

FCM-CH2M HILL
Sustainable Community Awards

*Municipal Governments and
Sustainable Communities:*
A Best Practices Guide **2005**



FCM

CH2MHILL

Canada



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Across Canada, municipal governments are implementing innovative projects that contribute to sustainable community development. Truly sustainable projects take a holistic, integrated approach where economic, social and environmental factors are inextricably linked. These actions are celebrated each year with the FCM-CH2M HILL Sustainable Community Awards.

Each year, case studies of all FCM-CH2M HILL Sustainable Community Awards winners are published in this Awards Best Practices Guide for distribution to municipal governments across

Canada. The Guide also includes summaries of all other submissions received.

The Awards Best Practices Guide 2005 is available electronically through FCM's web site at: www.fcm.ca. For copies in other formats, please send your request to awards@fcm.ca.

Cette publication est disponible en français sous le titre Prix des collectivités viables FCM-CH2M HILL : Guide des pratiques exemplaires 2004.

FCM-CH2M HILL Sustainable Community Awards Sponsors

The Federation of Canadian Municipalities' (FCM's) Green Municipal Fund (GMF) and CH2M HILL Canada Ltd. are the primary Awards sponsors. In addition, Transport Canada sponsors the Sustainable Transportation category, and the Affordability and Choice Today (ACT) program sponsors the Residential Development category.

Title Sponsors

FCM's Green Municipal Fund supports partnerships and leveraging of both public and private sector funding to reach higher standards of air, soil and water quality and to achieve greenhouse gas emission targets under the Kyoto Protocol. The Government of Canada has endowed \$550 million to FCM to establish and manage the Green Municipal Fund (GMF).

The GMF's broad range of financial products, resources, expertise and capacity building programs are increasingly becoming the first stop for municipal governments that want to pursue environmental infrastructure initiatives. The Fund can work as a stand-alone financing tool or can be combined with other federal and provincial infrastructure programs and private sector investment for even greater outcomes.

This dynamic combination makes the GMF a key player in the Government of Canada's commitments to protect Canada's environment.

GMF is housed within FCM's Centre for Sustainable Community Development (CSCD). CSCD helps municipal governments implement sustainable decision-making and planning processes and innovative projects. The Centre offers financial assistance, manages programs to showcase new technologies and encourages best practices. Visit www.fcm.ca for more information.

CH2M HILL, one of Canada's largest full-service engineering firms, offers a wide range of design, engineering and environmental services in water and wastewater, environmental remediation, energy and industrial systems, telecommunications and transportation.

CH2M HILL is committed to the principles of sustainability and is working, both within the organization and with clients, to integrate the concept of sustainable development into all projects and corporate activities.

CH2M HILL also supports the American James C. Howland Awards for Municipal Enrichment, managed by the National League of Cities, to recognize the contribution of cities and towns towards improving environmental quality of life. Profiles of winners are available at <http://www.nlc.org>.

Category Sponsors

The **ACT** program encourages housing affordability and choice through regulatory reform. Introduced in 1990, ACT is a partnership initiative involving FCM (as administrator), the Canada Mortgage and Housing Corporation (as funder), the Canadian Home Builders' Association and the Canadian Housing and Renewal Association. For ideas on updating residential bylaws, standards and building permit approvals to improve housing affordability and choice, visit ACT's Web site at www.actprogram.com.

The Urban Transportation Showcase Program (UTSP) is a Transport Canada initiative under the Government of Canada's Action Plan 2000 on Climate Change. The Program aims to reduce greenhouse gas emissions through the implementation of showcase demonstrations in communities across Canada and through the dissemination of information. For information on the program, visit the UTSP Web site at www.tc.gc.ca/utsp.

Sponsorship

For more information about participating as a sponsor, contact the FCM Awards Office at:

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Introduction

Who Can Apply

- › Municipal governments
- › Partners involved in the municipal project

Communities of all population sizes are encouraged to apply. **Each municipal government, regional government or equivalent may submit a maximum of two projects.**

Awards Eligibility Criteria

Submissions must meet the following criteria:

- Projects must demonstrate innovation and excellence in one of the award categories (buildings, energy/renewable energy, solid waste, residential development, sustainable community planning, sustainable transportation, wastewater and water);
- Projects must have been completed within two years of the date of application or be in the final stages of implementation.

Projects that take a holistic, integrated approach to a sustainable community development issue are encouraged.

How Submissions Are Judged

Submissions will be reviewed and judged by a panel selected by FCM. In addition to meeting the Awards eligibility criteria, each submission will be judged with special attention to the following elements:

- demonstration of an integrated approach to planning or decision-making, i.e., it involved the participation of various departments, governments, sectors and members of the public;
- sustainability of the project, e.g., relationship to the municipality's sustainability goals, land-use plans, etc;
- innovation and excellence, e.g., how and to what extent the project improved upon previous approaches;
- demonstration of environmental benefits and their impact on the community;
- demonstration of economic benefits and cost effectiveness, where applicable, including how the project has changed the way economic and planning decisions are made at the municipal level;
- demonstration of how the community was engaged in the project (planning, consultation and participation), if applicable;
- demonstration of social benefits and their impact on the community;
- partnerships created or supported by the project, e.g., multi-departmental co-operation, private sector partnerships, community engagement, etc.; and
- communications and promotional activities (internal and external).

Awards Recognition

Winners and honourable mentions are recognized in the Awards Best Practices Guide and at an Awards ceremony at FCM's Annual Conference and Municipal Expo™.

For More Information

Consult FCM's Web site (www.fcm.ca) for more information or contact the Awards office:

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Letter from the President, FCM

The FCM–CH2M HILL Sustainable Community Awards showcase and celebrate municipal projects that exemplify sustainable community development. In 2005, 57 submissions were received from every region of Canada. This year’s 14 award-winning projects reflect the continued commitment of municipal leaders and their partners to improve the quality of life in their communities.

The FCM–CH2M HILL Sustainable Community Awards are an important tool in the Green Municipal Fund (GMF) capacity building program. The successful Awards program will continue to promote Canadian municipal governments’ most sustainable practices.

By showcasing the “best of the best,” we hope to spark the imagination of other communities and to share the many benefits of sustainable community development. I encourage you to submit innovative projects in your community to the 2006 Awards so that all FCM members can learn and benefit from the vast wealth of expertise across the country.

Michael Coleman
President
Federation of Canadian Municipalities



Letter from the President, CH2M Hill Canada

CH2M HILL Canada is proud to partner with the Federation of Canadian Municipalities to recognize the achievements of forward-thinking municipalities across the country.

This Awards Best Practices Guide highlights the remarkable efforts made by municipal governments across the country in several categories. Clearly there is great enthusiasm and many specific drivers encouraging the adoption of sustainable business practices in Canada. After several years of observing the creativity of communities based on their FCM-CH2M HILL Sustainable Community Awards submissions, we continue to see progress in the field of sustainability. We expect to see even greater benefits as sustainable ideas continue to be adopted, modified and improved upon by others.

Municipal leaders are often the champions of these efforts; however, many others in our communities can be active in creating, developing and delivering sustainable solutions. Through strong leadership, public involvement and innovative programs and ideas, municipal governments across Canada are improving the environment in significant ways and obtaining tangible results.

Whether you are a civic worker, community leader, city planner or an interested citizen seeking the benefits of sustainability in your community, we hope that the FCM-CH2M HILL Sustainable Community Awards—through this Awards Best Practices Guide—will inspire you and your community to achieve new levels of sustainability in 2005 and beyond.

John Murray
President
CH2M HILL Canada

BUILDINGS

CENTRE PREMIER TECH DE RIVIÈRE-DU-LOUP

City of Rivière-du-Loup, Quebec
Population: 20,000



SUMMARY

Centre Premier Tech is unique not only in terms of the range of advanced and newly applied technologies it uses, but also in the way it garnered the support of residents and the business community. The 3,000-seat, 4,230-square-metre arena is the only one of its

kind in Canada boasting reduced energy and water consumption, in addition to increased spectator comfort. Its construction has generated considerable interest in other municipalities across Canada. The arena's steel structure, as well as its dehumidification, refrigeration and lighting systems have been innovatively implemented. The refrigeration system, for example, allows facility operators to optimally adjust the temperature in order to obtain an outstanding quality of the ice surface. The arena recovers heat from this system and uses it to heat spectator stands and domestic hot water as well as the snow dump. The use of waterless urinals also sets this arena apart from others. The CANMET's Centre for Energy Technology (Natural Resources Canada) and Hydro-Québec is continuing to monitor the building's energy efficiency and will provide recommendations for improvement to the systems and export the technologies experimented.

BACKGROUND

Rivière-du-Loup's original arena, built in 1963, had a 2,500 seating capacity and served a population of about 25,000 people, which was well below the provincial average per population. "Residents had to travel to neighbouring regions for ice time, and, over the years, pressure from the community to expand the arena became more pronounced," says Benoît Ouellet, director of the city's recreation, culture and community services.

The city initially wanted to modify the existing arena to match the current standards of comfort. Furthermore, when the city was awarded the 2nd Canadian Games of La Francophonie in 2002, it was clear that the existing arena was no longer suitable. Hence, the community feedback coupled with the needs expressed by users prompted the city to move toward the construction of a new arena.

Building a new facility would immediately address the needs of current arena users and accommodate the City's projected population growth. The City also wished to have an arena capable of accommodating major events.

"The city has been moving towards a strategic plan that incorporates sustainable development approaches in recent years," says Mr. Ouellet. City council viewed the project as an opportunity to showcase its policies, promote local economic development and improve the quality of life of the population.



Ville de
Rivière-du-Loup

PROJECT DETAILS

With a project cost of approximately \$9 million, fundraising was intensive. The private sector and the provincial and federal governments provided \$6.3 million in total, of which \$4.8 million came from the Canada-Quebec Infrastructure Program. Premier Tech Inc., a local environmental and biotechnology company of international reknown, bought the rights to the arena's name.

