

Partners for Climate Protection

National Measures Report 2013

Demonstrating Results: Municipal Initiatives to Reduce Greenhouse Gas Emissions



FEDERATION
OF CANADIAN
MUNICIPALITIES

FÉDÉRATION
CANADIENNE DES
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CONTENTS

INTRODUCTION	1
CLIMATE ACTION: 20 YEARS OF THE PCP PROGRAM	2
PCP MEMBER PROFILES	
City of Calgary, AB.....	4
Corporation of Delta, BC	6
City of Edmonton, AB	8
City of Fredericton, NB.....	10
City of Guelph, ON.....	12
City of Hamilton, ON	14
City of London, ON	16
City of Nelson, BC.....	18
City of North Vancouver, BC	20
City of Ottawa, ON	22
Town of Richmond Hill, ON.....	24
City of Saanich, BC	26
City of Surrey, BC	28
City of Vancouver, BC.....	30
Region of Waterloo, ON	32
City of Whistler, BC	34
City of Winnipeg, MB	36
City of Yellowknife, NT.....	38
ACKNOWLEDGEMENTS	40

The Partners for Climate Protection (PCP) program is a network of Canadian municipal governments that is committed to reducing greenhouse gas (GHG) emissions and acting on climate change. PCP is the Canadian component of ICLEI's Cities for Climate Protection (CCP) network, which involves more than 1,000 communities worldwide. The PCP program is a partnership between the Federation of Canadian Municipalities (FCM) and ICLEI—Local Governments for Sustainability.

The PCP program empowers municipalities to take action against climate change through a five-milestone framework that helps members create GHG inventories, set realistic and achievable reduction targets, develop and deliver local action plans, and measure progress against objectives. See more information about the milestone framework on the [PCP website](#).

INTRODUCTION

Celebrating 20 years of the PCP program

Canadian local governments have consistently shown leadership in meeting the challenges of climate change. Hundreds of Canadian municipalities are building valuable capacity through the PCP program to reduce GHG emissions, while saving money, investing in their communities, and improving quality of life.

FCM and ICLEI—Local Governments for Sustainability began publishing the National Measures Report in 2008 to document the types of GHG reduction initiatives undertaken by PCP members, and to track the cumulative impact of these initiatives nationwide.

In marking PCP’s 20th anniversary of local climate action, FCM and ICLEI recognized the large body of practical experience and municipal expertise from which communities can draw inspiration and guidance. In acknowledging this wealth of knowledge, the 2013 PCP National Measures Report presents a compendium of case studies. It highlights overarching municipal climate plans along with specific local projects, and reflects on successful applications of renewable energy, energy efficiency, waste management, land use and development policy.

The report is dedicated to profiling the successes and experiences of PCP members that have achieved or are nearing completion of Milestone Five — the final milestone in the PCP framework — for corporate or community goals. Each profile features two GHG reduction projects that have been particularly successful or that have become a significant source of community pride, as well as information on collaborators, process, benefits and results, challenges, and lessons learned.

Testimonials from elected officials and staff members provide key insights.

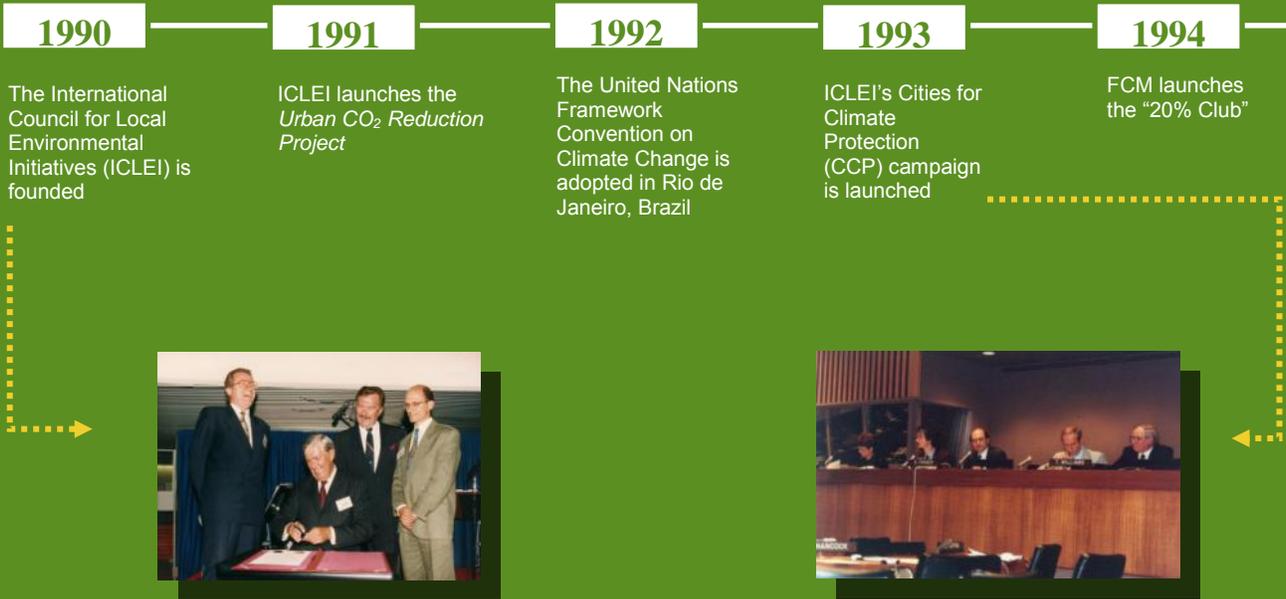
The following table lists each municipality profiled in this report, and PCP Milestones achieved to date.

Getting to Milestone 5 is a significant achievement and one of the top distinctions for members of the Partners for Climate Protection (PCP) program. Working through all five milestones of PCP’s performance-based framework can take several years, and hinges on strong collaboration with corporate and community stakeholders.

Municipality	Joined PCP	Corporate Achievements	Community Achievements
City of Calgary	1994	Milestone 5	Milestone 4
Corporation of Delta	1996	Milestone 5	Milestone 1
City of Edmonton	1995	Milestone 5	Milestone 4
City of Fredericton	2000	Milestone 5	Milestone 5
City of Guelph	1998	Milestone 3	Milestone 5
City of Hamilton	1996	Milestone 5	Milestone 2
City of London	1994	Milestone 5	Milestone 5
City of Nelson	2007	Milestone 5	Milestone 3
City of North Vancouver	1997	Milestone 5	Milestone 5
City of Ottawa	1997	Milestone 5	Milestone 5
Town of Richmond Hill	2000	Milestone 5	Milestone 3
City of Saanich	1996	Milestone 5	Milestone 5
City of Surrey	1998	Milestone 5	Milestone 4
City of Vancouver	1995	Milestone 5	Milestone 5
Region of Waterloo	2010	Milestone 5	Milestone 3
City of Whistler	1997	Milestone 5	Milestone 5
City of Winnipeg	1998	Milestone 4	Milestone 1
City of Yellowknife	1998	Milestone 5	Milestone 5

CLIMATE ACTION: 20 YEARS OF THE PCP PROGRAM

For 20 years, FCM and ICLEI have delivered programming to engage Canadian municipalities in taking action against climate change.



PCP Milestone Tool

The icons are: a bar chart with an upward arrow, a target symbol with a checkmark, a lightbulb, interlocking gears, and a document with a checkmark.



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·I·C·L·E·I
Local
Governments
for Sustainability

1998

FCM's 20% Club merges with ICLEI's CCP campaign to form the Partners for Climate Protection (PCP) program

2000

FCM receives the first endowment of the Green Municipal Fund

2002

The Government of Canada ratifies the Kyoto Protocol

2003

PCP reaches 100 municipal government members!



2004

Each provincial and territorial capital is a member of the PCP program

2005

Calgary becomes the first to achieve Milestone Five for corporate operations, followed closely by Edmonton

2009

ICLEI releases the International Local Government GHG Emissions Analysis Protocol (IEAP)

2008

PCP launches the National Measures Report and a National PCP Measures Database

2007

PCP membership reaches 150 municipal government members!


**PCP
Measures
Database
Report**

ICLEI
Local
Governments
for Sustainability

April, 2008
Report by
ICLEI - Local Governments for Sustainability
City Hall, West Tower, 10th Floor
100 Queen Street West
Toronto, ON M5H 2K2
Phone: (416) 392-0272
Fax: (416) 392-1474
Email: info-canada@iclei.org
Web site: www.iclei.org/canada



Population: 1,095,494 | PCP Member Since: 1994 | Corporate M5 Achieved : 2005 | Community M4 Achieved: 2004

As the first municipality in Canada to achieve Milestone 5 for corporate GHG emissions, the City of Calgary has made great strides in meeting the challenges of climate change. The city's corporate climate action initiatives date back to 2000, when it established a municipal climate change program. More recent activities have seen Calgary join the World Energy Cities Partnership (in 2009), through which it signed an accord to develop policies, plans and operations to reduce municipal GHG emissions by a minimum of 20 per cent by 2020, and 80 per cent by 2050, based on 2005 levels. The city has also committed to using green electricity for 100 per cent of its total corporate energy needs.

This dedication to local climate action has already shown results. At the end of 2012, Calgary had reduced its corporate GHG emissions by 46 per cent below 2005 levels, far exceeding its targets. The City has been actively reducing GHG emission from its operations since 1999 through such measures as purchasing green electricity, capturing landfill gas, increasing energy efficiency across all operations, and implementing alternative fleet and fuel technologies. Beginning in 2012, 100 per cent of electricity used by the city was offset with renewable electricity certificates, mostly from wind power.

The city's drive to reduce its corporate GHG reductions is matched by its focus on community-wide emission reductions. In 2006, it launched the imagineCALGARY Plan — the culmination of a development process involving over 18,000 Calgarians. The plan defined a long-term vision to save energy, increase renewable energy production, and reduce community GHG emissions. Further planning and consultation led to the 2011 Calgary Community GHG Reduction Plan, which set specific reduction targets for community emissions: 20 per cent below 2005 levels by 2020; 50 per cent below 1990 levels by 2036; and 80 per cent below 2005 levels by 2050.

PROJECT: GREEN POWER CONTRACT

In Alberta, electricity production is a significant source of GHG emissions due to a heavy reliance on fossil fuels, especially coal, for power generation. In 2005, the city signed a 20-year electricity supply agreement that called for at least 75 per cent of municipal electricity consumption to be offset with renewable energy sources.

Over the life of the agreement, the city will avoid about 6.5 million tonnes of GHG emissions, equal to about 32,000 rail cars full of coal that won't be needed to power municipal operations. The arrangement provides a long-term supply of renewable electricity to meet demand at a contracted price, provides budgetary certainty, and mitigates market volatility risks. While responding to higher energy demand, the city increased its renewable electricity purchasing goal to 100 per cent, and achieved it in 2012. Through this initiative, Calgary will become the largest municipal user of renewable energy certificates in Canada.



Photo courtesy of the City of Calgary

"As a member since 1994, the City of Calgary has had the opportunity to help shape and inform the PCP program over time. It is important to remember that each municipality will face unique challenges and opportunities as we implement the work in our local contexts. With that in mind, one of the most important lessons we learned was the importance of embedding climate change action into internal processes. By aligning each milestone with your municipality's policies and processes, you can ensure that this work will have a lasting impact and will become business as usual."

"As municipalities work towards Milestone 5, it is necessary to consider how you will continue to benchmark your own progress even after achieving the final milestone. From our experience, we would have benefitted from a series of internal milestones to maintain the momentum gained after reaching Milestone 5."

- Jennifer Koole, Manager of Environmental Programs and Services



Photo courtesy of the City of Calgary

PROJECT: MUNICIPAL WASTE ASSESSMENT

As part of its Sustainable Building Partnership Program, the city assessed waste management at 17 municipal buildings and facilities between July and October 2012. By examining the composition and volume of waste and recyclables generated at specific sites during a typical day, week or month, the city established a benchmark and set targets to support its waste diversion strategy. Key findings showed an aggregate 37 per cent waste diversion rate (ranging from a low of 10 per cent to a high of 80 per cent) and an approximately 50 per cent level of recyclable materials in the waste stream. In response, the city created a mixed recycling program for municipal employees. By the end of 2013, 75 buildings offered mixed recycling, available to 64 per cent of employees. The city aims to make mixed recycling available to 80 per cent of employees by the end of 2014. Alberta's Municipal Sustainability Initiative provided funding for this initiative.



