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## Acknowledgments

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- The Federation of Canadian Municipalities (FCM), which administers the Green Municipal Enabling Fund financed by the Government of Canada.
- Enbridge
- Ontario Power Generation
- Veridian

This Local Action Plan (LAP) report was prepared by Greenpath in consultation with the City of Pickering. The project consulting team included Terry Green, project manager and primary author of this report, Gail Lawlor of Energy Matters, senior advisor for the study and primary facilitator of the working group meetings. Project support, communications consulting and guidance was provided by Angela Wheeler and Jack McGinnis of Durham Sustain *Ability* (DSA), a local non profit sustainability organization.

A special thanks to the many individuals and organizations that contributed to the development of this program. In particular, Tom Melymuk, Division Head Corporate Projects & Policy and Ron Taylor, Coordinator, Business Development & Investment for the City of Pickering who have championed this initiative from its very beginnings. Ron chaired the municipal working group and championed the project as the key representative of the City on the Project Team.

This LAP report includes valuable input from five working groups that met a number of times from October, 2005 to March, 2006. The Municipal, Residential, IC&I, Transportation and Community Outreach working groups were chaired by Ron Taylor, George Armstrong of Veridian, Susan Clinesmith of Enbridge, Craig Oldman of Siemens Canada, and Jack McGinnis of Durham Sustain *Ability*, respectively. We wish to thank each chair and the representatives that offered their time and support to these working groups including city staff, local businesses (industrial, commercial, retail), local institutions (school, church, hospital), Durham Region, local and regional transit authorities, and community and neighbourhood associations.

A special recognition is extended to the mayor and councillors who have given their full support to this program and to the overall Sustainable Pickering vision, which is paramount to the success of this action plan.

## Introduction

### ***Background***

The City of Pickering recognizes the importance of environmental stewardship within its municipal operations and within the entire community. In recent years, the City has been a committed partner within the Greater Toronto Area (GTA) Clean Air Council and has demonstrated its commitment to the environment through various ongoing programs such as park clean-ups, the Frenchman's Bay environmental program and establishment of an anti-idling bylaw.

In 2005, the City's commitment to environmental stewardship and sustainable development was elevated to a new level with the commencement of a number of key initiatives:

- i) Creation of a new environmental co-coordinator position to support and develop environmental awareness programs within municipal operations (through the City's Corporate Green Committee) and in the community at large.
- ii) Commencement of the Sustainable Neighbourhood Plan (SNP) project to provide a design framework for responsible development and integration of new neighbourhoods.
- iii) Development of the Partners for Climate Protection (PCP) program to provide a greenhouse gas emissions reduction plan primarily focusing on responsible energy consumption for municipal operations and the community, which this report addresses.

The SNP and PCP programs are "sister projects" that are supported by the federal Green Municipal Enabling Fund administered by FCM, both commencing in May, 2005.

- iv) Establishment of a Benchmarking Sustainability initiative to clarify what sustainability means for Pickering, how to become a sustainable community and how to measure the progress on an ongoing basis.

In order to support, co-ordinate and provide guidance for these initiatives, an "umbrella program" was developed called Sustainable Pickering. For further information on this program and these various initiatives, refer to City's website

[www.sustainablepickering.com](http://www.sustainablepickering.com).

## ***Purpose of the LAP***

The City of Pickering is committed to developing a sustainable community as outlined in the Benchmarking Sustainability program. A number of objectives have been identified to define what a Sustainable Pickering would look like:

- i) Healthy Environment
- ii) Healthy Society
- iii) Healthy Economy
- iv) Responsible Development
- v) Responsible Consumption

The Local Action Plan (LAP) was initiated to identify greenhouse gas (GHG) emissions reduction opportunities to enable the community to move towards its sustainable objectives. The objective of Responsible Consumption is particularly relevant for the LAP as well as viewing all opportunities through the three lenses of healthy economic, social and environmental benefits.

The focus on GHG emission reduction targets and actions catalyzes progress in achieving a number of sustainable goals:

- i) An overarching goal that engages all sectors of the community fostering a healthier community social fabric.
- ii) Direct link with energy management and its long term economic benefits.
- iii) Direct link with reduction of air pollution and smog caused by fossil fuel combustion and its related social and health co-benefits.
- iv) Indirect link with many other sustainable environmental, economic and social benefits such as an increased local focus – employment, food, renewable energy, etc.
- v) Provides a global context through the Kyoto protocol while focusing on local tangible benefits.

The LAP emphasizes the link with energy management and responsible energy consumption as viewed through the three lenses of sustainability. It also recognizes the importance of waste management, which affects GHG emissions through landfill methane production, and the importance of water management which directly impacts energy consumption and GHG emissions. Most of the initiatives are focused on the existing community and municipal operations; however there are several initiatives that target the Responsible Development objective with synergistic overlap with the Sustainable Neighbourhood Plan project.

## ***Climate Change – Local Actions in a Global Context***

Greenhouse gas (Carbon dioxide CO<sub>2</sub>, Methane CH<sub>4</sub>, Nitrous Oxide N<sub>2</sub>O) concentrations in the atmosphere has been increasing significantly over the last 150 years and at even higher rate in the last 35 years contributing to tangible global climate change effects. This is mainly caused by human activity: primarily burning fossil fuels as well as creating landfill waste methane and removing carbon sinks such as forests.

Climate change is a global issue requiring local action, mainly in the area of responsible energy consumption. In Canada, FCM and the International Council for Local Environmental Initiatives (ICLEI) have developed a framework for reducing greenhouse gas (GHG) emissions for municipalities called Partners for Climate Protection (PCP).

The PCP program consists of five milestones:

1. Conduct a baseline GHG emission inventory analysis for municipal operations and the community.
2. Establish GHG reduction targets for municipal operations and the community.
3. Develop a local action plan outlining actions that reduce GHG emissions and energy consumption for municipal operations and the community at large.
4. Establish a program to implement adopted actions that will reduce GHG emissions and energy consumption.
5. Establish a monitoring and reporting system to verify GHG reduction achievements. Revise the action plan periodically to reflect new ideas and strategies.

In May 2005, the City of Pickering launched the program to complete Milestones 1, 2 & 3. Greenpath was contracted to assist the City in developing a program to complete these milestones and develop this LAP. When this report is reviewed by Council in June 2006, these three milestones will have been deemed to be completed.

## ***General Approach and Guiding Principles***

In order to ensure consistency and guidance for this project, a general approach with a number of guiding principles were established by the Project Team while aligning with the overall Sustainable Pickering program:

- **Engage community partners and the public** - establish working groups representing all sectors and conduct a public forum for general public input
- **Foster diverse stakeholder collaboration through common over-arching goal** – “doing our part to reduce GHG emissions for future generations”

- **Emphasize local benefits** – provide tangible justification for action through the ‘three lenses of sustainability’ – economic, environmental and social benefits
- **Foster community ownership with local champions** – e.g. Whitevale and District Residents Association – door to door compact fluorescent light bulb distribution
- **Engage “bottom-up” community-based social marketing** – change behaviour through community-based programs – e.g. Durham Conservation Centre’s (now Durham Sustain *Ability*) original Blue Box recycling program, Durham Region’s water efficiency program
- **Support “top-down” leadership** – e.g. City of Pickering corporate leadership, key programs by project partners – Enbridge, OPG, Veridian
- **Establish benchmarking, monitoring and feedback systems** – Sustainable Pickering benchmarking elements includes GHG emission data, ongoing monitoring and community feedback through multiple avenues and channels
- **Lever existing programs** – create efficiencies by integrating programs and combining top-down and bottom-up approaches
- **Focus on action** - commenced initiatives in parallel with developing action plan e.g. Veridian Lunch n’ Learns for IC&I sector; Municipal staff Lunch n’Learn sessions; Whitevale relamping program; Dunbarton-Fairport United Church energy efficiency retrofit with Enbridge assistance. Rosebank Road Public School and Dunbarton High School’s commitment to implement the EcoSchools program
- **Challenge stakeholders to establish pilot programs** - e.g. fuel additive program for improved efficiency and reduced pollution

Based on these guiding principles, the basic approach was to engage as many diverse perspectives as possible including “blue sky” ideas, while being pragmatic and action oriented at the same time. Rather than an "either/or" mentality concerning ideas versus action, the project principles allows for honoring the multitude of motivations and perspectives of the stakeholders.

## **Local Benefits**

One of the key principles is to emphasize local benefits. Without local benefits there is little motivation to act. However without an overarching goal such as greenhouse gas reduction targets there is little room to work together and align the diverse motivations and agendas of the residents, businesses, institutions, community organizations and municipal government. The topic of global climate change is quite abstract for most people, yet the overarching goal of greenhouse gas emission targets are tangible enough

to catalyze and align the many diverse perspectives of the various sectors of the community. However, this is not enough to enable and motivate stakeholders to act: the overarching goal must be translated to local benefits. “What does this mean to me, my family, my job or business, my community?”

In keeping with the three lenses of the Sustainable Pickering program, the following generic local benefits of this program are grouped into these three categories and yet they can be and should be seen through all three perspectives:

### **Economic Benefits**

- Energy and operating cost savings in all sectors
- Physical asset renewal in municipal operations and private sector
- Improved municipal service delivery
- Reduced healthcare costs
- Increased productivity and employee morale
- Greater support for local businesses – significant multiplier effects
- New local business opportunities in sustainable development sector
- Local job creation in new “green” businesses and services

### **Environmental Benefits**

- Improved air quality
- More green space and trees in the community
- Improved health of natural ecosystems
- Reduced “urban heat island effect”
- Better indoor living and working environments (e.g. improved lighting, better indoor air quality, reduced noise, increased comfort)
- Doing our part in creating a globally sustainable future for our children and the planetary biosphere

### **Social Benefits**

- Improved health of residents
- Reduced traffic congestion
- Increased community investment and services

- Opportunity for the municipal government to show leadership and influence other community stakeholders to take action
- Greater sense of community; enhanced quality of life

These are a few of the generic local benefits, and there are many more specific benefits that can accrue from GHG emission reductions and responsible energy management. A key project principle is that these local benefits as seen through the three lenses of sustainability need to be emphasized to fully engage collective action.

## ***Developing the Plan of Action***

In following the guiding principle of engaging community partners, a number of key steps were taken:

### **A. Founding Project Partners**

Early in the process, Enbridge, OPG and Veridian stepped-up to be founding project partners providing valuable support for this project and completing the funding contributed by the City of Pickering and the federal GMEF administered by FCM. Durham Sustain *Ability*, a non-profit local sustainability organization, also provided valuable in-kind support throughout the project.

### **B. Working Groups**

To engage diverse sector perspectives and knowledge, five working groups were developed during a public project kick-off workshop: Community Outreach, Industrial, Commercial and Institutional (IC&I), Municipal, Residential, and Transportation. Once chairs were established, each group met separately at least twice to brainstorm ideas within their relevant area and then to prioritize the initiatives using common criteria. In March 2006, all the groups met together in a workshop to brainstorm implementation strategies for each prioritized initiative including potential funding, responsibilities (coordinator and support), and timing. In all, over 50 community stakeholders representing a variety of sectors contributed their time to the program: from various City departments, small and medium size businesses, large corporations, energy companies, retailers, institutions such as school, hospital and church, Durham Region, neighbourhood associations, environmental organizations, transit authorities and organizations, conservation authority, residents and councillors.