The company hired for the project had recently constructed a similar arena in Amqui, a city just east of Rivière-du-Loup. Excavation and land preparation began in spring 2004, and the arena opened in May 2005.

Centre Premier Tech had to meet several requirements, including energy conservation and efficiency, environmental protection, spectator comfort and good acoustics. "The city also sits on top of a significant seismic zone, so the arena was built with earthquake resistance in mind," says Mr. Ouellet.

The arena's architect and engineers used a 3-D computer program to test and optimize several designs of 3D structures. "We looked at several drafts and consulted with several users, and, once the final design was agreed upon, there were few surprises during construction," says Mr. Ouellet. "The final model maximizes the use of steel and concrete for the spectator stands to improve the brace design of the building."

The city also took advantage of the Quebec Arena Association's (Association des aréas du Québec) PIRAQ program, which conducts energy efficiency studies for this type of facility. The study undertaken within this program has provided several recommendations to maximize energy efficiency using both new and old technologies.

One recommendation from the PIRAQ study was to use a type of commercial refrigeration system that had been used for arenas for only a few years. The city chose a commercial unit manufactured by the leader in interior comfort systems. This company installed a cooling loop under the ice surface. In contrast to traditional industrial compressors, the new system allows a precise cooling of the ice.

The centre's heating system is efficient and demand-driven. Typically, arenas are heated using hot air systems, which are not particularly energy efficient and usually heat the ice surface as well. Centre Premier Tech captures waste heat from the refrigeration unit by means of three secondary heating loops and stores it in a water reservoir. The warm water in the reservoir supplies heat to a radiant heating system for the spectator stands and the pre-heating of domestic hot water. The arena also uses it to heat the water for the ice surface and melt snow gathered from the ice surface (hot air is injected for increased efficiency).

The radiant heating system consists of small polyvinyl chloride (PVC) pipes embedded in the concrete beneath the stands. "It provides ideal spectator comfort because it provides a more direct heat than conventional hot air heating systems," Mr. Ouellet says. It also eliminates air movement and noise from fans, and, since there are no air ducts criss-crossing the arena, each spectator has an unobstructed view of the ice surface. The domestic hot water heating system is supplemented with excess heat from the heat pumps.

The system reduces energy consumption and costs of operation at the same time. The pumps within the system that circulate the refrigerant also work at variable flow rates and can adapt to ice temperature further reducing the building's energy consumption.

The centre's energy management system was designed to meet energy needs during peak hours and conserve energy whenever possible. For example, the system will shut down the compressors and ventilation system when the arena is not in use.

The arena saves energy by using low-emission lighting, adjustable to three intensities depending on the activity taking place, and a reflective canvas is fixed on the ceiling of the arena. The canvas minimizes heat projection onto the ice and protects it from infrared radiation. Light and heat sensors in the arena and change rooms also add to the savings.

The Centre's design and energy efficiency follow the Canada Green Building Council guidelines. Other municipalities, such as Shawinigan, Quebec, Lévis and Trois-Rivières, are looking at Centre Premier Tech as a model for their new arenas.

"You have to have some flexibility if plans or designs don't prove feasible," Mr. Ouellet concludes. "But we kept pushing innovative ideas forward and saw them through."

RESULTS

- The centre consumes less than half the energy used by conventional arenas. The city, with the help of the CANMET's Centre for Energy Technology (Natural Resources Canada) will continue to monitor all of the arena's systems with an eye to perfecting its maintenance and repair operations.
- The arena's interior walls are coated with a perforated film to improve the building's acoustics.
- The centre saves four million litres of water each year by having installed waterless urinals, which use an oil-filled cartridge containing a filter. Urine sinks through the filter to remain under the oil, which eliminates odours. In addition, the centre's design complies with the city's 2005 Water Management Policy.
- The arena captures cold air generated by the refrigeration system to create a "cold air bank." Rather than using an expensive dehumidification system, moist air is circulated and cooled over these "cold air banks."
- The arena is now home to a new Quebec Midget AAA Development Hockey League franchise.

LESSONS LEARNED

- **Community involvement is crucial.** The community was actively involved from the beginning, and through public consultations expressed its clear need for a new arena. Residents, community groups, the local media as well as the cultural and social groups have been extremely supportive, both financially and politically. For example, ice users and other city residents came together to raise funds, a model that was used for the whole project.
- **The private sector also needs to get involved.** The city's partnerships with the private sector were very successful. "Genivar Inc. (the construction and engineering company) did not hesitate to revisit a few notions in order to be innovative," says Mr. Ouellet. "Premier Tech also saw an opportunity to increase its visibility and add to the quality of life for its employees." Similarly, other private-sector partners recognized that the project could be a key factor in attracting new employees to the region.
- **Communication is key.** Partners to the project were continually informed during the evolution of the project since its inception. This procedure became the norm with respect to the communication and transfer of information throughout the whole project.
- **Use available resources.** In addition to the PIRAQ program, the city took advantage of an energy-efficiency evaluation program offered by Hydro-Québec, in order to monitor the centre's performance.

RELATED AND FUTURE INITIATIVES

The installation of the arena's geothermal energy system as a back-up heating source for peak energy use periods is currently underway by the city. It will use ground source heat pumps located to heat water and circulate it to the arena's main heating system.

The Quebec Arena Association will conduct a further assessment of the arena's energy efficiency. Hydro-Québec's Energy Technologies Laboratory and the city have partnered on a project to compile the arena's operational information to provide data for potential use in similar building projects.

PARTNERS

Internal

Municipal councillors, management, city departments including engineering, recreation, culture and community services, finance and treasury services, the Registry and legal services, as well as city's communications services.

External

Canada-Quebec Infrastructure Program

Government of Quebec's Ministère des Affaires municipales et des Régions; Ministère de l'Éducation, du Loisir et du Sport, Ministère de l'Emploi et de la Solidarité sociale; and Ministère de la Famille, des Aînés et de la Condition féminine

Numerous partners from the private and community sectors, including Association des arénas du Québec

CANMET Energy Technology Centre

Hydro-Québec

PROMOTIONAL ACTIVITIES

The city set up an ongoing consultative and informative process with its population at the different stages of the project, through the media, information evenings or registering sessions.

The city also held meetings with several local businesses as part of its corporate fundraising campaign and created the Friends of the Arena group to promote the project to small and medium-sized businesses. Its fundraising activities included a car lottery and a "seat sale," where it sold symbolic seats to the general public for \$100 each.

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BUILDINGS

CANMORE CIVIC CENTRE

Town of Canmore, Alberta

Population: 14,221



SUMMARY

Built to the Leadership in Energy and Environmental Design (LEED) silver rating, the Canmore Civic Centre houses all town hall administration staff, a local museum and meeting areas for community groups. It includes an array of energy-saving devices, such as a high-

efficiency condensing boiler, heat recovery and natural ventilation systems, daylighting and water conservation measures. Instead of expensive air conditioning, the town's water supply system cools the building. The Civic Centre is 40 per cent more energy-efficient than a conventional building of the same size and saves more than 50 per cent in water usage.

BACKGROUND

Before 2004, the Town of Canmore's administration was scattered throughout several facilities. "Part of environmental services and the engineering department were in one building, while our planning staff and some other environmental services staff were working out of our seniors' centre, so communication was difficult," recalls Don Kochan, director of environmental services. "It also made it very awkward for our customers, especially contractors and developers."

In addition, the Canmore Museum was on its last legs, and museum staff were finding it difficult to attract tourists to the facility.

It was clear that Canmore needed new administrative space. But, rather than simply construct a new town hall, town council and staff wanted to set an example of sustainability for the rest of the community. "We live in a very pristine mountain environment and we wanted to protect it," says Mr. Kochan. "We also wanted to show leadership and have our town hall meet our environmental goals."

PROJECT DETAILS

Canmore decided to follow LEED guidelines and build its new civic centre to a silver rating. The LEED system, developed by the U.S. Green Building Council, provides a common framework for the building industry on what constitutes a green building and includes a set of accepted design principles and practices.

The project began with an investigation of environmentally friendly technologies that could be incorporated into the new town hall. FCM's Green Municipal Fund (GMF) provided a grant to conduct the feasibility study.

A steering committee was formed to guide the building's design and construction. "I felt that we'd get better value if the architect and construction manager were involved from the beginning," says Mr. Kochan. "They helped with the feasibility study and gave us a lot of information on how to economize certain aspects of the project."

Mr. Kochan notes that some contractors were surprised to be asked for their input at such an early stage. "They're used to an architect designing a building, then they work through issues as they build it,"



he says. "We wanted them to tell us what the issues were before the design stage so that we could avoid any surprises. It was an opportunity for us to do things differently, and a lot of what the contractors learned on our project they can use on future job sites."

Construction began in April 2003, and the Canmore Civic Centre opened for business the following spring. The U.S. Green Building Council certified the Canmore Civic Centre as the first Alberta building to achieve a LEED silver rating.

The building boasts an impressive array of environmental features, including

- a high-efficiency condensing boiler;
- a heat recovery system that transfers energy from the exhaust fans to the incoming air supply system;
- an atrium designed for maximum air circulation;
- water conservation fixtures;
- thick walls and high levels of insulation to retain heat in winter and cool the building in summer; and
- light occupancy sensors.

The building's orientation also maximizes passive solar energy, helping to reduce heating costs.

Wood from trees damaged by a forest fire was used for the building's timber frames. Other recycled building materials, such as interior doors, were also used wherever possible. In addition, most of the new materials were purchased nearby, which helped stimulate the local economy.

