



Greenhouse Gas Emissions Reduction Strategy

City of St. John's Local Action Plan

2006-2010

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Executive Summary

In the City of St. John's continuing commitment to climate change, this local action plan highlights specific reduction targets and initiatives to reduce the emissions of greenhouse gases (GHG) and also improve the quality of life in St. John's. The environmental initiatives outlined in this plan will provide ways to reduce GHG emissions, and make the City of St. John's more environmentally friendly.

There is little dispute amongst the scientific community that climate change is occurring. Human activities are upsetting the balance of GHG, such as carbon dioxide (CO₂), methane (CH₄), and other gases in our atmosphere (Intergovernmental Panel on Climate Change (IPCC), 2001). Our increasing and unyielding demand for petroleum products releases these GHG's into the atmosphere, warming it. The result of increased CO₂ and GHG's is rising average world temperatures. The 20th Century was the warmest the world has seen in 1000 years, with the 1990's as the warmest decade in climatic history, and 2005 the warmest year (IPCC, 2001).

The City of St. John's has committed to reducing GHG emissions by 20% within the corporate structure of the municipality, and by 6% for the community, including commercial businesses and institutions. This climate change action plan presents the 1994 baseline of the City's corporate and community emissions, a forecast of emissions in 2010 using the business as usual (BAU) model, statement of reduction targets and three action plans, for the City's corporate structure, for the community, and for waste management. The action plans contain action items which generally can be implemented quickly, and which were designed to help reduce GHG emissions immediately. Reducing GHG emissions is not only good for our environment, it also helps our health, and makes our City a better place to live.

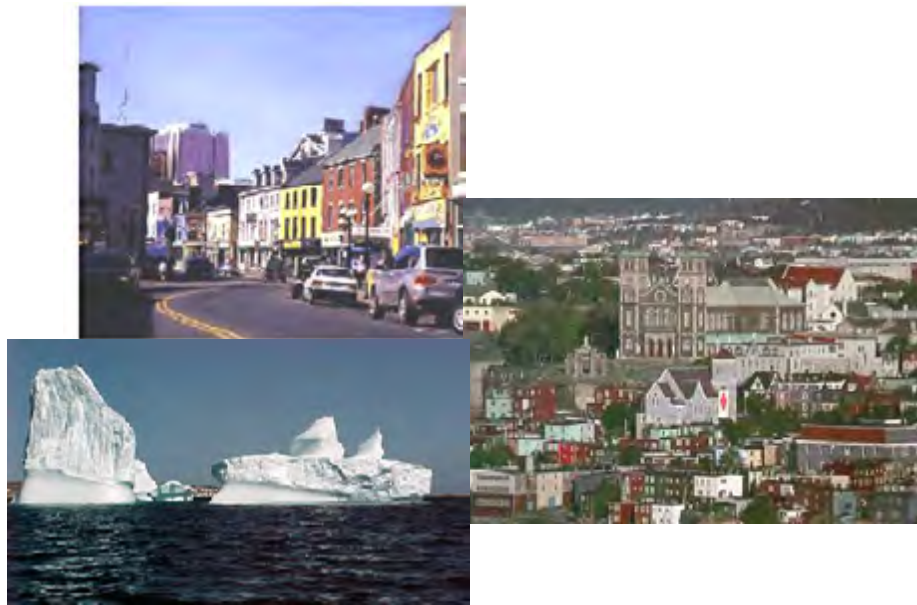


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Overview

Greenhouse Gas Emissions

The greenhouse effect traps heat in the Earth's atmosphere. The greenhouse effect is naturally occurring and integral for life to exist on Earth. Currently the greenhouse effect is altered due to increased GHG emissions into the atmosphere, primarily from fossil fuel combustion. CO₂ is a by-product of heating and cooling of urban buildings, consumption of electricity by local industries and businesses, and transporting people and goods to, from and within urban centers. CH₄, another GHG is produced in landfills and is 21 times more effective at warming the atmosphere than CO₂. CH₄ is the second most common greenhouse gas and accounts for approximately 12% of Canadian's contribution to global warming. As urban centers are major sources of GHG, municipalities have an integral role in reducing emissions of these gases.



In 1992 Canada, along with more than 155 countries signed the United Nations Framework Convention on Climate Change. The 1997 UN Conference held in Kyoto, Japan established legally binding targets for those industrialized countries that ratify the agreement and the time frames within which those targets are to be met. This is known as the "Kyoto Protocol." Canada ratified the Kyoto Protocol in 2002, and agreed to lower its GHG emissions to 6% below 1990 levels between 2008 and 2012.

The City of St. John's is part of the Partners for Climate Protection (PCP) Program, a program designed to assist municipalities achieve tangible reductions of local GHG's. The work plan for fulfilment of the PCP Program requires the completion of 5 sequential milestones. The City of St. John's completed Milestone 1 and 2 in November 2002. With Council's approval of this plan, Milestone 3 will be achieved. At the end of this document there is a directive towards completing Milestone 4 and 5.

PCP Milestones

1. Create a Greenhouse Gas Baseline Inventory and 2010 Forecast
2. Set a Greenhouse Gas Reduction Target
3. Develop a Local Action Plan
4. Implement the Action Plan
5. Measure Progress and Report Results

Purpose of a Climate Change Action Plan

St. John's City Council approved a resolution in December 2000 to participate in a voluntary

program designed by PCP. In 2001 the City developed an inventory of its GHG emissions for both the municipal corporate and community activities. The City committed to reducing corporate GHG emissions by 20%, and community emissions by 6% (from 1994 levels). The following document describes how the City of St. John's plans to fulfill these commitments.

Community GHG Emission Profile

The City of St. John's is the oldest and most easterly city in North America which encompasses a land area of more than 446 km², and a population of approximately 100,000. Built from the edges of its harbor, residential and commercial properties are scattered throughout the hilly and rocky landscape. As the center for business, research, education and government for the province, St. John's is the second largest metropolitan area in Atlantic Canada and is home to approximately one-third of the province's population. It is a place where old world traditions mingle with 21st century creativity and innovation. From the early days as a commercial trading outpost to the recent offshore oil industry, St. John's has become a thriving, modern city with world-class facilities and services.

The population of St. John's has decreased by 2.7% since 1996, with an increase in the number of dwellings by 4.0% (Statistics Canada, 2001). St. John's is grouped as part of a larger regional municipality, sharing facilities including the Robin Hood Bay Landfill. The landfill is used by the regional municipality, and while the climate change action plan is only for St. John's, the waste management strategies will also affect the regional municipality in a positive manner.

Table 1 - 2001 Census Information for the City of St. John's (Statistics Canada, 2001).

	2001 Census Information
Population	99,182
Number of Dwellings	39,290
Population Growth Rate (from 1996)	-2.7%

The community GHG emission inventory includes residential, institutional, commercial, industrial, transportation, and solid waste sectors. The baseline year is 1994 - the year against which future reduction efforts will be measured. Figure 1 and Table 2 illustrate the inventory of community emissions. The vehicle fleet, or transportation sector has the greatest emissions comprising 36% or 229,000 tonnes eCO₂. Residential energy usage is the 2nd highest GHG contributor. Significant reductions in these two sectors will provide the largest GHG reductions.

