



PARTNERSHIP FOR CLIMATE PROTECTION PROGRAM

Milestone 1: Inventory of Greenhouse Gas Emissions

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INTRODUCTION

The Intergovernmental Panel on Climate Change (IPCC) was established by the United Nations and is universally recognized as the leading authority on the science of Climate Change. The most recent findings from the IPCC conclude that global warming is “unequivocal” and that human activity is the main cause.

The burning of fossil fuels to meet the demand for energy coupled with deforestation has caused the greenhouse gas (GHG) concentrations to shift out of balance. The primary and most talked about GHG is carbon dioxide. Methane, nitrous oxides, sulphur oxides and volatile organic compounds are also GHGs contributing to global warming.

The level of carbon dioxide (CO₂) in the atmosphere has grown to 380 parts per million (ppm), a nearly 40 percent increase from pre-industrial levels.ⁱ Concentrations of other GHGs have also increased considerably.

Greenhouse gases work like a greenhouse, trapping heat from the earth that would otherwise escape. GHGs when in a natural balance with other gases make life on Earth possible. As the concentration of GHGs in the atmosphere increases, the ability for these gases to trap heat increases. Over the last century the mean temperature on Earth has increase by 0.74°C, in Canada the mean temperature has risen by over 1°C. Eleven of the twelve warmest years on record have occurred since 1995.

The impacts of global warming are much more than just a mean temperature increase of a couple of degrees. With the rise in temperatures, glaciers around the world are melting and there has been a notable increase in the number of extreme weather events such as hurricanes, tornadoes, flooding, etc.

PARTNERS FOR CLIMATE PROTECTION

Municipal governments have an important role to play in climate protection. Up to half of Canada’s GHGs emissions (350 million tonnes) are under the direct control or influence of municipal governments.ⁱⁱ

In Canada, the Partners for Climate Protection (PCP) is a joint program developed by the Federation of Canadian Municipalities and ICLEI Local Governments for Sustainability to help municipal governments reduce GHGs and advance sustainable community development by offering support, resources and networking opportunities to municipalities. A five-milestone framework was developed to guide municipalities through a proven strategy on climate change protection. The five-milestones are as follows:

- PCP Milestone One – Emissions Inventory
- PCP Milestone Two – Emissions Reduction Target
- PCP Milestone Three – Action Plan
- PCP Milestone Four – Implement, Monitor, Report and Verify
- PCP Milestone Five – Monitoring Progress and Reporting Results

Over 166 Canadian municipalities have committed to PCP to reduce greenhouse gases and climate protection. PCP is the Canadian component of ICLEI's Cities for Climate Protection (CCP) network that comprises of more than 800 communities world wide making the same efforts.

Milestone 1 – Emissions Inventory

The City of Windsor signed up with PCP in December of 2002. This report was developed to achieve PCP milestone one. This emissions inventory brings together data on community and municipal energy use and solid waste generation in order to estimate GHG emissions in 2005. PCP recommends a baseline year of 1994; unfortunately reliable data is not available. A recent energy audit of all City buildings included a thorough review of energy use in 2005 and therefore was selected as the baseline year.

Under the PCP program, each inventory (corporate and community) is divided into various sectors or areas outlined in Table 1.

Corporate Sector	Community Sector
Buildings	Residential
Vehicle Fleet	Commercial
Streetlights	Industrial
Water/Sewage	Transportation
Waste	Waste
Other	Other

The sections of this report breakout the specifics of each sector mentioned in Table 1. Sources of data including the strength and weakness of the data are also noted. The data is entered into the spreadsheet provided on the PCP website.ⁱⁱⁱ The spreadsheet is designed to estimate the GHGs generated from the different sources of energy (i.e. electricity, natural gas, gasoline, diesel, etc.) and presents the findings as equivalent tonnes of carbon dioxide.

The spreadsheet also provides the option of entering indicators that can be used to compare emissions by various criteria including population, floor space etc. The indicators are not mandatory for the calculation of emissions but can be used as a tool to compare against other municipalities. These indicators were updated where available.

The completion of this inventory is significant because it provides a starting point for staff to identify and assess areas where energy savings and emission reductions can be achieved. This information will be used to complete Milestones 2 and 3 of the PCP program.