CORPORATION OF DELTA, BC

Population: 99,863 | PCP Member Since: 1996 | Corporate M5 Achieved : 2012 | Community M1 Achieved: 2007

The Corporation of Delta has long understood the important role municipal leadership plays in climate change mitigation and has pursued various environmental initiatives to reduce its environmental footprint. In 2007, Delta adopted its Climate Change Initiative and became a signatory to the BC Climate Action Charter. An interdepartmental Climate Change Working Group (CCWG) has been established to ensure that action plans are developed, and that progress is monitored and reported to council. The plans focus on reducing corporate energy consumption and solid waste, and are revised by the CCWG as required. This process of development, implementation, and feedback ensures that plans are regularly updated to reflect leading-edge technologies and strategies being developed for municipalities in Canada and around the world.

Delta has set a corporate GHG reduction target of 20 per cent below 2007 levels by 2015, as well as community reduction targets of 33 per cent below 2007 levels by 2020 and 80 per cent below 2007 levels by 2050. To achieve these targets, Delta has adopted a diverse mitigation strategy that includes building and fleet management, natural areas management, outreach and education programs, and community plans, to name a few. A significant portion of Delta's corporate mitigation targets have been achieved through ongoing energy-efficient facility retrofits and green fleet measures. These include lighting retrofits, low "e" ceiling installations, climate control upgrades and optimization, replacement of more efficient equipment through regular building lifecycle improvements, as well as employee and operator awareness training. As of 2013, corporate GHG emissions have been reduced by 10 per cent relative to 2007 levels.

Implementation of this initiative has been made possible in part through participation in BC's Climate Action Revenue Incentive Program (CARIP). In 2007, BC local governments were invited to sign the BC Climate Action Charter (CAC), a voluntary agreement through which signatories commit to becoming carbon neutral in their corporate operations and to building more compact, energy-efficient communities. Signatories of the CAC are eligible to receive a 100 per cent reimbursement on their carbon tax payments provided they report annually on the initiatives they have undertaken to fulfill their CAC commitments. In 2013, Delta received \$212,000 in carbon tax rebates through CARIP. This innovative program has provided crucial support for municipal sustainability efforts by covering essential costs and creating more financial options for further initiatives.

"I am very proud Delta has been awarded Milestone 5; continuing to lead the way in implementing sustainable initiatives that reduce our carbon footprint. The Partners for Climate Protection program and the recognition received has helped us continue our work towards the ongoing implementation of Delta's Climate Change Initiative and accomplishing the goals we have established.

— **Mayor Lois E. Jackson**

"The Partners for Climate Protection Program has enabled us to collaborate with local governments across Canada to reduce our greenhouse gas emissions, and also acts as a measuring tool that Delta's Mayor and Council have used to celebrate our successes. Back in 2012 when Delta reached Milestone 5 for corporate operations, we were only the fourth community in British Columbia and tenth in Canada to meet this important achievement. "

— **George V. Harvie, Chief Administrative Officer**

PROJECT: ENERGY EFFICIENCY RETROFITS OF RECREATION CENTRES

In 2009, Delta commissioned a study to investigate potential energy and GHG emissions savings through retrofits to several municipal recreation facilities. The study revealed that the two largest energy consumers were the Sungod Recreation Centre in North Delta and the Ladner Leisure Centre in Ladner. With the support of FCM's Green Municipal Fund, Delta initiated a comprehensive energy efficiency retrofit of these two buildings.

In early 2010, retrofits to the Sungod Recreation Centre were completed and included a geo-exchange heat pump for pool heating, high-efficiency boiler heat recovery from pool exhaust air, and various lighting changes. These measures are projected to reduce emissions by 466 tonnes of CO₂e annually, representing a 29 per cent decrease in facility emissions compared to 2007 levels and a \$73,000 savings in annual utility costs.

Upgrades to the Ladner Leisure Centre were completed in 2012 and included solar water heating, a high efficiency boiler, and heat recovery from the pool, change room, and ice plant. These measures are expected to reduce CO₂e by 360 tonnes annually, representing a 34 per cent decrease in emissions from the facility compared to 2007 levels, and \$60,000 in annual utility cost savings.

The GHG emissions reductions from both building retrofits is equivalent to removing 180 vehicles from the road. Looking ahead, Delta will work to implement the strategies and outreach programs outlined in its Community Energy and Emissions Plan (CEEP), which was approved in the fall of 2013, and presents ways for community members and businesses to reduce their carbon footprint.



PROJECT: GREEN FLEET MANAGEMENT PLAN

The Green Fleet Management Plan, a major component of Delta's corporate Climate Change Initiative, is comprised of actions that aim to reduce GHG emissions and improve the overall efficiency of Delta's corporate fleet. Through the plan's implementation, Delta is working to reduce municipal fleet GHG emissions by 20 per cent below 2007 levels by 2015. The plan includes the following measures:

- Purchase of hybrid-electric vehicles
- Off-road vehicle pollution prevention program
- Diesel oxidation catalyst conversions
- Electronic control module adjustments
- Ensuring fleet manager representation on the interdepartmental CCWG
- Use of B10 biodiesel 6 months of the year
- Energy-efficient vehicle and component purchasing strategy
- Transportation demand management program for Delta employees

Implementation of this plan led to a designation in 2009 through Fraser Basin Council's E3 Fleet Accreditation Program rating system, making Delta the first municipality in Canada to receive a gold rating.



A panoramic view of the City of Edmonton skyline, featuring numerous high-rise buildings and modern architecture, situated on a hillside overlooking a body of water. The sky is clear and blue.

CITY OF EDMONTON, AB

Population: 817,498 | PCP Member Since: 1995 | Corporate M5 Achieved : 2005 | Community M4 Achieved: 2005

As a founding member of the PCP program and one of the first municipalities to achieve Milestone 5, the City of Edmonton is a leader in climate action. In 1998, it established a task force comprised of city representatives and local utilities to develop a GHG emissions reduction plan for corporate operations. Recognizing that a community-wide approach was needed to address Edmonton's total GHG emissions, the city created a team in 1999 consisting of city staff, stakeholders, and community members from all sectors. This stakeholder-driven consultative approach supported development of a multi-sector long-term strategy with city-wide goals. One of the most comprehensive climate mitigation strategies of its time, Edmonton's Greenhouse Gas Reduction and Energy Strategy was publically launched with city council support in early 2004. As part of this plan, the city implemented the community-wide Carbon Dioxide Reduction Edmonton (CO2RE) initiative, providing participating home and business owners with ideas, promotions, and programs to take energy-efficient actions that will permanently reduce local GHG emissions.

Through its City Operations' Greenhouse Gas Management Plan released in 2012, Edmonton's corporate GHG reduction targets are 50 per cent below 2008 levels by 2020 and 80 per cent below 2008 levels by 2050. The city is currently reviewing its community target through the development of its Energy Transition Strategy. To start the review process, the city released its Energy Transition Discussion Paper, which identified different energy options and specific scenarios to achieve the goals described in the City's 2011 environmental strategic plan, "The Way We Green". The city used the Paper in various discussions with stakeholders and citizens to further bring shape to the Energy Transition Strategy. In partnership with the Alberta Climate Dialogue and the Centre for Public Involvement, the city created a citizens' panel — a diverse group of 60 Edmonton residents recruited to provide their advice and feedback on the Paper's recommendations. The new community Energy Transition Strategy, expected to be completed in 2014 will update GHG reduction targets for the community, comply with the city's environmental strategic plan, and guide Edmonton's transition toward an energy supply system that is more resilient to climate change and more self-sufficient in meeting the city's heating and electrical needs.

"The Milestone process and achieving Milestone 5 has helped to maintain political awareness and support for Edmonton's climate change initiatives. From an operations standpoint, an additional driver has been direct cost savings. With respect to synergies with other goals, there are strong linkages. For example, the city has sought LEED Silver certification as a standard for our new buildings, which incorporates other benefits such as waste reduction, indoor air quality, water efficiency, etc., in addition to greenhouse gas reductions. Another synergy is improving public transportation which has social, economic and environmental benefits."

—Mark Brostrom, Director, Urban Planning and Environment, Sustainable Development

PROJECT: LEED TRANSIT FACILITY

Completed in 2010, Edmonton's Transit System Centennial Garage is a state-of-the-art facility that houses operation and maintenance activities for a 250-vehicle bus fleet. Funded mainly by Alberta's Municipal Sustainability Initiative, the cost for developing the facility was \$254 per square foot, which included site development, landscaping, paving, hoists, crane, refueling systems and lube systems, exterior and under bus wash systems, and vacuum systems.

The facility is certified LEED® Silver for its sustainable design, which includes a solar wall and a reflective roof. The solar wall captures heat and delivers 100–190 cubic metres per minute of preheated air, reducing heating demands by approximately 1,800 gigajoules per year.

The white reflective roof further reduces energy consumption and improves durability by diminishing the effects of thermal expansion. High albedo (highly reflective) roofing stays cooler than darker roofing, reducing the cooling energy required and prolonging the life of the roof membrane.



PROJECT: COMPOSTING FACILITY

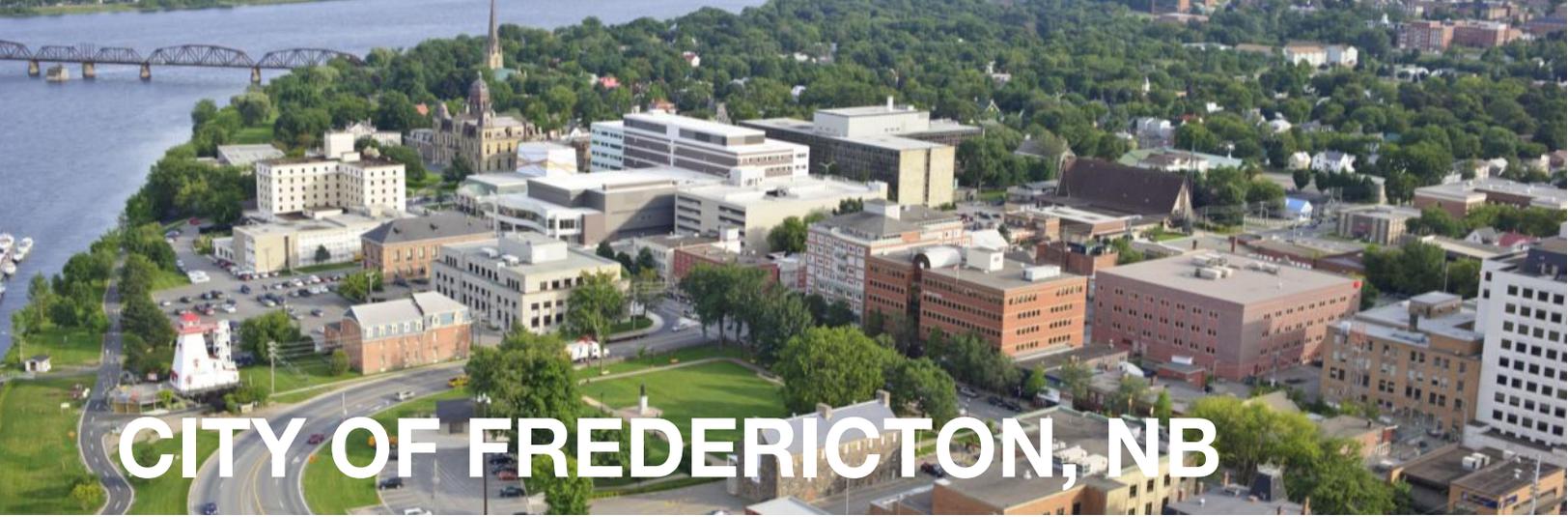


In the mid-1990s, after several years of unsuccessfully searching for new landfill locations, the city of Edmonton issued a request for long-term landfill service provider. Alberta-based utility TransAlta offered to build and operate a large composting facility. Since 2000, the Edmonton Composting Facility at the Edmonton Waste Management Centre has used organic waste collected from city households and biosolids (sewage sludge) from the city's wastewater treatment plant to manufacture compost. In 2002, the city made a successful bid to purchase the facility when TransAlta decided to sell the composter in order to return to its core business. Currently, Sena manages the facility on behalf of the city.