The air conditioning system is one of the most innovative aspects of the project. "We used our municipal drinking water supply to air condition the building," Mr. Kochan explains. "We don't take the water, just the coolness of the water and capture it in a closed loop system." The system avoids the use of mechanical refrigeration and the associated energy costs.

"We've been in the building for a full year and everything is working well," Mr. Kochan reports. The physical environment for employees has also improved through the use of low-volatile organic compounds (VOC) paints, carpets and stains, and separate venting for the photocopy rooms to isolate harmful chemicals.

The civic centre houses the museum as well as most of the town's administrative staff. "The museum has really benefited," says Mr. Kochan. "They're in a beautiful building that attracts tourists, and we incorporated special humidity controls to protect the artefacts."

Community groups also have access to meeting rooms. The town has used the building and its grounds for arts and music festivals and community events, including a parade to honour Canmore local Thomas Grandi, who won two gold medals at the 2004 Alpine Ski World Cup. "We finally have a place to celebrate our heroes," says Mr. Kochan.

RESULTS

- The civic centre set a precedent in the community for sustainable building design, and, as a result, town council agreed that all new construction and upgrades to municipal facilities must achieve a minimum LEED silver rating.
- Energy efficiency measures will divert about 323 tonnes of greenhouse gas emissions annually and save the town approximately \$14,000 a year in energy bills.
- The civic centre uses half as much water as a conventional building of the same size.
- At a cost of \$5.4 million, the return on investment for individual components of the building (e.g., the boiler and heat recovery systems) is less than five years. The return on investment for the entire building is approximately seven years. The Canada-Alberta Infrastructure Program contributed \$1 million toward construction, with the town contributing the remainder.
- In 2004, the Canmore Civic Centre was awarded Alberta's Project of the Year by the construction industry.
- The centre's HVAC engineering consulting firm also received recognition from the Consulting Engineers of Alberta.
- The Canadian Green Building Council (CGBC) has chosen to profile the Canmore Civic Centre as part of a presentation it will make at the World Sustainability Conference in September 2005 in Tokyo, Japan.
- On June 7, 2005, the Town of Canmore received the Provincial Emerald Award for its environmental care program, which included the town's civic centre.

LESSONS LEARNED

- **Use an integrated design process.** All stakeholders were included in the civic centre's design. By using an integrated process, contractors were able to assess a variety of issues before they occurred and compare the costs and performance of materials ahead of time. Economic spin-offs for the local industry are also becoming apparent.
- **Be prepared to make changes.** Although the building uses passive solar heating and natural lighting, the town initially wanted to incorporate solar energy technology. The cost, however, was too great. Similarly, the town wanted to use its groundwater to provide air conditioning, but the groundwater extraction permitting system would have taken too long to obtain. Instead, the town tapped into its municipal water supply for air conditioning.
- **Success breeds success.** The civic centre's opening prompted one developer, who owns the land next to the building, to also follow LEED guidelines. "This project is part of our town's evolution as it is now developing a full sustainability plan for the entire community," says Mr. Kochan.

RELATED AND FUTURE INITIATIVES

Canmore is now actively pursuing a community-wide sustainability plan using The Natural Step (TNS), a science-based planning framework. TNS will be used in conjunction with the town's commitment to Partners for Climate Protection, jointly supported by FCM and ICLEI-Local Governments for Sustainability. The project is supported by a GMF grant. Several businesses (hotel and restaurant associations, an insurance agency, developers, etc.) are partnering with the town as 'early adopters' of the TNS framework.

"I've been talking a lot with Whistler about their progress because they were the first municipality in Canada to use TNS," says Mr. Kochan (see related case study on page 32). "We've wrapped up our TNS training and will start putting different concepts forward to the CEOs of those companies and ask for funding to implement sustainable activities."

To help evaluate the success of TNS and other initiatives, the town has set up a community monitoring program, which evaluates trends and serves as part of an early detection system that identifies risk areas that threaten the health of the community.

Canmore has been active in several environmental areas, including adopting water, energy, waste and snow management plans and restricting the use of pesticides.

In 2004, Mr. Kochan travelled to Sweden as a delegate with FCM's annual community energy mission. "I found their approach very impressive. It confirmed that we can accomplish the same things in our community," says Mr. Kochan, who rhymes off several examples of initiatives he saw in Sweden that he would like to replicate in Canmore, including a methane capture system at the town's wastewater treatment plant, the use of solar energy technology in the retrofit of the town's recreation centre, and a microhydro power centre.

PARTNERS

Internal

Municipal departments involved included facilities, planning, parks and engineering.

External

The Canmore Museum
Canada-Alberta Infrastructure Program
Partners for Climate Protection
Green Municipal Fund

PROMOTIONAL ACTIVITIES

As early as 1998, the Town of Canmore had been looking for a new space to build a civic centre. Several public workshops were held between 1998 and 2002 to gather suggestions. Once the design was approved, three open houses were held to explain the project, its funding and the construction process.

Once construction was finished, the community was invited to add items to a time capsule located inside the building. Pictures, newspaper articles, public records and other local memorabilia were contributed.

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BUILDINGS

GREEN BUILDINGS PROGRAM Greater Vancouver Regional District (GVRD), British Columbia Population: 2,133,000



SUMMARY

The Green Buildings Program will help streamline green building design in the GVRD by providing technical education and research to the building industry. The GVRD integrated Leadership in Energy and Environmental Design (LEED) guidelines with provincial standards

and industry needs and is using them as a springboard to educate builders, architects, engineers, general contractors and municipal staff about the many mutual benefits associated with sustainable building practices. Its BuildSmart Web site features technical guides and tools, as well as a directory of more than 650 locally available building products. Since the program's launch in 2001, the number of LEED-certified projects has doubled every year. The program's evaluation component monitors these buildings for energy performance and emissions.

BACKGROUND

According to the Worldwatch Institute, an independent sustainable development research network, buildings have a significant impact on the environment, consuming about one-quarter of the world's virgin wood, 40 per cent of its energy and 16 per cent of its water.

Commercial, industrial and institutional buildings in the GVRD produce about one-third of the region's greenhouse gas (GHG) emissions. Leading by example, the GVRD first developed a green building policy for its own facilities. It then introduced its Green Buildings Program (GBP) to educate and support the commercial building sector, with the goal of making green building design a mainstream practice within the industry. The GBP is the first integrated, technical education and assistance program offered by a local government in Canada that advances sustainability in the building sector.

The GBP reflects the principles set out in the GVRD's Sustainable Region Initiative (SRI) by ensuring that future generations enjoy a Greater Vancouver with the same or better level of economic prosperity, environmental health and community well-being that exists today. The SRI is an action plan intended for all GVRD stakeholders, with roles for citizens, governments, business groups, social agencies and academic institutions.

PROJECT DETAILS

In late 2001 and early 2002, the GVRD began discussions with federal and provincial government agencies and provincial utilities about how it could adapt the LEED program specifically for British Columbia. The LEED program, developed by the U.S. Green Building Council, provides a common framework for the building industry on what constitutes a green building and includes a set of accepted design principles and practices.

GVRD staff members, the BC Buildings Corporation, which owns all government buildings in British Columbia, and several others in the



Greater
Vancouver
Regional
District

commercial building industry, who saw green building as an economic opportunity, formed a LEED BC steering committee.

The steering committee's biggest challenge was to adapt the LEED system to Canadian energy-use guidelines. In the United States, LEED operates under ASHRAE (American Society of Heating, Refrigerating and Air-Conditioning Engineers) codes; in Canada, developers use the Model National Energy Code for Buildings.

"Many developers use the national code to obtain funding under the Commercial Building Incentive Program (CBIP)," says Thomas Mueller, former manager of the GVRD's business and community services division, now president of the Canada Green Building Council. CBIP is a federal program that offers financial incentives for builders to incorporate energy-efficient features into new building designs.

"If Canadian developers use ASHRAE to get a CBIP grant, they have to do additional energy modelling and that can be costly," Mr. Mueller explains. "So we conducted several studies to see how ASHRAE compares with our national code [Model National Energy Code for Buildings] and then prepared guidelines so that B.C. developers and builders could use LEED more easily."

Once the studies were completed, the GVRD developed a series of tools and resources to support the Green Buildings Program. Among its resources, the GBP offers industry training opportunities and workshops, technical guides and manuals, and an online building directory of locally available products and services. Three LEED-accredited GVRD staff members co-ordinate and deliver the workshops, make presentations to the industry, provide direct assistance to design teams and assist building owners in monitoring their buildings' performance.

Developers in the GVRD who apply to become LEED-certified follow the LEED BC guidelines, and the Canada Green Building Council, the organization that promotes LEED across the country, then certifies all buildings, rating them as Certified, Silver, Gold or Platinum, depending on their performance. Criteria include energy and water use, the use of sustainable and recyclable materials and the amount of construction waste produced.

The new operations building in the City of White Rock offers a good example. Following the LEED BC guidelines, White Rock cut its building's operating costs in half, uses 100 per cent renewable energy and diverted 98 per cent of all construction waste. About one-third of all new building materials were manufactured locally. Each year, the building saves more than one million litres of water. It was the first building in Canada to receive a LEED Gold rating, and, in 2004, won the FCM-CH2M HILL Award in the building category.

Building to a higher environmental standard often means greater upfront costs, but, by using LEED BC, the builder recoups those costs through energy and water savings and by pre-ordering materials and streamlining the construction process. "Changing material orders can be expensive, so using an integrated approach avoids those kinds of surprises," says Mr. Mueller. The GVRD's LEED for Contractors training

program helps builders grasp LEED concepts, reducing the risks associated with new practices. He adds that the payback period for buildings varies, but, on average, a building that achieves a LEED silver rating has a two- to three-year return on investment.