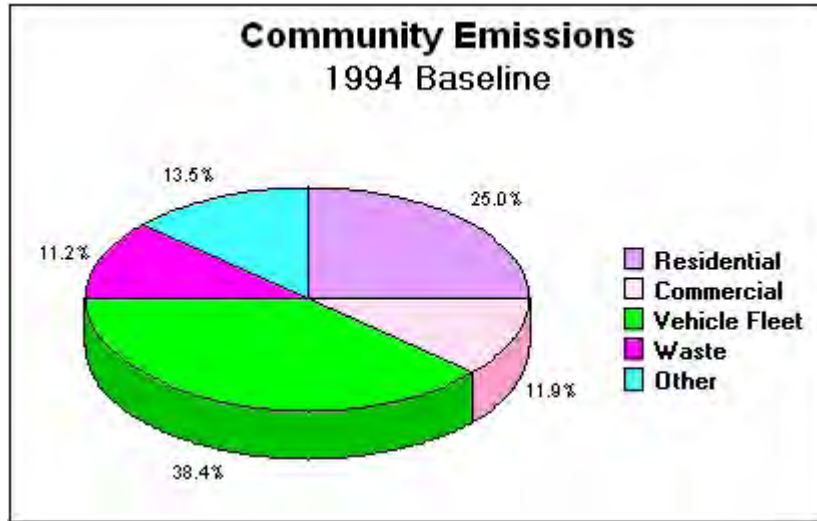


Figure 1 - Community emissions categorized to 100% total.

Table 2 - Community eCO₂ (tonnes) inventory for baseline year 1994.

	tonnes (eCO₂)
Residential	149,302
Commercial	70,822
Vehicle Fleet	229,054
Waste	67,129
Other	80,539
Total	596,846

Corporate GHG Emission Profile

With an annual operating and capital budget of over \$120 million and 1,200 full and part-time staff, the City is mandated to provide services to the citizens of St. John's. The City also provides essential services to regional municipalities by contract in areas such as public transportation and waste disposal; and through regional service arrangements for the protection and preservation of life and property and the supply of potable water. The corporate GHG inventory includes municipal facilities and operations.



Corporate emissions are only a fraction (~2%) of community emissions. Leading the community by example, the City must get its own house in order to show corporations, institutions and the Citizens ways to reduce GHG emissions.

As with the community inventory the vehicle fleet has the largest GHG emission, comprising nearly 40% (5,141 tonnes) (Figure 2, Table 3). Energy use in municipal buildings is the second largest source of GHG's, emitting over 4,000 tonnes. Significant reductions in both of these areas will bring the largest GHG reductions.

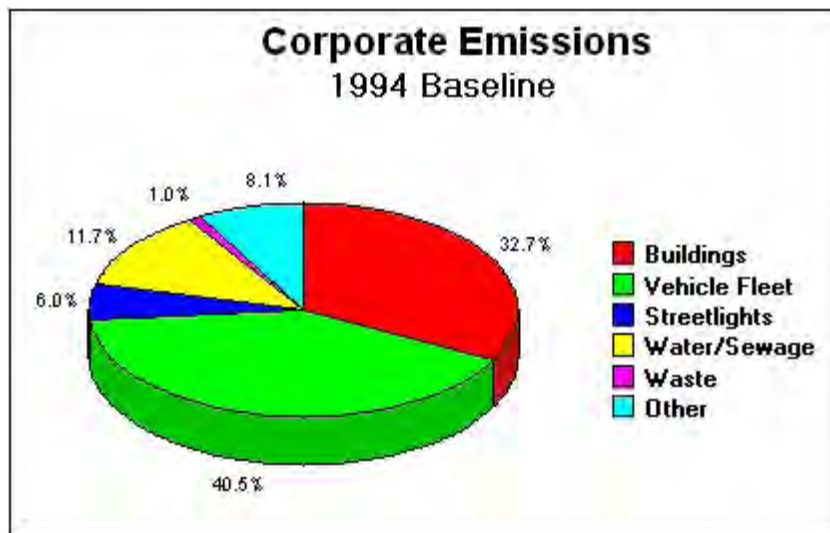


Figure 2 - Corporate emissions categorized to 100% total.

Table 3 - Corporate eCO₂ (tonnes) inventory for baseline year 1994.

	tonnes (eCO₂)
Buildings	4,152
Vehicle Fleet	5141
Streetlights	756
Water/Sewage	1486
Waste	126
Other	1,030
Total	12,691

Reduction Targets

The City of St. John's has committed to reducing corporate GHG emissions by 20% and community emissions by 6% by 2010. Figures 3 and 4 highlight current emissions, proposed reductions and a 2010 forecast using the business as usual (BAU) model, for both the community and corporate structure respectively. To meet the corporate reduction target the City will have to reduce their emissions by 2,538 tonnes. For the community to meet the target of the Kyoto protocol, a reduction of 35,811 tonnes will have to be attained.

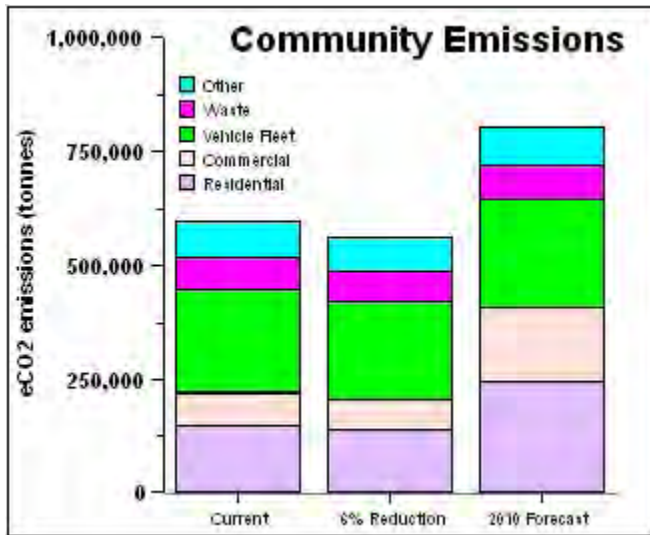


Figure 3 - Community emissions in eCO₂ (tonnes) for 1994 baseline data, 6% reduction target and 2010 forecast data using BAU model.

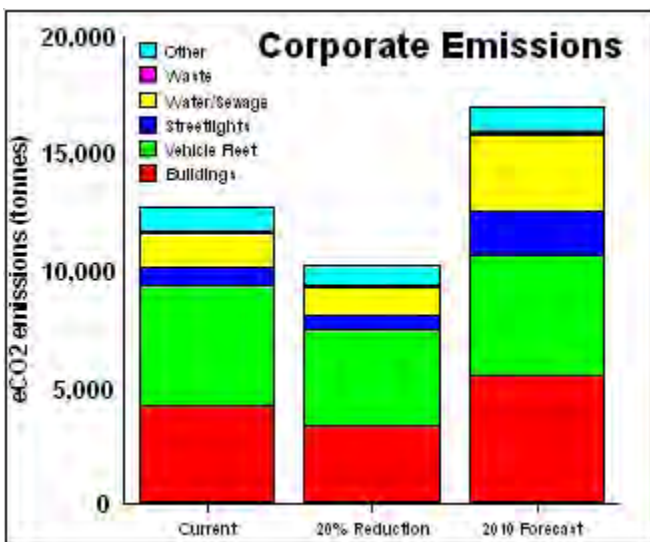


Figure 4 - Corporate emissions in eCO₂ (tonnes) for 1994 baseline data, 20% reduction target and 2010 forecast data using BAU model.