Together with established recycling programs this project has allowed Edmonton to divert up to 60 per cent of its residential waste from landfill, reducing landfill emissions by approximately 100,000 tonnes of CO₂e per year. This innovative project is the largest of its kind in North America, and has significantly helped the city's efforts to become more sustainable. The facility, which occupies an area about the size of eight football fields (36,690 square metres), can process 200,000 tonnes of residential waste and 25,000 dry tonnes of biosolids each year.

"Be aware that tracking is vital to the process of reporting. Make sure your measures are in place from the start, and try to start recording individual project success stories now. Building up your own library of successes shouldn't have to wait until you get to Milestone 5. Your municipality probably has things on the go already that can be stored for future reference. Set up a central success story repository. Establish a template of basic information for projects (cost, timing, before and after states, energy use, occupancy, production, serviceability, maintenance, etc.) and distribute it to relevant staff to ensure you capture your success data sets."

—Mark Brostrom, Director, Urban Planning and Environment, Sustainable Development



Population: 56, 224 | PCP Member Since: 2000 | Corporate M5 Achieved : 2009 | Community M5 Achieved: 2011

Upon joining the PCP program in 2000, the City of Fredericton launched its First to Kyoto initiative, showing leadership in climate action by setting targets to reduce corporate GHG emissions by 20 per cent and community emissions by six per cent by 2010, relative to 2000 levels. Beginning with municipal operations, the city created a Corporate Inventory and Action Plan for Greenhouse Gas Reduction in 2006, and surpassed its target with a 25 per cent reduction below the baseline. Measures that contributed to this success included a Municipal Building Initiative to retrofit municipal buildings for improved efficiency, as well as over 800 streetlight energy use reductions.

After taking action on their corporate operations, Fredericton followed up with a community GHG reduction action plan in 2008. A key community initiative was the Green Matters campaign to support citizens in reducing their carbon footprint through a multi-tiered approach. The city developed a campaign website, offered special events, and used social marketing and communications activities to encourage citizens to reduce their emissions through more environmentally-friendly ways of living, playing, traveling, and working. As a result, per capita GHG emissions dropped 12 per cent between 2000 and 2009 and Fredericton became the fourth municipality in Canada, and the first east of British Columbia, to achieve Milestone 5 of the PCP program.

PROJECT: FREDERICTON GREEN SHOPS

Fredericton Green Shops is a voluntary program for small- to medium-sized businesses, started under the umbrella of the Green Matters campaign. A partnership between the City of Fredericton, Enterprise Fredericton, the Fredericton Chamber of Commerce, Business Fredericton North, Efficiency New Brunswick, and Downtown Fredericton Inc., the program aims to reduce Fredericton’s environmental impact by supporting, promoting and rewarding environmental stewardship in the business community. Participating businesses are asked to take action in energy efficiency and fuel switching, recycling and waste management, transportation, water conservation, and products and services.



When businesses join the program, they undergo an initial assessment by the Green Shops coordinator to determine which environmental actions may be applicable to their individual situation and find out what has been successfully implemented to date. The assessment determines the participant’s program score: bronze (30-49 per cent), silver (50-69 per cent), and gold (greater than 70 per cent). Each business is then invited to establish a goal for the following 12-month period and must record data (cost savings, reduced energy use, water conserved, fuel saved, etc.) when new actions are implemented. Each business develops its own unique course of environmental progress and results are measured annually against stated goals.

All participating Green Shops are given an official Fredericton Green Shops window decal and are recognized at a medal ceremony at Fredericton City Council or a Green Shops Social event. Currently, there are over 80 businesses participating in the program. The program’s success can be attributed to its flexible design in providing guidance that is applicable to all commercial sectors.

“Developing a community outreach program is critical in advancing the learning about GHG’s within the community and is an approach that evolves over time requiring fresh messaging and community engagement. We created the Green Shops Program for business and the Green Matters Certified program for the non-profit sector and they have been huge successes. They have inspired partnerships across the community.”

— Michael Baldwin, Manager – Information Services

“The PCP program has created a green culture throughout the organization and inspired learning and action across the community. It has been instrumental in setting the foundation to adopt a sustainability lens to all that we do.”

— Mayor Brad Woodside

PROJECT: MUNICIPAL BUILDINGS INITIATIVE

The city’s Municipal Building Initiative (MBI) aims to improve energy efficiency in all municipal buildings by upgrading lighting, heating and ventilation, air conditioning, and arena ice plant systems. The primary goal is to increase efficiency while reducing GHG emissions and improving staff and user comfort and safety. Over the next 20 years, the city expects that the upgrades will reap 20–25 per cent in cost savings.

The MBI began in 1999 with the major retrofit of 18 city-owned facilities that were deemed high energy users. While the retrofits of the original 18 facilities were finished in 2001, additional MBI retrofitting has continued at these and other facilities, including:

- Increasing the R-value of roofing insulation when buildings require new roofing
- Replacing overhead doors with high R-value doors as required
- Replacing old low-efficiency oil-fired heating appliances with high-efficiency natural gas appliances
- Continuous replacement of old light fixtures with energy-efficient fixtures
- Installing motion sensors on lighting
- Close monitoring of HVAC digital control systems to optimize energy consumption
- Replacing failing HVAC equipment with new energy-efficient models
- Raising employee awareness and education about energy consumption practices



The annual energy consumption in most existing city facilities continues to drop, due to improvement projects and investments. The Fredericton City Hall building was recognized in 2011 as one of the most energy-efficient municipal buildings in the country; ranking fifth out of 60 municipal administrative buildings in a Town Hall Challenge administered by the Toronto and Region Conservation Authority.



CITY OF GUELPH, ON

Population: 121,688 | PCP Member Since: 1998 | Corporate M3 Achieved : 2010 | Community M5 Achieved: 2014

The City of Guelph is a frontrunner in raising awareness of climate change and reducing GHG emissions. Acknowledging the growing importance of managing energy and natural resources, the city formed a consortium in 2004 to proactively develop a community energy plan. It represented various sectors, including the city administration, academia, business, gas and electric utilities, and other community groups. By late 2005, the consortium had carried out a number of public meetings and workshops and, in 2006, they formalized a long-term plan that would guide the city's energy future.

The resulting Community Energy Initiative (CEI), adopted by council in 2007, outlines how sustainable growth for Guelph can be achieved through careful energy use planning. The CEI has two fundamental high-level goals: to reduce energy use by 50 per cent per capita and to reduce GHG emissions by 60 per cent per capita, relative to 2006 levels, by 2031, when Guelph's population is expected to have grown by 50,000 people. The city received a 2014 FCM Sustainable Communities Award in the energy category in recognition of the CEI's integrated approach to sustainable community development. Since the CEI's introduction, per capita GHG emissions and energy usage have fallen. In 2012, the City reported per capita energy and emissions reductions approaching double digits.

To support evolving best practices, the city established a Corporate Energy Management Program in December 2012. With a focus on buildings, the program examined energy-efficiency opportunities such as modern lighting systems, solar hot water systems, new HVAC units, and high-efficiency boilers. This investment to conserve energy will significantly mitigate the city's exposure to risks linked to escalating energy prices.

PROJECT: RENEWABLE ENERGY PROJECTS

One of the CEI goals states that "at least a quarter of Guelph's total energy requirement will be competitively sourced from locally created renewable resources." To reach this goal, Guelph continues to expand its capacity to generate energy using renewable sources through the Ontario Power Authority's Feed-In Tariff (FIT) Program, which offers a fixed rate for renewable electricity sold to the grid.

In 2010, the City of Guelph named Guelph Hydro Inc. as the primary developer of energy-related projects to support the CEI. Since that time, Guelph Hydro and its subsidiary company, Envida Community Energy Inc., have been developing sustainable energy projects connected to city-owned assets. This includes leasing municipal building roofs for solar installations. In 2012, 20 FIT-related projects across the community generated more than three million kilowatt hours of electricity.

Approximately 170 Guelph homeowners have also installed rooftop solar photovoltaic systems under the OPA's microFIT program, designed for renewable electricity projects generating a capacity of 10 kilowatts or less. These projects collectively generated just over one million kilowatt hours of electricity in 2012.



"The Community Energy Initiative shows how a community can take control of its energy future, and how it can play a role and make a difference in the global issue of climate change."

— **Mayor Karen Farbridge**

"The Community Energy Initiative is a community plan in which city hall plays a key facilitating role; it's not a city hall plan imposed on the community. Ongoing public support is what gives community energy planning and its implementation much of the momentum and resources it needs to succeed."

— **Rob Kerr, Corporate Manager, Community Energy**

PROJECT: **DISTRICT ENERGY SYSTEMS**

The first municipality in North America to announce and publish a plan for a city-wide thermal energy network, the city released its Guelph District Energy Strategic Plan in December 2013. It sets a vision for Guelph as a prosperous, cleaner and healthier community powered by a secure, reliable, affordable and sustainable district energy system that would supply at least 50 per cent of commercial, institutional and industrial heating needs, as well residential heating requirements. With Envida Community Energy Inc. as the primary developer of the thermal energy network, several district energy projects are underway including the Galt District Energy System in downtown Guelph and the new Hanlon Creek Business Park greenfield site.

On December 30, 2014, a natural-gas fuelled district energy facility located in the Sleeman Centre (Guelph's sports and entertainment complex) will begin commercial operation. It will provide heating and cooling for the Sleeman Centre and serve as the central thermal resource for the Galt District Energy System. The system will transport hot water and chilled water to area buildings, providing space heating and cooling as well as water heating. Connected buildings will be equipped with a heat exchanger to transfer thermal energy from the thermal distribution system to the internal piping system. Benefits include lower fuel and equipment costs, reduced space requirements, lower building and maintenance costs and reduced GHG emissions.



CITY OF HAMILTON, ON

Population: 662,401 | PCP Member Since: 1996 | Corporate M5 Achieved : 2013 | Community M2 Achieved: 2010

The City of Hamilton has recognized its municipal responsibilities associated with climate change since the 1990s, when it first took steps to reduce GHG emissions. The former Regional Municipality of Hamilton-Wentworth signed the Canadian Declaration on Climate Change and the Urban Environment in 1995, and in the following year joined the Federation of Canadian Municipalities' 20% Club, which later became known as the Partners for Climate Protection program.

In 2008, the city set a target to reduce its corporate-generated GHG emissions by 10 per cent by 2012, and by 20 per cent by 2020, based on 2005 levels. It also sought to lower community-generated GHG emissions by 10 per cent by 2012, and by 20 per cent by 2020, based on 2006 levels. In terms of progress against these targets, the city reduced GHG emissions by 19.7 per cent (108,433 tonnes of CO₂e) by 2012, well exceeding its goal for corporate emissions, and it surpassed its community targets, reducing GHG emissions by 23.2 per cent (17,835,696 tonnes of CO₂e) in 2011.

Other recent accomplishments include Hamilton's Climate Change Action Charter, introduced in 2011, as the first charter of its kind in Ontario to encourage community-based GHG reduction actions. The city has also adopted a Corporate Energy Policy, and implemented a green fleet policy, which includes steps to right-size vehicles, introduce hybrid technology and reduce fuel consumption through anti-idling and driver training.

Having reached Milestone 5 in 2013, the city looks to other integrated strategies for addressing climate change, which include addressing the costs and risks of extreme weather events, conducting infrastructure vulnerability studies, and setting a new target to reduce GHG emissions by 80 per cent below baseline levels by the year 2050.