### **C. Public Forum**

In May 2006, A public forum was held in the form of a celebration at the Pickering Town Centre: Sustainable Pickering Day. This was an integrated effort that provided information on all Sustainable Pickering programs and initiatives with the support of



many exhibitors of sustainable technology, products and services as well as business sustainability presentations for the local business community. Public feedback was obtained through a “Passport to Sustainability” survey during the day.

# GHG Emissions Inventory, Trends and Forecasts

## ***Background***

For PCP Milestone 1, a GHG emissions inventory and forecast was established for both municipal operations and the community. This work was done in parallel with engagement of community partners and stakeholders in developing a local action plan as part of completing PCP Milestone 3.

PCP Milestone 2 requires the establishment of GHG emissions targets. The Pickering Council approved a resolution with provisional targets subject to the work in developing Milestones 1 and 3. This report recommends new emission targets based on this work.

The Partners for Climate Protection (PCP) software was used to gather energy inventory data and convert this information to GHG emissions inventory. Greenpath utilized its forecasting model to develop several scenarios to arrive at a recommended emissions target based on Pickering's growth plans and its commitment to responsible consumption and development.

A baseline year of 1995 was selected due to a number of considerations. The Kyoto protocol uses a baseline year of 1990, so in a perfect world 1990 should be used to mirror the protocol; however 1995 was the earliest year that community and municipal information was available. For trend analysis, the latest energy and waste information was gathered for the year 2004.

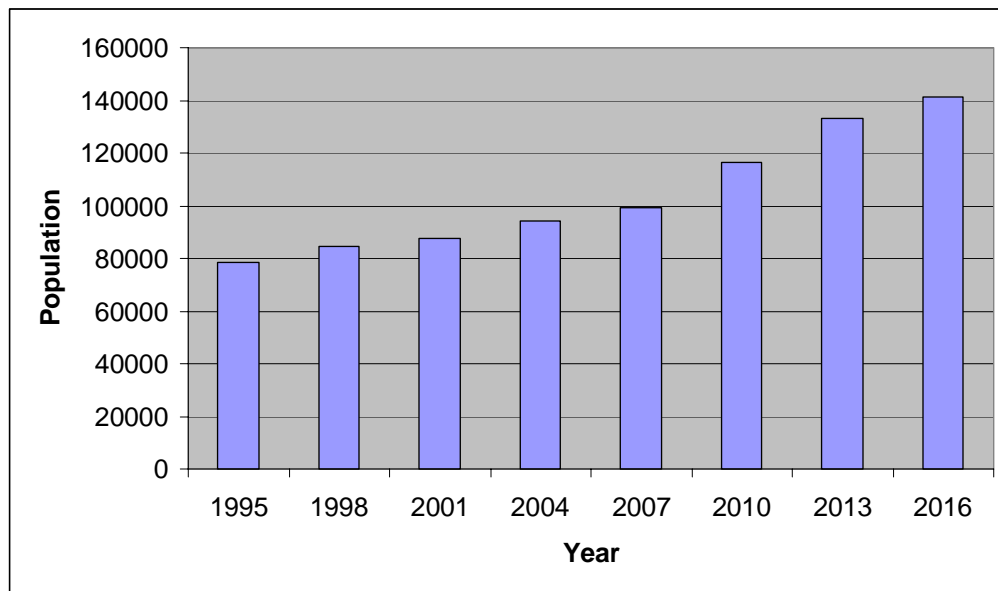
A forecast and target year of 2016 provides a 10 year window of opportunity from commencing the full program in 2007 based on PCP recommendations. Also, 10 years allows for a good portion of the substantial growth of the Seaton development with its significant effect on community emissions and energy management planning.

## ***Community Growth Plan***

The City of Pickering is in a unique situation in that much of its central and northern lands were expropriated by the provincial and federal governments in the early 1970's. The federal lands were designated for a new airport which is now being proposed in a downsized form as a regional airport. The provincial lands include a land swap with developers which will be part of the new urban development of Seaton, a development that may eventually double Pickering's current population of 94,200. As no development has occurred on these lands for several decades, Pickering's growth has been slower than most municipalities in Durham Region, however this now presents a tremendous opportunity for the City: as the Seaton lands open up to development in the next few years, there is an opportunity to develop neighbourhoods in accordance with new cutting

edge sustainable urban designs as are being developed in the Sustainable Neighbourhood Plan (SNP) project.

Pickering’s population is projected to grow by 50% from 2004 to 2016 as part of the Seaton expansion (see Figure 1). This represents 80% growth from the baseline year of 1995.



**Figure 1: Pickering Population Trend and Forecast**

### ***Emissions Performance Indicators***

The GHG emissions data is much more meaningful when translated into performance indicators. A key indicator used in this study is GHG emissions per capita, mostly per population or per household, which is used as the key basis for forecasting. Some relevant performance indicators developed for this study include:

<b><u>Municipal Operations:</u></b>	<b><u>1995</u></b>	<b><u>2004</u></b>
Municipal building floor space ('000 square metres)	52.6	53.2
Municipal fleet vehicles (excluding APTA buses)	112*	129
Municipal Employees (including part-time)	697*	685
Energy Cost (\$'000/yr)	\$1,435	\$2,233

\* Not available in 1995, used 1999 data

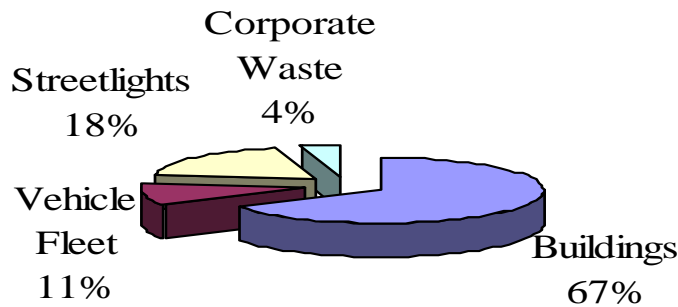
<u>Community:</u>	<u>1995</u>	<u>2004</u>
Population	78,300	94,200
Households	23,872	29,346
IC&I building floor space ('000 square metres)		1,298
IC&I Employees		31,000

### ***Emissions Inventory Baseline***

Emissions inventories were established in 1995 for both municipal operations and the entire community through gathering energy and waste data.

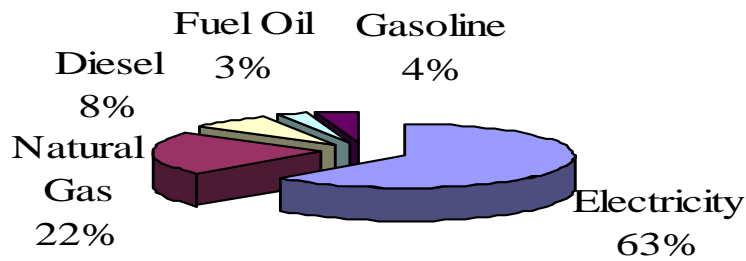
### **Municipal Operations – Inventory Baseline**

In 1995, municipal operations produced 7,874 tonnes of GHG emissions from energy usage that cost \$1.44 million. On a per capita basis, this equates to 0.10 tonnes per resident. Refer to Figure 2 for a breakdown of these emissions by sector. Municipal buildings use by far the most energy. Water and sewage operations are not included here as these operations are owned and operated by Durham Region; however they are included in community emissions.



**Figure 2: Breakdown of Municipal Operations GHG Emissions by Sector (1995)**

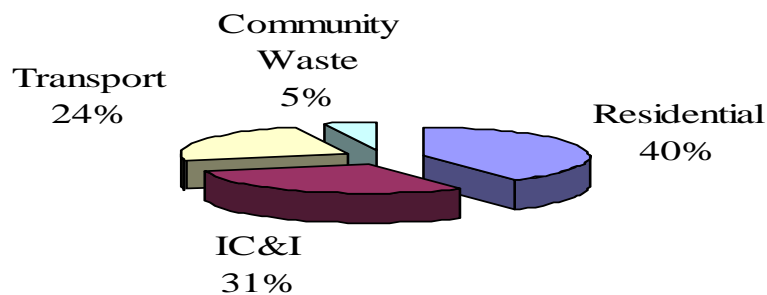
Refer to Figure 3 for a breakdown of emissions by energy source. Electricity is by far the largest source of energy followed by natural gas.



**Figure 3: Breakdown of Municipal Operations GHG Emissions by Source (1995)**

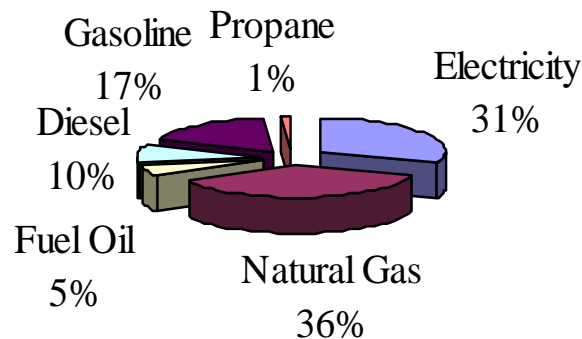
### Community – Inventory Baseline

In 1995, the community generated 633,428 tonnes of GHG emissions from energy consumption and waste disposal. On a per capita basis, this equates to 8.1 tonnes per person. Refer to Figure 4 for a breakdown of these emissions by sector. The residential building sector is the largest consumer of energy followed by the industrial, commercial and institutional sector and vehicle transportation. The community produced 77,797 tonnes of waste of which almost 17.6% was recycled. The remainder that went to landfill produced 30,872 tonnes of GHG emissions.



**Figure 4: Breakdown of Community GHG Emissions By Sector (1995)**

Refer to Figure 5 for a breakdown of emissions by source. Natural gas represents the largest source followed by electricity.



**Figure 5: Breakdown of Community GHG Emissions By Source (1995)**

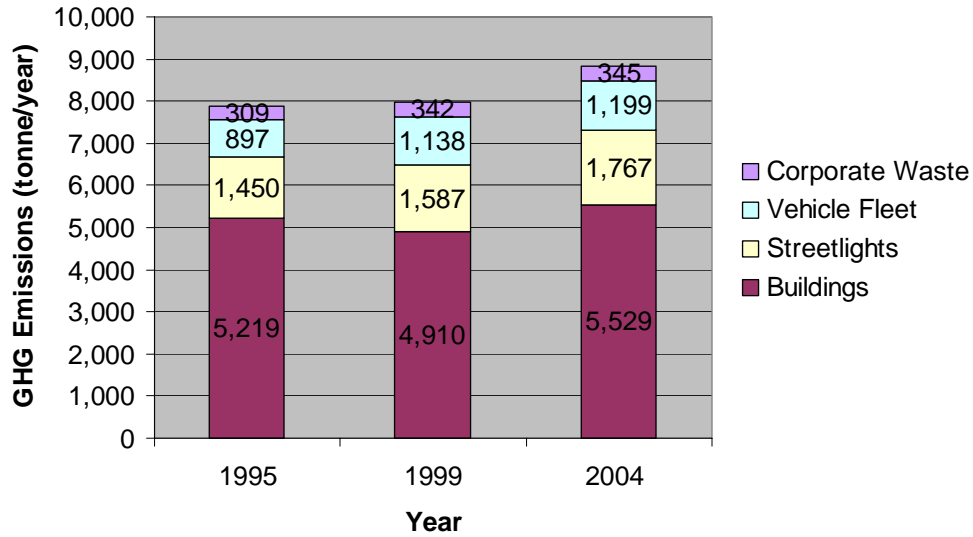
### ***GHG and Energy Management Trends***

Energy data and indicators were collected for both the baseline year of 1995 and in 2004 for trend analysis. To ensure a meaningful comparison of GHG emissions in each year, the same electricity GHG coefficient was used. In Ontario, this coefficient can change dramatically year to year based on the annual mix of primary sources of electricity generation, from utilization of nuclear and hydro power with no GHG emissions to use of coal with the highest GHG intensity. According to Statistics Canada, the Ontario electricity eCO<sub>2</sub> (equivalent CO<sub>2</sub>) emissions coefficient was 0.123 kg e CO<sub>2</sub>/KWh in 1995 and this has more than doubled to 0.272 kg eCO<sub>2</sub>/KWh in 2003 (latest year of publication) as a result of changes in mix of electricity generation sources. This has a major skewed effect on the amount of GHG emissions generated from electricity consumption and trend comparisons are not useful in using these different coefficients unless energy consumption numbers are used instead of GHG emissions.