CORPORATE INVENTORY

The corporate inventory was developed through cooperation and collaboration of many departments throughout the City.

BUILDINGS

Sources of Data

Council resolution CR 397/2006 retained the firm of MCW Custom Energy Solutions Ltd. to conduct a comprehensive energy audit of all corporate facilities and buildings. The audit included a detailed energy consumption inventory (electricity and natural gas) of municipally owned buildings, including libraries and Transit Windsor for 2005 and 2006. The purpose of the study was to identify building improvements or energy reduction measures that would realize savings and reduce the environmental impact of the Corporation. Based on the accuracy of the information presented in this report, 2005 was selected on the baseline year for the inventory. The recently constructed 400 City Hall Square was not included in the inventory as it was only occupied for part of 2005.

District Energy provides services to the downtown core including the City owned Windsor Justice Facility and 400 City Hall Square. District Energy provided the total usage for each facility in Megawatts (MW) over 6 month periods, which needed to be convert to Gigajoules (GJ) for use in the spreadsheet. Appendix A includes the corporate building inventory spreadsheet.

Findings

In 2005, over 4 million dollars was spent on heating, cooling and general energy usage at City buildings. The energy usage within City buildings accounts for 15,550 tonnes of equivalent carbon dioxide and is the largest contributor to GHG emissions of all City operations.

Table 2 highlights the top five buildings in terms of energy consumption and therefore the largest contributors of GHGs.

Table 2: Top Five Buildings and total GHG emissions

Ranking	Building	Equivalent Tonnes of CO₂ (eCO₂)
1	Windsor Justice Facility	3,230
2	E.C. Row/Recycling Centre	1,201
3	Transit Windsor	987
4	350 City Hall Square	897
5	South Windsor Recreational Complex	838

However, the following five buildings produce more GHG emissions per square metre as shown in Table 3.

Table 3: Top Five Buildings for GHG emissions per m².

Ranking	Building	Tonnes of CO₂/m²
1	E.C. Row/Recycling Centre	1.62
2	Centennial Park Washrooms	0.47
3	Alton C. Peter Comfort Station	0.45
4	Windsor Water World	0.43
5	Bert Weeks Memorial Garden Washrooms	0.42

400 City Hall Square West was not included in this inventory, as the building was not occupied until September 2005.

WATER AND WASTE WATER

Sources of Data

The two wastewater treatment plants (Lou Romano Water Reclamation Plant and Little River Pollution Control Plant) and pumping stations were also included in the Energy audit described above. Several diesel generators are in service at the plants and at several of the major pumping stations as back-up power. The diesel quantities provided in the Appendix B were tallied based on historical invoice tracking. Where the invoices were not tracked (small pump stations), quantities were estimated based on size of tank and estimated number of fill ups in one year.

Windsor Utilities Commission provided their electricity consumption for the water treatment plant and the pump station. Union Gas quantities were not readily available but will be included in the inventory under community usage.

Findings

Windsor Utilities Commission Water Treatment Plant, the Little River Pollution Control Plant and the Lou Romano Water Reclamation Plant are the largest consumers of energy and therefore are major contributors of GHGs (4,558 tonnes, 2,630 tonnes and 1,670 tonnes respectively). The Pontiac pump station cannot be overlooked as a large contributor with 1,373 tonnes of equivalent carbon dioxide emissions.

The Lou Romano Plant is currently undergoing an expansion and upgrade, therefore the energy consumption and GHG emissions are expected to increase above those reported in 2005.

The carbon dioxide released due to biological activity in the plants is not considered when calculating total greenhouse gas emissions.

VEHICLE FLEET

Sources of Data

The section of the GHGs inventory pertaining to the City’s fleet included that largest amount of collaboration between departments. Table 4 provides a breakdown of the Departments that reported fuel use in 2005.

Table 4: Vehicle Fleet Information

Department	Responsibility
Operations Department - Fleet	The fleet division is responsible for maintaining the city owned fueling stations (gasoline, diesel and propane). The fuel management system allows the City to track the volume of fuel used for each class of vehicles.
Fire Department	Fire Stations 1, 2, 3 ,4 and 6 have diesel refueling stations for their fire trucks
Parks and Facilities Operations	Off-road vehicles and maintenance equipment (i.e. lawn mowers, weed whippers, zambonies) not fueled at city fuel sites is tracked by the Parks division.
Human Resources - Payroll	City staff required to use their personal vehicle for city business are eligible for renumeration through payroll.
Finance Department	The finance department tracks vehicles used for travel outside of Essex County.
Transit Windsor	Transit Windsor is responsible for the operation of the Transit Windsor fleet.