Figure 5 and 6 show the progression of the BAU model and the reduction targets through to 2010. The gap between the BAU model and the reduction targets is large. For community emissions the gap is 240,899 tonnes, while for corporate emissions, there is a 6,771 tonne gap. To meet the reduction targets the City of St. John's and the community will have to work together to reduce GHG emissions.

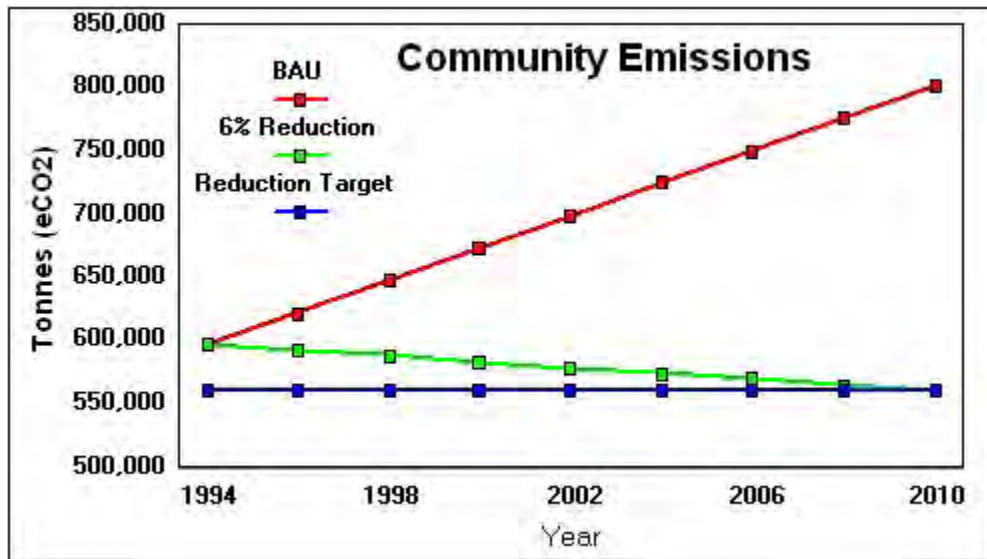


Figure 5 - Community emissions in eCO₂ (tonnes) for 1994 baseline data, 6% reduction target and 2010 forecast data using BAU model.

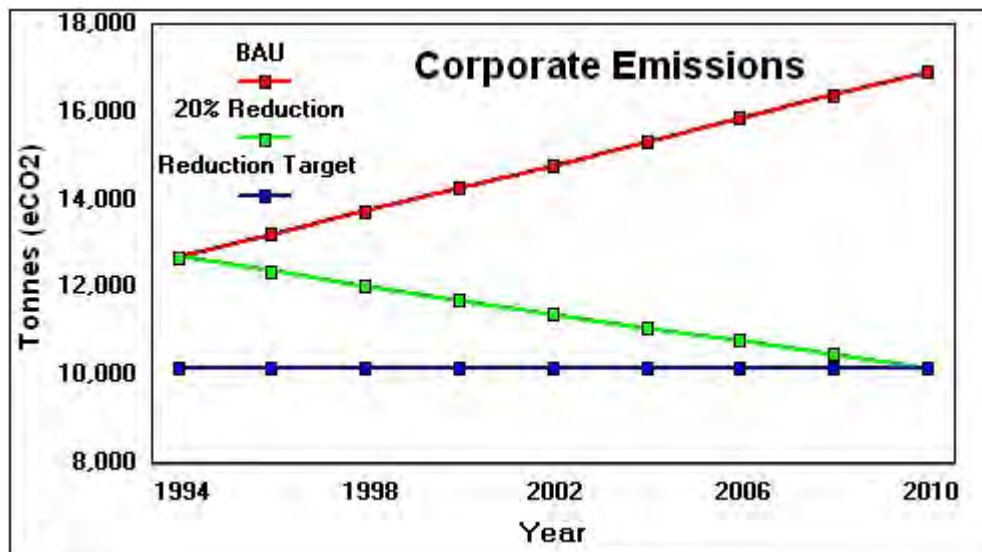


Figure 6 - Corporate emissions in eCO₂ (tonnes) for 1994 baseline data, 20% reduction target and 2010 forecast data using BAU model.

Community Action Plan

Through partnerships with non government organizations (NGO's) and community groups, the City of St. John's and its citizens have worked diligently to help keep the City clean, safe and environmentally responsible. Two examples of community groups working to make St. John's a better place are *St. John's Clean and Beautiful (SJCB)* and the *Grand Concourse Authority*. *SJCB* works to eliminate litter through clean up days and public education, and also organizes beautification and restoration projects. The *Grand Concourse Authority* works to increase the green spaces and trees within the City and has created a 120 kilometer integrated walkway system for the regional municipality. Many other community groups are working to enhance the beauty of St. John's, and educate the community on environmental and conservation practices. These groups include, but are not limited to:

- Conservation Corps of Newfoundland and Labrador
- East Coast Trail Association
- Friends and Lobbyists of the Waterford River
- Friends of Pippy Park Inc.
- Friends of the MUN Botanical Garden Inc.
- Friends of Victoria Park
- Nature Conservancy of Canada, Atlantic Region
- Newfoundland and Labrador Environmental Association
- Newfoundland and Labrador Legacy Nature Trust
- Newfoundland and Labrador Wildlife Federation
- Newfoundland Ocean Industries Association
- Ocean Net Newfoundland and Labrador
- Quidi Vidi / Rennie's River Development Foundation / The Fluvarium
- STEER (Smart Taxi's Encouraging Environmental Respect).



The City of St. John's works with community groups to help reduce the amount of GHG entering our atmosphere. We as members of the community have the responsibility to maintain our City, Province, Country and Planet. Citizens and business leaders within St. John's are working towards reducing GHG emissions, and this plan will compliment work already conducted by these groups.

The community climate change plan is categorized into; completed projects, ongoing projects and new initiatives. New initiatives are characterized as “proposed” or “conceptual”. Proposed action items are listed with an anticipated start date, while items which are conceptual will require further research, and re-examined during Milestone 4 to determine feasibility.



Completed Projects

Energuide Home Evaluations. Youth Eco-Teams conducted ~700 evaluations providing information and practical advice on reducing residential emissions, and cost saving tips. The Conservation Corps partnered with the City of St. John's to complete these home evaluations. Residential heating in St. John's accounts for 149,302 tonnes of CO₂. Helping eliminate energy waste not only helps the environment, but it also helps the home owner save money.

Home Green Ups. Working with the Conservation Corps, the City of St. John's provided environmental assessments, including a pesticide awareness service, and a “Pesticide Free Naturally” kit. The program helped reduce the amount of pesticide use within the City. Pesticides are toxic, and while reducing their use will have little impact on GHG reductions, it will improve the quality of our air, and help reduce respiratory stress.

Ongoing Projects

Pesticide Reduction. The City of St. John's has implemented a City bylaw requiring all new residential developments to have a minimum of 6 inches of topsoil on the property prior to landscaping. The topsoil will provide a good base for healthy grass growth, which will help reduce the need for fertilizers, weed, insect control and extra watering. The City also partners with the MUN Botanical Garden each year to provide a series of workshops on pesticide free gardening.

Smart Taxis Encouraging Environmental Respect (STEER). The Taxi Industry of St. John's, the City of St. John's, Natural Resources Canada, the Provincial Department of Environment and Conservation, the Conservation Corps, and St. John's Clean and Beautiful are the current partners of the STEER project. This group is continuing a program about environmentally friendly driving and are drawing on the taxi industry as the first participants. The program and educational workshop help to increase driver awareness of environmentally friendly driving techniques and

vehicle maintenance, and in turn, helps drivers reduce their greenhouse gas emissions, along with saving money. Since its inception in 2000, over 150 taxi drivers have attended STEER workshops. The STEER committee plans on bringing the workshop to the municipal fleet in 2006.