For consistency of the performance indicators, the most recent coefficient data provided by the PCP software will be used for all electricity eCO<sub>2</sub> calculations so that baseline, trend and forecast are based on the same greenhouse gas intensity for electricity generation. (For Kyoto compliance purposes, the GHG emissions are calculated using the actual coefficient data of that year which has been reserved in the database).

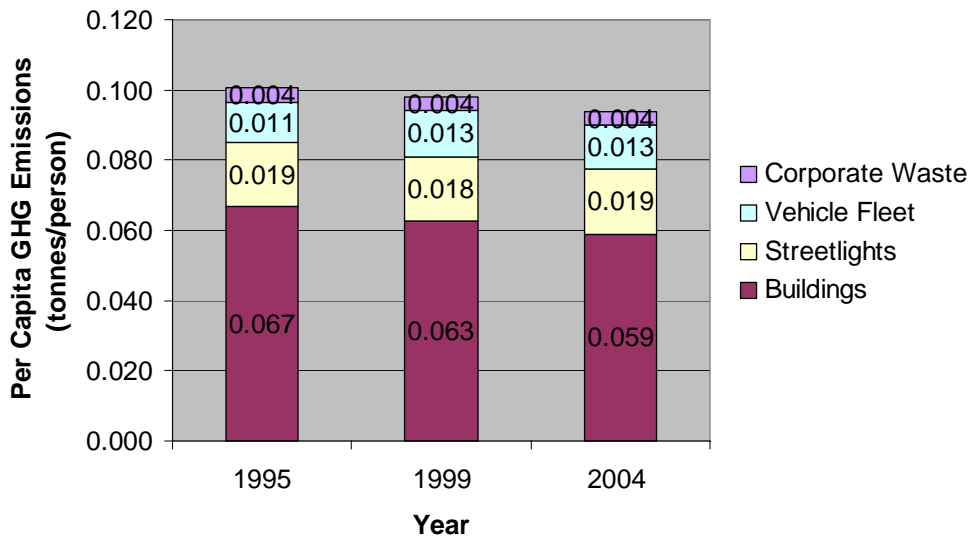
### **Municipal Operations – GHG and Energy Management Trend**

Refer to Figure 6 for a comparison of municipal operations GHG emissions in 1995, 1999 and 2004. Most notable is the vehicle fleet fuel consumption and emissions have risen by 34% and streetlight energy consumption and emissions have risen by 22%.



**Figure 6: Municipal Operations GHG Emissions Trend By Sector**

Some of this increase in emissions is due to an increase in level of services for a population that has risen by 20% from 1995 to 2004 such as the increase in street lighting. Refer to Figure 7 for the per capita trend in corporate GHG emissions and energy management.



**Figure 7: Municipal Operations Per Capita GHG Emissions Trend By Sector**

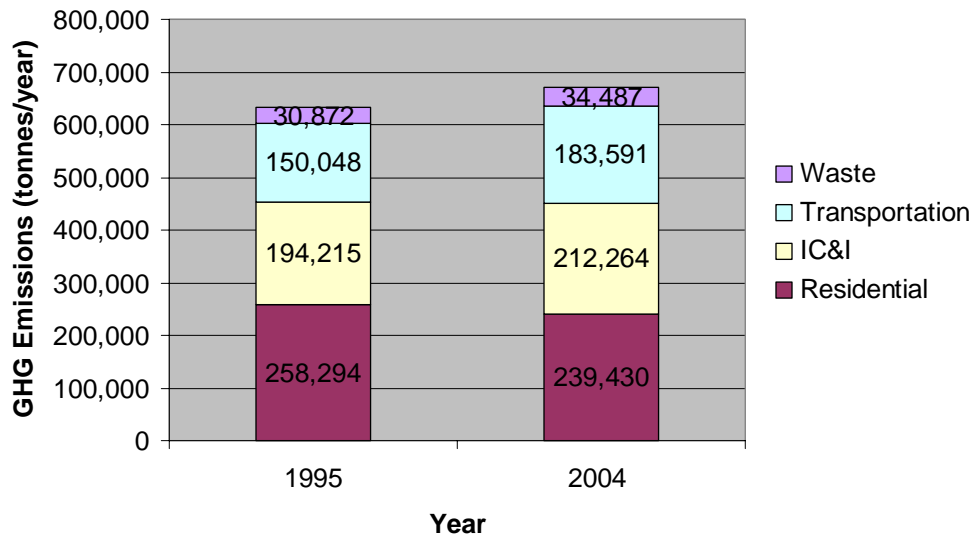
Per capita emissions from buildings have dropped by 15% as there has been no significant new buildings constructed except replacement of a few facilities, which is reflected by only a 1% increase in floor space. The vehicle fleet per capita emissions has

increased by 11% due to increases in fleet size which has outpaced the population growth.

One of the most significant trends is that total energy costs have risen dramatically from \$1.4 million in 1995 to \$2.2 million in 2004: a 50% increase in 10 years. One quarter of this increase is due to a net increase in energy consumption.

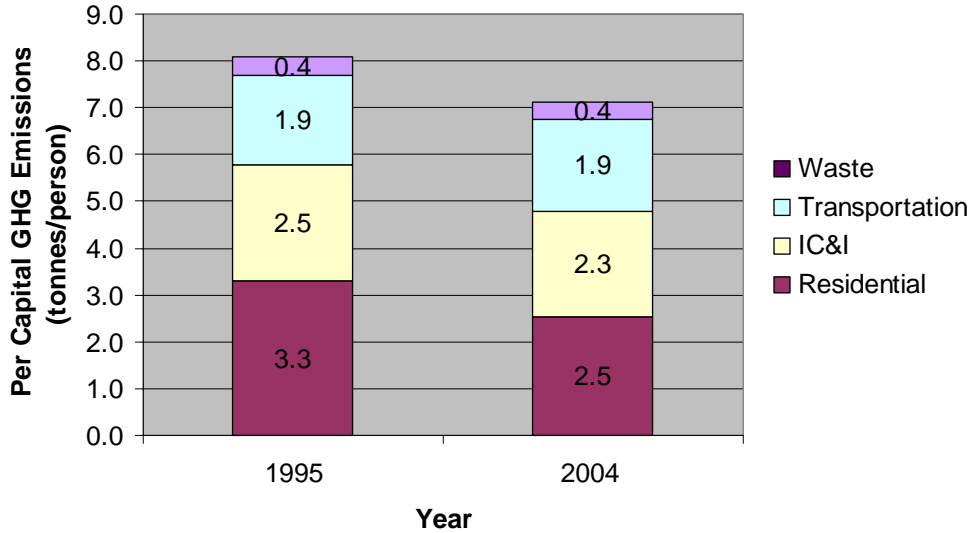
### Community – GHG and Energy Management Trend

Refer to Figure 8 for community GHG emissions trend from 1995 to 2004. Even though the population increased by 20%, residential GHG emissions and energy consumption declined by over 7% mainly due to a reduction in natural gas and fuel oil consumption which suggests improvements in space heating for both existing homes and new home construction. Emissions from transportation rose significantly by over 22% as a result of the trend of increased “vehicle kilometers traveled” (VKT).



**Figure 8: Community GHG Emissions Trend By Sector**

Transportation emissions slightly increased more than the population growth by about 2%; however rounding shows it to be constant in Figure 9 below. Refer to Figure 9 for a per capita trend analysis by sector.



The residential sector saved 23% in energy consumption on a per capita basis on the strength of primarily space heating improvements (programmable thermostats have made a significant impact) and some electricity gains through replacement of appliances, etc.

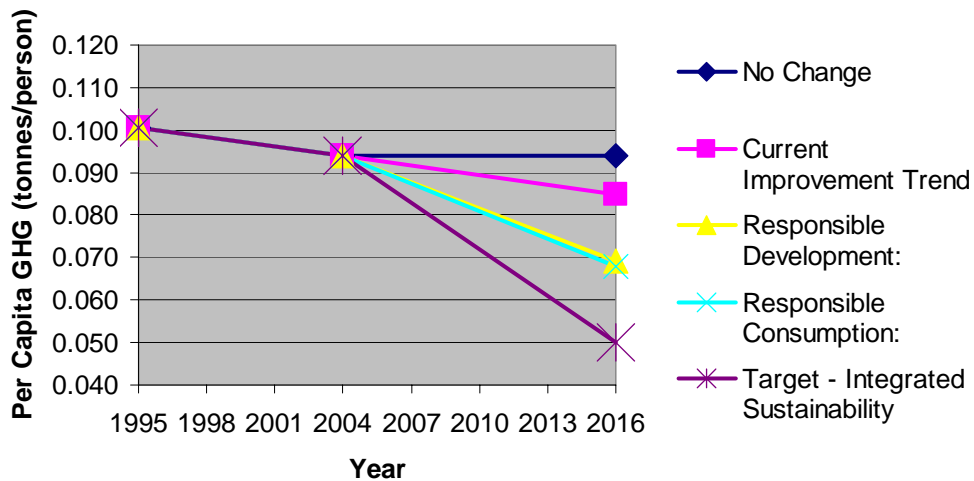
### ***Emissions Forecasts***

A number of scenarios were run based on the per capita trend analysis for actual GHG emissions from 1995 to 2004 and scenario forecasts to 2016. The following is a summary of the scenarios:

<b>No Change</b>	Same per capita emissions as 2004 – 0.094 tonnes/person
<b>Current Improvement Trend</b>	Same % improvement from 1995 and 2004 – 0.085 tonnes/person
<b>Responsible Development</b>	Current Improvement Trend plus focus on reductions in new infrastructure – 0.069 tonnes/person
<b>Responsible Consumption</b>	Current Improvement Trend plus focus on reductions within existing infrastructure – 0.068 tonnes/person
<b>Integrated Sustainability</b>	Focus on both Responsible Development and Responsible Consumption – 0.050 tonnes/person

## Municipal Operations – Emissions Forecasts

Refer to Figure 10 for representation of the various forecast scenarios to 2016.