PROJECT: HAMILTON LEED GRANT PROGRAM

In September 2008, the city adopted an innovative grant program to provide an economic catalyst for the construction of sustainable industrial, commercial, mixed-use, and multi-unit residential buildings and land development. The program services the entire urban area, known as the Hamilton LEEDing the Way Community Improvement Project Area. The program provides financial incentive for LEED certified projects by offsetting the costs associated with certification against future tax revenue that would stem from development or redevelopment. Specifically, the city shares a 50 per cent portion of the incremental construction cost, as well as costs for consultation, energy modelling and LEED certification fees.

Grants are calculated based on the official rating of the LEED Green Building Rating System™ (assigned by the Canadian Green Building Council) and are equivalent to 75 per cent of the municipal realty tax increase during the term of the grant (five years or up to eligible costs, whichever comes first). The program has played a significant role in attracting businesses to the area. For example, it was an integral part of Canada Bread's (Maple Leaf Foods Inc.) decision to locate their new 388,000-square-foot industrial bakery in the Hamilton's Red Hill Business park — an initiative that helped create 1,000 new jobs. The program has been acclaimed as a best practice in development, and earned recognition in 2011 from the Economic Developers Association of Canada (EDAC), as winner of the EDAC/RBC Financial Group Economic Development Achievement of the Year Award.

"By setting an achievable GHG reduction target in the early stages of the program we were able to focus efforts, achieving the target seven years in advance and quickly joining other Canadian municipalities in shooting for the more science-based 80% GHG reduction target by 2050."

— **Brian McHattie, Councillor**

"Once you have achieved Milestone 5, the process and lessons learned do not and should not end. Addressing climate change is a continual effort across many fronts, but the local benefits of improved health, improved community, economic development retention and attraction is worth the continual effort."

— **Brian Montgomery, Air Quality and Climate Change Coordinator**

PROJECT: ENERGY RETROFITS AT WOODWARD AVENUE WATER TREATMENT PLANT

The aging pumps, motors, and switchgear of the Hamilton Woodward Avenue High Lift Pumping Station needed upgrades to continue pumping more than 340 million litres of Lake Ontario water to over 500,000 people on a daily basis. To do this while meeting water safety and energy-efficiency targets, the city's enlisted Burlington's Insyght Systems, whose analysis showed that the optimum solution was to replace the facility's various pumps with six identical pumps that could operate more efficiently across a wider range of flow rates, and use variable-frequency drives. The new design and change in operational approach allowed the high lift pumps to run at a lower capacity during higher-cost, on-peak periods and at a higher capacity during lower-cost, off-peak periods. A new supervisory control and data acquisition system shows plant operators, in real time, how much electricity is being used at each pump.

Completed with over \$2 million in financial incentives from Horizon Utilities' Electricity Retrofit Incentive Program, the new system reduces the facility's energy cost by 20 per cent annually, representing \$400,000 of the current, \$2-million annual electricity cost. This upgrade is seen as a benchmark for energy-efficiency opportunities available at the municipal level to adapt to peak demand pricing. Local electricity utilities across Ontario deliver incentive programs, such as the saveONenergy program, which offer municipalities, businesses, industries, and other sectors support for the installation of new energy-efficient technology.



CITY OF LONDON, ON

"Thames River, London, Ontario, Canada" by flickr user abdallah

Population: 366,000 | PCP Member Since: 1994 | Corporate M5 Achieved : 2013 | Community M2 Achieved: 2013

The City of London's GHG emissions reduction efforts can be traced back as far as its Vision '96 — Planning for Tomorrow activities and more recently to its 2003 Air Quality in London — Moving Forward Locally strategy. Since its release, the 2003 strategy has evolved to include participation in numerous provincial and federal sustainable energy projects, the introduction of a 30-member expert panel called the Mayor's Sustainable Energy Council that supports the development and implementation of initiatives in the area of sustainable energy, and the launch of a public engagement and awareness campaign named Rethink Energy London. The strategy has also recently been embedded in the city's 2011–2014 Strategic Plan, which recognizes the role for sustainable energy as a foundation of being green.

Energy spending in London was estimated at about \$1.3 billion in 2012, and most of this money flowed to people and companies outside of the city. Each year, London's energy use also accounts for almost three million tonnes of GHG emissions. Reducing costs and energy use therefore drives many of London's GHG-reducing actions. Among these are a municipal building retrofit program, a landfill gas capture system, LED traffic signals, and various partnerships with local utilities and homebuilders to help residents lighten their carbon footprint.

The city strives for the Province of Ontario's GHG emissions reduction targets: six per cent below 1990 levels by 2014; 15 per cent by 2020; and 80 per cent by 2050. In 2012, London's energy use per capita was 12 per cent below 1990 levels, with transportation and residential energy reductions leading the way. Thanks in part to a warmer-than-average winter and a cleaner provincial electricity supply, overall 2012 GHG emissions were 10 per cent lower than in 1990. To drive deeper reductions, the city is finalizing a Community Energy Action Plan that builds on what city staff learned through the Rethink Energy London campaign and supporting activities, setting out further actions for the city and stakeholders.

PROJECT: LONDON ENERGY EFFICIENCY PARTNERSHIP

The City of London and the London Home Builder's Association, struck a partnership in 2007 with funding from FCM and Natural Resources Canada to develop the London Energy Efficiency Partnership (LEEP) Project for evaluating the latest in green home-building techniques and technologies. This builder-led process provides local homebuilders with toolkits on "LEEP Technologies" and building practices that can improve the comfort and energy-efficiency of their new homes. Many of the identified LEEP technologies can also be used for retrofitting existing homes.



"Sustainable energy and new energy production and distribution technologies are critical elements of a growing and vibrant economy. We must encourage Londoners to employ sustainable energy, wherever possible. This is our reality, it's not down the road; it is here and now."

— Mayor Joe Fontana

"Many of the activities we've done were not originally in our business plan for that year; the opportunities just arose. It can appear chaotic and uncoordinated, but it's amazing what progress you can make when you keep plans flexible to opportunities that arise and fit within your overall goals."

— Jamie Skimming, Manager, Air Quality

PROJECT: STONEY CREEK COMMUNITY CENTRE

The new Stoney Creek Community Centre, a partnership between the City of London, the London Public Library and YMCA, is the first LEED Gold certified green building to be designed and built by the City of London. This building was designed to use 44 per cent less energy and 53 per cent less water than a comparative building built to the building code. In 2012, the Stoney Creek Community Centre officially received its LEED Gold certification from the Canada Green Building Council.

One of the most popular facilities in London, the building includes many environmental features, such as a green roof to reduce storm water run-off and air conditioning needs, drain water heat recovery from showers to reduce water heating needs, and lots of natural light for less reliance on artificial lighting. In its first year of operation, energy savings exceeded expectations and resulted in 55 per cent savings over standard conditions, with over 8,900 gigajoules of energy saved. The centre's YMCA issued memberships at nearly double its sales target, library visits rose, and more than 19,000 new library cards were requested.

FCM's Green Municipal Fund provided \$2.3 million in grants and loans toward the construction of the facility. Union Gas supported the project with incentives totaling approximately \$15,000 to help install condensing boilers, condensing water heaters and energy recovery wheels on two air handling units in this new state of the art facility.



CITY OF NELSON, BC

Population: 10,230 | PCP Member Since: 2007 | Corporate M5 Achieved : 2012 | Community M3 Achieved: 2012

Within a short span of time, the City of Nelson has demonstrated strong leadership in climate action. In 2007, the city joined the PCP program and signed the BC Climate Action Charter. Shortly afterward, it adopted a Corporate GHG Reduction Plan to reduce GHG emissions from municipal operations by 25 per cent below 2007 levels by 2015; 36 per cent by 2020; and 43 per cent by 2025. The Low Carbon Path to 2040 plan was also developed with goals for reducing per capita GHG emissions by 57 per cent, community-wide GHG emissions by 43 per cent, and community-wide energy use by 26 per cent. Since the adoption of these plans, the city has implemented a number of GHG-reducing actions.

The Corporate GHG Reduction Plan serves as a living document that is reviewed annually, and makes way for the integration of new technologies and ideas. A corporate energy coordinator has been contracted to oversee its implementation of the plan, and procedures are in place to measure progress and the impact of reduction measures. Ongoing emissions monitoring and a yearly GHG emissions inventory update will allow the city to determine whether anticipated energy savings and emissions reductions are being achieved. Each fall, meetings are arranged with individual department heads to involve staff in the planning process and collect feedback on GHG projects. Each spring, a project summary with an updated emissions inventory and a progress report is presented to council.

PROJECT: CITY HALL & CIVIC CENTRE CONDENSING BOILER RETROFITS

The City of Nelson completed a boiler retrofit in its City Hall and Civic Centre with \$26,000 in financial support from FortisBC's Efficient Boiler Program. The project ran from 2010–2012 and involved three main steps. First, engineers calculated heat losses for each building and designed the system so that they were sized according to heat load. New boilers were then purchased independently, through a tender contract. Lastly, the project was put on tender and awarded to a local contractor for installation. The retrofits have resulted in:

- Reduced natural gas consumption by 877 gigajoules at City Hall, equivalent to a 31 per cent reduction in energy use
- Reduced natural gas consumption by 1,597 gigajoules at the Civic Centre, equivalent to a 35 per cent reduction in energy use
- Reduced GHG emissions by 124 tonnes of CO₂e, equivalent to a 10 per cent reduction in corporate emissions based on 2007 levels
- Total cost savings of \$25,000 with a 13-year simple payback on the project



Through implementing this project, the city learned about the importance of engaging all parties as early as possible in the process and of the need to spend time communicating with each group. A flexible installation timeline with a large buffer to avoid installing/commissioning during the heating season was also found to be valuable. For other municipalities interested in implementing a boiler retrofit, the city recommends purchasing the boilers separately from installation only if there is a significant savings to be achieved.

"The PCP Program has provided Nelson with a measurable checklist against which the City has been able to track their climate change goals. Each stage of the process has an achievable goal and the individual milestones have been used to celebrate successes along the way. The program dovetails well with Nelson's BC Climate Action Charter commitments and provided additional resources for meeting those commitments. The success of Nelson's climate change program is twofold in that it received strong support from council, while also dedicating resources to working on greenhouse gas reductions at the operational and community level."

— Mayor John Dooley

"We are proud to be one of the first communities to achieve Milestone 5 in corporate operations in the PCP program when we reached this level in 2013. Being a leader in sustainability is something that Nelson has always been known for and having a program to follow was a great help in embarking on a strategy to reduce our GHG emissions, both corporately and as a community. It also made good business sense as investing in energy reduction initiatives not only reduced our GHG emissions but also generated substantial savings. Our average payback on these upgrades has been 9.2 years."

— Kevin Cormack, City Manager

PROJECT: DIGITAL CONTROL SYSTEM INSTALLATION

A digital control system was installed in a mixed-use building housing both the local police station and the municipal library that regulates the building's HVAC system through thermostats, exterior air temperature sensors, and carbon dioxide sensors. The project ran from May 2011–October 2011 and involved retaining engineers to identify the building's various mechanical systems and how they could be connected to the control system. The city then contracted a firm that specializes in Delta System controls (the type of system already in place at City Hall) to complete the installation, and train the facility operators who would be using the system. The digital control system has resulted in:

- Reduced natural gas consumption by 300 gigajoules, equivalent to 19 per cent
- Reduced electricity use by 17,040 kWh, equivalent to 6 per cent
- Reduced GHG emissions by 15 tonnes of CO₂e
- Total cost savings of \$4,400 per year with a 10-year simple payback on the project
- Improved user comfort since the building heating and cooling systems operate more effectively

One of the main challenges overcome during installation involved the ability to sole-source the contract to the Delta Controls system supplier. This required explaining to the purchasing department that having a consistent control system across all buildings would be a critical element in achieving efficiencies. Further, training and gaining support from the staff members who would operate the system was an important step in the implementation process. A controls system requires ongoing monitoring; therefore success is dependent on the knowledge of its operator.