Green Spots Naturalization and “No Mow Zones”. The City of St. John's in collaboration with the Grand Concourse Authority and Environment Canada have enhanced existing naturalized sites and created new sites where grass mowing was reduced or removed completely. The sites became part of the “No Mow Zone” program. The “No Mow Zone” program reduces GHG emissions from lawn mowers. Approximately 6,000 native and nursery trees, shrubs and plants were added to the “No Mow Zone's”, resulting in a potential reduction of 500 tonnes of GHG. Within the Municipal structure, the Parks department plants 150 large, and 400 small trees annually. Approximately 50 large trees are removed yearly due to death or public hazard.

New Initiatives

Initiative	Lead Agency	Partners	Status
One Tonne Challenge	Federal Government, Conservation Corps.	City of St. John's	Proposed. Start the One Tonne Challenge (OTC) for the City of St. John's. This would involve a comprehensive public awareness campaign, resulting in a possible reduction of 5,000 tonnes (assuming 5% of the population committed to challenge). Anticipated start: June 2006.
Environmental Awareness Days	City of St. John's	Community Partners	Proposed. The City will promote environmental days (International Walk to School Week, Car Free Day, Clean Air day, Earth Day, etc). Promotions part of the OTC. Anticipated start: February 2006.
Transit Lottery	Metrobus, City of St. John's	Community Groups, Business Sector, MUN	Proposed. The City will work with Metrobus to help increase ridership. Bus riders are provided with a ticket for a chance to win prizes donated by the business community. Implement as part of the OTC to increase awareness towards public transport. Anticipated start: September 2007.
Anti-Idling Campaign	City of St. John's	Provincial, Federal Government, STEER	Proposed. Creation of an anti-idling campaign within the City. “No Idle Zones” in front of supermarkets, shopping centres, schools, hospitals, government buildings, and idling hot spots. Anticipated start: March 2006.

City of St. John's Climate Change Action Plan 2006

Initiative	Lead Agency	Partners	Status
Building Code By-Law	City of St. John's		Conceptual. Create a City by-law requiring new homes to be built with insulated basements.
Plumbing By-Law	City of St. John's		Conceptual. Create a by-law requiring the installation of low flow toilets and taps to be installed in all new homes.
Active Transportation	Environmental Initiatives	Grand Concourse	Conceptual. Increase awareness and modes of active transport during, Spring, Summer and Fall.
Park and Ride Stations	City of St. John's, Metrobus, Memorial University		Conceptual. The City will work with Memorial and Metrobus to create a park and ride station for commuters coming to Memorial University (including the Health Sciences Centre). The station would provide a reduction in traffic, create a safer roadway for pedestrians and reduce GHG emissions from the transportation sector.

Corporate Action Plan

The City has already completed many action items to reduce energy waste within its corporate structure, which has resulted in both GHG and financial savings. The City continues its commitment to the environment and looks for new and innovative ways to reduce GHG emissions, and lead the province, and community by example.



The corporate action plan is modelled after the community action plan. New initiatives are characterized as “proposed” or “conceptual”. Proposed action items are listed with an anticipated start date, while items which are conceptual will require further research, and be re-examined during Milestone 4 to determine feasibility.

Completed Projects

Municipal Building Retrofits. In 1995 and 2001 the City retrofitted all municipal buildings. Average annual energy savings are approximately \$625,000, with an estimated reduction of 11,000 tonnes of CO₂ since the project began in 1995. There are average savings of 1,000 tonnes of CO₂ each year, approximately 1/3 of the total buildings emissions. With continued monitoring and energy analysis, the City aims to improve the energy reductions. Building manager Bob Wilson won the FCM-CH2M HILL Sustainable Community Award in 2001 for the energy savings resulting from the retrofits. Although the yearly reduction is approximately 1,000 tonnes, the 11,000 tonne reduction since 1995 is a major environmental achievement for the City of St. John's.

Plumbing Retrofit Study. The City of St. John's hired Kendall Engineering to complete a feasibility study exploring ways to reduce residential water demand. The feasibility study was cost shared with the Federation of Canadian Municipalities (FCM). The study concluded that a metering program would provide the largest decrease in water demand (~10%), but implementation and operations costs would be cost prohibitive. The study found that residential water usage was at or below the Canadian average, suggesting that the City's conservation education programs are working.



Ongoing Projects

Pesticide Reduction. The City of St. John's continues to reduce the amount of pesticide used on City green spaces. The Lawn Bowling Green is the only area where fungicides are used within the City's parks and open spaces. This is to meet the required grass standard of the bowling green. Reducing pesticide use helps keep the air clean and free of toxic constituents.

Salt Management Plan. The City of St. John's is continually trying to reduce the amount of road salt used, and is currently using 25% less compared to average levels. The City continues training its personnel in attempts to safely use the least possible amount of salt. The salt management plan allows the City to reduce the amount of salt used on roads, which ends up in the sewer system. Financial savings from reduced salt use are redirected into training employees on proper salt application.

Water Conservation Order. Within the regional municipality, there is a mandatory ban on unmonitored outside water usage. Lawns and gardens are watered on specified days in the early morning or early evening. Watering plants and car washing can be completed at any time when using an automatic shut off nozzle. The water ban helps reduce water consumption. The City looks to reduce water consumption to help preserve this precious resource, while also reducing the energy and cost requirements to treat and transport the water. During 2005-2007, the City will invest \$2 million in an infiltration/inflow reduction program, a leak detection program, expanding the water education program to the industrial, commercial and institution sectors, increased conservation-order enforcement, a zone water metering program, and a residential metering study. All of these initiatives will help reduce water usage, and the environmental and fiscal costs associated.

Updating Street Lights. Newfoundland Power is currently replacing mercury vapour lights with high pressure sodium lights as they burn out. High pressure sodium bulbs use less energy and have a lamp life of over 24,000 hours. The reduction in energy will result in decreased GHG emissions and a decrease in energy costs. Nearly all streetlights in St. John's have been converted.

Anti-Idling Policy for Municipal Fleet. There is a mandatory anti-idling policy for municipal vehicles. This plan calls for further reductions from vehicle idling by 5% (257 tonnes) by 2010.

An updated anti-idling policy is attached in the Appendix, and through the new policy and increased driver education, idling times will be reduced.

Fleet Management. There is ongoing work on the fleet management program, ensuring municipal fleet are maintained properly to help reduce GHG emissions. The City of St. John's hopes to introduce mandatory training sessions for all fleet drivers for education on driving habits to reduce GHG emissions. The City will also look to gradually replace obsolete vehicles with newer fuel efficient models, and make fuel efficiency important when tendering the purchase of a new vehicle.

LED Traffic Light Replacement. By the end of 2005, 12 traffic signals will be equipped with LED (light emitting diode) traffic lights. LED traffic lights are estimated to use 9% of the energy used by traditional incandescent bulbs. The Engineering Department has proposed to replace all traffic lights in 2006. Energy savings would result in a net reduction of 178 tonnes of CO₂. The cost to convert all traffic signals to LED is \$588,953 with energy savings realised in 3.8 years.