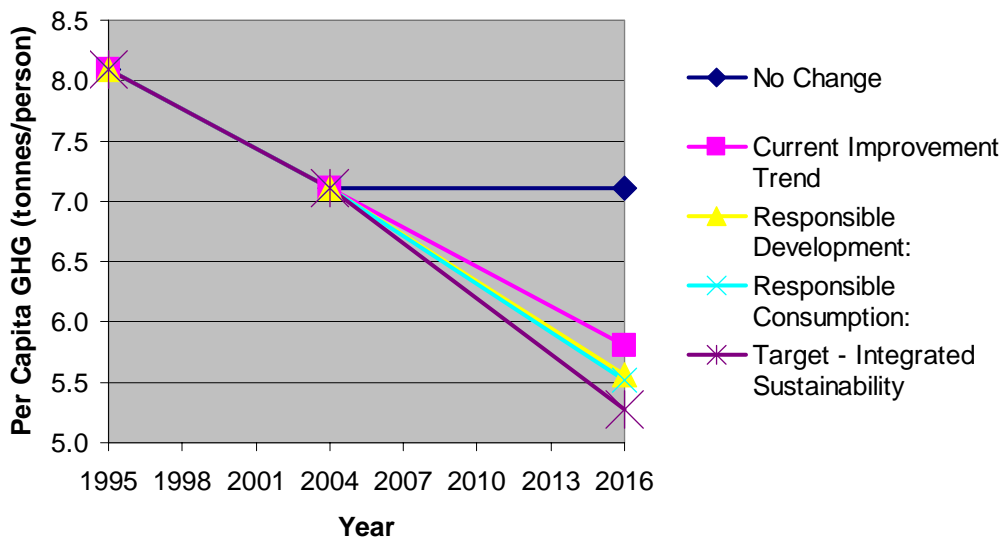


**Figure 10: Municipal Operations Per Capita Forecast Scenarios and Target**

The per capita target of 0.050 tonnes/person represents a 50% reduction from the 1995 baseline of 0.101 tonnes/person. On absolute terms, the 2016 target is 7,083 tonnes, which represents a 10% reduction of total GHG emissions despite an increase in population of 80% from 1995.

## Community – Emissions Forecasts

Refer to Figure 11 for representations of these forecasts and the target.



**Figure 11: Community Per Capita Forecast Scenarios and Target**

The per capita target of 5.3 tonnes/person represents a 35% reduction from the 1995 baseline of 8.1 tonnes/person. On absolute terms, the 2016 target is 744,634 tonnes, which represents an 18% increase in total GHG emissions despite an increase in population of 80% from 1995.

In keeping with the principle that the City must be a leader by example, municipal operations has a more stringent per capita reduction target of 50% versus the community per capita reduction target of 35%.

### **Emission Targets**

Refer to Table 1 for a summary of recommended GHG emission targets for the community and municipal operations. This is based on the targets associated with the “Integrated Sustainability” scenario outlined above.

The targets are stated on a per capita basis due to Pickering’s growth potential in the next 10 years and more. The table provides both per capita targets and corresponding total targets based on the growth in population as forecasted in the City’s official plan.

**Table 1: Per Capita and Total Emissions in 1995 (Baseline) and 2016 (Target Year) and Total Gap from Target (Tonnes)**

	1995		2016				
	Total GHG	Per Capita GHG	“No Change” Total	Per Capita Target	Per Capita Reduction	Target Total	Total Gap from Target
<b>Municipal Operations</b>	<b>7,874</b>	<b>0.10</b>	<b>13,239</b>	<b>0.05</b>	<b>50%</b>	<b>7,083</b>	<b>6,157</b>
<b>Community Wide</b>	<b>633,428</b>	<b>8.1</b>	<b>1,003,229</b>	<b>5.3</b>	<b>35%</b>	<b>744,634</b>	<b>258,595</b>

Actual progress to-date (2004) shows that the municipal operations per capita emissions have been reduced by 7% to 0.09 tonnes/person. Community-wide emissions have been reduced by 12% to 7.1 tonnes/person.

## Action Plan Initiatives and Programs

### *Working Group Framework*

The process of engaging working groups was crucial for this program. It provided the means by which the program could accomplish several objectives:

- i. Engage community partners and foster early stakeholder buy-in and involvement. This is crucial for the implementation and monitoring stages of the program (PCP milestones 4 & 5).
- ii. Develop a broad spectrum of ideas from multiple sectors and perspectives.
- iii. Prioritize ideas based on a broad level of experience and expertise.
- iv. Integrate and cross-fertilize ideas and stakeholder relationships.
- v. Focus on actions and “low-hanging fruit” through pragmatic implementation strategies and a “just do it” attitude.

The working group categories were established at a public project kick-off workshop, which also provided the context for enlisting interest in working group representation. The following working groups and chairs were established over the first two months of the project launch:

Municipal:	Ron Taylor – Coordinator, Business Development & Investment, City of Pickering and City representative on Project Team
IC&I:	Susan Clinesmith – Manager, Business Markets Development, Enbridge, a founding project partner
Residential:	George Armstrong – Manager, Regulatory Affairs and Key Projects, Veridian, a founding project partner
Transportation:	Craig Oldman – Account Manager, Siemens Canada, a project sponsor
Community Outreach:	Jack McGinnis - Chair, Durham Sustain Ability, a founding project partner

Over 50 community stakeholders volunteered from a large cross section of local organizations and businesses to form these working groups. The first four groups were categorized by sector to ensure that a broad cross-section of community representation was engaged in the process. The Community Outreach group was formed to provide an all encompassing perspective on community engagement and to address areas that might not fall within the other four sector categories (e.g. agriculture).

### **Four Sector Working Groups**

The four sector working groups met twice each and were asked to meet two objectives:

1. Brainstorm ideas to reduce GHG emissions *and* to provide local benefits.
2. Categorize and merge ideas into project initiatives and prioritize them.

The process of prioritizing initiatives required a common set of criteria that was simple enough to use without impeding the process and yet had enough complexity to make the prioritization process meaningful. The project team developed the following key criteria which was used to rate each initiative in order of favourability (1, 2, or 3):

Cost:	Sub-categories: program and end-user
Effort:	Sub-categories: program implementation and end-user implementation
Impact:	Sub-categories: GHG reduction, economic and other (including program awareness, social, and other environmental)
Timing:	Sub-categories: short, medium and long term

Over 40 initiatives were prioritized by the four sector working groups and these in turn were sorted as a whole and in some cases merged together and/or renamed to establish a “short list” of 25 prioritized initiatives.

The summary of the working group meetings including the matrices used for prioritizing initiatives are posted on the City’s sustainability website [www.sustainablepickering.com](http://www.sustainablepickering.com).

## Community Outreach Working Group

Community outreach is not a community sector but a critical *function* within this program. Therefore, this group had a somewhat different purpose as it was focused more on the “how” than the “what”. The four sector working groups were formed to establish *what* needed to be done to reduce GHG emissions and provide local benefits. The Community Outreach group was formed to address *how* these initiatives could reach the community in the most effective ways such that success rates were *maximized*.

The Pickering “community” includes residents, businesses, institutions and community organizations.

The Community Outreach group met on five occasions to address the following objectives:

- Identify effective ways and channels to reach the community that fosters action
- Brainstorm marketing and promotional ideas
- Develop criteria for prioritizing community outreach efforts
- Prioritize sector working group initiatives using this criteria

- Integrate prioritized initiatives into larger community outreach programs

The following criteria were established for prioritizing initiatives requiring community outreach support:

- Timing – focus on short term only within next year
- Program Cost
- Focus on Success (foundational)
- Community awareness
- Measurable action
- Representative (initiatives from different sectors or cross-sector)

Once the initiatives were sorted based on the first four criteria (the last 2 were checks only), a number of prioritized initiatives were integrated together into larger community outreach programs. These programs are based on “bottom-up” community-based social marketing to effect behaviour change and “top-down” leadership by example and incentive programs (eg. financial, recognition, etc). Five major programs were established:

1. Focus on conservation in the home – starting with green bin distribution in July, 2006 – lever as a channel for energy conservation action
2. Focus on conservation in the workplace – starting with Lunch n’ Learns
3. Focus on schools – lever provincial EcoSchools program and local programs
4. Focus on residential transportation – starting with anti-idling program
5. Focus on land use – starting with coordination of tree planting programs and addressing new development (eg. SNP project)

These larger scale community outreach programs each include a number of prioritized initiatives or “subprograms” that were addressed by the four sector working groups. These five programs were given names by the project team that align with the Sustainable Pickering theme and are straight forward enough such that they are understandable by anyone in the community:

1. Sustainable Home
2. Sustainable Workplace
3. Sustainable School
4. Sustainable Transportation
5. Sustainable Land

In addition, the municipal operations initiatives that are not specifically addressed by the Community Outreach programs have been integrated together and called “Sustainable Municipality”.



# **Municipal Operations Action Plan**

## ***Municipal Operations Action Plan***

The following municipal operations action plan provides proposed initiatives that the City can implement to reduce GHG emissions as well as create many local benefits. These actions were prioritized by the municipal working group, however each program initiative will require further study and quantification prior to being presented to council for approval.

This municipal action plan named “Sustainable Municipality” provides sustainability leadership for the community by reducing municipal energy costs and GHG emissions and by delivering social, health and environmental benefits for City employees and the community it serves.

<b>1. Sustainable Municipality</b>			
<b>Sub-Program</b>	<b>1a. Municipal Building Audits and Retrofits</b>		
<b>Overview</b>	<p>The City has an ongoing Energy Management Program which identifies retrofit opportunities through building audits. For example the following retrofit will be implemented at the Civic Complex which houses City Hall and the Central Library:</p> <ul style="list-style-type: none"> <li>i. Lighting Retrofit – change to efficient T8 fluorescent lamps and LED EXIT signs</li> <li>ii. Lighting Controls – Automatic occupancy sensors throughout the building and photocell sensors for automatic control of exterior lighting and interior light level in specific locations.</li> </ul>		
<b>Program Cost/Effort</b>	<b>Program Development</b>		<b>Ongoing</b>
	<p>Civic Complex audit performed by Siemens Canada. Capital cost estimated at \$240,000.</p> <p>Next energy audit required for Recreation Complex which comprises more than 50% of all municipal building floor space.</p>		<p>Annual energy savings of \$68,000 and electricity reduction of 58%.</p>
<b>Program Impact</b>	<b>Economic and Other Benefits</b>		<b>GHG Reduction Targets</b>
	<p>A 3.5 year payback from energy savings plus reduction in maintenance costs. Also results in improved illumination levels and less eyestrain, improved ability to control workspace and task lighting, and improved colour rendering. These social and environmental benefits reduce stress and improve productivity.</p>		<p>Civic Complex: 430 tonnes per year starting in 2007.</p> <p>Other existing buildings: 1130 tonnes per year by 2008.</p>
<b>Implementation</b>	<b>Timeline</b>	<b>Potential Funding</b>	<b>Responsibility</b>
	<p>Complete Civic Complex retrofits by end of 2006.</p>	<p>Veridian PowerWISE incentives for relamping.</p>	<p>City of Pickering's Operations &amp; Emergency Services Department</p>

1. Sustainable Municipality		
Sub-Program	<b>1b. Municipal Employee Education and Awareness</b>	
Overview	Work has already started in this area led by the Coordinator, Environmental Awareness Programs. Lunch n' Learn sessions have been organized on home energy efficiency. Sessions have been facilitated by Durham Sustain <i>Ability</i> . Veridian provided energy efficient light bulbs and night lights.	
Program Cost/Effort	Program Development	Ongoing
	Lever Lunch n' Learn program for businesses. No additional cost to City.	Target specific improvements in the workplace.
Program Impact	Economic and Other Benefits	GHG Reduction Targets
	Education and awareness programs are difficult to quantify, yet they can catalyze change in the workplace and the home.	Included in other programs.
Implementation	Timeline	Potential Funding
	Already launched	City of Pickering, Veridian, Enbridge
		City of Pickering's Coordinator, Environmental Awareness Programs and Corporate Green Committee with support from Durham Sustain <i>Ability</i> and Veridian.