CITY OF NORTH VANCOUVER, BC

Population: 48,168 | PCP Member Since: 1997 | Corporate M5 Achieved : 2010 | Community M5 Achieved: 2010

An active member of the PCP program, the City of North Vancouver counts sustainability and climate action as central to its core values, policies, and programs. In 2005, the city endorsed a GHG Local Action Plan (LAP), making it the second municipality in BC and the first in Metro Vancouver to achieve Milestone 3. The city updated its LAP in 2011 to incorporate a Corporate Climate Action Plan as well as a Community Energy and Emissions Plan, and a set new of GHG emissions reduction targets: 25 per cent below 2007 levels by 2020 for corporate operations and, for community-wide emissions, 15 per cent below 2007 levels by 2020, and 50 per cent below 2007 levels by 2050.

With well-developed annual monitoring and reporting processes, the city achieved Milestone 5 in December 2012, becoming the third municipality nation-wide to do so for both corporate and community sectors. Corporate GHG reduction actions range from updated building design guidelines that require new construction to comply with LEED certification, to vehicle fleet initiatives that rely less on fossil fuels through the use of hybrid vehicles, electric bicycles, and biodiesel. In the community, the city has shown leadership with its award-winning Lonsdale Energy Corporation (LEC) district heating system, which continues to expand in Lower and Central Lonsdale and by being the first municipality in British Columbia with a density bonusing bylaw. These measures will propel the city toward its reduction targets, and put it on track for meeting its long-term vision of being carbon neutral by 2107, coinciding with its 200th anniversary.

PROJECT: HIGH ENERGY STANDARDS AND DENSITY BONUSING



Buildings contribute approximately 50 per cent of North Vancouver’s GHG emissions and 70 per cent of its energy consumption. Effective January 1, 2011, North Vancouver became the first municipality in BC to use the density bonusing provisions of the Local Government Act that requires all new buildings—regardless of zoning designation or location—to meet higher energy requirements. Under the new bylaw, developers of new residential buildings (four storeys or less) can access density bonuses in the form of exclusions for cellar floor space and bonuses for other floor area, in return for achieving a minimum energy standard of EnerGuide 80.

Further, all new institutional, commercial, mixed-use, and industrial buildings, as well as residential buildings over four storeys, must meet the

ASHRAE 90.1–2010 and NECB–2011 energy standard to build above the base density prescribed in the relevant zone without exceeding the maximum limits set in the Official Community Plan.

The program has raised energy standards in 95 per cent of new construction. During the same time, 98 per cent of new residential buildings met or exceeded the minimum EnerGuide 80 energy standard. Through other programs, single family homes have the potential to save approximately 25–44 per cent on energy use and \$500–\$2,000 of energy costs annually. Meanwhile, the city’s enhanced verification process for larger buildings will lead to estimated savings of 0.64 gigawatt-hours per year on electricity, 1,904 gigajoules per year on natural gas, and 95 tonnes of GHG emissions by year 2020.

PROJECT: ACTIVE TRANSPORTATION INITIATIVES

In 2008, the city adopted a long-term transportation plan to reduce local GHG emissions and provide safe, efficient, and accessible transit, including more active modes of transportation, namely walking, cycling. Since the plan's adoption, the city has been working hard to enhance its walking and cycling networks, as well as other transit facilities, and has reduced barriers for people with mobility challenges. These actions include:

- Increasing bicycle and multi-use facilities by over 70 per cent since 2008
- Improving cycling infrastructure with painted bike lanes, markings for shared roadways and multi-use paths, pedestrian/cyclist traffic signals, pedestrian/cyclist push buttons, and bike boxes
- Installing bike racks at public facilities
- Equipping 40 per cent of all traffic signals with audible accessible devices and 100 per cent with countdown timers
- Improving accessibility at bus stops, making 85 per cent of the city's bus stops universally accessible

TransLink's Trip Diary data (trips during 24-hour period) demonstrate a steady increase in the proportion of residents traveling by transit, foot, or bike: 28 per cent in 2011 versus 27 per cent in 2008 and 25 per cent in 1999. For commute trips to work, data from Statistics Canada show that the share of combined non-vehicle modes of transit, walking, and cycling is even higher—growing from 32 per cent in 2006 to 36 per cent in 2011. Although, non-vehicle mode shares have increased, the city recognizes that much work remains and will continue promoting active transportation as a daily means of travel.



"Through participating in the PCP program and taking action to reduce our energy use and emissions, we've substantially reduced our spending on energy — both as a corporation and as a community. At the same time, we're building a more resilient, sustainable community for future generations."

— **Mayor Darrell Mussatto**

"When we began the program we focused a lot on the process of completing our corporate and community inventories. The inventory, while a key element, is just one part of the process. It provides just a snapshot of what some of the opportunities are and gives an overall idea of how the city is doing. It's important to finish up the inventory as best you can and then move on to the equally if not more important piece — taking action in implementing policies and programs to reduce emissions."

—**Caroline Jackson, Section Manager, Environmental Sustainability**



CITY OF OTTAWA, ON

Population: 940,000 | PCP Member Since: 1997 | Corporate M5 Achieved : 2012 | Community M5 Achieved: 2012

Since 2005, the City of Ottawa's Air Quality and Climate Change Management Plan has guided a range of corporate and community GHG emissions reduction efforts. Initiatives undertaken over the past decade include: developing an Energy Management and Investment Strategy to manage corporate utility costs; integrating hybrid vehicles into the municipal fleet; purchasing double-decker buses; introducing an idling by-law; commissioning a landfill gas-to-energy facility at the city's Trail Road Waste Facility, and more.

To monitor and assess progress, the city prepared GHG emissions inventories for 2004 (baseline year) and 2008, and is now finalizing its 2012 corporate and community GHG inventories.

In March 2013, the city hosted its first ever GHG Roundtable to kick-start a review and update of the 2005 Air Quality and Climate Change Management Plan. The roundtable brought experts and stakeholders together to explore various ways of addressing climate change. An updated plan will be released in 2014, incorporating a new target goals, objectives, actions and performance indicators.

PROJECT: TRAIL ROAD LANDFILL GENERATING FACILITY

In 2007, PowerTrail Inc. (a public-private partnership between the City of Ottawa, Energy Ottawa, and Integrated Gas Recovery Services) commissioned a 5-megawatt landfill gas-to-energy facility to process landfill gas from the Trail Road Waste Facility and the former Nepean Landfill. This facility is equipped with five generating units; each with capacity to generate 1,060 kilowatts. PowerTrail added an additional generator in 2012 to increase the total capacity to 6 megawatts. The facility produces enough power to serve approximately 6,000 homes on an annual basis while by minimizing landfill gas released into the atmosphere. In addition, the city receives an annual royalty payment of approximately \$120,000 for gas used by the generating plant.



“The City of Ottawa was one of the first municipalities in Canada to join the Partners for Climate Protection program and to commit to reducing corporate greenhouse gas emissions and in 2013 we were recognized as one of just 21 municipalities in Canada to achieve Milestone 5. I am proud to say that we are moving in the right direction. The City of Ottawa embraces the concepts of leading by example, and working in partnership for change. I look forward to working with members of the community in the years ahead to manage our energy use responsibly while responding to changes in weather patterns that are affecting us all.”

— Mayor Jim Watson

“Engaging the community is a key driver to our success in decreasing GHG emissions in Ottawa. Our Energy Management and Investment Strategy has helped to dramatically reduce GHG emissions at City facilities, while also educating the public on conservation strategies that can be used at home. Later this spring, the city will release its updated Air Quality and Climate Change Management Plan which will allow us to continue focusing on reducing emissions.”

— Councillor Maria McRae, Chair of the Environment Committee

PROJECT: ENERGY MANAGEMENT AND INVESTMENT STRATEGY

In 2002, Ottawa initiated an Energy Retrofit Program, now known as its Energy Management and Investment Strategy, to promote energy conservation in its corporately owned buildings and facilities. The goal is to achieve greater efficiency through retrofits, producing significant operational savings, decreasing GHG emissions, and creating more comfortable facilities. Under this program, the city:

- Upgraded existing lighting on 26 ice pads with T5H0 fluorescent lights, for a 50 per cent reduction in electricity consumption
- Installed 10-kilowatt solar photovoltaic systems on the roofs of City Hall and the Transit Services Integrated Control Centre through participation in the Ontario Power Authority's microFIT program, which sells the electricity generated to the provincial power grid at 80.2 cents per kilowatt-hour
- Installed LED lighting at three indoor garages, reducing energy use by 60 per cent and improving comfort and safety for patrons
- Replaced wall-packs with LED lights outside of all city buildings, for a 75-per-cent energy savings

By the end of 2012, the program had invested almost \$13.8 million in energy conservation and efficiency retrofits. It generated a total savings of approximately \$12.6 million with annual savings of \$3 million and a typical return on investment of five years. Fifty-three projects were implemented in 2013, saving \$450,000 annually in utility costs. Preliminary results of the 2012 emissions inventory indicate that GHG emissions from city buildings have decreased significantly below 2004 levels. These results have not only demonstrated the city's leadership, they have also freed up resources for other community needs.





TOWN OF RICHMOND HILL, ON

Population: 185,541 | PCP Member Since: 2000 | Corporate M5 Achieved : 2010 | Community M3 Achieved: 2005

The Town of Richmond Hill established climate action and clean air programs well over a decade ago. In 2000, the same year it joined the PCP program, the town was recognized nationally for its Clean Air Program by co-winning the first-ever FCM Sustainable Communities Award. Building on this momentum, the town adopted a Clean Air Initiative Local Action Plan in 2004, which set a corporate GHG reduction target of 20 per cent below 2000 levels by 2009 and a community target of 6 per cent below 2000 levels by 2010. When the town updated its corporate GHG emissions inventory for 2009, results showed it had exceeded its goal, having reduced emissions by 33 per cent relative to 2000 levels. With this achievement, Richmond Hill became the first municipality in Ontario to reach its GHG emissions reduction target under the PCP program.

One of the factors contributing to Richmond Hill's success has been an "environment first" commitment among council and senior managers. The Clean Air Initiatives Local Action Plan is fully aligned with the town's Vision Statement, Strategic Plan and related goals and objectives. Prior to being adopted, the plan was reviewed by a multi-disciplinary project team with representatives from various departments to ensure that proposed actions were financially and technologically feasible. Council directed staff to implement, monitor, and report back on the results, and communicate progress with municipal staff and the public via newsletters, council documents, and other presentations.

PROJECT: GEOTHERMAL HEATING AND COOLING

With recent technological advances, ground source heat pumps are growing in popularity as a means of heating and cooling home and building spaces. They offer a compelling alternative to traditional forced air systems from both an economic and environmental standpoint. In 2005, when Richmond Hill's new Centre for Performing Arts was being constructed, the town initiated its first geothermal project: the installation of a ground source heat pump to serve the heritage component (old school house) of the building. Proposed by the architect design, approved by the Project Steering Committee, and completed in 2009, the geothermal component cost approximately \$200,000 and was funded through the federal Gas Tax Fund.

Due to recent advances in heat pump performance, ground source heat pumps are growing in popularity as a means of heating and cooling home and building spaces since they offer a compelling alternative to traditional forced air systems from both an economic and environmental standpoint. It reduces electricity consumption by over 96,000 kilowatt-hours per year and GHG emissions by approximately 16 tonnes of CO₂e per year.

The town sees ground source heat pumps as a good option for retrofitting smaller facilities. For other municipalities interested in implementing a similar project, the town stresses the importance of ensuring that bore hole locations are accurately placed to avoid interference with any future development on the site.



“Achieving Milestone 5 is consistent with the goals and objectives of our 2009 Strategic Plan. Specifically, by managing our resources wisely, we're protecting the environment, while also saving money for this generation and those to follow. We're also serving as a role model for environmental and municipal management.”

“Stay committed to the program. Richmond Hill experienced significant growth from 2000–2009. Our population grew by 50,000 and there was a 33 per cent increase in total square footage in facilities, a 32 per cent increase in fleet size, and a 26 per cent increase in the number of streetlights, yet the Town was able to achieve a 33 per cent reduction in GHG emissions.”