New Initiatives

Initiative	Lead Agency	Partners	Status
Environmentally Responsible Procurement Policy	Environmental Initiatives	Purchasing Office	Proposed. Introduce an updated environmentally responsible procurement policy instructing the purchasing office to purchase more environmentally friendly products, and goods and services. The policy will extend to the municipal fleet. Anticipated start date: February 2006.
Installation of Autotherm Energy Recovery System© in Municipal Feet	Public Works	STEER, Natural Resources Canada, City of St. John's	Conceptual. A pilot project is proposed with this technology to determine if this product would be a useful addition to the municipal fleet. This product could reduce GHG emissions by reducing idling and improving fuel efficiency, saving the City money.
Pedestrian and Bicycle Initiatives	Engineering, Planning, Traffic, Public Works, Environmental Initiatives	Memorial University	Conceptual. The Traffic department will continue to research the feasibility of bicycle lanes on major roads, and near Memorial University.

Waste Management Action Plan

There is an increasing need for a waste management plan for the City of St. John's to keep in line with standards set by other Canadian cities. There are initiatives to help reduce the amount of waste entering the landfill, and further initiatives will have to be implemented to meet the province's commitment to divert the total waste of the province by 50% by 2010. A 50% waste diversion will result in increased recycling and composting. GHG reductions will primarily occur from a reduction in methane production at the landfill.



In 1994 waste from both community and corporate emissions totalled 67,255 tonnes eCO₂. In 2007 the City of St. John's waste diversion strategy will be implemented, including three stream source separation. Garbage will be separated into fibre products (currently account for 37% of waste), wet garbage (currently accounts for 30% of waste) and garbage which cannot be recycled or composted. As part of the St. John's waste management strategy fibre products and compost will be diverted from the landfill. Using the province's diversion rate of 50%, the City could potentially see a reduction of waste emissions by half (33,000 tonnes). It is proposed that the diversion rate achieved in St. John's at the start of the project would be approximately 30%, resulting in reductions of nearly 20,000 tonnes. As the project continued increased diversion rates would result with a better understanding of the project.

Ongoing Projects

Household Hazardous Waste. There are four household hazardous waste drop off days a year (1800 drop offs in 2002.), diverting hazardous waste from the landfill. Current rate of residential diversion is 10%. The elimination of hazardous waste from the landfill helps reduce the amount of toxic substances in the landfill. There will be a hazardous waste depot at the landfill as part of the 2007 waste management strategy.

Commercial Cardboard Ban. The ban helps eliminate the amount of commercial cardboard entering the landfill. As a result of the ban, 75-85% of commercial cardboard is diverted from landfill. The cardboard is recycled and used in other markets.

Fall Leaf and Christmas Tree Recycling. Leaves and trees are recycled as part of this program, creating mulch and compost for City shrubs and flower beds. The program reduces the amount of organics entering the landfill (reducing CH₄ production), and provides free fertilizer for City landscaping. The program diverts approximately 100 tonnes of leaves and 8,000 trees annually from the landfill.



Tire Ban. The City of St. John's in partnership with the Provincial Government and the Multi Materials Stewardship Board (MMSB) have implemented a ban of tires at the Robin Hood Bay Landfill. Tires are collected by retailers, and stored by the MMSB. Over 1 million tires have been collected. The tires are recycled and used in other markets, but currently the province has not secured a tender to purchase the tires.

Beverage Container Recycling. The City of St. John's works with both the Provincial Government and the MMSB on the beverage container recycling initiative. Beverage containers are recycled and kept out of the landfill. The current recycling rate is 68%. The City has also partnered with OMG Atlantic to provide bins for recycling in the downtown core, helping reduce litter and the number of beverage containers entering the landfill. There is further interest to bring these bins to the Stavanger Drive area. Each bin diverts ½ tonne of garbage from entering the landfill.

Mandatory Office Paper Recycling Program. The Provincial Government and the MMSB have implemented a mandatory office paper recycling program in September 2005. Fibre products are recycled into new paper products. Large institutions, such as Memorial University have found that the recycling program has reduced their waste by nearly 1/3. Recycling programs such as this help extend the lifetime of the Robin Hood Bay Landfill.

Riverhead Sewage Treatment Plant. The City of St. John's in collaboration with the Provincial Government, Federal Government, City of Mt. Pearl and Town of Paradise have committed over 90 million dollars to the construction of a sewage treatment plant. Once completed the treatment plant will treat the 120,000,000 litres of raw sewage and storm water runoff entering the harbour daily. Anticipated completion date: January 2008.

New Initiatives

Initiative	Lead Agency/Sector	Partners	Status
Source Separated Waste Collection	Environmental Initiatives	Engineering and Planning	Proposed. Initiate three stream source separated waste collection. Organics will be composted at landfill site, garbage disposed of safely in the landfill and fibre products would be recycled. A 50% diversion rate would reduce emissions by approximately 30,000 tonnes CO ₂ . Anticipated start date: January 2007.
Waste Diversion Calendar	Environmental Initiatives, Public Works and Parks		Proposed. Calendar would provide collection schedule along with information regarding: water conservation, GHG reduction strategies, anti-idling, waste diversion, pesticide reduction, household hazardous waste, and community events. Anticipated start date: January 2007.
Methane Capture and Green Electricity Production at Robin Hood Bay Landfill	Engineering and Planning	Federation of Canadian Municipalities, Provincial Government	Conceptual. CH ₄ is a by-product of bacterial reduction of organic waste. The amount of CH ₄ produced at the landfill could range between 3450-6030m ³ /hr, depending on the life-span of the landfill. CH ₄ can be flared at the landfill site reducing GHG emission by 130,000 tonnes. Alternatively a power plant powered by CH ₄ could power 3,000 homes for ~10 years.

Milestone 4 & 5: Steps Toward The Future

Milestone 4 is the implementation of the climate change plan, and Milestone 5 involves measuring GHG emissions and reporting results. As part of Milestone 4 & 5 this document will be edited and reviewed. For the completion of Milestone 5 the City of St. John's will measure progress of GHG reduction strategies. To help the City complete Milestone 4 & 5 the following are suggested:

- 1) Maintain a yearly record of GHG emissions from the City's operations and report these results to St. John's City Council, the Provincial Government, and the citizens of St. John's. Fleet Managers, Directors and Managers will be required to submit electricity bills, fuel consumption and other energy usage to the Environmental Initiatives group at the end of each fiscal year. The Environmental Initiatives group will compile and report GHG emissions yearly. As data is compiled, the Environmental Initiatives group will continue to forecast and monitor emissions with changes in population, population density and the impact of other municipalities utilizing City of St. John's services, providing guidance to both the City Council and its citizens.
- 2) Personnel within the municipal structure will be responsible for ensuring that the emissions reduction strategies are being implemented properly and that the initiatives are properly focussed. Initiatives with positive results will be extended, while initiatives with poor results will be reviewed.

Summary

The City of St. John's is committed to protecting its environment and is leading by example for other municipalities within Newfoundland and Labrador. This climate change action plan highlights the City's commitment and leadership with respect to climate change.



Table 4 shows 1994 emissions, realized emission reductions and planned reductions. The Table details areas where the City plans to make reductions, and how it plans to reach its 20% and 6% goals. The municipal building retrofits conducted in 1995 and 2001 have resulted in a net reduction of over 11,000 tonnes of CO₂ over a 10 year period, reducing CO₂ emissions of buildings by $\sim 1/3$. The Building Department continues to work on energy reductions, and looks to improve on energy reductions. Through energy savings from streetlight and traffic light retrofits, the mandatory office recycling program, driver education, anti-idling, and environmental procurement policy, the City of St. John's will likely surpass the 20% reduction target.