All of the divisions above provided their records on fuel usage for 2005. The exception to this was personal vehicle usage. City staff required to use their personal vehicle will report back the total kilometers driven. In order to estimate the fuel usage an assumption was made that the vehicles were light duty gasoline vehicles with an average fuel efficiency of 10.3 L/100km.^{iv}

The obvious deficiency in this data is the amount of fuel purchased from outside vendors by the Police Department. All available data is included in Appendix C.

Findings

The City’s gasoline, diesel and propane consumption for fleet use accounts for approximately 31 percent of the Corporate GHG emissions. Transit Windsor accounts for 66 percent of the total fleet emissions. The service provided by Transit Windsor is paramount in reducing the total emissions of the community inventory.

The City of Windsor switched to ethanol gasoline blends in January 2007.

STREETLIGHTS/TRAFFIC SIGNALS

Sources of Data

The electricity requirements for the City's streetlights and traffic signals is currently tracked by Public Works Engineering and Traffic Signals division respectively. Appendix D provides the energy consumption for streetlights and traffic signals for 2005.

Findings

Streetlighting and traffic signals account for approximately 10% of the Corporate GHG emissions. Fortunately, traffic signals are slowly getting replaced with LED bulbs, therefore even though the number of traffic signals is going up in the City, the energy consumption and GHG emissions are decreasing.

WASTE

Sources of Data

The City of Windsor Environmental Services department is responsible for waste collection within the City of Windsor and tracks tonnes of waste transferred from the City's waste transfer station to the Regional Landfill Site. Unfortunately, the waste from corporate facilities is often collected on general routes, making it impossible to track the quantity of waste from City facilities. The waste generated at these facilities would be most likely office waste (i.e. paper), which is recycled or food waste. Another stream of waste would be construction waste, of which asphalt, concrete and gravel would be recycled.

The Fleet division tracks fuel used by environmental services for waste and recycling collection. The greenhouse gas contribution for waste and recycling collection is included in the Vehicle Fleet section of this report.

CORPORATE SUMMARY

This summary includes as much information on City of Windsor operations as was available. Agencies, boards and commissions of the City of Windsor are not included in this inventory with the exception of energy use at Windsor Public Library buildings, Essex Windsor Solid Waste Authority recycling centre, and Transit Windsor. Windsor Public Library and Transit Windsor were active participants in the Energy Audit and were therefore included in this inventory. Windsor Utilities Commission provided the energy use for the water treatment facility and associated water pumping and therefore was included under the water & sewage inventory.

The following agencies, board and commissions are not included in this inventory: Enwin Utilities Commission, Tunnel Commission, Airport Commission, Visitor and Convention Bureau. In addition the fleet fuel consumption was not included for Windsor Utilities Commission or the Windsor Public Library.

In 2005, the City of Windsor directly contributed 44,425 tonnes of equivalent CO₂ from its operations. Table 5 indicates the total equivalent CO₂ for each sector, with Figure 1 illustrating percent breakdown per sector. Table 6 breaks down the CO₂ emissions by energy type.

Table 5: Corporate eCO₂ emissions by sector – 2005

Sector	Total eCO ₂ (tonnes)
Buildings	15,550
Fleet	13,551
Streetlights/Traffic Signals	4,394
Water & Sewage Treatment and associated pumping	10,931
Corporate Waste*	0
Total	44,425

Note: * the corporate waste is included in the community inventory.