— George Flint, Manager, Air Quality and Solid Waste

PROJECT: DRY-O-TRON TEMPERATURE CONTROL UNIT UPGRADE

By nature, indoor pool environments create excess humidity within building envelopes. Dehumidifiers help to save energy and control temperature variations. In 2009, the Town replaced the aging Dry-O-Tron dehumidifier in its Lois Hancey Aquatic Centre Wavepool facility with a newer model. The installation presented challenges due to limited access — the new unit had to be assembled in the shop, then disassembled and delivered in pieces, and rebuilt at the facility. The benefits of the upgraded technology include electricity savings of over 182,000 kilowatt-hours per year and reduced GHG emissions of approximately 31 tonnes of CO₂e per year. The project cost was \$600,000 and was funded through the federal Gas Tax Fund.



DISTRICT OF SAANICH, BC

Population: 109,661 | PCP Member Since: 1996 | Corporate M5 Achieved : 2013 | Community M5 Achieved: 2013

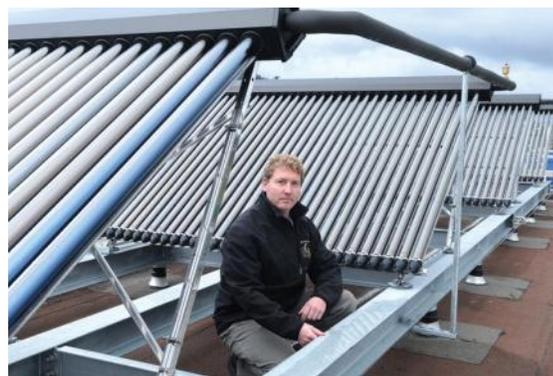
For over two decades the District of Saanich has been working towards a more energy-efficient future. With the adoption of its Climate Action Plan in 2010, the municipality formalized its climate action efforts through to 2020 with targets to reduce corporate-generated GHG emissions by 50 per cent and community-generated GHG emissions by 33 per cent, below 2007 levels. Through the implementation of projects between 2007 and 2012, Saanich has already cut its corporate emissions by 18 per cent and community emissions by 4 per cent. Two programs in particular — an energy service contract to retrofit corporate buildings and participation in the E3 Fleet program to improve fleet performance — helped to cut emissions by more than 980 tonnes over this period.

The majority of the corporate actions have been funded through the Saanich Carbon Fund, an innovative tool — exclusively for new initiatives in Saanich — that directs offsetting funds for GHG-reducing initiatives such as solar water heating, geo-exchange and photovoltaic systems, and carbon sequestration. Starting in 2008, the municipality also began assigning GHG responsibility to each department in the organization, an essential step in helping staff members understand and take ownership for their carbon footprint.

For community initiatives, the Saanich Environmental Advisory Committee, which includes both community and council representation, provides continual feedback on potential initiatives and programs that align with community priorities. The municipality also established a Carbon Fund Calculator that helps residents calculate their GHG emissions, and offers them a chance to donate to local carbon reduction projects through the Saanich Carbon Fund.

PROJECT: SOLAR HOT WATER INSTALLATION

In 2008, the District of Saanich was selected as a Solar Community by SolarBC to lead the promotion of solar hot water technology in the municipality. To set an example, Saanich partnered with Apricus Solar Systems in 2010 to install the municipality's first solar hot water system at the Gordon Head Recreation Centre. Camosun College faculty and students were also involved in the systems installation. The project provided students with valuable training and worksite experience. The system provides heating for the showers at the facility helping Saanich achieve annual energy savings of 400 gigajoules and GHG emissions reductions of 20 tonnes per year, as well as more than \$4,000 in annual cost savings.





PROJECT: TAP-BY-TAP

In partnership with the Capital Regional District, Fortis BC and City Green Solutions, the District of Saanich delivered a program in 2011 called Tap-by-Tap that provided a free energy and water saving kit to over 1,000 residents in multi-unit residential buildings as well as a customized walk-through assessment for building managers. The energy and water saving kit included a high-efficiency showerhead, faucet aerators, a shower timer, thread seal tape, as well as education material. By installing the kits, residents:

- Saved over 40,000 litres of water each year
- Saved \$70 to \$135 on energy bills each year
- Reduced GHG emissions generated through water heating
- Enhanced drinking water quality by maintaining higher water levels in Sooke Lake
- Deferred the need for developing new sources of drinking water
- Reduced the costs, energy and materials required to treat and deliver water

Building on the success of the pilot, a second iteration of the program is currently available on a first come, first served basis for up to 3,000 residential units in the region.

"In terms of encouraging community emissions reductions, we believe the best thing we can do is lead by example with our operations."

—Mayor Frank Leonard

"Build on existing accomplishments and thoroughly integrate sustainability throughout your organization. Then don't let perfection get in the way of action."

—Mark Boysen, Sustainability Coordinator

CITY OF SURREY, BC

Population: 468,251 | PCP Member Since: 1998 | Corporate M5 Achieved : 2012 | Community M4 Achieved: 2014

In September 2008, the City of Surrey adopted a Sustainability Charter — a comprehensive framework with a progressive 50-year vision of sustainability. The Sustainability Charter includes a commitment to climate action, by completing PCP’s five-milestone program and developing strategies to reduce the causes of climate change and mitigate impacts. The City set targets, defined opportunities, and has taken measures to reduce energy consumption and GHG emissions from both its corporate operations and the community as a whole.

Leading by example, the city developed a Corporate Emissions Action Plan in 2010, with a target to reduce emissions from its municipal operations by 20 per cent below baseline levels by 2020. Projects targeting corporate operations relate to green procurement, energy retrofits across city buildings, low carbon vehicles, and alternative fuels. In the community as a whole, the city aims to reduce emissions by 33 per capita below baseline levels by 2020, and by 80 per cent per capita by 2050.

Notable efforts to support the city’s Community Energy and Emissions Plan (CEEP), adopted in 2013, include the development of a district energy system in the City Centre, an organic waste collection program powered by compressed natural gas vehicles, climate change awareness activities in schools, and extending bike routes and sustainable transportation options. By taking informed and proactive actions guided by the CEEP, the city is positioned to create a low-carbon and resilient future, facilitating growth for decades to come.



“The City of Surrey achieved Milestone 5 on the corporate side when we completed our Corporate Emissions Action Plan in 2010, and then moved towards implementation and monitoring. For Surrey, the Milestone 5 corporate award provided important recognition of our leadership in reducing energy use and GHG emissions from our buildings and greening our corporate fleet.”
— Anna Mathewson, Manager, Sustainability

PROJECT: GREEN FLEET INITIATIVES

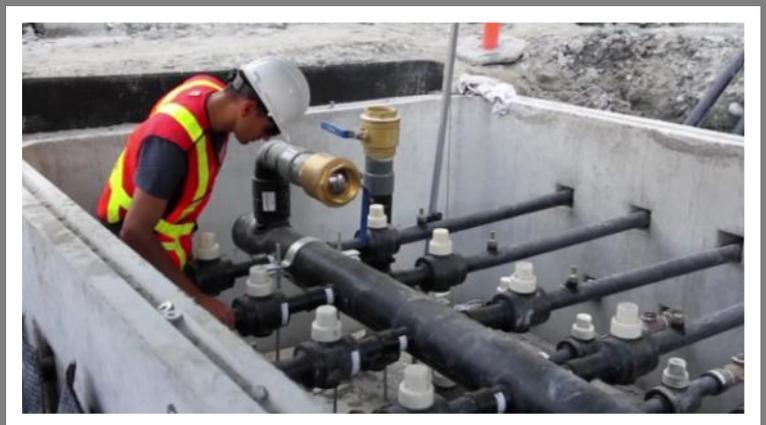
The city's Green Fleet Initiative tested a variety of alternative-fuel vehicles, including original equipment manufacturing and conversion electric vehicles (EVs), hydrogen fuel trucks, and hydrogen fuel-cell passenger vehicles. A partnership with Simon Fraser University's School of Mechatronics has provided a lifecycle assessment of alternative vehicles. In 2011, the city earned the Fraser Basin Council's E3 Fleet Gold Rating. It achieved this through the purchase of fuel-efficient and alternative-technology vehicles, route optimization strategies, an automated fuel data management program, regular vehicle maintenance, and staff training, which included fuel-efficient driving and idle-reduction programs. As a result of these and other initiatives, the city is improving the efficiency of its fleet vehicles by an average of 1.3 per cent per year.

With funds from the Province of BC, the city installed 14 new EV charging stations, 10 of which are publically-accessible and 4 of which will be used for the city's fleet. As well, the city transitioned a full fleet of compressed natural gas (CNG) waste collection trucks.



PROJECT: SUSTAINABLE BUILDINGS

The city has reduced GHG emissions from municipal buildings, even with several major facilities coming on line in recent years. Major facilities recently built or in the design process include the new City Hall, City Centre Library, the Animal Care Facility, a City Works Yard, an aquatic centre, and two recreation centres. Surrey's newest Fire Hall incorporates solar hot water system. In addition to energy efficient design, the new City Hall houses a geo-exchange district energy system, which will heat and cool the main building as well as City Centre Library and an adjacent residential and hotel tower.



Retrofits to Surrey's existing facilities have also contributed to enhanced building performance. The city has installed heat recovery systems, lighting and window retrofits, and high-efficiency boilers and chillers in many buildings. As well, a Workplace Conservation Awareness (WCA) Program engages staff at various locations and provides education on behaviour-based energy reductions.



CITY OF VANCOUVER, BC

Population: 603,502 | PCP Member Since: 1995 | Corporate M5 Achieved : 2010 | Community M5 Achieved: 2010

“Sustainability — in all its aspects — is an important part of the vision for Vancouver. We joined the PCP program to provide structure to the projects already underway, and to provide a clear mechanism against which to track progress. The PCP program also facilitated access and sharing of knowledge.”

— **Lloyd Lee, Monitoring and Reporting Planner, Sustainability Group**

“PCP milestones and their stepped approach mirror the path Vancouver has taken. Simply put: start with any project that you can get early traction on, no matter the scale. Avoid classifying things as ‘low-hanging fruit’ or ‘mega-projects’ — these are just names. Select a project where you can get early partners onboard. Don’t become obsessed with saving carbon yet; focus on working hard to achieve success. These early wins help build rapport amongst stakeholders, demonstrate capability, and generate momentum for new initiatives and partnerships.”

— **Malcolm Shield, Climate Policy Engineer, Sustainability Group**

PROJECT: GREEN BUILDING POLICY FOR REZONINGS



The City of Vancouver has two main green building targets: all new buildings are to be carbon neutral in operations by 2020; and energy use and GHG emissions are to be reduced by 20 per cent in existing buildings by 2020. To reach these targets, the city has a five-tier policy that includes its Green Building Policy for Rezonings, requiring that all rezoning projects — roughly 50% of all new developments in Vancouver — achieve of LEED Gold certification. Since the policy’s introduction, the number of LEED Gold projects in Vancouver has grown by 46 per cent. Other key outcomes include transforming the market by increasing consumer choice and awareness and developing a process that is workable for industry participants who wish to rezone their property.

A member of the PCP program since 1995, the City of Vancouver continues to push the envelope of what can be achieved through a commitment to sustainability. The city has reduced its community-sourced GHG emissions by four per cent below 2007 baseline levels, which amounts to nearly 100,000 tonnes of CO₂e. These reductions have been accomplished through a combination of methods including a strict sustainable building policy, ambitious waste diversion and reduction targets, and efforts to encourage active transportation, such as biking, walking, and transit, as well as the adoption of electric and hybrid vehicles.

The city's corporate GHG emissions reductions are also commendable and include a 25 per cent reduction in building emissions below 1990 levels. This achievement has been made possible through building new facilities to a minimum requirement of LEED Gold certification and upgrading existing city facilities to make them more energy efficient. In addition, the city aims to reduce GHG emissions from its vehicle fleet and heavy equipment by providing education and policies for efficient driving and by introducing of biodiesel, hybrid, and electric vehicles (EV).

Through its 2020 Greenest City Action Plan (GCAP), Vancouver aims to be the greenest city in the world by 2020. The plan sets targets in 10 categories and includes a goal to further reduce GHG emissions by 33 per cent below 2007 levels. The GCAP was developed in consultation with 32,000 city residents and businesses and expert professionals from industry.