Reducing community emissions will be challenging as the City has to overcome views and misconceptions on idling, energy use, housing retrofits and climate change in general. The public awareness campaign associated with the One Tonne Challenge will help improve the knowledge base of the citizens of St. John's. Improving the air quality through reduced idling will help all members of the community, especially children, who are more acute to respiratory illnesses.

The community based initiatives presented in this plan will help reduce individual emissions. We hope to achieve a 10,000 tonne reduction through individual and corporate commitments to the One Tonne Challenge. Through the anti-idling campaign we aim to reduce transportation emissions by 5% (11,453 tonnes). One of the largest, and most costly initiatives proposed is the implementation of waste diversion in 2007. The goal is to reduce waste by 50%. A 50% reduction in waste has the potential to reduce waste GHG emissions by 33,563 tonnes.

The City of St. John's climate change action plan is ambitious, and at times costly, but the City believes that climate change is a bigger risk. One cannot use the "wait and see" attitude. St. John's has to plan for climate change, and its effects. This includes mitigation, planning, and adaptation. This document should be considered a "working document", as planning for climate change has no expiration date.

City of St. John's Climate Change Action Plan 2006

Table 4 - Community and Corporate realised and planned reductions to meet the reduction targets by 2010. The Table illustrates how planned reductions will compare to the reduction targets set.

Corporate	eCO2 (tonnes)	Realised Reductions	Planned Reductions	Total Reductions	Note
Buildings	4,152	624	353	977	Current building retrofit energy savings, with additional 10% reduction
Vehicle Fleet	5,141	0	514	514	10% reduction from anti-idling campaign
Streetlights	756	0	178	178	LED traffic signal replacement
Water/Sewage	1,486	0	149	149	10% reduction from decreased water use
Waste	126	0	63	63	50% diversion by 2010
Other	1,030	790	24	814	Reduction from decreased use of Bunker C at Depot, with additional 10% reduction
Total	12,691	1,414	1,281	2,695	
20% Reduction Target	2,538	2,538	2,538	2,538	
Over/Short	-	(1,124)	(1,258)	157	

Community	eCO2 (tonnes)	Realised Reductions	Planned Reductions	Total Reductions	Note
Residential	149,302	0	5,000	5,000	One Tonne Challenge
Commercial	70,822	0	5,000	5,000	One Tonne Challenge
Vehicle Fleet	229,054	0	11,453	11,453	5% reduction from anti-idling campaign
Waste	67,129	0	33,565	33,565	50% diversion by 2010
Other	80,539	500	0	500	Green Spots tree planting
Total	596,846	500	55,017	55,517	
6% Reduction Target	35,811	35,811	35,811	35,811	
Over/Short	-	(35,311)	19,206	19,706	

Beyond the Reduction Targets

The reduction targets set by the City of St. John's are ambitious and challenging. The conceptual items presented in the climate change plan will allow the City of St. Johns and its citizens to surpass the 6% and 20% reduction targets (see Table 5). For the corporate structure, with realised, planned and conceptual reductions combined, the reduction achieved will be 1,048% from 1994 levels and 786% from forecasted 2010 levels. For the community the reductions would account for a 15% reduction from 1994 levels and 11% from 2010 forecast.

There are also other initiatives which have not been developed or conceived, which can help reduce our GHG emissions. Working with the community and its citizens, and leading by example the City of St. John's will continually look to reduce GHG emissions, and make the City a cleaner, and better place to live.

Table 5 - eCO₂ emissions (tonnes) for both corporate and community emissions. Conceptual items include fuel efficient vehicle purchases, use of CH₄ as an energy source, residential retrofits (including by-law recommendations), and transportation reductions from increased use of transit.

Corporate	eCO₂ (tonnes)	Planned Reductions	Conceptual Reductions	Total Reductions
Total	12,691	2,695	130,257	132,952
20% Reduction	2,538	2,538	2,538	2,538
% Reduction 1994	0	21	1,026	1,048
% Reduction 2010	-	16.5	770	786

Community	eCO₂ (tonnes)	Planned Reductions	Conceptual Reductions	Total Reductions
Total	596,846	55,517	36,732	92,249
6% Reduction	35,811	35,811	35,811	35,811
% Reduction 1994	0	9	6	15
% Reduction 2010	-	7	5	12

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Acronyms

BAU - Business as usual

CH₄ - Methane

CO₂ - Carbon Dioxide

eCO₂ - Equivalent Carbon Dioxide

FCM - Federation of Canadian Municipalities

GHG - Greenhouse Gases

IPCC - Intergovernmental Panel on Climate Change

LED - Light Emitting Diode

MMSB - Multi Materials Stewardship Board

NGO - Non Governmental Organizations

OTC - One Tonne Challenge

PCP - Partners for Climate Protection Program

STEER - Smart Taxis Encouraging Environmental Respect

SJCB - St. John's Clean and Beautiful

Appendix

TO: All Vehicle & Equipment Operators

DATE: February 01, 2006

SUBJECT: Vehicle & Equipment Idling - Updated Operating Guidelines

The Problem Vehicle idling is an important environmental and economic problem, resulting in unnecessary fuel waste, accelerated engine wear and greenhouse gas emissions. Burning fuel creates harmful greenhouse gases: 2.9 kilograms of greenhouse gases for every litre of diesel consumed and 2.5 kilograms for every litre of gasoline.

The Solution Modern diesel and gasoline engines are designed to start easily and to be operated following a very short warm-up period. Idling *does not* improve their performance.

Recommended normal warm-up period for **light duty vehicles** (cars, vans, light trucks and sport utility vehicles):

- ⇒ Above 0 degrees Celsius 30 seconds
- ⇒ Below 0 degrees Celsius 1 minute

Recommended normal warm-up period for **heavy duty vehicles**:

- ⇒ Above 0 degrees Celsius 3 to 5 minutes
- ⇒ Below 0 degrees Celsius 7 to 10 minutes

In addition no person shall idle a **light duty vehicle** for more than **2 minutes** in a sixty minute period.

In all cases, ensure that oil pressure and air pressure are within the normal operating ranges and all windows are clear of ice and snow before operating the vehicle or equipment. After the short warm-up period and for the first few minutes of use, the engine should be operated at a gentle throttle until normal operating temperature is reached. Normal operating temperature is reached much faster if the vehicle or equipment is operated at a gentle throttle rather than left idling.

Driving your vehicle cuts warm up times in half.

The Benefits This department spends in excess of \$1,000,000.00 every year on diesel and gasoline. By eliminating unnecessary idling, we can achieve at least a 10% savings on fuel purchases plus additional savings from reduced engine wear. This represents a saving of more than \$100,000.00 every year. Besides this direct financial saving, reducing greenhouse gases means a cleaner environment for the benefit of everyone. The City has committed to reducing its greenhouse gas emissions by 20%, and reduced idling will help us achieve this goal.

Your Contribution You are part of the solution! Please stop unnecessary idling of your vehicle or equipment.

Operators who do not follow these guidelines are subject to the disciplinary process.

Paul Mackey, P.Eng

Director of Public Works & Parks

Environmentally Responsible Purchasing Policy

Purpose:

The City of St. John's recognizes that it consumes large amounts of material, and produces large amounts of waste. This policy is to ensure that the City's specifications for the purchase of goods, equipment, services and construction projects are **Environmentally Responsible**, where possible and practical.