Figure 1: Corporate % contribution per sector – 2005

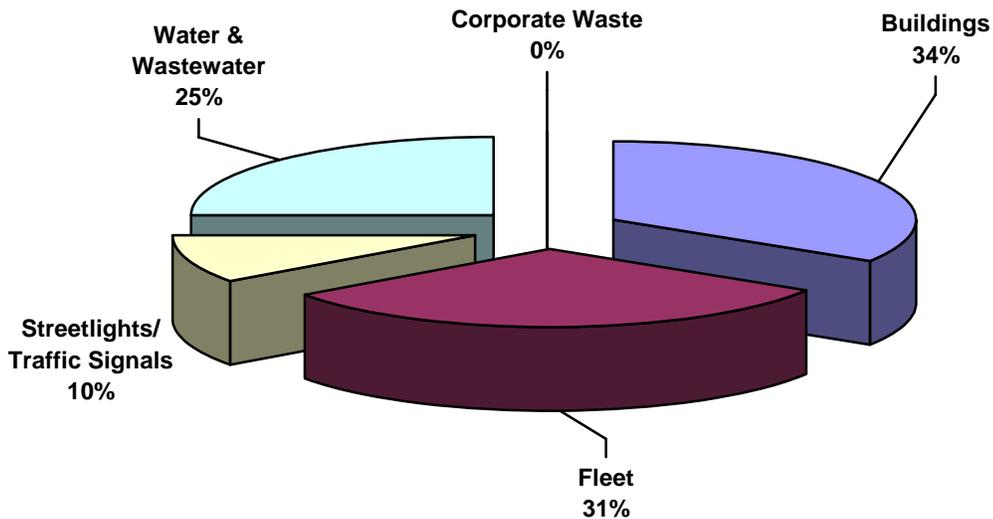


Table 6: Corporate CO₂ Emissions by Energy Type

Energy Type	Total eCO₂ (tonnes)
Electricity	22,467
Natural Gas	6,932
Compressed Natural Gas	1
Diesel	11,065
District Energy	1,306
Ethanol Blend	0
Fuel Oil	0
Gasoline	1,867
Propane	788
Waste	0

The facilities operated by the City of Windsor are the largest contributor of greenhouse gases, followed closely by the City's fleet (including Transit Windsor). The breakdown provided by sector and energy type is important as the City of Windsor moves forward with the corporate action plan. The development of the corporate action plan should include a review of energy demands by sector and the type of energy used. The optimum solution to reduce the City's contribution of greenhouse gas is to reduce the quantity of energy used by corporate activities and then review the option of switching energy types to lower impact types as acceptable (for example gasoline to ethanol blends, natural gas heating to district energy).

COMMUNITY INVENTORY

The Community inventory was developed through collaboration of several city departments as well as the local utilities. In 2005, the City of Windsor was home to approximately 210,000 people.

RESIDENTIAL/COMMERCIAL/INDUSTRIAL

Sources of Data

Enwin Utilities provided the total electricity consumed within the City of Windsor in 2005. Enwin breaks down energy consumers into 3 groups; residential, light and heavy users. For the purposes of this inventory, light users are commercial users while heavy users are industrial users. The City of Windsor is included under the light users and therefore the electricity consumed by City facilities has been subtracted from the total provided in the commercial information.

Union Gas was pleased to provide their data for 2005. Unfortunately, they do not separate their customers similar to Enwin. Union gas has 2 groups, general and contract customers. The general customers are both residential consumers and commercial users. To provide information for both the residential and commercial sectors it was estimated

that the ratio of electricity consumption between residential and commercial would best approximate the natural gas usage between the 2 sectors (residential 34%, commercial 66%). As with the electricity consumption, the natural gas used by City facilities was subtracted from the general totals. The contract customers are generally heavy industries.

District Energy had 4 customers using district energy at the beginning of 2005 and had increased the number of customers to 6 by the end of 2005. Two of these consumers are City owned facilities, which have been subtracted from the commercial inventory. All buildings on District Energy are commercial. District Energy reports the usage as MW and therefore had to be converted to GJ for use in this inventory.

Based on "Home heating and the environment" Statistics Canada Catalogue No. 11-2008^v, primary heating by fuel oil was less than 10% in Ontario. Due to the availability of natural gas within the City of Windsor boundary, it is anticipated that very few homes still rely on fuel oil as a heating source. Therefore, the effects of fuel oil are expected to be minimal.

Quantities of propane for residential, commercial and industrial users were not available. Local suppliers were unwilling or unable to provide quantities of propane used throughout the City of Windsor.

Similar to propane the quantities of diesel used by the commercial and industrial sectors was hard to determine. It is assumed that a large portion of the diesel purchased by both the residential and commercial sectors will be accounted for in the transportation section of this report.