<b>1. Sustainable Municipality</b>		
<b>Sub-Program</b>	<b>1c. Municipal Water and Waste Management</b>	
<b>Overview</b>	Over and above the water conservation and waste management efforts conducted at municipal offices, this initiative includes the installation of recycling receptacles in high traffic areas such as arenas (including change rooms), sports fields and parks. It also includes the use of recycling bins at all city events (and events held on city property) such as Frenchman's Bay Festival, July 1 <sup>st</sup> celebration, Art Fest etc. Water use can be reduced with water efficient landscape practices such as drought tolerant garden plants.	
<b>Program Cost/Effort</b>	<b>Program Development</b>	<b>Ongoing</b>
	Program to be coordinated by Operations for little incremental cost.	Part of City leadership campaign in community. Little incremental cost.
<b>Program Impact</b>	<b>Economic and Other Benefits</b>	<b>GHG Reduction Targets</b>
	To be quantified.	To be quantified.
<b>Implementation</b>	<b>Timeline</b>	<b>Potential Funding</b>
	2007	City of Pickering, Durham Region Works dept.
		<b>Responsibility</b>
		City of Pickering's Operations & Emergency Services Department

<b>1. Sustainable Municipality</b>		
<b>Sub-Program</b>	<b>1d. Municipal Green Procurement Policy</b>	
<b>Overview</b>	Revise existing screening policy and provide higher weighting in purchasing selection criteria for green products and services. Include Energy Star and Ecologo Program criteria.	
<b>Program Cost/Effort</b>	<b>Program Development</b>	<b>Ongoing</b>
	Lever off Durham Region program and established York Region program. No additional cost required to revise procurement screening policy.	Lever FCM/AMO buying group for group discounts.
<b>Program Impact</b>	<b>Economic and Other Benefits</b>	<b>GHG Reduction Targets</b>
	To be quantified based on operating and maintenance costs of existing equipment, etc.	To be quantified.
<b>Implementation</b>	<b>Timeline</b>	<b>Potential Funding</b>
	2007	Discounts from municipal purchasing groups – e.g. FCM, Durham Region
		<b>Responsibility</b>
		City of Pickering’s Supply and Services Division and Corporate Green Committee

<b>1. Sustainable Municipality</b>		
<b>Sub-Program</b>	<b>1e. Municipal Communication and Recognition</b>	
<b>Overview</b>	The OPA Conservation Bureau recognition program can be leveraged here or an additional municipal program created. Purpose is to provide public recognition to local businesses, schools and institutions for their efforts to be sustainable and reduce energy and waste. Communication and feedback can be conducted through multiple channels such as city website, councilor and city newsletters.	
<b>Program Cost/Effort</b>	<b>Program Development</b>	<b>Ongoing</b>
	Proposed new Sustainability Officer position to develop program (refer to the Integrated Sustainability Program (no. 2) in the Community Action Plan). No significant incremental costs.	No significant incremental costs.
<b>Program Impact</b>	<b>Economic and Other Benefits</b>	<b>GHG Reduction Targets</b>
	Provides the IC&I sector will added incentive to become more sustainable based on public recognition and community awareness. Leverages success of other programs.	Included in Sustainable Workplace programs (refer to Community Action Plan)
<b>Implementation</b>	<b>Timeline</b>	<b>Potential Funding</b>
	2007	City of Pickering, with support from the OPA Conservation Bureau.
		<b>Responsibility</b>
		City of Pickering's proposed new Sustainability Officer.

<b>1. Sustainable Municipality</b>		
<b>Sub-Program</b>	<b>1f. Municipal New Building Standard</b>	
<b>Overview</b>	Leadership in Environmental and Energy Design (LEED) standards have become a common framework for other municipalities to encourage integrated building design. It is proposed that the City mandate a minimum of LEED Gold for all new municipal buildings. It is critical that the City lead by example by stretching to a slightly higher level than the LEED Silver rating being required for new IC&I buildings in the community.	
<b>Program Cost/Effort</b>	<b>Program Development</b>	<b>Ongoing</b>
	City to review LEED Gold rating with Canadian Green Building Council who launched LEED Canada certification in 2005. In first year, over 200 applications received many of which are for Gold standard. Capital cost is 2-3% higher but declining.	Significant operating and maintenance savings creates a sound business case.
<b>Program Impact</b>	<b>Economic and Other Benefits</b>	<b>GHG Reduction Targets</b>
	At least 20-30% energy cost savings plus many environmental and social benefits. Creates visible leadership for the City.	2500 tonnes per year by 2016.
<b>Implementation</b>	<b>Timeline</b>	<b>Potential Funding</b>
	For next municipal building.	City, Enbridge, NRCan
		<b>Responsibility</b>
		City of Pickering's Planning & Development and Operations & Emergency Services Departments

1. Sustainable Municipality		
Sub-Program	1g. Municipal Fleet Management	
Overview	<p>A number of initiatives have been identified:</p> <ul style="list-style-type: none"> <li>i. Alternative fuels – review biodiesel and natural gas conversion options. Natural gas requires infrastructure that could be installed by Enbridge. Also City could provide a “green incentive” to city taxi cabs. A taxi fleet conversion usually has a pay back of less than one year with rebates. Fleet vehicles that use gasoline should use a 10% ethanol blend. This will be mandated by provincial and federal governments in the next few years for all gasoline.</li> <li>ii. Efficient fleet – need to initiate study on each fleet vehicle – currently report fuel consumption per vehicle only - require kilometers, trip and cargo log – assists in assessment of possible rationalization of fleet and optimum size of vehicles.</li> <li>iii. Fuel efficiency – Lever first hybrid vehicle purchase – review case for additional hybrids (possibly biodiesel) or smaller fuel efficient vehicles. Also, conduct pilot study on fuel additives (Jomini has committed to this) and fuel tank chip.</li> <li>iv. Driver training – Smart Driver program improves fuel efficiency (averages 5%) and can eliminate unnecessary idling. As fleets are visible in the community, the City can lead by example both negatively and positively.</li> </ul>	
	Program Development	Ongoing
Program Cost/Effort	Pilot programs are useful ways to commence many of these reviews. Each program to be quantified.	Each program to be quantified.
Program Impact	Economic and Other Benefits	GHG Reduction Targets

	<p>The GHG emissions per vehicle have been reduced by 9% over the last 5 years, however the number of fleet vehicles has risen by 15%. As the vehicle fleet has net per capita increase in emissions over the last 5 years, significant action is required in this area which calls for a stretch target of a per capita reduction target of 50% GHG emissions by 2016 equating to reduced operating costs of \$160,000 per year.</p>		<p>Recent improvement: 1 Hybrid vehicle – 1 tonne per year starting in 2006.</p> <p>Fleet target: 990 tonnes per year by 2016.</p>
<b>Implementation</b>	<b>Timeline</b>	<b>Potential Funding</b>	<b>Responsibility</b>
	<p>Initiate in 2006/2007.</p>	<p>NRCan, City of Pickering, Enbridge, PST rebate</p>	<p>City of Pickering – led by Operations &amp; Emergency Services and supported by all City departments. Additional support by Enbridge, NRCan, Jomini International</p>



# Community Action Plan

## **Community Action Plan**

The following community action plan presents GHG reduction initiatives that have been integrated into subprograms for funding purposes and into larger sustainability programs in order to be more effective and cost efficient. Some initiatives and subprograms will need further study and quantification before they can be funded and implemented.

In addition to the Sustainable Municipal program, there are five community programs:

**Sustainable Home**  
**Sustainable Workplace**  
**Sustainable School**  
**Sustainable Transportation**  
**Sustainable Land**

Each of the community programs requires a concerted community outreach focus. However, it was apparent at the integrated working group meeting held in March 2006 that an overall coordinating role was required in order to make the community outreach programs more effective. The project team has called this overall coordinating function “Integrated Sustainability”.

## **Integrated Sustainability**

It was suggested at the integrated working group meeting that was organized to address implementation issues and strategies, that a full-time position be created (preferably administered by the City) that would coordinate these programs. The founding project partners, Enbridge, OPG, and Veridian, as well as Siemens Canada were willing in concept to fund this position on a multi-year contract, subject to agreement on the position’s key objectives in addition to normal corporate approvals.

This provides a multi-tiered approach to effective and successful implementation:

- Initiative (Tier 1): A specifically targeted action that results in a measurable outcome. (eg. home relamping initiative in hamlet of Whitevale – door-to-door CFL distribution)
- Subprogram (Tier 2) Multiple initiatives that can be funded together. (e.g. Responsible Electricity Consumption funded by Conservation Fund and Veridian CDM programs which includes the Whitevale relamping initiative)
- Program (Tier 3) Multiple subprograms that are integrated into one community outreach program to substantially increase effectiveness – reduces cost, increases success rate

(e.g. Sustainable Home program which includes Responsible Electricity Consumption subprogram and other Home subprograms to eliminate duplication of effort)

Integrated Sustainability (Tier 4) Reduces cost of implementing each program by providing an overall cohesiveness to the programs to enhance economies of *scope* (eg combine elements of Sustainable Home, Sustainable Workplace and Sustainable Transportation and Sustainable Land programs while facilitating Lunch n' Learns for employees).

<b>2. Integrated Sustainability Program</b>			
<b>Overall Program</b>	<b>2. Integrated Sustainability Program</b>		
<b>Overview</b>	<p>This overall community-based program targets responsible consumption within the existing community and responsible development for a growing community.</p> <p>In order to make this program cost effective and successful, all programs and subprograms must be integrated and coordinated as a whole even though they're administered separately for funding purposes. A key principle to this integrated, layered approach is to compound the effectiveness of each subprogram through "bottom-up" community based social marketing that emphasizes behavioural change utilizing natural and organized networks of residents and organizations, while simultaneously utilizing a "top-down" approach of financial incentives, promotions and forms of recognition for each subprogram.</p>		
<b>Program Cost/Effort</b>	<b>Program Development</b>	<b>Ongoing</b>	
	Requires a new full-time position at the City (or alternatively at a local sustainability organization) – for purposes of reference in this report this position will be called a "sustainability officer".	Total cost of position estimated at \$80,000 per year on a three year contract for ease of funding.	
<b>Program Impact</b>	<b>Economic and Other Benefits</b>	<b>GHG Reduction Targets</b>	
	An integrated program will leverage and create efficiencies between the subprograms. Cost savings and increased rates of success will be apparent but difficult to quantify.	Difference between integrated sustainability scenario and following current improvement trend. 70,500 tonnes per year by 2016.	
<b>Implementation</b>	<b>Timeline</b>	<b>Potential Funding</b>	<b>Responsibility</b>
	Fill position by end of 2006.	Veridian, Enbridge, Siemens, OPG and provincial government	Coordinated by proposed Sustainability Officer and supported by all City departments. Also supported by Durham Sustain Ability and funding partners.