The program has far exceeded expectations, with the number of LEED-registered and certified projects in Greater Vancouver doubling every year since 2001. “Working with all three levels of government meant that we were all on the same page and going in the same direction,” says Mr. Mueller. “It was a powerful message to the industry that the program was going to continue in the long-term.”

RESULTS

- LEED BC is the first adaptation of LEED outside the United States.
- The GVRD board of directors formally endorsed LEED BC in June 2003 and recommended that the GVRD apply the system to all new facilities. Several municipalities within the GVRD are now following the LEED standard, including Richmond, Langley and North Vancouver. “They see it as an opportunity to save money over the life of their buildings,” says Mr. Mueller.
- LEED-certified buildings make up about 14 per cent of all new industrial, commercial and institutional construction in the GVRD.
- Post-occupancy monitoring of a representative sample of five LEED-certified buildings shows an average GHG emission reduction of 60 tonnes per building per year (this ranges from a reduction of 116 tonnes for the Nicola Valley Institute of Technology to 32 tonnes for the Kelowna Sr. Secondary School) and annual energy savings of \$44,000.
- The GVRD has informed more than 2,300 industry representatives, of a total industry population of about 30,000 professionals, about the GBP through presentations, workshops and trade shows.

LESSONS LEARNED

- **Practise what you preach.** The GVRD developed a green building policy for all of its new and existing facilities and began by retrofitting these buildings first to set an example for the rest of the industry.
- **A common vision helps maintain momentum.** Mr. Mueller explains that establishing a vision for the program, one that all partners and stakeholders could agree upon, helps to maintain momentum as the program expands.
- **Invest in education and research.** Mr. Mueller points out that many government-sponsored building initiatives often run for a short period and are then shelved. “For the private sector to buy in, they need to be certain that the GVRD is in it for the long haul,” says Mr. Mueller. Ongoing training and education programs are a key component of the GBP. “Short programs don’t do any good...you need to make green building a standard practice in the industry.”
- **Build partnerships with many organizations.** “You can’t do a program like this alone because no single organization has the funds or the staff to do it,” says Mr. Mueller. “You need access to and credibility with the industry and to be straightforward about what you’re trying to accomplish.” Many of the GBP partners shared the cost of conducting the initial studies and developing the technical guides and information.
- **Promote integrated design.** An integrated design process is one in which all stakeholders—owner, occupant, design and construction team—are involved from the beginning. “You need to spend more time and money at the start,” Mr. Mueller explains. “But, when you do it this way, there are fewer surprises so you catch up during the overall process.”

RELATED AND FUTURE INITIATIVES

Evaluation of the GBP includes follow-up surveys with workshop participants and design teams to determine the degree to which the program has changed construction and design practices and what the GVRD can do to improve communication within the industry.

Although the GBP is specific to industrial, commercial and institutional buildings, the GVRD has created a task force with residential developers to create a program specific to the home building sector. “Some home builders are still tentative about whether there is a market for green homes, but there are a lot of people in Vancouver who value health and the environment and have the means to pay a higher premium for green homes,” says Mr. Mueller.

The GVRD is also working in partnership with real estate appraisers on a Green Value Study. The study will compare conventional buildings to green buildings. “If you can demonstrate to a developer that a green building sells for more, it’s a very powerful way to promote the program,” says Mr. Mueller.

The GVRD has been very active in sustainable development issues for years. It has been a member of Partners for Climate Protection, jointly supported by FCM and ICLEI-Local Governments for Sustainability, since 1996 and is now working on milestone three, preparing a local action plan. It has also received numerous Green Municipal Fund loans and grants for energy, transportation, planning and water projects.

PARTNERS

City of Vancouver
Canada Green Building Council
BC Buildings Corporation
BC Ministry of Competition,
Science & Enterprise
Canada Mortgage and
Housing Corporation
Natural Resources Canada
BC Hydro
Terasen Gas

National Association of Industrial
and Office Property
Urban Development Institute
Sierra Club
Forest Stewardship Council
Architectural Institute of BC
Partners for Climate Protection
Green Municipal Fund
Industry associations, such
as design firms and engineering
organizations

PROMOTIONAL ACTIVITIES

All of the GBP program information is on the GVRD’s BuildSmart Web site. “We pre-screen all the information on it so that only documents that are meaningful and provide good information are included,” says Mr. Mueller.

GVRD staff took several different approaches to engage industry professionals and other levels of government to shape the program. First, it launched the program concurrently with its Sustainable Region Initiative at its Green Building and Sustainable Communities conference. Four hundred industry representatives attended, which led to the GVRD developing several long-term partnerships. Some of these partners, such as the Architectural Institute of BC, also educate their members about the GBP as part of their professional development programs.

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CITIZEN ENGAGEMENT

CRAIK SUSTAINABLE LIVING PROJECT (CLSP)

Town of Craik and Rural Municipality of Craik, Saskatchewan

Combined population: 745



SUMMARY

From its recycled timber posts and beams and strawbale walls, to its passive solar and geothermal heating system, the Craik Sustainable Living Project (CSLP) Eco-Centre is a model of sustainability. The facility has environmental education and general meeting areas and will

generate its own revenue by leasing space. The building features a rain-water capture system, composting toilets, environmentally friendly interior finishing techniques and a host of other environmentally friendly practices. It will also form an integral part of Craik's ecovillage project, which involves the construction of about a dozen energy-efficient alternative homes next to the Eco-Centre.

BACKGROUND

In early 2000, the Town of Craik and the Rural Municipality of Craik recognized that their populations were declining and the two municipalities had been slowly losing businesses to other parts of the province. "It was a slow decline and there was no immediate danger," says Mayor Rod Haugerud. "But we could see that we'd be getting there a few years down the road."

The town and rural municipal councils initially believed that building up their tourism sector could be a way to halt the decline. Craik is located near one of the busiest highways in Saskatchewan, between Saskatoon and Regina, so the councils began looking at how they could draw tourists to their town. It was around this time that they met Dr. Lynn Oliphant, a retired professor who works with the Prairie Institute for Human Ecology on approaches to sustainability.

It was perfect timing. Dr. Oliphant's idea to construct an ecologically sensitive community building and an ecovillage resonated with town officials and a local community group, the Mid-Lakes Community Coalition, of which the town was a member.

PROJECT DETAILS

Town officials had a number of objectives when they started down the path of the CSLP. They wanted to provide environmental tourism opportunities, create jobs and demonstrate energy-efficiency in buildings and houses.

The town and its partners began researching energy-efficient construction and ecovillages. "Lynn was our 'guru'. He did a lot of the background research into ecovillages, plus we toured several in Vancouver," says Glenn Hymers, chair of the CSLP steering committee. "We also did a lot of research on strawbale construction and hired an appropriate manager. He took over from there."

Craik benefited from its history of community involvement, its wealth of local building and trades expertise and its resources to get the job done.

The CSLP was first introduced to town residents at Craik's yearly ratepayers meeting. "We announced it there, along with a full-page description in the local paper," says Mayor Haugerud. Regular town hall meetings were then held during the design and development phases.

The project began to take shape with the construction of the CSLP Eco-Centre. To finance the building, Craik looked to the Green Municipal Fund (GMF) and received a \$146,000 loan and a \$100,000 grant to go toward the \$600,000 construction budget. Money was also raised through community fundraisers, such as the "Buy-a-bale" sale, where residents bought individual straw bales that were used for the Eco-Centre's walls.

The Eco-Centre opened in July 2004 and houses a restaurant, meeting areas and gift shop. The building is a model of energy-efficiency, incorporating recycled timber, strawbale construction, passive solar heating, a geo-thermal heating system and rainwater capture. It also uses composting toilets and composts food waste from the restaurant.

The Eco-Centre was built using some outside expertise, town staff, local tradesmen and the "sweat equity" of volunteers, including Shirley Eade, the town's administrator, who helped lay the radiant in-floor tubing, part of the centre's heating system, and Mayor Haugerud, who hauled straw bales.

"It was prudent to start with the Eco-Centre because it has become a symbol. Residents are really taking ownership of the entire project now," says Mr. Hymers. "Whenever family or friends come to visit, many of our residents make the Eco-Centre one of the stops on the tour."

The Eco-Centre will form the heart of the ecovillage, a new sustainable community that will start with eight to ten energy-efficient homes. The rural municipality is providing the land for free, and, in return, potential homeowners must follow the overall sustainability goals the town has established. Like the Eco-Centre, the ecovillage project has raised the town's profile, and people from across Canada who are interested in energy-efficient construction have visited the area.

"Many of the people I talk to have a dream of living in an alternative home. The first fight they have is with their municipality to build that type of home in an urban centre," says Mayor Haugerud. "There's no problem like that here; in fact, we're pushing them to a higher standard."

In February 2004, while at the FCM Sustainable Communities Conference in Ottawa, Ms. Eade found yet another way to push the sustainability envelope, as well as an opportunity to diversify the town's economy. "When I registered for the conference I received the delegate bag made of hemp," she explains. Ms. Eade called Hemptown Inc., the company that made the bags, thinking that hemp clothing could be sold in the CSLP Eco-Centre's gift shop. As the conversation progressed, she discovered that the company was looking for a place to build a mill.

"I said that if they wanted to build here, we could probably find the land," she explains. "Within half an hour, Jason Finnis, president of Hemptown, called back wanting to speak with the Mayor, and within two weeks we had a 'gentleman's agreement' on a piece of land."

Craik is donating about 32 hectares (80 acres) of land to Hemptown to build a hemp fibre mill, the first of its kind in Canada. The mill will produce a new industrial hemp fibreglass product, named Crailar in honour of the town, and will employ about a dozen people. The mill is sure to become a tourist attraction, and the company has plans to include a retail store on-site.

In February 2005, Hemptown offered a free seminar to provide the community with more information and to encourage local farmers to grow hemp for the mill. On the same day, Craik launched its One-Tonne Community Challenge (see "Related and Future Initiatives"). In August 2005, 20 hectares (50 acres) of hemp test plots were planted. The mill should be operational by 2007.