This data is provided in Appendix E (residential), Appendix F (commercial) and Appendix G (industrial).

Findings

Based on the limited data available, the commercial sector is the largest consumer of electricity, while the largest consumer of natural gas is the industrial sector. Union Gas has 34 contract customers (heavy industrial and cogeneration facilities) that use approximately 75% of the natural gas distributed through the City of Windsor.

The industrial sector is also the largest contributor to GHG emissions with approximately 50% of the emissions from industrial operations involving electricity or natural gas. As stated above, Enwin and Union Gas divide their customer usage differently. Therefore, it is expected that some larger institutions or commercial facilities may be included as large or heavy users (assumed to be industry usage for this report) by either Enwin or Union Gas but not by the other. The 50% contribution of GHG emissions seems reasonable as manufacturing and industry accounted for a significant portion of the City's employment at approximately 23% and is significantly more energy intensive than other employment sectors.

TRANSPORTATION

Source of Data

The City of Windsor reports the total vehicle-kilometres annually as part of the OMBI survey. The vehicle-kilometres are estimated by multiplying the total lane kilometers by the most recent traffic counts for the representative roads.

The spreadsheet uses the vehicle-kilometres provided to calculate the equivalent carbon dioxide emissions. This step is completed through estimated ratios of autos, light trucks, heavy trucks and buses. The spreadsheet further breaks down these types of vehicles into fuel classifications of gasoline, diesel, propane, natural gas and ethanol blends. The detailed breakdown is included as Appendix H.

Findings

Approximately 822,449 tonnes of equivalent carbon dioxide are emitted from transportation sources, this is approximately 22 percent of the total GHG emissions from the community.

It is anticipated that the current fuel prices will have a dramatic effect on the transportation demand.

WASTE

Sources of Data

The City of Windsor Environmental Services department tracks tonnes of waste transferred from the City's waste transfer station to the Regional Landfill Site.

Findings

In 2005, approximately 60,119 tonnes of waste was transferred from the City of Windsor to the Regional Landfill Site (Appendix I). This accounts for the generation of approximately 28,959 tonnes of equivalent carbon dioxide. The trucks needed to collect and transport the waste generate another 1,134 tonnes of equivalent carbon dioxide. This amount is tracked in the corporate inventory under fleet.

In 2005, it was estimated that the community of Windsor and Essex County achieved a 33.1 % waste diversion rate. Recyclable materials diverted from the landfill are not included in this section. However, the energy required at the recycling center for sorting and compaction is included under the buildings section of the corporate inventory. Similarly the fuel used for the recycling trucks is included in the corporate fleet section.

COMMUNITY SUMMARY

The community inventory was developed through collaboration with ENWIN utilities and Union Gas, who were able to provide information specific to total consumption within the City of Windsor in 2005. However, ENWIN and Union Gas do not record customers similarly, so assumptions were made in order to split the total consumption between the residential, commercial and industrial sectors. Information on transportation and waste was provided by the City of Windsor Public Works department.

In 2005, the community of the City of Windsor directly contributed approximately 3,690,224 tonnes of equivalent CO₂. Table 7 indicates the total equivalent CO₂ for each sector, with Figure 2 illustrating percent breakdown per sector. Table 8 breaks down the CO₂ emissions by energy type.

Table 7: Community eCO₂ emissions by sector – 2005

Sector	Total eCO ₂ (tonnes)
Residential	346,167
Commercial	680,415
Industrial	1,812,232
Transportation	822,449
Community Waste	28,959
Total	3,690,224