3. Sustainable Home		
Sub-Program	3a. Responsible Electricity Consumption	
Overview	<p>Electricity consumption in the average home in Pickering produces about 37% of residential GHG emissions, the majority of which is used for appliances, lighting, air conditioning and water heating. Some rural and older homes also use electricity for space heating.</p> <p>This initiative leverages two existing programs:</p> <ul style="list-style-type: none"> <li>i. Ontario Conservation Bureau and PowerWISE programs – discounts for compact fluorescent lights, programmable thermostats, ceiling fans, electrical timers, air conditioners, water heater and air conditioner tune-ups, peak saver program, water heater tune-up, etc</li> <li>ii. Energy Star appliances – includes above discounts on air conditioners and ceiling fans plus working with specific retailers to provide incentives.</li> </ul> <p>This is an integral part of a coordinated community based social marketing (CBSM) approach that will focus on changing behaviour at a grass roots level in existing homes.</p>	
Program Cost/Effort	Program Development	Ongoing
	Requires a City “sustainability officer” to coordinate. Develop specific electricity conservation program and apply to the Conservation Fund. Co-ordinate with Veridian and local retailers.	Estimated cost of this community based subprogram is \$50,000 per year.
Program Impact	Economic and Other Benefits	GHG Reduction Targets
	Achieved average home electricity usage reduction of 15% between 1995 and 2004. An additional 25% savings is achievable in existing homes by 2016. This equates to a savings of \$230 per household at 2005 electricity pricing.	20,500 tonnes per year in existing homes by 2016.
Implementation	Timeline	Potential Funding
	Launch by end of 2006.	Ontario Conservation Fund, Veridian, Siemens Canada, selected retailers such as Home Depot, Sears, etc.
		Responsibility
		Durham Sustain <i>Ability</i> (DSA) supported by City, Veridian, Siemens and retailers.

3. Sustainable Home		
Sub-Program	3b. Responsible Natural Gas Consumption	
Overview	<p>Natural gas consumption in the average home in Pickering produces about 69% of residential GHG emissions, the vast majority of which is used for space heating and water heating.</p> <p>This initiative leverages two existing programs:</p> <ul style="list-style-type: none"> <li>v. Enbridge TAPS (programmable Thermostat, kitchen and bathroom Aerators, Pipe wrap and low-flow Showerhead) program – door to door initiative to install energy saving devices</li> <li>vi. Enbridge \$100 rebate for purchasing an Energy Star (high efficiency) furnace</li> </ul> <p>This is also an integral part of a coordinated community based social marketing (CBSM) approach that will focus on changing behaviour at a grass roots level in existing homes.</p>	
Program Cost/Effort	Program Development	Ongoing
	Integrate TAPS program with overall CBSM approach.	Estimated cost of this portion of program \$25,000 per year.
Program Impact	Economic and Other Benefits	GHG Reduction Targets
	Achieved average home natural gas consumption reduction of 26% between 1995 and 2004. An additional 30% savings is achievable in existing homes by 2016. This equates to a savings of \$290 per household at 2005 natural gas pricing.	40,700 tonnes per year in existing homes by 2016.
Implementation	Timeline	Potential Funding
	Launch by end of 2006	Enbridge, Natural Resources Canada, selected retailers such as Home Depot and Canadian Tire.
		Responsibility
		Durham Sustain <i>Ability</i> supported by City, Enbridge and retailers

<b>3. Sustainable Home</b>			
<b>Sub-Program</b>	<b>3c. Home Audits and Energy Clinics</b>		
<b>Overview</b>	This program was originally intended to support the federal EnerGuide for Houses audits and energy retrofit grants. With the recent cancellation of the federal program, the provincial government is considering a subsidy to homeowners for the audit process and possibly retrofits. In the meantime, EnerGuide for Houses evaluations can still be promoted with the full cost covered by the homeowner. Toronto Regional Conservation Authority (TRCA) and Home Depot have also launched a computer based Do-It-Yourself home audit		
<b>Program Cost/Effort</b>	<b>Program Development</b>		<b>Ongoing</b>
	Requires Sustainability Officer to market and coordinate with DSA for delivery of home evaluations.		Cost of marketing of program and the home audits is recovered in the fee to homeowners and possibly subsidized by government programs.
<b>Program Impact</b>	<b>Economic and Other Benefits</b>		<b>GHG Reduction Targets</b>
	The main benefits are reduced space heating costs which has been primarily quantified in the natural gas subprogram. The average energy savings is 30% for those who have implemented the home audit recommendations.		Refer to the natural gas subprogram.
<b>Implementation</b>	<b>Timeline</b>	<b>Potential Funding</b>	<b>Responsibility</b>
	Launch by end of 2006	Veridian, Enbridge, Provincial government, TRCA and Home Depot	DSA supported by City, Veridian, Enbridge, TRCA and retailers

<b>3. Sustainable Home</b>			
<b>Sub-Program</b>	<b>3d. Responsible Water Consumption</b>		
<b>Overview</b>	<p>This initiative leverages two existing programs:</p> <ul style="list-style-type: none"> <li>vii. Durham Region’s Water Efficiency program – Outdoor water use program uses effective CBSM delivery methods to target high water use neighbourhoods. Program also includes literature and displays at garden centres and special events for reducing indoor and outdoor water use.</li> <li>viii. Enbridge’s TAPS program (see sub-program 1b for details) and Veridian’s water heater tune-up (see sub-program 1a for details)</li> </ul>		
<b>Program Cost/Effort</b>	<b>Program Development</b>		<b>Ongoing</b>
	Sustainability Officer to coordinate with Durham Region. No additional costs.		No dedicated cost allocation for this initiative.
<b>Program Impact</b>	<b>Economic and Other Benefits</b>		<b>GHG Reduction Targets</b>
	Key benefit is overall awareness of responsible consumption of water levers responsible behaviour for energy consumption.		To be quantified by Durham Region.
<b>Implementation</b>	<b>Timeline</b>	<b>Potential Funding</b>	<b>Responsibility</b>
	Launch by end of 2006	Durham Region, Enbridge and Veridian	DSA supported by Durham Region, Enbridge and Veridian.

<b>3. Sustainable Home</b>			
<b>Sub-Program</b>	<b>3e. Responsible Waste Management</b>		
<b>Overview</b>	<p>This initiative leverages an existing program:</p> <p>ix. Durham Region Green Bin program for the curbside collection of organics, starting July 1st, 2006, Information about home energy efficiency included with the green bin and a compact fluorescent (CFL) bulb from Veridian.</p>		
<b>Program Cost/Effort</b>	<b>Program Development</b>		<b>Ongoing</b>
	Coordination with the Region to locally promote the use of the green bin as well as energy conservation.		No ongoing cost allocated to this initiative.
<b>Program Impact</b>	<b>Economic and Other Benefits</b>		<b>GHG Reduction Targets</b>
	Key benefit is overall awareness of responsible reduction and diversion of waste which levers responsible behaviour for all home conservation efforts.		Durham Region targets residential waste diversion rate of 60% which equates to reduction of 23,400 tonnes per year.
<b>Implementation</b>	<b>Timeline</b>	<b>Potential Funding</b>	<b>Responsibility</b>
	Launch July 1, 2006	Durham Region, Veridian (CFL bulb and brochure)	Durham Region with support by City of Pickering and Veridian

<b>3. Sustainable Home</b>			
<b>Sub-Program</b>	<b>3f. Responsible New Home Development</b>		
<b>Overview</b>	<p>Pickering's Sustainable Neighbourhood Plan (SNP) Program has proposed the use of the LEED-ND framework to guide the construction of all new homes and neighbourhoods in Pickering. Leadership in Energy and Environmental Design (LEED) Green Building Rating System® is a voluntary, consensus-based national standard for developing high-performance, sustainable buildings. The Neighbourhood Design (ND) is a new initiative of the US and Canadian Green Building Council. Further details about this program are available through the SNP documents.</p> <p>Local builders are already constructing homes to the energy efficient Energy Star level and incorporating innovative technologies such as solar water heating and geo-thermal heating.</p>		
<b>Program Cost/Effort</b>	<b>Program Development</b>	<b>Ongoing</b>	
	<p>City of Pickering to develop guidelines for more stringent housing standards for all new homes developed in Pickering. Recommend new homes be built to minimum Energy Star standards. Support and promote local builders who are already building to this standard.</p>	<p>Currently adds about \$3500 - \$5000 to cost of standard new home although additional cost is declining as more Energy Star homes are built. The monthly energy savings well exceeds the increase in the home buyer's mortgage payment.</p>	
<b>Program Impact</b>	<b>Economic and Other Benefits</b>	<b>GHG Reduction Targets</b>	
	<p>Energy savings of 30-40% versus a standard new home. New home construction quality and comfort dramatically increases.</p>	<p>56,000 tonnes per year for new homes by 2016.</p>	
<b>Implementation</b>	<b>Timeline</b>	<b>Potential Funding</b>	<b>Responsibility</b>
	2007	None required.	City of Pickering's Planning & Development Department

<b>4. Sustainable Workplace</b>		
<b>Sub-Program</b>	<b>4a Building Audits and Retrofits</b>	
<b>Overview</b>	This initiative leverages existing programs:	
	<ul style="list-style-type: none"> <li>x. Enbridge Business Solutions – multiple programs/audit services, incentives and rebates for the industrial, commercial and institutional (IC&amp;I) sectors.</li> <li>xi. Veridian and PowerWISE Business Incentive Programs that initiate energy conservation and load management projects through rebates and incentives</li> <li>xii. Performance contracts with Energy Saving Companies (ESCOs)</li> </ul>	
<b>Program Cost/Effort</b>	<b>Program Development</b>	<b>Ongoing</b>
	Sustainability Officer to coordinate. Segment and prioritize target market. Building size, organization size, etc.	Requires co-ordination of programs and focused targets. Estimated cost \$25,000 per year.
<b>Program Impact</b>	<b>Economic and Other Benefits</b>	<b>GHG Reduction Targets</b>
	<p>Pickering buildings represent over 1.3 million m<sup>2</sup> of floor space. The sector reduced per capita GHG emissions by 9% between 1995 and 2004. A further 9% reduction by 2016 is quite achievable.</p> <p>The average building retrofit provides a payback of less than 5 years with an average of 30% energy savings. Improvements in indoor environment (temperature control, air quality) results in improved productivity.</p>	<p>16,000 tonnes per year from existing buildings by 2016.</p> <p>Equates to retrofitting 25% of existing buildings.</p>
<b>Implementation</b>	<b>Timeline</b>	<b>Potential Funding</b>
	Launch by end of 2006	Enbridge, Veridian, ESCOs
		<b>Responsibility</b>
		City of Pickering’s proposed Sustainability Officer with support of Veridian, Enbridge, ESCOs, Ajax-Pickering Board of Trade