New ideas seem to arrive in Craik with each passing day. "People who were scared to voice their ideas before are coming to us," says Mayor Haugerud. "We now have a reputation as a community where you can say anything and not feel like you're crazy. We went from wingnuts to experts in less than three years!"

RESULTS

- Using local workers and resources reduced costs, stimulated Craik's economy and created new jobs in the Eco-Centre's restaurant, meeting centre and gift shop. The estimated payback period is between five and six years.
- A LEED-certified (Leadership in Energy and Environmental Design) technician will monitor the building over the next two years to assess its performance. "Compared to our ice rink, the Eco-Centre is using only about one-fifth the energy," says Mayor Haugerud. "Also, when we speak with people in the restaurant business, they say we should be averaging 4,500 to 5,600 litres of water per day, but we're using only 1,000 litres."
- Tourism has increased considerably. "We thought winter would be our downtime, but there's been a lot of activity," says Mr. Hymers.
- Dr. Oliphant won the 2005 Canadian Environment Award in the Sustainable Living category for his work on the CSLP. The awards are an annual event sponsored by *Canadian Geographic* magazine.

LESSONS LEARNED

- **Ensure that funding is in place.** Although Mayor Haugerud admits that Craik has a history of doing things a bit differently, he advises other municipalities considering similar ventures to secure financing before starting any project. "In hindsight, we should have had more funding before we began, but we also ran the risk of being left out if we didn't forge ahead," he says.
- **Develop community champions.** The town and municipal councils and the mayor showed excellent leadership throughout the project, which was a major factor in engaging the wider community, Ms. Eade says.
- **Engage the community early and often.** Mobilizing a smaller population can often be easier since there may be more opportunities to reach them through word-of-mouth, town meetings and local newspapers. "I find that the smaller the community the more volunteerism there is because people realize that no one else will do the work," says Mr. Hymers. "We're proof that it can be done." Regular town meetings and workshops are an ongoing part of Craik's strategy to keep the public informed.
- **Take chances.** Mayor Haugerud says that when he speaks with officials from other communities, he often hears that they are afraid to try anything in case they fail. But if they do nothing they will fail. "Since our successes with the CSLP, we think we can take on the world now and we aren't afraid to try," he says.

RELATED AND FUTURE INITIATIVES

Through the Government of Canada's One-Tonne Challenge, Craik received funding for a community challenge that will build on its current CSLP activities. Initiatives include working with elementary and secondary students on climate change education; developing how-to conferences and workshops on energy use reduction (including home energy, farming practices, retrofitting, construction and water and waste management); and providing a regular feature for the local newspaper.

The town is also working with Help International, of Weyburn, Saskatchewan, on a zero-waste and tree planting initiative that pairs the town with one in Kenya. In turn, Craik will also take on a zero-waste initiative. Part of this initiative has already begun with the planting of 2,000 trees around the town's wastewater lagoon.

In partnership with Natural Resources Canada, Craik is part of Forest 2020, a federal agri-forestry demonstration project showing how hybrid poplar trees can be used as a forestry resource as well as for carbon sequestration.

Craik Co-op (the local co-operative that supplied many of the building materials used in the CLSP Eco-Centre) has agreed to finance a portion of a new photovoltaic project, and the town is now looking for other partners. The town is also interested in exploring wind energy generation.

Craik also received a GMF grant to use The Natural Step (a science-based sustainability planning framework) to guide its local action planning. Although the project is currently on hold due to a lack of financing and human resources, the town's long-range plan includes retrofitting its existing buildings for energy efficiency, developing a local farmer's market, holding fairs to showcase solar energy technology and constructing an ecologically sound marina.

PARTNERS AND COLLABORATION

Internal

Councils of the Town of Craik and the Rural Municipality of Craik

External

Hundreds of community residents	Sask Lotteries — Community Initiatives Fund
Mid-Lakes Community Coalition	Sask Water
Natural Resources Canada	Investors' Group
Help International	Green Municipal Fund

PROMOTIONAL ACTIVITIES

Craik holds regular outreach and educational activities for all sectors of the community. For example, its Sustainable Rural Alternative Seminar series ran from January to April 2004, providing area farmers with new agricultural alternatives. Some ideas included growing food products that are not currently available locally. Canadian Adaptation and Rural Development Saskatchewan, Carleton Trail Regional College and the Craik and Davidson Co-ops provided funding and support for the series.

The CSLP has also established a sustainable resource centre that includes books, videos and posters on climate change and related topics. The Davidson InterChurch Association donated many of these items.

Contact Information

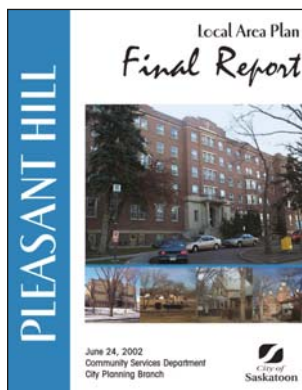
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CITIZEN ENGAGEMENT

PLEASANT HILL LOCAL AREA PLAN

City of Saskatoon, Saskatchewan

Population: 196,811



SUMMARY

For a decade, Saskatoon's Pleasant Hill community had been in decline, losing jobs and affordable housing. To revitalize the community, about 500 of 6,000 community residents came together to create a Local Area Plan (LAP). Since implementation of the plan in 2003, a community police station has opened, 15 safety audits have been conducted and funds have been budgeted to upgrade sidewalks and pave roads. The Adopt-a-Shelter program—the first of its kind in Canada—matches a commu-

nity group with a neighbourhood bus shelter. The group works with Saskatoon Transit Services to keep the shelter safe and clean. If successful, the program could serve as a model for the rest of the city.

BACKGROUND

Since 1997, the City of Saskatoon's Corporate Strategic Plan has guided community development. The city's sustainability vision includes a commitment to invest in core neighbourhoods to make more efficient use of resources, reduce its urban footprint and, most importantly, ensure that all residents are involved in development decisions.

These plans and commitments are the basis for the city's local area planning process in Pleasant Hill, a core inner-city neighbourhood first developed in the early 1900s. With a mix of industrial, commercial and residential buildings, churches, schools and parks, Pleasant Hill was a vibrant, working class neighbourhood with almost 100 per cent home ownership.

During the 1990s, however, Pleasant Hill changed dramatically. Rental units increased, home ownership declined and employment decreased by more than half. Pleasant Hill's population also grew by about 25 per cent overall, with the Aboriginal population making up about 40 per cent of the area's total residents. With unemployment leading to higher poverty rates, residents worried that if action was not taken, housing deterioration, racism and crime would grow.

"Our corporate plan states that each neighbourhood is to be treated exactly the same, but each neighbourhood has different issues," says Lorne Sully, manager of the city's planning branch. "Even though each community deserves equal rights to access and the same share of city services, we had to recognize that they're not all the same. Ultimately, if we don't see the tipping point coming, there is a real risk of neighbourhood abandonment."

PROJECT DETAILS

The city identified Pleasant Hill as an area in need of revitalization, officially beginning the Local Area Plan (LAP) process for the community in May 2000. City staff first researched how other cities plan for their communities, then initiated a statistical analysis of the Pleasant Hill neighbourhood.



"The city had not reinvested in Pleasant Hill," says Mr. Sully. "Even before we had the statistical analysis, we had heard concerns from many people—fire, police, health services, landlords and residents—so we knew the community was under stress."

Residents and community groups were invited to attend a meeting that would eventually result in a long-term plan to revitalize Pleasant Hill. Over the next two years, open houses, meetings and public consultations were held in Pleasant Hill and two other neighbourhoods where LAPs were also being developed.

Residents expressed a range of concerns during those initial meetings: that property taxes were not distributed fairly; that Pleasant Hill was not receiving its share of services; that intercultural tensions and socio-economic problems were increasing. "We spent a fair bit of time at the beginning letting the community vent its frustrations because we are the sounding board for everyone who is discontented with government," says Mr. Sully.

Together, city staff and residents created a common vision for the community, a vision that would, as one community member said, "put the 'pleasant' back in Pleasant Hill." They formed a LAP committee to guide the overall process, while subcommittees identified challenges and action items for specific issues.

The community's involvement in the LAP has been impressive. Residents, business owners, developers, community groups, religious leaders, city staff, elected officials and technical experts all participated. "Getting First Nations residents involved was a hurdle because there is a high community turnover with people going on and off the reserve," says Kelley Moore, a senior planner with the city's local area planning section. City staff persevered, phoning community groups, keeping the local media informed and literally knocking on doors to invite people to participate.

Meetings operated on a shared leadership model, in which city planners acted as facilitators and community residents led the discussions. "The process is open and everyone participates equally," explains Ms. Moore. "We ask people to lead the discussion on different topics, depending on their passion, and all voices are valued equally." Decisions were made collaboratively so that a variety of alternatives could be discussed and refined until the community arrived at an option that the majority could agree upon.

The Pleasant Hill LAP was finalized in June 2002. Its strategy areas include the following:

1. Improving neighbourhood safety and appearance (reducing housing deterioration, paving gravel roads, etc.)
2. Improving communication between the community and the city and improving access to services
3. Establishing integrated community policing
4. Improving transit and pedestrian linkages

A Local Civics Committee (LCC) was formed to implement the actions identified in the LAP. The LCC works with volunteers, many of whom were initially involved in developing the plan, as well as with the city's planning staff to ensure that the LAP implementation continues into the future.