Environmentally Responsible products have a less harmful effect on human health and the environment, compared to other competitive alternatives which serve the same purpose.

Environmentally Responsible attributes include: Biodegradable, Carcinogen-free, Chlorofluorocarbon (CFC) free, Compostable, Durable (life cycle), Energy efficient (energy star rating, etc.), Heavy metal free, Low toxicity, Created from rapidly renewable material, Recyclable, Recycled content, Reduced greenhouse gas emissions, Reduced packaging, Refurbished, Reusable, Upgradable and Water efficient, etc..

Policy Statement:

1. Wherever possible, materials required for City operation's will be environmentally responsible. This applies to products and packaging supplies. Environmental consideration should be included as part of the regular purchasing process as competition exists not only in price but also in technical competence, quality and performance, including environmental performance.

2. This policy is applicable to all divisions that create specifications and requisitions, and all divisions that have purchasing authority. Each department within the City will ensure that all employees are familiar with the City's commitment to purchasing environmentally responsible goods and services from vendors and contractors which share our commitment to the environment. This policy should apply to purchases made with corporate credit cards.

It is recognized that competitive pricing is required per the Public Tender Act and that the environmental benefits provided by goods, equipment, services or construction projects do not undermine overall performance.

Exemptions:

Nothing in this policy will prevent users from requiring recycled material content as a tender specification. Nothing in this policy requires a buyer or vendor to purchase products which do not perform for their intended use, or which are unavailable at a reasonable price/time frame.

Purchasing Policy in Plain English

Who does this policy apply? *Answer:* Everyone!

What should I do to implement this policy? *Answer:* We are asking City employees to purchase environmentally responsible products wherever possible and practical. This means one has to look beyond price, and examine the lifetime of the product, the products performance, including environmental performance and disposal of the product. Tenders should reflect the City's commitment to our environmental considerations.

Where does this policy apply? *Answer:* Everywhere! Employees are asked to add environmental considerations to the way we judge products and services. Ask yourself "How the product was made", "how the product will be disposed of", "how the product is packaged" and "what is the recycled content"?

When does the policy go into effect? *Answer:* Immediately.

Why change the original purchasing policy? *Answer:* The old policy was out of date and needed to be updated to show the City's continued commitment to the environment. The outcome of this policy will be that all City employees will increase our use of products and services which are environmentally responsible.

City of St. John's
Community Greenhouse Gas Emissions in 1994
Base Year Summary Report

	Equiv CO ₂ (tonnes)	Equiv CO ₂ %	Energy (GJ)
Residential Sector	149,302	25.0	3,539,538
Commercial Sector	70,822	11.9	2,463,477
Industrial Sector	0	0.0	0
Transportation Sector			
Automobiles	83,060	13.9	1,218,578
Vans & Light Trucks	69,519	11.6	1,019,160
Heavy Trucks	76,565	12.8	1,088,410
Transit Bus	53	0.0	758
Subtotal Transportation	229,197	38.4	3,326,906
Waste Sector	67,129	11.2	
Other Sector			
Heavy Fuel	63,612	10.7	
Kerosene	16,927	2.8	
Subtotal Other	80,539	13.5	
Total	596,988	100.0	9,329,920

This report has been generated for St. John's, Newfoundland with software created by Torrie Smith Associates for the Cities for Climate Protection Campaign of The International Council for Local Environmental Initiatives.
 Default emissions coefficients were used

City of St. John's
Community Greenhouse Gas Emissions in 1994
Base Year Detailed Report

	Equiv CO ₂ (tonnes)	Equiv CO ₂ %	Energy (GJ)
Residential			
Electricity	54,783	9.2	2,245,286
Fuel Oil	93,722	15.7	1,280,954
Propane	797	0.1	13,297
Subtotal Residential	149,302	25.0	3,539,538

* Electricity Information based on Energy Sales (kWh) supplied by NF Power.

* Fuel Information obtained from Statistics Canada (1994)

* Light fuel oil = Fuel Oil

Commercial

Electricity	54,671	9.2	2,240,691
Fuel Oil	15,472	2.6	211,468
Propane	678	0.1	11,317
Subtotal Commercial	70,822	11.9	2,463,477

* Electricity Information based on Energy Sales (kWh) supplied by NF Power.

* Commercial comes under the heading of "General Service" which means customers not using electricity for domestic use. These include businesses as well as institutions such as hospitals, schools and government.

Due to this classification, one can subtract the municipal government figures to get community analysis.

$656,280,254 \text{ kWh} - 36,736,288 \text{ kWh} = 619,543,966 \text{ kWh}$

$619,543,966 \text{ kWh} + (11,481,223 - 8,610,917 \text{ kWh}) = 622,414,272 \text{ kWh}$

* Total figure includes street lighting owned by businesses and residents as well as the City. An estimate of 75% of total streets were assumed to be owned by city.

$11,481,223 \text{ kWh} * 0.75 = 8,610,917 \text{ kWh}$

* Fuel Information obtained from Statistics Canada (1994).

* Light fuel oil = Fuel Oil

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City of St. John's Climate Change Action Plan 2006

Industrial 0 0.0 0

* Electricity is included within the Commercial Category.

* As the City of St. John's is not an "Industrial City", the total amount of Bunker C is only recorded. This is the total volume that comes from all sources within the city. A total volume of 20,585,849 L of Bunker C was consumed in St. John's in 1994. This information has been included in the Other Section and the volume of heavy fuel has been converted to tonnes of CO₂.

Transportation

Automobiles

Gasoline	81,416	13.6	1,194,758
Diesel	1,390	0.2	19,683
Propane	202	0.0	3,373
Subtotal	83,008	13.9	1,217,81

* Annual VKT (vehicle kilometers traveled) information based on an estimate from annual per capita values given in a help file at 6,000 VKT. This number was multiplied by population and added in the Transportation Assistant.

* Average L/100km information was based on typical vehicle efficiency for different fuels.

Heavy Trucks

Gasoline	7,541	1.3	110,657
Diesel	68,976	11.6	977,070
Subtotal	76,517	12.8	1,087,727

Subways/Light Rail

Subtotal	0	0.0	0
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Transit Bus

Diesel	53	0.0	0
Subtotal	53	0.0	0

Unclassified

Subtotal	0	0.0	0
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Vans & Light Trucks

Gasoline	67,488	11.3	990,359
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City of St. John's Climate Change Action Plan 2006

Diesel	1,988	0.3	28,162
Subtotal	69,476	11.6	1,108,520
Subtotal Transportation	229,054	38.4	3,324,818

Waste

Paper Products	44,313	7.4
Food Waste	25,618	4.3
Plant Debris	-431	-0.1
Wood/Textiles	-2,371	-0.4
Subtotal Waste	67,129	11.2

* Percentages are estimates used from report by ADI Ltd/NewPlan Consultants Ltd. (1993). This information is on par with Canadian Waste Stream, prepared by Davis Engine.

Other

Heavy Fuel

Carbon Dioxide	63,612	10.7
Subtotal	63,612	10.7

* The volume of CO2 produced within the City of St. John's has been converted from the volume of heavy fuel consumed. A total of 20,585,849 L of Bunker C was burned by various institutions and industries in St. John's.

Kerosene

Carbon Dioxide	16,437	2.8
Nitrous Oxide	490	0.1
Subtotal	16,927	2.8

* Based on information from Statistics Canada (1994). An estimate of kerosene was obtained. Total amount of kerosene consumed was 34,900,000 L provincially and based on 18.47% population relationship between the province and St. John's. It was concluded that approximately 6,446,030 L was consumed in St. John's.

