the PCP program for community GHG emissions.

This improvement is due to many factors, including the following:

- Ontario has moved to more sustainable energy sources for electricity generation through gradual improvement in fuel mix to generate electricity (gradually phasing out coal-fired plants).
- Changes to the Ontario Building Code that prescribed a range of energy efficiency requirements for insulation levels and furnaces.
- York Region and Richmond Hill have offered more sustainable transportation choices, resulting in a 43% increase in per capita transit trips⁵, and 147 km of on-road cycling track and 125 km of off-road local cycling trails in Richmond Hill.
- Various government incentives and conservation programs have improved energy efficiency of household products and industrial processes.
- The Town has decreased waste to landfill by improving diversion rates, introducing the green bin program and directing waste to the Energy from Waste facility rather than landfill.

⁵ 2011 Transportation Tomorrow Survey (York Region).

Appendix A

Key Community Measures from Local Action Plan (LAP)

Measure	Sector	Description of Measure
Home Energy Efficiency Retrofit Grants	Residential	This grant program from the Government of Canada's Climate Change Plan for Canada was aimed at encouraging homeowners that were in need of energy efficiency upgrades. This measure was expected to reduce residential and C&I energy consumption and associated GHG emissions.
ENERGY STAR Qualified Products Grant	Residential and Commercial & Industrial	The customers are provided with rebates to purchase ENERGY STAR rated equipment.
Change in Ontario Building Code from 2006 to 2011 (New Measure)	Residential	Prescribed requirements for houses for insulation in walls & ceilings, and efficiency requirements for windows and doors, and furnaces.
Smart Commute Initiative	Transportation	This initiative encouraged carpooling, vanpooling and car sharing programs.
York Region Rapid Transit Plan	Transportation	This plan was expected to eliminate up to 1 million cars in the Region and significantly reducing vehicle emissions in the Town.
Commercial Transportation Energy Efficiency and Fuels Initiative	Transportation	This grant program from the Government of Canada's Climate Change Plan for Canada provided rebates for devices that reduce engine idling in the on-road commercial transportation sector.
Enbridge Commercial & Industrial Energy Efficiency Incentive Programs	Commercial & Industrial	This program provided technical consulting and incentives to facilitate retrofits in commercial, multi-residential or institutional facilities; promoted high efficiency hydronic heating and hot water boiler; and promoted ideas for water and energy savings.
Industrial Energy Audit Incentive	Commercial & Industrial	This program from Natural Resources Canada provided incentives to companies to carry out energy audits to identify potential energy conservation opportunities.
Recycling, Yard Waste & Composting Program	Waste	These three programs undertaken in the community waste sector was expected to reduce waste disposal and GHG emissions.

Appendix B

Stakeholder Engagement and Consultation Report
(See Section 5 of the Consultant Report in the following pages)



GREENING THE HILL

Our Community
Our Future

Key Themes and Priorities

The Environment Strategy consultation process reached over 2000 members of the community. During the course of this work, many hundreds of comments were provided. The following sections summarize the key themes and messages expressed.

- **Overarching themes**

The call for **education, awareness and outreach** was a consistent trend throughout both the face-to-face and on-line consultation data. In fact, when asked what the Richmond Hill Environment Strategy should address first, on-line survey results indicated that public education and outreach was the top priority. The majority of community members, stakeholders, Councillors and staff felt there was a significant need to increase awareness and understanding of the policies, programs and initiatives that the Town currently has underway and to communicate those that will arise out of the Environment Strategy. This also included a desire to understand how families, individuals, businesses and partners could participate and contribute to the Town's environmental health.

Related to this trend was a strong desire for municipal **incentives** and **education** to support environmentally sustainable initiatives at home and in their neighbourhoods.

Further, the need to ensure a **green, connected community** was seen to be one of the most important considerations for both the increased health of the environment as well as for human well-being. Respondents associated a connected greenway with many aspects of environmental management, in particular with pedestrian and cycling trails to help keep pace with urbanization.

The final overarching theme addressed **partnerships** between stakeholders and policy makers. Partnerships were widely viewed as a mechanism to increase awareness and to maximize programming efficiencies.

Please refer to Appendix A for a detailed summary of all comments related to overarching themes.

- **Priority areas of environmental management**

While we heard from several thousand members of the community, and each consultation element involved a different process, a number of key themes relating to areas of environmental management emerged. These include:

- Connected communities through greenspace, trails, bike and pedestrian connections
- Managing our urban forest by planting trees, trees and more trees
- Protection/expansion of greenspace and natural areas
- Providing sustainable and active transportation options with a focus on more off-road trails and promoting transit
- Ensuring clean healthy water systems by minimizing impacts from development and reducing salt usage
- Conserving energy and water in municipal operations, providing education and incentives for residents, and requiring/incenting developers to build more sustainable buildings

When asked what **top three** areas of environmental management the Richmond Hill Environment Strategy should focus on, responses from the on-line survey indicated:

1. Expanding, protecting, connecting greenspace
2. Healthy rivers, streams and lakes
3. Increased sustainable, active transportation options

These trends and themes will be used to inform the next phase of the Environment Strategy's development through the preparation of the Key Findings and Future Directions Report.

- **Themes by consultation group**

Each consultation group had a slightly different set of opinions and preferences. The trends that emerged from each main consultation session are as follows:

Key Themes By Consultation Group						
KEY FOCUS AREA	Councillors	On-line Survey	Community/ Seniors/Youth	Staff	Stakeholder Workshop	Dotmocracy
AIR QUALITY						
<ul style="list-style-type: none"> ○ Reduce GHG ○ Plant more trees 	•	•	•	•	•	•
Sustainable Energy Use <ul style="list-style-type: none"> ○ Energy Conservation ○ Education and Incentives 			•	•	•	•
Sustainable Transportation Increase/promote sustainable and active transportation by: <ul style="list-style-type: none"> ○ Increasing off-road bike trails ○ Improving/promoting transit 	•	•	•	•	•	•

KEY FOCUS AREA	Councillors	On-line Survey	Community/ Seniors/Youth	Staff	Stakeholder Workshop	Dotmocracy
WATER RESOURCES						
Watershed Management ○ Town is a unique headwaters setting-celebrate and protect				•	•	
Surface and Stormwater ○ Improved stormwater management & reuse ○ Improve development standards			•	•	•	
Quality and Quantity ○ Ensuring healthy rivers and streams by protecting these resources from impacts of development	•	•	•	•		•
Groundwater Protection ○ Protect recharge, encourage re-use				•		
Water Conservation ○ Conserve, reuse greywater ○ Education and partnerships		•	•	•	•	
LAND RESOURCES						
Sustainable Development through: ○ Requiring green, sustainable building practices ○ Soil standards for new development ○ More connected greenspace and trails	•		•	•	•	
Natural Environment Management through: ○ Planting more trees ○ Urban forest management ○ Wildlife management	•	•	•	•	•	•
Solid Waste Management through: ○ Waste reduction ○ Partnerships in to increase access to waste diversion		•	•	•	•	•
Sustainable Urban Agriculture, Local Food Production through: ○ More options to grow food locally (e.g. community gardens) ○ Farmers markets	•		•	•	•	
EMERGING THEMES						
○ Education -Provide community education to raise awareness about environment (what Town is doing, what they can do)	•	•	•	•	•	
○ Incentives -Provide incentives for energy and water conservation, and Incentives for developers		•	•	•	•	
Greenspace Connections/Connected Communities		•	•	•	•	
Climate Change/Severe Weather			•			•

Appendix C

Supplementary Report: Detailed Data Assumptions & Calculations

This is not attached due to the size of the report. It can be made available upon request.