Figure 2: Community % contribution per sector – 2005

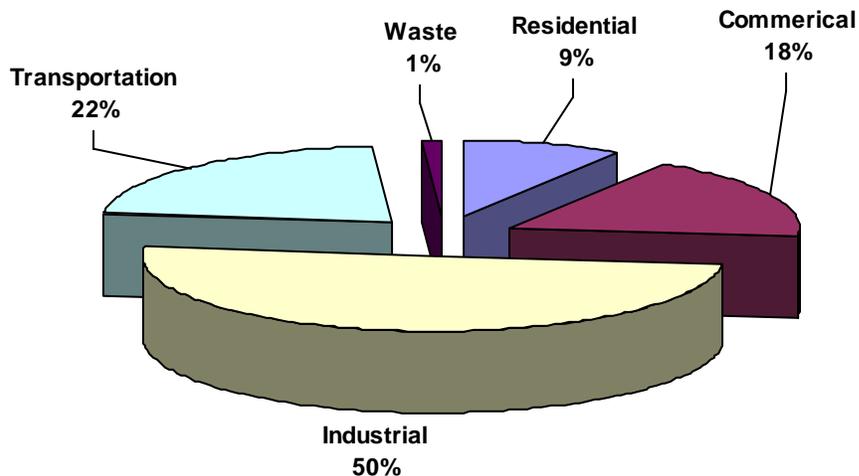


Table 8: Community CO₂ Emissions by Energy Type

Energy Type	Total eCO₂ (tonnes)
Electricity	713,599
Natural Gas	2,109,651
Diesel	255,439
District Energy	15,565
Ethanol Blend	N/A
Fuel Oil	N/A
Gasoline	560,827
Propane	6,183
Waste	28,959

N/A – Not Available

The development of the community inventory is complex. Though ENWIN and Union Gas provided the total consumption of electricity and natural gas consumption, other fuel quantities such as fuel oil, diesel and propane were not easily obtainable as several providers and outlets offer these services and do not necessarily track usage within the City of Windsor. Assumptions made for the breakdown of vehicle fuel types includes a portion of the CO₂ emissions to be from diesel and propane sources, however, purchase of diesel and propane for other uses such as diesel generators or barbeque propane tanks are not accounted for in this inventory.

FORECASTING

CORPORATE FORECAST

The total corporate contribution to greenhouse gases in 2005 was 44,425 tonnes eCO₂. It is expected that the corporate structure will not experience large changes between the preparation of this report and the PCP recommended forecast year of 2015. The following are some anticipated changes:

- The replacement of 2 single pad arenas with a large multi-recreational complex with 3 rinks, a balance of greenhouse gas emissions is expected.
- The 400 City Hall Square building was completed and was occupied at the end of 2005. The 2006 energy requirements for this building contributed 1,422 tonnes of equivalent carbon dioxide.
- The completion of the energy audit in 2007/2008 and subsequent approval to undertake energy upgrades will decrease the greenhouse gas emissions from several of the City facilities. Unfortunately, it is too early to tell the extent of the reductions.

- The City of Windsor has purchased the first hybrid vehicle for its fleet in 2008. Future investments into new higher fuel-efficient vehicles will reduce the fleet contribution to greenhouse gases.
- Transit Windsor is investigating the replacement of 18 full size buses with hybrid buses.

Many of these initiatives and other policies under development are dependent on support from elected officials and therefore make forecasting difficult.

COMMUNITY FORECAST

RESIDENTIAL

Based on the report “Windsor-Essex and the City of Windsor Population and Housing Projections: 2006 – 2031 and Affordable Housing Targets” prepared by Lapointe Consulting^{vi} the average annual population growth for the City of Windsor will slow to approximately 0.33% between 2006 and 2011. After 2011, the average growth rate will increase to approximately 1% annually.

This slow growth rate and the rising costs of fuel, it is expected that the greenhouse gas emissions will remain steady or decrease slightly as single vehicle travel decreases. Therefore, the residential forecast for 2015 will be comparable to the residential contribution from 2005 of 346,167 tonnes eCO₂.

COMMERCIAL / INDUSTRIAL

The report “City of Windsor Employment Projections & Employment Land Needs Assessment” prepared by EDP Consulting indicates that the employment structure within the City of Windsor is changing^{vii}. The heavy manufacturing base will be transitioning to light and advanced manufacturing and a knowledge based service economy. Based on the current situation in Windsor, a decrease in the greenhouse gas emissions from the industrial sector will occur, with some increase expected in the commercial sector due to the transition of the employment market in Windsor.

COMMUNITY FORECAST SUMMARY

Enwin experienced an all-time record peak electricity demand of 656.7 megawatts on August 2, 2006. An article in the Windsor Star in August 2008 reported that the City of Windsor reduced the peak electricity demand by nearly twice the provincial average. Windsor's average peak demand from January to the end of June was 10.65 per cent lower than last year, according to Enwin Utilities.^{viii} The reductions are a result of a cooler summer, conservation effects and plant closures.