PROJECT: ELECTRICAL VEHICLE AND CELLULAR INFRASTRUCTURE CO-LOCATION DEMONSTRATION PROJECT

In 2012, the City of Vancouver partnered with TELUS on an innovative demonstration project that placed two electric vehicle (EV) charging stations in the same location as telecommunication company receivers, installed at each of three sites along Beach Avenue. This addressed two challenges: the up-front capital costs of building infrastructure for electricity supply to EV charging stations; and the growing demand for cellular phone service and residential bandwidth in areas where rooftop locations are unavailable (and smaller, on-the-ground antennae are required instead).

Through this project Vancouver not only increased cellular serviceability in the local area and the profile of electric vehicles in the city, but also demonstrated that co-location is a natural fit. When a telecommunications company develops a site for cellular infrastructure on city land, the city can require them to bring enough power to the site to also service EV charging equipment. In this scenario, the telecommunications company pays for the cost of infrastructure installation up front. The cost of power infrastructure necessary for this increased electrical capacity is offset under the business terms, through rent abatement on the site lease. In return, the city avoids the up-front capital expense, but pays for the infrastructure through slightly reduced long-term site lease payments.

Some of the challenges overcome by the city during the project include:

- Setting business terms for an innovative business approach and shared infrastructure
- Coordinating access for maintenance by determining who has what access to what equipment
- Ensuring the installed infrastructure is aesthetically compatible with the site
- Educating the public on the project and the benefit it provides
- Finding sites that meet the telecommunication company's radio frequency needs while also being close to an identified site that requires EV charging infrastructure



The model pioneered by the city and TELUS is widely replicable and could be applied to any public electrical amenity. For example, a charging station could provide power for food carts to reduce their reliance on portable generators.

REGION OF WATERLOO, ON

Population: 553,000 | PCP Member Since: 2010 | Corporate M5 Achieved : 2013 | Community M3 Achieved: 2013

Over the last 20 years, the Region of Waterloo has cultivated a strong environmental record. It was among the first municipalities in Ontario to champion environmental initiatives in a Regional Official Plan and counted several green program and projects among its priorities, such as the municipal blue box program, a LEED Gold-certified building, and a comprehensive Water Resource Protection Strategy. In 2009, Regional Council formalized its environmental commitments by adopting its first Environmental Sustainability Strategy. The strategy commits the region to integrating sustainability considerations into many of its decision-making processes, particularly in areas that have a significant impact on the environment such as purchasing, planning and infrastructure.

In support of this strategy, regional council passed a resolution in 2010 to participate in the PCP program and the Sustainable Waterloo Regional Carbon Initiative. A Corporate GHG Inventory and Action Plan was adopted soon after with an emissions reduction target to maintain 2009 emission levels through 2019, offsetting the 28 per cent projected growth in emissions from regional operations. An updated emissions inventory for the reporting year 2011 indicated, however, that the region had already reached nearly 15 per cent in GHG emissions reductions in just two years. Based on the lessons learned and success achieved to date, it has been estimated that the existing target would be fulfilled and reduced by another five per cent. With this finding and the increasing need to address climate change, regional council approved an enhanced target: to reduce GHG emissions by 10 per cent below 2009 levels by 2019.

Recently, regional council approved a community-wide Climate Action Plan that includes a GHG emissions reduction target of six per cent below 2010 levels by the year 2020. Development of the plan included collaboration with local municipalities and a range of community organizations, local businesses and residents over a span of 18 months. The plan outlines other benefits to taking climate action, such as economic growth, energy security, cost savings, improved local air quality and public health.

PROJECT: HARNESSING SOLAR ENERGY

Since joining the PCP program, the Region of Waterloo has successfully installed 16 rooftop solar photovoltaic systems. On an annual basis, they feed 1,050 megawatt-hours of clean renewable electricity into the provincial power grid under Ontario's Feed-in-Tariff program. Grants amounting to over \$2 million were secured for these projects, involving installations on regional housing facilities, childcare buildings, operations centres and water services facilities. Two additional systems involving almost 1,100 panels will be installed on a new police building and transit facility; the latter will be supported through FCM's Green Municipal Fund. These systems will fulfill a portion of on-site energy demand, generating approximately 360,000 kilowatt-hours of renewable electricity each year, and will contribute toward LEED Gold certification, which the region will seek in the coming year.



PROJECT: SUNNYSIDE HOME

Sunnyside Home is an 11-acre campus of facilities that provides health and wellness services to seniors as well as housing units with different levels of supportive care. Long-term care facilities emit relatively high levels of GHG emissions because of their 24/7 operation practices, stringent indoor air quality requirements and higher demands for heating and cooling.

A new 3,500-square-metre Supportive Housing and Wellness centre was recently built to LEED Silver certification. One of the main features of this new building is a geothermal heat system that supplies space heating and cooling. The system runs with support from three dozen 90-metre-deep vertical wells located below the parking area. This renewable energy system will reduce the building's energy consumption by over 50 per cent compared with conventional systems. It will reduce operating costs, and lead to GHG reductions of 170 tonnes of CO₂e per year.

In another building on the Sunnyside campus, a waste heat-recovery system has been installed. It captures air exhausted from the building and stores it in thermal reservoirs where a heat exchanger can either preheat cold incoming air in the winter or pre-cool hot incoming air in the summer. Anually, the system avoids the need for 240,000 cubic metres of natural gas and 450 tonnes of GHG emissions, and saves \$84,000 in energy costs.



“Working closely together with our community partners is essential to maximize the effectiveness of our various environmental initiatives and achievement of our GHG emission reduction targets. We have much to learn from each other and through such collaboration we send a powerful message to our citizens that this work has tremendous value to the broader community.”

— Ken Seiling, Regional Chair

"It is important for municipalities to document their progress to show credibility and build momentum by frequently reporting results and co-benefits. Rather than seeing M5 as the final step in the PCP process, treat monitoring and reporting progress as an ongoing means to improve the impact of your efforts, i.e. leverage more participation, resources, partnerships and emission reductions with these reports."

— David Roewade, Sustainability Planner



RESORT MUNICIPALITY OF WHISTLER, BC

Population: 10,000 | PCP Member Since: 1997 | Corporate M5 Achieved : 2007| Community M5 Achieved: 2007

Since climatic conditions are integral to its tourism-based economy, the Resort Municipality of Whistler has a heightened awareness of potential climate impacts, which is what led them to join the PCP program in 1997. This commitment led to development of its 2004 Integrated Energy, Air Quality and Greenhouse Gas Management Plan, the first integrated plan in Canada to include energy, air quality and greenhouse gases management planning in one document. In 2007, Whistler also adopted the Whistler2020 Integrated Community Sustainability Plan (ICSP) as an overarching document to guide future municipal development. Based on the principles of The Natural Step, this ambitious plan seeks to significantly accelerate Whistler's journey toward becoming a truly sustainable community.

Whistler has recently taken strong steps to limit GHG emissions generated by corporate and community activities. Total community GHG emissions in 2012 were estimated at 111,082 tonnes of CO₂e, approximately 16 per cent lower than 2007 levels and 22 per cent lower than 2000 levels. Between 2008 and 2011, annual GHG emissions reductions averaged approximately 4,500 tonnes, primarily through changes to waste management practices, a switch to natural gas from piped propane, and the introduction of a hydrogen fuel cell bus pilot project. By 2012, Whistler had achieved a 21 per cent reduction in corporate emissions from 2008 levels, which puts the municipality on course to achieve its ongoing reduction targets. Currently, heating and powering corporate buildings generates nearly 60 per cent of Whistler's corporate GHG emissions, and the municipality is taking action to target reductions in those areas.



“Getting out there with the financial message year after year — and having those financial numbers be strong — is critical. With energy prices only increasing over time, the message becomes even more compelling.”

“The more that the cost on carbon is understood by staff, and clearly linked to operations, the better the job staff will do to reduce those costs.”

— Ted Battiston, Manager of Special Projects

PROJECT: MEADOW SPORTS COMPLEX RETROFIT

An assessment of the Resort Municipality of Whistler's corporate energy and emissions inventory identified the Meadow Park Sports Centre (MPSC) as having the highest energy cost per square foot and the greatest annual GHG emissions footprint out of all municipal buildings. In response, staff secured \$10,000 from BC Hydro to study energy conservation opportunities for the facility. The study proposed that primary energy load on the building could be reduced by a combined ground source heat pump and solar hot water system.

An MPSC retrofit project took place in 2009 installing evacuated tube solar technology that uses solar panels to heat domestic water loads and a vertical loop geo-exchange bore field that draws heat from the ground for the building's two pools and hot tub. As a result, GHG emissions have been reduced by more than 65 per cent (477 tonnes of CO₂e), the largest portion of Whistler's emission reductions achieved to date. Overall energy costs to operate the building have dropped by almost 40 per cent; from \$340,000 in 2009 to less than \$210,000 in 2012.

Financial highlights:

- Total renovation costs: \$910,000
- Solar panels: approximately \$225,000
- Geo-exchange: approximately \$685,000
- ROI: energy cost savings of \$110,000–\$130,000 per year
- Internal rate of return: 12 per cent
- Payback period: 6–8 years



PROJECT: LOST LAKE PASSIVHAUS

The Lost Lake PassivHaus, constructed to host the Austrian Olympic Committee and Austrian Public Broadcasting during the 2010 Olympic Games, represents a powerful step towards sustainable buildings in Whistler. The building's design is based on the European "passive house" model, and results in up to 90 per cent less energy consumption than traditionally built homes and approximately 50 per cent less energy than a LEED Platinum certified house. To qualify as a passive house, a building can use no more than 15 kilowatt-hours per square metre per year for heating and cooling, regardless of the building's location.

Key features of the passive house model include a thick band of insulation encasing the house from the roof to beneath the basement floor (3–4 times thicker than most Canadian homes) and triple-paned windows facing south that are encased in wood and cork-insulated frames (drawing heat in and not letting it out). These elements maintain comfortable indoor temperatures without the use of a conventional furnace. Whistler's Lost Lake PassivHaus emits less than 1 tonne of CO₂e per year.

In addition to showing what a high level of commitment to sustainable building principles can achieve, the PassivHaus has also helped to build local capacity for green building practices, providing a model and valuable experience for local builders.

Financial highlights:

- Total project costs: approximately \$1.5 Million
- Resort Municipality of Whistler's investment: \$300,000 for site servicing and preparation
- Other community investments: \$150,000 from the Whistler Blackcomb Foundation
- Energy costs: approximately \$300 annually for the 250-square-metre building's heat and hot water



CITY OF WINNIPEG, MB

Population: 700,000 | PCP Member Since: 1998 | Corporate M4 Achieved : 2008 | Community M1 Achieved: 2002

The City of Winnipeg joined PCP in 1998 and, shortly after creating a GHG emissions inventory, began undertaking corporate GHG-reducing measures, including the adoption of Power Smart programs for municipal buildings. The city's Climate Change Action Plan, adopted in 2006, sought to reduce corporate GHG emissions by 20 per cent below 1998 levels. By 2007 the city had achieved its target, with a 20.2 per cent reduction in GHG emissions, from 68,452 tonnes of CO₂e per year to 54,624 tonnes of CO₂e per year. More ambitious reduction targets were set in 2009, including a further 20 per cent reduction in corporate GHG emissions and a 6 per cent overall community reduction target, to be achieved by 2019. These objectives align with the 2011 OurWinnipeg Community Plan, which sets a 25-year framework for achieving sustainability across all areas of the city.

The city succeeded in reducing energy consumption by focusing on corporate facilities, traffic signals, and its corporate vehicle fleet. Early progress was made in its existing building stock through the implementation of a 10-year comprehensive energy performance contract with Manitoba Hydro. More recently, the city has adopted an ambitious corporate green building policy. The ongoing replacement of existing traffic signals with high-efficiency LED signals has been highly successful, representing an average annual savings of 248,000 kilowatt-hours over nine years. The city recently adopted a Green Fleet Plan which seeks to reduce GHG emissions from Winnipeg's nearly 2,000 civic vehicles by 17.65 per cent below 1998 levels. The city has reconfigured its corporate vehicle fleet to reduce emissions while lowering its overall fuel consumption and fuel costs. Additional GHG reductions have been achieved through a new comprehensive waste plan, and an upcoming biosolids master plan will ensure continued city-wide reductions in this sector.