Many of the LAP's first recommendations addressed safety issues, which residents consistently ranked as a top priority. The LAP provided support for a call to action on a wide range of safety initiatives that were emerging outside of the planning process. A dedicated police constable was assigned to work with the committee and came to every meeting. "People loved that he was there," says Ms. Moore. "He cared, and people genuinely saw that." A community police station has now been established in Pleasant Hill, 15 safety audits have been completed and two workshops on Crime Prevention through Environmental Design (CPTED) have been held.

The city's transit services initiated an Adopt-a-Shelter program—the first of its kind in Canada. Community groups are matched with bus shelters, and volunteers and city staff work to keep the shelters clean and safe.

In January 2003, city council made the implementation of the Pleasant Hill LAP a top priority and moved partial funding for the program from its capital budget to its operating budget. It assigned two permanent and three temporary staff members, in varying degrees, to the project. This allowed the two permanent staff members (the Local Area Planner and the Local Civic Committee Co-ordinator) to concentrate fully on the work at hand, ensuring continuity of the planners working on the project rather than worrying about job security. It was also an important signal to residents that the city was serious about supporting Pleasant Hill and other LAP communities over the long term.

The Pleasant Hill LAP is beginning to reverse some of the community's socio-economic problems. "The model is working here. In future we will see Pleasant Hill as a place where we celebrate our mixed races and multi-faiths," says Mr. Sully. "We want to get home ownership back up over 75 per cent, reinvest in schools and park spaces, increase early childhood services and ensure that every resident has access to basic health and education services."

RESULTS

- More than 500 residents participated in creating the Pleasant Hill LAP. Action items in the plan cover land-use planning, zoning, safety issues, transportation, municipal services, parks and recreation, heritage and intercultural relations.
- Approximately \$750,000 has been allocated to Pleasant Hill to create and implement the plan. Of that, about \$500,000 has been designated to pave gravel roads and install new sidewalks in core neighbourhoods.
- The city's Business Licence Bylaw was amended to limit the number and density of pawnshops, which appeared to have a detrimental impact on the neighbourhood.
- The Central Urban Metis Federation Inc. bought deteriorated housing units in the area and is revitalizing them. "They stripped those units to the bone and are also dealing with other issues, like crime, on their own terms," says Mr. Sully.
- Since Pleasant Hill is a transient neighbourhood, with many people moving in and out, city planners arranged for its waste management staff to do additional sweeps of the area to empty overfilled waste bins, thereby improving the look of the area.
- The city has completed eight of twelve scheduled LAPs. The Pleasant Hill LAP's implementation approach was the first of its kind and has benefited other neighbourhoods with LAPs. The lessons learned from the Pleasant Hill experience will also be applied to the four neighbourhoods yet to undergo the LAP process.

LESSONS LEARNED

- **Involve citizens.** The LAP clearly showed that, if given the opportunity, citizens want to be involved in development decisions. "Communities have been studied to death," says Ms. Moore. "Our process is participatory. Residents worked on the implementation plan with us. We continue to go back to the community and ask them what they want."
- **Be patient and be flexible.** Because the Pleasant Hill LAP is a living document, community and city representatives understand that over time it will change to reflect different priorities, as well as funding and staffing levels. "You have to be patient and realize that you can only go as fast as people are comfortable with," says Mr. Sully.
- **Actively listen to concerns.** Facilitation skills among city staff were critical to hearing community concerns. Based on some initial survey results, the city also widened its advertising. "We do a mail drop to property owners using our property tax database, put notices in the city paper, do a flyer drop, post notices in frequently visited places (e.g., schools, businesses and libraries) and advertise on local radio and television stations," says Ms. Moore.
- **Partner with established community groups.** "We needed the Pleasant Hill Community Association to anchor the process, and they took a bit of a risk because not everyone agreed with the changes," says Mr. Sully. "Their commitment has been profound."

RELATED AND FUTURE INITIATIVES

Over the next year, the city planning branch will be working with Pleasant Hill residents to create "Critical Success Factors" to measure ongoing changes and progress in the community.

In June 2005, city council received the Pleasant Hill Safety Audit, which outlines more than 30 recommendations to ensure ongoing commitment to the neighbourhood's future success.

Pleasant Hill's transportation network will be a key priority in the coming years. In June 2005, the city's first Pedestrian Actuated Signal was installed in Pleasant Hill. City officials continue to review pedestrian and automobile traffic volumes at major intersections, pedestrian safety and noise levels. Transportation goals include enhancing public transit, expanding the Adopt-a-Shelter program and increasing opportunities for safe cycling.

"We also have a long list of brownfields that need redevelopment," says Mr. Sully, adding that city council has identified the Riversdale area (adjacent to Pleasant Hill) as a major area for redevelopment. "It'll take about a \$30 million to clean up the brownfields in Riversdale, reinvest in an old power plant site and possibly bring in a farmer's market."

To move toward its vision of sustainability, Saskatoon joined Partners for Climate Protection, jointly supported by FCM and ICLEI-Local Governments for Sustainability, in December 2004. Since 2002, the city has also accessed FCM's Green Municipal Fund for several projects, including developing a strategic transit plan, doing an energy cogeneration feasibility study, installing permanent recycling centres and building a facility to reclaim wastewater sludge to be used as a cover at the city's landfill.



2005 Sustainable Community Awards Winners

PARTNERS AND COLLABORATION

Pleasant Hill Local Area Planning Group
Pleasant Hill Community Association
City Planning Branch
Community Development Branch
Environmental Compliance Branch
Transit Services Branch
Electrical Systems Branch
Saskatoon Police Services
Saskatoon Fire and Protective Services
Municipal Engineering Branch
Parking Services Section
Traffic Management Section
Traffic Signal Section
Parks Branch
Horticulture Maintenance Section
Turf Maintenance Section
Public Works Branch
Asset Preservation Section
Roadways Section
Support Services Section
Sign & Paint Shop
Corporate Information Services Branch
Land Assessments
City Clerk's Office
Records Management
City Solicitor's Office
Public Library Local History Room
Building Standards Branch
Systems & Information Management Section
Secretarial Support Section
Development Services Branch
Development Review Section
Business Licence & Zoning Compliance Section
Land Branch
Land Development Services
Leisure Services Branch
Mayor's Office
City Manager's Office
Communications Branch
Councillor Ward I
Councillor Ward II
Child Hunger and Education Program
University of Saskatchewan Department of Family Medicine
Sunridge Development Corporation
Canadian Pacific Railway
Quint Development Corporation
Riversdale BID
Saskatoon Regional Economic Development Authority
Pleasant Hill School
Saskatoon Public School Board
St. Mary's School
Saskatoon Catholic School Board
Action Associates
Marketing and Publications Section
Partners for Climate Protection
Green Municipal Fund

PROMOTIONAL ACTIVITIES

Biannual progress reports are presented to the city's municipal planning commission and city council. As implementation continues to progress on various projects, community members are called on to provide input. In recognition of the overall progress that occurs each year, a neighbourhood-wide meeting is held in the community to discuss the overall implementation of the LAP.

Attending meetings is easier for many participants as the city provides on-site child care, and staff will often check in with regular participants if they have missed a few meetings.

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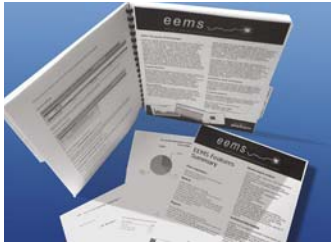


ENERGY/RENEWABLE ENERGY

ENERGY AND ENVIRONMENTAL MANAGEMENT SYSTEM (EEMS)

Regional Municipality of York, Ontario

Population: 897,607



SUMMARY

After reviewing off-the-shelf products, the Regional Municipality of York (York Region) decided to create its own unique in-house software tool to measure the energy and environmental performance of its municipal operations. The Energy and Environmental

Management System (EEMS) captures information on all facilities, street and traffic lights, water and wastewater treatment, power generation and transportation. Users can automatically upload electronic files containing energy data to the Web-based system, where the information is passed through data and bill verification checks. Estimates show that York Region will save about \$70,000 a year in efficiencies. Also, through licensing agreements with other municipalities, York Region will recover the cost of the software's development.

BACKGROUND

The Regional Municipality of York joined Partners for Climate Protection (PCP), jointly supported by FCM and ICLEI-Local Governments for Sustainability, in 2001. As part of the PCP commitment, municipalities follow a five-milestone framework and must first compile greenhouse gas emission and energy use inventories in order to establish a baseline from which they can create an action plan. However, one of the main challenges in developing these inventories is being able to access credible and reliable energy and emissions data.

York Region consulted ICLEI to help it compile the inventories. "The software that ICLEI had been using didn't offer all the functionality that was needed, and they were honest about the gaps that were missing," says Tracey Forrest, York Region's program manager, energy management.

Rather than settle for second-best, York Region began looking for existing software tools that could help it compile and analyze its energy use and emission information. "We met with the staff of our own departments and with other municipalities and industry professionals and developed a list of criteria, then tried to find something that fit our requirements," Ms. Forrest explains. Although many software tools existed, none met York Region's specific needs. "Most of the ones we looked at were too expensive and either had features that weren't meaningful to municipal governments or were too limited in their scope," she says.



PROJECT DETAILS

After the review failed to turn up a single tool that York Region could use, it decided to create its own. Beginning in 2003, it hired a company to design and test an environmental management software tool that met all of its requirements. Initially, only electrical utility information was included; all other remaining energy types and uses were added in phase two of the EEMS development.

The EEMS measures all types of energy and environmental performance and also captures all end uses, such as street and traffic lighting, water and wastewater treatment and pumping, fuel usage in buildings, power generation, heating and transportation.

The EEMS is Web-based so each municipal department has access to it and can upload information electronically. All of the data first passes through bill verification checks to minimize errors. The system tracks energy consumption and savings, as well as emissions generation and reductions, offers historical trend analysis and budget forecasting, and generates an array of performance indices, tables and graphs that help identify opportunities for savings.