<b>4. Sustainable Workplace</b>			
<b>Sub-Program</b>	<b>4b Employee Education and Awareness</b>		
<b>Overview</b>	<p>Providing staff education and awareness programs at work benefit both the employer to ensure compliance to business energy conservation plans and helps reinforce the value of energy conservation for employees in their home. Both local utilities provide an education service to their IC&amp;I market:</p> <ul style="list-style-type: none"> <li>i. Veridian has hired a Lunch 'n Learn facilitator and offered this free service to local businesses.</li> <li>ii. Enbridge provides training for “influencers” of energy conservation programs such as engineering consulting firms.</li> </ul> <p>In addition, the provincial government has provided the opportunity for all sectors of Pickering to participate in their annual Energy Forum. A targeted IC&amp;I Energy Forum has been suggested as a means to boost the uptake of local businesses to benefit from the knowledge, incentives and rebates offered by the utilities.</p>		
<b>Program Cost/Effort</b>	<b>Program Development</b>		<b>Ongoing</b>
	Requires a coordinated marketing program on behalf of the utilities.		Cost of education programs is free to businesses - part of utility CDM/DSM programs.
<b>Program Impact</b>	<b>Economic and Other Benefits</b>		<b>GHG Reduction Targets</b>
	Reinforces and levers other Sustainable Workplace, Transportation and Home initiatives.		Quantified in other subprograms. Part of market penetration strategy for building retrofits.
<b>Implementation</b>	<b>Timeline</b>	<b>Potential Funding</b>	<b>Responsibility</b>
	Started in Dec 2005	Veridian, Enbridge	Durham Sustain <i>Ability</i> with support from Veridian, Enbridge, Ajax-Pickering Board of Trade

<b>4. Sustainable Workplace</b>			
<b>Sub-Program</b>	<b>4c Recognition of Responsible Businesses and Institutions</b>		
<b>Overview</b>	<p>Presently there are both provincial and federal recognition programs that can be leveraged for the purposes of Pickering's Local Action Plan. The Conservation Bureau of the Ontario Power Authority (OPA) awards their Certificate of Recognition for Energy Conservation to those who demonstrate leadership and take action to conserve energy in Ontario.</p> <p>The status of federal programs relating to energy conservation is unknown at this time, but it is anticipated that new programs will be developed in the near future.</p> <p>The City of Pickering could leverage and enhance the Conservation Bureau awards through a municipal recognition program to recognize community leaders/businesses who take action to reduce GHG emissions and energy consumption.</p>		
<b>Program Cost/Effort</b>	<b>Program Development</b>		<b>Ongoing</b>
	Sustainability Officer to coordinate. Relatively low effort to set-up recognition program – part of lunch & learn awareness program.		Insignificant ongoing cost – add to City's existing recognition programs.
<b>Program Impact</b>	<b>Economic and Other Benefits</b>		<b>GHG Reduction Targets</b>
	Public recognition is an excellent motivator for many businesses and institutions. Usually enhances what is already a very good business case.		Taken into account in other subprograms.
<b>Implementation</b>	<b>Timeline</b>	<b>Potential Funding</b>	<b>Responsibility</b>
	Launch by end of 2006	Conservation Bureau of the OPA, NRCan (possibly)	Coordinated by City of Pickering's proposed Sustainability Officer and conducted through Pickering City Council

<b>4. Sustainable Workplace</b>		
<b>Sub-Program</b>	<b>4d. Responsible New Building Development</b>	
<b>Overview</b>	<p>Leadership in Environmental and Energy Design (LEED) standards have become a common framework for other municipalities to encourage integrated building design. It is recommended that the City require a minimum of LEED Silver rating for all new commercial and institutional buildings.</p> <p>Many businesses are already designing more energy efficient buildings. OPG opened a new building in Pickering in 2005 that was 38% more energy efficient than standard design and won the first place Award of Excellence from Canadian Design – Build Institute.</p>	
<b>Program Cost/Effort</b>	<b>Program Development</b>	<b>Ongoing</b>
	<p>Planning Department to review other municipal programs with LEED criteria for new buildings and integrate best elements and incentives from the most successful programs.</p> <p>The incremental capital cost of LEED Silver is approximately 2%; however incremental costs are declining as it becomes more accepted and standardized.</p>	<p>Integrated as part of permitting process.</p> <p>LEED building operating and maintenance costs are substantially lower than standard buildings.</p>
<b>Program Impact</b>	<b>Economic and Other Benefits</b>	<b>GHG Reduction Targets</b>
	<p>LEED Silver rating reduces energy consumption by at least 20%, but it can be substantially greater. Many environmental, social and productivity benefits from this integrated design.</p>	<p>OPG building – 800 tonnes per year starting in 2006.</p> <p>25,200 tonnes per year for new buildings by 2016.</p>
<b>Implementation</b>	<b>Timeline</b>	<b>Potential Funding</b>
	<p>Launch in 2007.</p>	<p>Enbridge, NRCan</p>
		<b>Responsibility</b>
		<p>City of Pickering's Planning and Development Department</p>

<b>5. Sustainable School</b>		
<b>Sub-Program</b>	<b>5a EcoSchools</b>	
<b>Overview</b>	<p>The Durham District School Board (DDSB) has adopted the Ontario EcoSchools program as a means to help schools play their part in responding to the great challenge of living more sustainably through the reduction of their energy use and waste production. As a new, voluntary program it takes time to engage individual schools, staff and parents. Through Sustainable Pickering two schools (Dunbarton High School and Rosebank Road Public School) have recently committed to becoming EcoSchools, with the goal to engage all Pickering schools within the next two years. EcoSchools supports the development of an EcoTeam consisting of representatives from staff, administration, custodial services, students and parents, which helps ensure its success at all levels.</p>	
<b>Program Cost/Effort</b>	<b>Program Development</b>	<b>Ongoing</b>
	EcoSchool program is already developed. Engage first two schools already signed up to lead by example.	Recognition program already in place with DDSB. No additional cost except EcoTeam volunteer time and effort.
<b>Program Impact</b>	<b>Economic and Other Benefits</b>	<b>GHG Reduction Targets</b>
	DDSB already has an energy and waste management system in place with regular feedback and reporting to all schools. Tangible improvements will be measured, however the intangible learning opportunities (by example and through curriculum) levers and impacts all other Sustainable programs, which is difficult to measure.	Included in Sustainable Workplace GHG reductions for buildings.  Other reductions through this program are difficult to quantify.
<b>Implementation</b>	<b>Timeline</b>	<b>Potential Funding</b>
	Pilot program launched in May 2006.	DDSB program support.
		<b>Responsibility</b>
		DDSB supported by Durham Sustain <i>Ability</i> and City of Pickering.

5. Sustainable School		
Sub-Program	5b Beyond EcoSchools	
<b>Overview</b>	<p>EcoSchools primarily deals with energy use and waste reduction though it encourages schools to develop other programs such as anti-idling, the “Walking School Bus” and water conservation measures. Many schools have concerns for children’s health and the environment by the number of parents who idle their vehicles while waiting to pick up children. Signage, education materials and enforced local anti-idling bylaws need to be developed to support the schools. Better still is the creation of safe routes and walking buddies to encourage walking/biking to school.</p> <p>OPG has a “Green Sprouts” program which provides \$200 per classroom for tree planting.</p> <p>Pine Ridge Secondary School has created a unique program called “I am the change” which encourages leadership amongst students. One of their first programs is an anti-litter campaign at their school and adjacent park.</p>	
<b>Program Cost/Effort</b>	Program Development	Ongoing
	Encourage add-on initiatives to the EcoSchool program and leverage Pine Ridge “I am the change” program with EcoSchools. Development costs to be quantified (eg signage for anti-idling, brochures)	Add new initiatives to recognition program. No additional ongoing costs – based on volunteer efforts.
<b>Program Impact</b>	Economic and Other Benefits	GHG Reduction Targets
	New initiatives can act as a pilot program for the community at large (eg. anti-idling zones at schools to selected community target zones). Can have a significant leveraging effect but difficult to quantify.	Anti-idling initiative quantified in Sustainable Transportation program.
<b>Implementation</b>	Timeline	Potential Funding
	Commence in 2007 with EcoSchool pilot program.	City of Pickering, OPG, Siemens Canada, TRCA (new school design)
		Responsibility
		City of Pickering’s proposed Sustainability Officer with support of Durham Sustain <i>Ability</i> and DDSB.

<b>6. Sustainable Transportation</b>		
<b>Sub-Program</b>	<b>6a Anti-Idling Program</b>	
<b>Overview</b>	There was a consistent message from all sector working groups to deal with vehicle idling in targeted zones for both private vehicles and fleet vehicles. The City of Pickering has an anti-idling bylaw in place, but it was suggested that it be modified and enforced with more stringent criteria including a fine. This initiative is being addressed by the Coordinator, Environmental Awareness Programs at the City of Pickering.	
<b>Program Cost/Effort</b>	<b>Program Development</b>	<b>Ongoing</b>
	Requires revision of bylaw and minimal cost for signage in targeted zones.	Enforcement would be incorporated into existing duties. Volunteer programs such as at schools (refer to 5b) can be highly successful.
<b>Program Impact</b>	<b>Economic and Other Benefits</b>	<b>GHG Reduction Targets</b>
	Reducing idling by 5 minutes per day results in annual fuel savings of \$50-\$100 per vehicle. Reduced air contaminants are a significant benefit in high vehicle intensity zones such as schools, drive-thru restaurants and pick-up areas at public transit stations.	6,900 tonnes per year by 2016.  Based on reducing idling time by an average of 5 minutes per day.
<b>Implementation</b>	<b>Timeline</b>	<b>Potential Funding</b>
	2007	Municipal, OPG
		<b>Responsibility</b>
		City of Pickering's Municipal Law Enforcement Services and Coordinator, Environmental Awareness Programs

## 6. Sustainable Transportation

### Sub-Program

### 6b Responsible Commuting

### Overview

There are a wide variety of options for residents to reduce vehicle kilometers traveled (VKT) and improve fuel efficiencies, and many of these programs are already in existence, however they need more profile in the community through a CBSM approach. For example:

- xiii. Enbridge has successfully launched a corporate car/van pool program including a “guaranteed ride home” if you need to leave work early. Other companies could emulate this program.
- xiv. OPG has a shuttle bus service operated by Durham Transit, to provide frequent rides between the Pickering GO station and local OPG facilities. It also provides inter-office shuttling services during the day. This has resulted in a GHG emission reduction of 460 tonnes per year.
- xv. Many companies are encouraging flex hours, telecommuting / work from home and use of satellite offices to reduce the time lost to commuting in rush hour.
- xvi. Also included in this initiative is the promotion of alternative transportation (e.g. bicycling to work), use of fuel efficient vehicles (e.g. hybrid vehicles, smaller vehicles/engines) and fuel efficiency products. Improved driving habits and trip planning can also produce significant results.

Pickering is a commuter community with a ratio of 0.33 local jobs to population. GO train service is at capacity during rush hour but buses are under-utilized. GO Transit and Durham Region Transit acknowledge that when transit is convenient and comfortable people will use buses and trains. Program 4f looks at the long term infrastructure changes that need to be considered to provide more capacity and improve service.