As outlined above, the City of Windsor is currently undergoing significant community changes. The automotive industry has been particularly hard hit in recent years due to

several factors including the rising Canadian dollar and the changing demands of the North American consumer for more fuel-efficient vehicles. However, it is expected that employment in other sectors including the health sector will continue to grow.

It is expected that the economy in Windsor will rebound within the next couple of years with an increase in light and advanced manufacturing and knowledge based services offsetting the losses expected in the heavy automotive/manufacturing sector. Due to economic changes facing Windsor, a 5 percent reduction in greenhouse gas emissions from the community inventory is expected. Therefore it is forecasted that the community will contribute approximately 3.5 million tonnes eCO₂ in 2015 without significant incentives and programs to encourage change.

RECOMMENDATIONS

1. That a corporate climate change task force be developed to assist the Environmental Coordinator in identifying achievable emission reduction targets (Milestone 2), if feasible and development of a corporate action plan to reach the identified targets (Milestone 3). Every division throughout the Corporation will have a role to play in order to achieve recommended reduction targets. However, the following areas will have a notable role to play and should be included in the Task Force:
 - Administrative Advisory Group
 - Community and Protective Services
 - Building
 - Corporate Facilities Planning
 - Development
 - Planning Policy
 - Urban Design and Community Development
 - Facility Operations
 - Public Works
 - Engineering
 - Corporate Projects
 - Environmental Services
 - Lou Romano Water Reclamation Plant/Little River Pollution Control Plant
 - Transportation Planning
 - Traffic Operations
 - Fleet
 - Transit Windsor
 - Windsor Utilities Commission
 - ENWIN Utilities
2. That a community climate change task force be developed to assist the Environmental Coordinator in identifying achievable emission reduction targets, if feasible and a local community action plan. It is recommended that this

community task force be made up of some members of the corporate task force but will include a large representation from the community. The community stakeholders should include representatives from industry, commercial business, environmental groups, and general members of the public. It is also proposed that the community task force will help spread the message to the community and help implement actions that may be outside the jurisdiction of the City of Windsor.

3. Agencies, Boards and Commission not already included in this inventory should undertake the development of a greenhouse gas inventory for their operations.
4. It is recommended that the greenhouse gas inventory be updated every 3 years to measure the successes and failures of the corporate and community action plans.

A special thanks to....

City of Windsor Staff from....

Public Works – Operations
Public Works – Environmental Services
Community and Protective Services – Planning
Community and Protective Services – Corporate Facilities Planning
Community and Protective Services – Fire
Community and Protective Services – Parks and Facilities Operations
Corporate Services – Finance
Corporate Services – Human Resources

Outside Agencies...

Transit Windsor
Windsor Utilities Commission (WUC)
ENWIN
Union Gas
Essex-Windsor Solid Waste Authority

ⁱ Municipal Knowledge Series “Stepping up to the Climate Change Challenge, Perspectives on Local Government Leadership, Policy and Practice in Canada”, Municipal World 2008.

ⁱⁱ FCM: <<http://www.sustainablecommunities.fcm.ca/Partners-for-Climate-Protection/>>

ⁱⁱⁱ FCM:< http://www.sustainablecommunities.fcm.ca/Partners-for-Climate-Protection/Milestone_one.asp>

^{iv} Statistics Canada, Canadian Vehicle Survey 2005, Summary Report.

^v Statistics Canada, Home Heating and the Environment: <
<http://www.statcan.ca/bsolc/english/bsolc?catno=11-008-X20050049126>>

^{vi} Lapointe Consulting Inc, “Windsor-Essex and City of Windsor Population and Housing Projections: 2006-2031 and Affordable Housing Targets”, January 2008.

^{vii} EDP Consulting, “City of Windsor Employment Projections & Employment Lands Needs Analysis”, January 2008.

^{viii} Windsor Star, “Factory Closures help cut Windsor power consumption, August 11, 2008.<
H<http://www.canada.com/windsorstar/news/local/story.html?id=0beb5c17-7730-4259-9017-0a7bbff5b3a9>H>

APPENDICES