"We spent a lot of time on testing so the software is very user-friendly," says Ms. Forrest. Virtually every department is now using the software to track and monitor its internal operations. "One of the first things we used it for was our Corporate Clean Air Task Force because we needed baseline information to evaluate the success of the actions we were already taking," Ms. Forrest explains. "When I brought the EEMS forward to the task force, they were astounded that we had such a complex system."

Since the inception of the software, York Region has developed a user's guide and held training seminars for municipal staff. "The EEMS is meant for everyone to use, and the staff have been very happy with it because they no longer have to maintain their own utility database," says Ms. Forrest.

Many of the municipalities that York Region had consulted with on the system specifications expressed interest in licensing the software once it was developed. The Town of Markham and the Regional Municipality of Waterloo were the first licensees, and their response has been very positive. "Waterloo told us that it is so easy to install and to use that there has been widespread buy-in from all their departments," says Ms. Forrest. As of the summer of 2005, three other municipalities had taken a request to license the EEMS to their councils. Revenues from these licenses will offset the cost of developing the software, and York Region will share the cost of future upgrades to the EEMS among the licensees.

The EEMS is compatible with York Region's long-term strategic policy, Vision 2026. In particular, the EEMS will help compile information and track the success of its Corporate Clean Air Task Force (CCATF). "The CCATF plan has a host of emission reduction actions and policy items, and the EEMS will help us track and benchmark all of those measures and pinpoint other actions we can take to reduce energy and emissions," Ms. Forrest explains.

The EEMS also promotes conservation by comparing the energy and water all facilities use and identifying those users with the highest consumption. “We expect that EEMS will also influence a green power purchasing strategy that York is considering,” says Ms. Forrest.

As the region works through the PCP milestones, the EEMS will aid this work immeasurably. “ICLEI experienced difficulty in obtaining energy information to complete our PCP inventories,” says Ms. Forrest. “Once the EEMS was developed, they were able to compile them more completely and much faster.”

With so many municipalities working on sustainable development initiatives, York Region’s EEMS couldn’t have come at a better time. “We’re very proud to have engineered a solution that so many municipalities need,” says Ms. Forrest. “That’s exactly why we’re licensing it...so other municipalities don’t have to reinvent the wheel and can share in our success.”

RESULTS

- The EEMS has helped York Region improve its budgeting process. “It’s important to get our utility budgets as correct as possible. The EEMS helps us forecast that,” Ms. Forrest explains. “We can provide those figures to each department and show them their costs and average utility rates.”
- Within the first two months of using the EEMS, the system uncovered \$20,000 in billing errors. Additional cost efficiencies are expected to save the region about \$70,000 each year.
- York Region uses the EEMS in its Building Energy Feasibility Studies, funded in part by a grant from the Green Municipal Fund, to validate emission reductions. To date, it has reviewed approximately 20 buildings using the software. It will also use EEMS to track emission reduction credits that it could sell on Canada’s emerging carbon market, which could become an ongoing source of municipal revenue.
- York Region will recoup development costs for the software through additional licences to other municipalities. The licensing framework also fosters a dialogue between York Region and licensees so that information can be shared among municipalities.

LESSONS LEARNED

- **Retain professional software developers.** York Region could not have developed such extensive software on its own. Once it established the criteria required for the system, it used outside expertise to design and test the software.
- **Take a chance.** York Region identified a gap in its information collection and analysis methods and made it a priority to find a solution. “A lot of municipalities don’t think they should be in the software business, but if you identify an issue that’s impeding your performance, don’t be afraid to innovate and market your solutions,” says Ms. Forrest.
- **Test, test, test!** Substantial testing was done on the EEMS over several months to ensure that it was user-friendly and contained all of the necessary information and features.

RELATED AND FUTURE INITIATIVES

York Region will upgrade the software as required in order to respond to the changing regulatory and market forces. “Ontario has a very dynamic electricity market, and, once smart meters start to be used, we will need to access interval data,” says Ms. Forrest. York Region has also partnered with the City of Toronto on a Transmission Operations Optimizer. Since electricity rates are lower during certain times of the day, York Region’s and Toronto’s supervisory control and data acquisition (SCADA) systems, which control their water treatment plants, will be used in conjunction with the EEMS to determine the optimal times for water pumping.

York Region’s social and non-profit housing organization, Housing York Inc. has access to EEMS and is currently using it to develop energy-saving measures for its housing stock. “It’s a very large project and Housing York Inc. is currently piloting it with two buildings,” says Ms. Forrest.

At the EECO 2005 Energy and Environmental Conference held in Toronto in May 2005, York Region announced that it was seeking additional clean air solutions. “We want to show leadership and we know it’s wise to look outside our boundaries for emerging technologies,” says Ms. Forrest. “We believe that the EEMS will fit well with many of those new technologies and help us to aggressively reduce our emissions.”

PARTNERS AND COLLABORATION

Internal

All regional departments were engaged in planning and provided feedback during the development and testing phases. Two regional staff steered the final design of the EEMS and conducted user testing, and one staff member administers the system.

External

Regional Municipality of Waterloo, Ontario
Town of Markham, Ontario
Partners for Climate Protection
Green Municipal Fund

These two early licensees also participated in user testing and were part of the software development team.

PROMOTIONAL ACTIVITIES

York Region has promoted the EEMS mostly through word-of-mouth, training seminars and the user’s guide. It has also presented the system at several conferences and a number of energy and environmental seminars, including the Association of Ontario Municipalities’ annual conference.

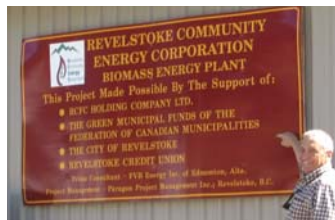
As additional licensees come on board, York Region plans to create a users group that will meet annually to share energy and environmental benchmarks and provide feedback on the system.

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ENERGY/RENEWABLE ENERGY REVELSTOKE COMMUNITY ENERGY SYSTEM

City of Revelstoke, British Columbia
Population: 7,500



SUMMARY

Revelstoke's community energy system (CES) incinerates wood waste from the local forestry industry to produce energy, while eliminating many of the common air pollutants associated with burning wood waste by other methods. The

CES produces low-pressure steam for a local sawmill's dry kilns, as well as hot water heating, which is distributed through an underground pipeline to buildings in the city's centre. The sawmill—the energy system's primary customer—has signed 20-year agreements to supply the wood waste and buy the energy produced. The city estimates the plant will cut annual greenhouse gas (GHG) emissions by 4,000 tonnes.

BACKGROUND

Revelstoke is a forestry town. The forest industry typically disposes of wood waste by burning it—a practice that sends fly ash and other emissions into the atmosphere. This practice, along with the emissions from residential wood-burning stoves and the transportation sector, was having a detrimental effect on local air quality.

In 2000, Natural Resources Canada completed a pre-feasibility study of various community energy systems that could be used in the City of Revelstoke. Community energy systems distribute steam or hot water to multiple buildings from a central plant.

The study concluded that the energy produced from burning wood waste could be transformed into heat and electricity. A community energy system would also generate revenue for the municipality and improve air quality. In 2001, the city adopted its Community Development Strategic Action Plan, which included a recommendation to proceed with a district energy system.

"We've had the ambition, for quite some time, to capture the heat from the burner at the local sawmill," says Geoff Battersby, project coordinator. In the spring of 2001, the city issued a call for companies interested in taking on such a project, but an appropriate proposal did not materialize. FVB Energy Inc., a company that specializes in community energy systems, completed a second feasibility study a year later.

PROJECT DETAILS

Developing a community energy system takes time, money, research and a strong commitment from the partners involved. With the results of the two feasibility studies in hand, Revelstoke immediately began making its community energy system a reality.

The city first signed a memorandum of understanding with the Downie Street Sawmill to supply wood waste as fuel for the energy plant. In return, Downie would buy the energy produced to run its dry kilns. Downie also transferred to the city ownership of a small piece of property (0.2 hectares, or half an acre), where construction of the plant would take place.

The city formed the Revelstoke Community Energy Corporation (RCEC), with a seven-member board of directors, to oversee the project. At least four members are elected council members or senior administrative staff.

Revelstoke's original plan was to produce both heat and electricity. However, market forces (e.g., the U.S. countervail duty on Canadian imports such as softwood lumber) caused Downie some concerns. In addition, the plant's estimated cost began to spiral upwards. "Risk was the number one reason for scaling back the project," Mr. Battersby explains. "To have both heat and electricity, the cost would have been about \$18.5 million."

So, in June 2003, the RCEC decided the plant would produce only heat, in the form of low-pressure steam and hot water. The original memorandum of understanding was amended, and Downie signed a 20-year agreement with the city, guaranteeing the fuel supply (primarily cedar wood waste). Another 20-year agreement guaranteed that the city would supply Downie with the low-pressure steam.

A delay in financing was one of the biggest issues the RCEC needed to overcome before construction could begin. With the heat-only option now in place, project costs were estimated at \$5.3 million, half for the plant and half for the underground pipeline.

A combined loan and grant of \$2.7 million from FCM's Green Municipal Fund (GMF) provided 50 per cent of the cost. "The GMF funds really made this project possible and we're very grateful for that," says Mr. Battersby. The Revelstoke Community Forest Corporation (RCFC) Holding Company—a private corporation the city established to purchase and manage an area of public forest land—contributed an equity investment of \$1.25 million. The Revelstoke Credit Union provided a \$100,000 loan, and the city's electrical utility reserve agreed to purchase up to \$1 million worth of preferred shares.

Construction of the underground pipeline and the plant began in late 2004 and was completed in the spring of 2005. The plant began operations in July 2005.