<b>Program Cost/Effort</b>	<b>Program Development</b>		<b>Ongoing</b>
	This initiative focuses on a CBSM approach to behavioural and attitudinal change with support of existing programs. The key to this program is a well coordinated strategy that integrates well with the community-based Sustainable Home initiative.		To be included in the integrated sustainability program. Estimated cost of \$25,000 per year to coordinate program.
<b>Program Impact</b>	<b>Economic and Other Benefits</b>		<b>GHG Reduction Targets</b>
	Energy consumed for light vehicles has remained the same from 1995 to 2004 on a per capita basis equating to GHG emissions of 4.2 tonnes per household. A resident transportation target of an 18% reduction by 2016 is feasible which equates to \$300 annual savings per household.		27,200 tonnes per year by 2016.
<b>Implementation</b>	<b>Timeline</b>	<b>Potential Funding</b>	<b>Responsibility</b>
	2007	To be determined.	Durham Sustain <i>Ability</i> with support of Smart Commute Group (Durham wide), City of Pickering and Durham Transit.

<b>6. Sustainable Transportation</b>		
<b>Sub-Program</b>	<b>6c Responsible Fleet Management</b>	
<b>Overview</b>	The industrial, commercial and institutional sector (IC&I) has many existing programs available to help reduce GHG emissions, such as: Smart Driver Program (NRCan), employee incentives, fleet conversions (Enbridge), and fuel additives (eg Jomini International Inc.). This initiative includes sharing success stories (CN Rail's use of Jomini's fuel additives), and case studies that demonstrate fuel savings through targeted messages at business Lunch n' Learns and City awareness programs including its hybrid vehicle.	
<b>Program Cost/Effort</b>	<b>Program Development</b>	<b>Ongoing</b>
	Sustainability Officer to integrate program with IC&I building retrofit awareness. No additional cost.	Part of lunch & learns and other Sustainable Workplace initiatives – no additional cost.
<b>Program Impact</b>	<b>Economic and Other Benefits</b>	<b>GHG Reduction Targets</b>
	Energy consumption from light and heavy-duty trucks and buses remained the same on a per capita basis from 1995 to 2004. The same residential per capita reduction target of 18% by 2016 is feasible.	15,500 tonnes per year by 2016.
<b>Implementation</b>	<b>Timeline</b>	<b>Potential Funding</b>
	2007	NRCan, Enbridge, Jomini International Inc.
		<b>Responsibility</b>
		City of Pickering's proposed Sustainability Officer with support from Durham Sustain Ability, OPG, Enbridge, Jomini, Ajax Pickering Board of Trade.

<b>6. Sustainable Transportation</b>		
<b>Sub-Program</b>	<b>6d. Short Term Infrastructure Improvements</b>	
<b>Overview</b>	There is current activity pursuing improvements for pedestrians, bicyclists and local transit, such as the proposed 401 Pedestrian Bridge to link the GO train station with the city centre (mall, city hall, and intensive housing (high rises, condos and town homes), more bike lanes and walking paths (City investigating involvement with an international conference on encouraging walking and cycling, Toronto, 2007); increasing GO train capacity and GTA fare integration with smart cards (through newly established GTTA).	
<b>Program Cost/Effort</b>	<b>Program Development</b>	<b>Ongoing</b>
	Sustainability Officer to coordinate initiatives with various City departments, Durham Transit, GO Transit and GTAA.	Coordination of current initiatives, no additional cost.
<b>Program Impact</b>	<b>Economic and Other Benefits</b>	<b>GHG Reduction Targets</b>
	Each initiative would need to be quantified separately, however short term infrastructure improvements will support the success of residential commuter programs in 6b.	Included in 6b.
<b>Implementation</b>	<b>Timeline</b>	<b>Potential Funding</b>
	2007	Municipal, Federation of Canadian Municipalities, GO Transit, Durham Transit
		<b>Responsibility</b>
		City of Pickering's proposed Sustainability Officer with support of transit organizations.

<b>6. Sustainable Transportation</b>			
<b>Sub-Program</b>	<b>6e. Responsible Long Term Infrastructure Development</b>		
<b>Overview</b>	Newly formed Greater Toronto Transit Authority (GTTA) will be responsible for transit integration between regions and the City of Toronto. Long term strategy options include Light Rapid Transit lines that have both north/south and east/west connections through Durham and York regions, and a 407 corridor transit strategy (including studying feasibility of a magnetic-levitation train system between Pearson and proposed Pickering airports).		
<b>Program Cost/Effort</b>	Program Development		Ongoing
	A key initiative is the formation of the GTTA, which will lead program development; however it's important for the City (and Durham Region) to strongly influence these long-term strategies especially with the potential explosive growth of Seaton.		Part of GTTA's responsibility.
<b>Program Impact</b>	Economic and Other Benefits		GHG Reduction Targets
	To be quantified with various options.		To be quantified with various options.
<b>Implementation</b>	Timeline	Potential Funding	Responsibility
	2012-2016	Sustainable Development Technology Canada (part of NRCan)	GTTA with support of the City of Pickering, the Region, Siemens Canada

<b>7. Sustainable Land</b>			
<b>Sub-Program</b>	<b>7a Greening Public Spaces</b>		
<b>Overview</b>	<p>The Toronto Regional Conservation Authority (TRCA) in partnership with Ontario Power Generation (OPG) has created many opportunities for local tree plantings, especially around Frenchman’s Bay. This has resulted in some 4700 trees and shrubs planted in the last 3 years equating to 33 tonnes per year of CO<sub>2</sub>) absorbed continually for the next 80 years. This has been a very successful program that will be expanded to other areas.</p> <p>One area of focus is to plant more shade trees around schools and public buildings to cool and reduce air conditioning use. Another area is to promote other existing programs such as planting a new tree for every City tree that must be cut due to age, condition, or interference with overhead wires.</p>		
<b>Program Cost/Effort</b>	<b>Program Development</b>		<b>Ongoing</b>
	City’s proposed Sustainability Officer to coordinate and provide recognition for existing and new initiatives.		No additional costs – based on volunteer efforts and City/TRCA/OPG staff.
<b>Program Impact</b>	<b>Economic and Other Benefits</b>		<b>GHG Reduction Targets</b>
	Strategic placement of shade trees not only saves GHG emissions but reduces energy consumption for air conditioning in the summer. OPG/TRCA has saved 33 tonnes of GHG emissions per year since 2002. A target of tripling that effort by 2016 is realistic.		100 tonnes per year by 2016.
<b>Implementation</b>	<b>Timeline</b>	<b>Potential Funding</b>	<b>Responsibility</b>
	Coordinated program launch in 2007.	TRCA, OPG, Municipal	City of Pickering’s proposed Sustainability Officer with support of TRCA, OPG

<b>7. Sustainable Land</b>			
<b>Sub-Program</b>	<b>7b Responsible Land Use Development</b>		
<b>Overview</b>	<p>Urban sprawl is a challenge for most municipalities. Pickering has chosen to manage its anticipated growth with a smart growth management plan that includes the framework of the Leadership in Environmental and Energy Design – Neighbourhood Development (LEED-ND). As described in Program 1f New Houses LEED-ND sets a very high standard for home construction and neighbourhood integration within a real community context. Dillon Consulting, through the City's Sustainable Neighbourhood Plan (SNP) is working with the City on this leading edge growth plan design.</p>		
<b>Program Cost/Effort</b>	<b>Program Development</b>		<b>Ongoing</b>
	<p>SNP design document is nearing completion in which there will be recommendations for next steps. Costs to be quantified.</p>		<p>Based on SNP recommendations.</p>
<b>Program Impact</b>	<b>Economic and Other Benefits</b>		<b>GHG Reduction Targets</b>
	<p>Houses in the SNP design will be between 50% - 80% more energy efficient than standard design. Many other social and environmental benefits of this unique neighbourhood design.</p>		<p>Partially quantified in Sustainable Home section based on Energy Star rated new homes.</p> <p>Additional 38,000 tonnes per year if SNP is adopted.</p>
<b>Implementation</b>	<b>Timeline</b>	<b>Potential Funding</b>	<b>Responsibility</b>
	<p>2010 - 2012</p>	<p>FCM, City of Pickering</p>	<p>Dillon Consulting with support from City of Pickering's Planning and Development Department and Durham Sustain <i>Ability</i></p>

## **Summary - Program GHG Reductions**

### **Municipal Operations**

The municipal operations target requires a total GHG emission reduction from 1995 baseline of 6,157 tonnes by 2016. The contribution of the various Sustainable Municipal programs provides reductions of 1130 tonnes from existing buildings retrofits, 2500 tonnes from new buildings, 990 tonnes from fleet management and an undetermined amount from other programs. With a current reduction of 0.01 tonnes/yr as of 2004, this equates to a total per capita reduction of 0.04 tonnes/yr with another 0.01 tonnes/yr yet to be quantified to achieve the target reduction of 0.05 tonnes/yr.

Although relamping street lighting could theoretically provide a reduction of 0.01 tonnes/yr, the peak loading in Ontario is such that reduction in electricity in night time non-peak hours does not appreciably reduce GHG emissions as this tends to impact GHG-free nuclear power generation loading. Also, new off-peak hour electricity pricing will reflect this reality as smart meters are installed, so the economic case will also be less attractive. As the other programs are quantified such that they further compound savings in building and fleet efficiency, the remaining 20% reductions to achieve target will not be overly burdensome. To put this in perspective, roughly 2/3 of potential energy savings in buildings is from operational/behavioural changes and 1/3 from capital retrofits. Only the retrofit changes have been taken into account thus far.

### **Community**

The community target requires a total GHG emissions reduction from 1995 baseline of 258,595 tonnes by 2016. The contribution of the various community programs provides reductions of 141,000 tonnes from the Sustainable Home program, 41,000 tonnes from the Sustainable Workplace and Sustainable School programs, 50,000 tonnes from the Sustainable Transportation program, and 38,000 tonnes from the Sustainable Land program. With a current reduction of 1.0 tonnes/person as of 2004, this equates to a total per capita reduction of 2.9 tonnes/person, which exceeds the target of a 2.8 tonne/person reduction.

## Recommendations and Next Steps

### *Recommendations for Council*

The following are recommendations to council concerning adoption of milestones 1, 2 & 3 of the PCP framework:

- 1) Adopt 1995 as the baseline year and 2016 as the target year for GHG inventory and forecast calculations. The GHG emission inventory and forecast information presented in this report completes the PCP requirements for Milestone 1.
- 2) Commit to reduce GHG emissions for the entire community by 35% on a per capita basis by 2016 from 1995 levels, which will include a 50% per capita reduction in municipal operation emissions. This commitment completes PCP Milestone 2.
- 3) Adopt this PCP Local Action Plan as a working document in proceeding to the next stage of implementation of programs and initiatives. Adoption of this report completes the requirements for PCP Milestone 3. Adoption of this report does not commit council to the approval of specific implementation initiatives. Initiatives and programs that require council approval will be submitted at a later date as part of Milestone 4 (implementation stage) when further program quantification and funding is ascertained.

### *Next Steps*

There are many implementation suggestions in the action plan, however the following next steps are the most pertinent:

- 1) Obtain funding for the creation of new full-time position to coordinate all sustainability programs outlined in this action plan plus other relevant initiatives under the Sustainable Pickering program. Private sector funding could potentially be ascertained for this position on a three year contract.
- 2) Develop a phased implementation plan with estimated start-up costs and operating costs for each program.
- 3) Continue to engage stakeholders and potential funding partners for milestone 4 program implementation.
- 4) Develop funding strategies and applications for relevant programs.
- 5) Develop a budget for any of the above work that needs to be contracted.