PROJECT: GARBAGE AND RECYCLING MASTER PLAN

In 2010, the city took steps to develop a comprehensive waste management plan that would boost the its waste diversion rate to 50 per cent or more by reducing household garbage and significantly increasing household recycling. Its diversion rate at the time was 15 per cent and it has since increased to 28 per cent in 2013. More than 2,500 Winnipeggers participated in nine months of city-wide public consultations in 2011 to help develop new waste and recycling services. The plan, adopted in 2011, not only includes measures that improve existing waste diversion programs, but also addresses waste processing and disposal needs for the next twenty years. It proposes various ways to reduce the amount of waste being landfilled, including: automated garbage and recycling cart collection, seasonal bi-weekly yard waste collection, a source-separated organics collection trial, and community resource recovery centres where residents can drop off material that could be processed and reused, resold, or recycled.

The city is also diverting some of the GHG emissions associated with the Brady Road Resource Management Facility, the city's sole landfill site. It installed a methane gas collection system, which captures and flares methane gas that would otherwise be released, uncontrolled, into the environment. The amount of GHG emissions reduced from this project is equivalent to taking 21,700 passenger vehicles off the road. The city is currently investigating the possibility of using the captured gas as an energy source.



“Through the Partners for Climate Protection program, we’ve set achievable goals for the reduction of greenhouse gas emissions, and that expectation is driving innovation in our every day actions.”

— Sean Madden, Climate Change Coordinator

“The City of Winnipeg’s commitment to the reduction of greenhouse gas emissions through the Partners for Climate Protection program has helped to advance Winnipeg’s sustainability goals. The Green Building Policy succeeds in reducing our environmental impact while making it more affordable to operate our buildings over the long term.”

— Deepak Joshi, Acting Chief Administrative Officer

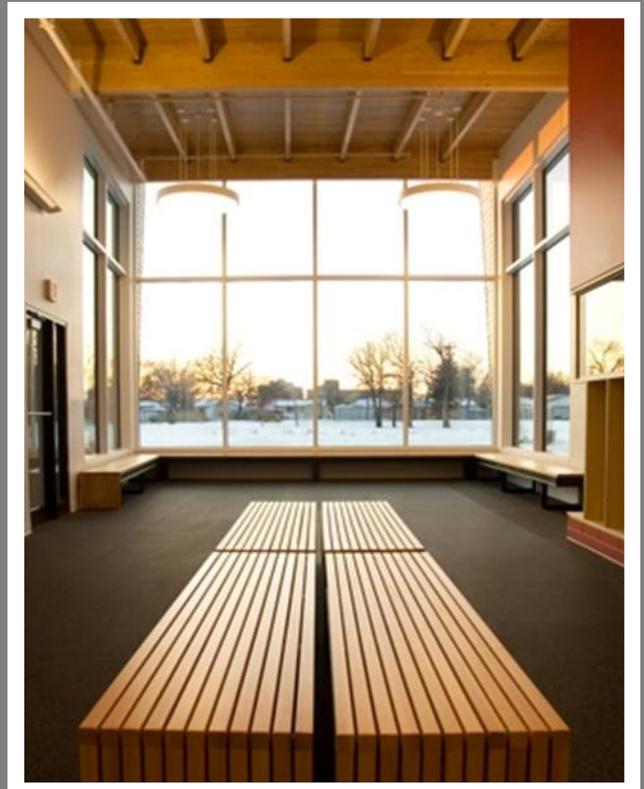
PROJECT: GREEN BUILDING POLICY

A hallmark of the city’s corporate GHG emissions reduction strategy is its Green Building Policy. Adopted in 2010, the Green Building Policy commits all new city owned buildings to:

- Achieve a minimum of LEED Silver certification (or a comparable green design standard)
- Deliver improved energy performance through certification with the Manitoba Hydro Power Smart New Buildings Program
- Employ life-cycle costing to ensure maximum value of projected capital and operating costs and savings in financial decision-making and reporting

In addition, the policy requires that green design experts participate in each project, which also helps to foster and sustain a local green building industry.

Two projects that show Green Building Policy achievements are the newly completed Sturgeon Heights Community Centre (SHCC) and the recently commissioned East Yard Public Works Complex. The SHCC has obtained LEED Gold certification, exceeding the minimum requirements of the Green Building Policy. It has achieved a 47 per cent reduction in energy use, diverted just over 84 per cent of waste from landfill, features locally appropriate landscaping that uses 50 per-cent less water, and employs local and recycled materials throughout its design. The newly commissioned East Yard Complex, which consolidates six existing public works facilities into one 103,000-square-foot facility, will be Winnipeg’s largest undertaking in green building to date. While not yet been certified, it has been designed to achieve LEED Silver certification and represents another significant step in the city’s efforts to integrate sustainability principles throughout its operations.





CITY OF YELLOWKNIFE, NWT

Photo by Bob Wilson

Population: 19,234 | PCP Member Since: 1998 | Corporate M5 Achieved : 2012 | Community M5 Achieved: 2012

The City of Yellowknife joined the PCP program in 1997, marking the beginning of its journey to reduce GHG emissions and improve its overall sustainability. The city completed a baseline GHG emissions inventory in 2004, which revealed that emissions from fossil fuel-sourced heating were almost twice that of the Canadian average. This compelled Yellowknife city council to form a community energy planning committee and develop the city's first Community Energy Plan. Created in 2005, the committee included members from public institutions, private businesses, power utilities, and the general public — representatives offering many different perspectives. The committee held workshops and public meetings to collect ideas and hired technical and economic experts to research energy options for reducing emissions and saving money. The final plan adopted by council in 2006 strives to increase energy efficiency and promotes renewable energy.

With a target year of 2014, Yellowknife aims to reduce its corporate GHG emissions by 20 per cent and its community GHG emissions 6 per cent, based on 2004 levels. It has budgeted \$500,000 annually for energy efficiency, renewable energy conversions and public awareness. The city has already implemented a number of projects and has achieved a 38 per cent reduction in corporate GHG emissions since 2004. Its community energy planning committee supports the evolution of the Community Energy Plan and meets on a quarterly basis to hear updates and consider future projects. With these dedicated efforts, Yellowknife will carry on its tradition of sustainability, and is well positioned to claim even more success in the coming years.

PROJECT: FIELDHOUSE AND MULTIPLEX ICE PLANT WASTE HEAT RECOVERY

One of the first projects that came out of the City of Yellowknife's Community Energy Plan was the installation of an ice plant heat recovery system at its Multiplex Arena. The ice plant extracts heat from the arena floor through a mechanical process, producing waste heat as a by-product. The waste heat is then used to offset space heating requirements in the facility's rink, dressing rooms and lobby areas. Although the system uses more electricity—a result of the increased operating pressure of the ice plant—much of the electricity generated in Yellowknife is from hydro and costs are more than offset by the reduction in heating oil. The city leveraged its Community Energy Plan budget to obtain funding from the Municipal Rural Infrastructure Fund, which paid for two-thirds of the \$313,000 system.



Photo by Patrick Kane

In 2011, the system was expanded connecting it to the Fieldhouse, a neighbouring recreational facility. The complete project cost was \$580,000 and was supported by \$286,000 in federal and territorial grants. As of February 7, 2013, the heat recovery system's monitoring data stated that 11,617,537 megajoules of energy had been recovered since implementation of the system resulting in annual GHG emissions reduction of 125 tonnes of CO₂e and \$33,900 in annual cost savings. The system performs well and more strictly enforced ice and air temperature settings have yielded a 15,000 liters savings per month in oil consumption for 2013–2014 compared to the previous year.

"As a northern and remote community, the City of Yellowknife decided to join the PCP program to address our high energy costs and higher than average greenhouse gas emissions. The program provided us with a simple, structured process that helped us understand how we use energy, and what steps we could take to become more energy efficient. It also provided the opportunity to analyze the feasibility of moving away from fossil fuels and towards cleaner, renewable sources of energy."

"Successful community energy planning and the achievement of all five PCP milestones requires a comprehensive organizational effort, from frontline staff up to mayor and council. A council that is serious about addressing its energy use in a meaningful way must devote adequate resources to that undertaking, and consistent reporting from a municipality's administration on energy planning efforts will encourage councillors to buy into the process. It's also important to celebrate your successes, big and small."

— Mayor Mark Heyck,

PROJECT: POOL, COMMUNITY ARENA AND CURLING RINK PELLET BOILER SYSTEM

In 2008, council approved the installation of a wood pellet (biomass) boiler to provide supplemental heat to the Ruth Inch Memorial Pool, Yellowknife Community Arena, and Curling Rink. The Curling Rink and Yellowknife Community Arena were already sharing oil boilers, but new underground piping needed to be installed to reach the Pool. The city chose Arctic Green Energy (AGE), a biomass supplier in Yellowknife, to connect and install a 750-kilowatt wood pellet boiler that was manufactured by the Austrian company Binder GmbH. Under the contract terms, AGE would provide a multi-year supply of wood pellets, maintain the system for one year, and train a city employee to maintain and operate the system after that.

The new boiler is estimated to provide 63 per cent of the peak load and 86 per cent of the heating for the cluster of buildings. In the five years preceding the installation of the boiler, the average annual oil consumption for the three facilities was 290,038 litres. Following implementation, for the three years for which there is complete data, the average oil consumption was 38,816 litres. Overall, the biomass boiler has reduced GHG emissions by approximately 650 tonnes of CO₂e per year.

The direct implementation cost for the project (including material, installation and staff training time) was \$532,500, of which \$252,500 came from the city's Community Energy Plan fund. Today, average annual savings are about \$131,000 giving a simple payback of just over four years.

In the almost five years since the biomass boiler was installed, the city has experienced no major issues with the system's equipment or operation, and has had no difficulty in obtaining fuel (AGE continues to supply it, sourcing from a company in northern Alberta). Not only does the project provide major financial and GHG reductions, but there is notable interest and uptake of pellet boilers within the wider community — contributing to the development of a new market for biomass-based heating systems/fuels in Yellowknife.



ACKNOWLEDGEMENTS

The 2013 Measures Report was made possible through the dedication and efforts of participating municipal governments in the PCP program. Considerable time and resources were invested by participants in collecting the required information and completing necessary data collection forms. Without this dedication from municipal staff there would be no foundation on which to build the report.

Many thanks to the following municipalities that contributed information for this report:

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- City of Surrey, BC
- City of Vancouver, BC
- Region of Waterloo, ON
- City of Whistler, BC
- City of Winnipeg, MB
- City of Yellowknife, NT

A number of other PCP members that have achieved or are nearing completion of Milestone Five could not be profiled in the 2013 National Measures Report due to the project's time constraints. The FCM and ICLEI would like to acknowledge their dedicated efforts and achievements in climate action.

The PCP would also like to acknowledge the work of both ICLEI and FCM staff in the production of this report. Thank you to Mike Cidylo, Michael Dean, Nicole Marzok, Bahareh Toghiani Rizi, Ewa Jackson, Jonathan Connor, and Devin Causley for their continuing work in supporting municipalities in their reporting efforts.

All across the country, municipal governments are implementing innovative solutions to reduce GHG emissions and mitigate the effects of global climate change. These efforts are commendable, and should be recognized, shared, and celebrated in order to encourage continued action toward climate change mitigation. It is our sincerest hope that the 2013 Measures Report will give credit where credit is due, and provide Canadian municipal governments with the information and motivation required to achieve deep and lasting GHG reductions.

For more information on the PCP measures Reporting initiative, please visit our website at:
<http://www.fcm.ca/home/programs/partners-for-climate-protection/national-measures-report.htm>

Is your local government interested in participating in 2014? Contact us at pcp@fcm.ca.