Subtotal Other	80,539	13.5	
Total	595,845	100.00	9,327,832

This report has been generated for St. John's, Newfoundland with software created by Torrie Smith Associates for the Cities for Climate Protection Campaign of The International Council for Local Environmental Initiatives. Default emissions coefficients were used

City of St. John's
Community Greenhouse Gas Emissions in 2010
Target Year Summary Report

	Equiv CO ₂ (tonnes)	Equiv CO ₂ %	Energy (GJ)
Residential Sector	242,785	30.3	3,675,651
Commercial Sector	162,707	20.3	2,583,632
Industrial Sector	0	0.0	0
Transportation Sector			
Automobiles	86,992	10.8	1,276,269
Vans & Light Trucks	72,810	9.1	1,067,409
Heavy Trucks	80,189	10.0	1,139,938
Transit Bus	56	0.0	793
Subtotal Transportation	240,048	29.9	3,484,410
Waste Sector	75,855	9.5	
Other Sector			
Heavy Fuel	63,612	7.9	
Kerosene	16,927	2.1	
Subtotal Other	80,539	10.0	
Total	801,933	100.0	9,743,692

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 Default emissions coefficients were used

City of St. John's
Corporate Greenhouse Gas Emissions in 1994
Base Year Summary Report

	Equiv CO ₂ (tonnes)	Equiv CO ₂ %	Energy (GJ)
Buildings	4,152	32.7	79,929
Vehicle Fleet	5,141	40.5	73,660
Streetlights	756	6.0	30,999
Water/Sewage	1,486	11.7	51,540
Waste	126	1.0	
Other	1,030	8.1	
Total	12,692	100.0	236,158

City of St. John's
Corporate Greenhouse Gas Emissions in 1994
Base Year Detailed Report

	Equiv CO ₂ (tonnes)	Equiv CO ₂ %	Energy (GJ)
Buildings			
City Hall and City Hall Annex			
Electricity	299	2.4	12,264
Subtotal	299	2.4	12,264
* No fuel used in these buildings. Electrical information provided by VESTAR.			
City Parks - Buildings			
Electricity	25	0.2	1,023
Fuel Oil	242	1.9	3,313
Subtotal	267	2.1	4,336
* This section includes park buildings, Bowering Park Lodge and Maintenance Shed, and the Bannerman Park Pool Building.			
Fire Stations			
Electricity	97	0.8	3,968
Fuel Oil	704	5.5	9,625
Propane	20	0.2	331
Subtotal	821	6.5	13,923
* This section includes 5 municipal fire stations, Central, West End, Kents Pond, Kenmount, Brookfield and Mount Pearl.			
* Fuel data for all fire stations excluding Central and West End is estimated. Estimation values were determined by calculating the fuel consumption per square meter of both Central and West End using the average consumption per square meter of the two.			
Recreation Facilities			
Electricity	206	1.6	8,434
Fuel Oil	1,276	10.1	17,440

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City of St. John's Climate Change Action Plan 2006

Propane	7	0.1	125
Subtotal	1,501	8.3	26,499

* This section represents 4 facilities; Memorial Stadium, Buckmasters Circle, H.G.R. Mews Centre and Wedgewood Park.

Service Buildings

Electricity	206	1.6	8,434
Fuel Oil	1,051	8.3	14,370
Propane	6	0.0	102
Subtotal	1,263	10.0	22,906

* This section includes City Depot, Robin Hood Bay Service Building and East End Maintenance Shed. Information supplied by NF Power and Finance Department.

* The City Depot also consumed 296,482 L of Bunker C and 4,282 L of kerosene.

Subtotal Buildings	4,152	32.7	79,929
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Vehicle Fleet

Central Fire

Gasoline	195	1.5	2,866
Diesel	70	0.6	996
Subtotal	266	2.1	3,862

City Depot

Gasoline	1,453	11.5	21,327
Diesel	2,976	23.4	42,152
Subtotal	4,429	34.9	63,479

* Quantity of fuel was supplied by Finance Department.

Regional Water Supply

Gasoline	43	0.3	632
Subtotal	43	0.3	632

* Quantity of fuel was supplied by Finance Department.

Robin Hood Bay

Diesel	404	3.2	5,716
Subtotal	404	3.2	5,716

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Default emissions coefficients were used

City of St. John's Climate Change Action Plan 2006

* Quantity of fuel was supplied by Finance Department.

Subtotal Vehicle Fleet	5,141	40.5	73,690
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Streetlights

All Streetlights

Electricity	756	6.0	30,999
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Subtotal Streetlights	756	6.0	30,999
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Water/Sewage

Bay Bulls Big Pond

Electricity	756	6.0	30,991
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Fuel Oil	278	2.2	3,800
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Subtotal	1,034	8.1	34,791
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Pumping Stations

Electricity	387	3.1	15,870
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Fuel Oil	64	0.5	879
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Subtotal	452	3.6	16,750
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* This data includes electrical consumption figures from 3 pumping stations, Ruby Line, Blackmarsh (Kenmount) Road, and Becks Cove. There is no volume available for Ruby Line and Blackmarsh Road Stations.

Subtotal Water/Sewage	1,486	11.7	51,540
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Waste

Paper Products	83	0.7
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Food Waste	48	0.4
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Plant Debris	-1	0.0
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Wood/Textiles	-4	0.0
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* Based on the estimate that each employee generates approximately 0.7kg of waste per day, it was calculated that 910kg of waste is generated by 1300 City employees. Using a 247 possible number of work days in a year, one can further calculate the amount of waste in one year. Percentages are estimates used for report by ADI Ltd/NewPlan Consultants Ltd. (1993). This information is on par with Canadian Waste Stream, prepared by Davis Engine.

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Subtotal Waste **126** **1.0**

Other

Heavy Fuel

Carbon Dioxide 916 7.2

Subtotal **916** **7.2**

* The City of St. John's consumed 296,483 L of Bunker C at the City Depot.

Kerosene

Carbon Dioxide 11 0.1

Nitrous Oxide 103 0.8

Subtotal **114** **2.9**

* By using coefficients for kerosene in relation to CO₂, N₂O and CH₄ the following can be calculated:

CO₂ = 2.55E-3 tonnes/L * 4,282 L = 10.9 tonnes

N₂O = 2.3E-10 tonnes/L * 4,282 L = 9.85E-7 tonnes

CH₄ = 2.1E-10 tonnes/l * 4,282 L = 8.99E-7 tonnes

Due to rounding, N₂O and CH₄ values cannot be used in the calculation.

Subtotal Other **1,030** **8.1**

Total **12,692** **100.0** **236,158**

City of St. John's
Corporate Greenhouse Gas Emissions in 2010
Target Year Summary Report

	Equiv CO ₂ (tonnes)	Equiv CO ₂ %	Energy (GJ)
Buildings	5,455	32.2	79,929
Vehicle Fleet	5,141	30.4	73,690
Streetlights	1,923	11.4	30,999
Water/Sewage	3,249	19.2	51,540
Waste	126	0.7	
Other Sector	1,030	6.1	
Total	16,924	100.0	236,158

This report has been generated for St. John's, Newfoundland with software created by Torrie Smith Associates for the Cities for Climate Protection Campaign of The International Council for Local Environmental Initiatives.
 Default emissions coefficients were used