The plant's high efficiency combustor burns the wood waste, while an electrostatic precipitator controls the flue gas and fly ash generated by the combustion process. Large sheets of metal that make up the electrostatic precipitator remove dust from the flue gases. These positively charged sheets attract the negatively charged dust. The sheets are shaken periodically, and the dust falls into a pocket where it is then transported for safe disposal.

Revelstoke has had an air quality monitoring system in place for several years, which the city will use to monitor the plant's performance. Performance monitoring is a mandatory condition of the GMF loan. The Province of British Columbia also requires regular emissions monitoring of the plant's stacks.

Downie uses the low-pressure steam the plant generates to operate kilns that dry its lumber. The remaining hot water is piped underground to heat the city's arena, community and aqua-fitness centres and a high school. Additional buildings may be added to the system in future.

It's a good deal for all customers. "We're quoting people the same price for energy from the plant as they're paying now," says Mr. Battersby. It's a complicated formula to arrive at the exact pricing, but Mr. Battersby explains that, if all costs are taken into account (amortization costs of the boiler, operational costs, the cost of energy consumed), the price works out to be approximately \$9.30 per gigajoule. Current prices for propane are about \$16 per gigajoule. "Our customers are locking in on an energy price, and the plant also takes away the capital cost of maintaining individual boilers in buildings."

RESULTS

- The Revelstoke Community Energy System is the first wood residue-fired district heating plant in British Columbia.
- The plant has a nine-year payback period, with a 6.7 per cent return on investment and a 14.8 per cent return on equity (a non-taxable source of city revenue).
- Propane had been the fuel used to heat the mill, municipal facilities and high school. By eliminating the use of propane in these buildings, the community energy system will displace 4,000 tonnes of GHG emissions. Replacing the propane, which had been imported from Alberta, with a renewable energy source will also have local economic benefits, with more money staying within the community.
- Plant emissions are expected to meet or exceed the provincial standards for air quality.
- According to a study of 47 GMF projects conducted in May 2004 by an independent consultant on behalf of FCM, Revelstoke's community energy plant will eliminate more than 180 tonnes of particulate matter.
- All of the plant's customers will benefit from stable, long-term energy pricing.
- The underground distribution system includes a separate two-inch polyvinyl chloride (PVC) line to carry fibre optic cable for telecommunications in the future.

LESSONS LEARNED

- **Hire the best.** Geoff Battersby admits that the city "floundered a bit at first, but once we hooked up with FVB Energy, things went much smoother. It's a credit to them and to our construction manager that we came in on budget."
- **Use an integrated design approach.** By planning the entire project at the beginning and keeping all stakeholders apprised of developments, the construction team was able to pre-order most of the major equipment, which helped meet the project timeline and keep the project on budget.
- **Be willing to change direction.** Revelstoke was reluctant to abandon its original plan to produce both heat and electricity from the plant, but when confronted with the cost and the risks to Downie, it recognized that it had to alter course. In the end, the community energy system is a win-win situation for all those involved: revenue for the city, stable energy prices for Downie and cleaner air for the entire community.

RELATED AND FUTURE INITIATIVES

One of Revelstoke's most successful projects has been the Revelstoke Community Forest Corporation, mentioned above. The city established the corporation in 1993 to regain control over local forest resources and improve forest management and environmental protection in the area. "We hold a tree farm licence and process all the trees locally," says Mr. Battersby. "Before the corporation was formed, only about 4,000 of 800,000 cubic metres of the local cut were processed here."

Since the community energy plant needs only about 10 per cent of Downie's wood waste, the RCEC and Downie are working together to find a local use for the remainder. "We're negotiating with a firm in Germany that has a process that makes fuel from different types of waste," says Mr. Battersby. "If all goes well, the German company is looking to have a plant in Vancouver by the end of 2005 to test biowastes from wastewater sludge and a plant in Revelstoke by the spring of 2006 to make diesel from wood residue."

In future, the city hopes to bring the community energy concept to homes. "The infrastructure costs to do the same for individual homes make that financially unfeasible at this time," says Mr. Battersby.

The district energy plant also supports Revelstoke's Community Environmental Strategy, which identifies the most pressing environmental issues affecting the community and includes a series of actions the city could take in the coming years.

The city has also led by example with several other initiatives, including energy-efficient street lighting, energy audits and phased-in retrofits for several city buildings, and a SCADA (supervisory control and data acquisition) computerized system that optimizes the energy use of the city's water and sewer plants.

PARTNERS

Downie Sawmill
FVB Energy Inc.
Revelstoke Credit Union
Revelstoke Community Forest Corporation
Green Municipal Fund

PROMOTIONAL ACTIVITIES

The city held two open houses so that the community could provide feedback or voice concerns about the project. More than 90 per cent of the 60 people who attended the first open house in June 2002 endorsed the project. City council was also updated on the project's progress. In addition, FVB Energy has made several presentations about the project at various conferences.

The Community Energy Association of BC awarded the project its 2004 Energy Aware Award, and the project has received media attention from local newspapers and television stations.

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2005 Sustainable Community Awards Winners



Hamilton

SOLID WASTE

SOLID WASTE MANAGEMENT MASTER PLAN (SWMMP)

City of Hamilton, Ontario

Population: 490,268



SUMMARY

The SWMMP is a long-range plan that will extend the lifespan of Hamilton's landfill by diverting 65 per cent of waste by 2008. The plan's 19 recommendations range from public education, to bylaw improvements, to recycling and organic waste programs. For exam-

ple, improvements to its leaf and yard waste program resulted in a 72 per cent increase in material collected, diverting almost three times more material in 2004 than in 2000. Hamilton is also partnering with the Region of Niagara to pool resources and explore alternative disposal options, such as biological treatment or energy-from-waste facilities.

BACKGROUND

The City of Hamilton had slated its Solid Waste Reduction Unit (SWARU) for closure. The SWARU had been in operation since 1972, producing energy from waste to heat the city's wastewater treatment plant and generating electricity for the facility and to export to the city's electrical grid.

In 2001, Hamilton's waste diversion rate was 16 per cent. With the planned closure of the SWARU, city officials feared that its landfill would be significantly compromised if they could not find an alternative waste solution to deal with the more than 230,000 tonnes of waste generated in the region each year.

Work began to develop a long-term strategy to deal with the waste in a socially, economically and environmentally acceptable manner.

PROJECT DETAILS

Hamilton's Solid Waste Management Master Plan (SWMMP), developed over the course of 2000 and 2001, supports Vision 2020, Hamilton's long-range planning strategy. City council originally adopted Vision 2020 in 1992 and revised it in 2003.

As a first step, the city identified the need to address diminishing landfill capacity and created a 32-member public advisory committee (PAC) to develop strategies and recommendations to find solutions to the landfill problem.

Over the course of the first year, PAC met 16 times. All community sectors were represented: the general public, local environmental groups, the Hamilton Chamber of Commerce, the public and separate school boards, McMaster University and Mohawk College.

PAC learned about waste management technologies and, with the assistance of a consulting firm, researched a number of integrated waste management systems in cities across Canada. "The committee looked at Peel Region, Edmonton, Halifax, Guelph and Burnaby, where they have a waste-to-energy facility, and toured some of those facilities," recalls Beth Goodger, director of Hamilton's waste management division. "It was important to visit the facilities in person, not only to know

what options were available, but also to see how they could work in Hamilton."

Using that information as a base, the committee set a target of 66 per cent waste diversion from landfill by 2008 and devised a list of 19 recommendations for action to achieve the SWMMP. The recommendations and target were presented to council and approved in late 2001. "The nice thing about having a master plan is that it's a vision, not a detailed plan," says Ms. Goodger. "So you end up having a process to work with, as well as a range of recommendations." Among those recommendations were plans to adopt a three-stream waste collection system, expand the Blue Box program to include additional materials and consider energy-from-waste once diversion programs were established.

One of PAC's key recommendations was to continue to involve the public in implementing the SWMMP. In response, the city created a Waste Reduction Task Force. "The role of the PAC was critical because the SWMMP isn't something that was proposed from a political or technical basis," Ms. Goodger explains. "It was a group of residents meeting over 16 months, looking at how waste is managed in other areas and seeing what could work for Hamilton. Going forward, the Waste Reduction Task Force is also helping us monitor implementation of the plan."

The first program improvement was to the city's leaf and yard waste program. The city banned the use of plastic bags for these materials, opting instead to distribute a sample paper waste bag to residents. The results were overwhelming—within the first year, leaf and yard waste collection increased by 72 per cent. The city composts the materials at the landfill site and gives the compost away each year at Environment Day and other special events.

The city then implemented a pilot household organics collection project, known as the Green Cart Project. Initially, this was a demonstration project, funded in part by a grant from FCM's Green Municipal Fund (GMF). Its success convinced city council to continue the pilot areas as a permanent program in October 2003. Hamilton expanded the program to an additional 2,000 homes in May 2004 and will roll it out across the city starting in April 2006. Residents store their household organic waste in large, wheeled carts, and the city picks up the waste weekly, along with regular garbage and recyclables.

The success of the city-wide Green Cart Project meant that the city needed additional composting capacity; it is now moving forward with the construction of a large engineered composting system, scheduled for completion in the spring of 2006. The facility is fully enclosed, and the composting process takes place inside large concrete tunnels, where conditions are optimized to control moisture and temperature. The facility will process up to 90,000 tonnes of organic material each year.

Other SWMMP strategies include enforcing bylaws that deal with illegal dumping and littering, encouraging local companies to manufacture more durable products and take responsibility for their packaging, and improving communications between the city and residents on a variety of waste management issues.

Ms. Goodger says the city council's role was a key success factor. "We had champions on council who took the time to learn about our systems," she says. "Some councillors also travelled to the facilities in Peel, Guelph, Halifax and Edmonton to speak with their peers about the political perspective of implementing waste diversion systems."

Ms. Goodger and councillor Murray Ferguson also travelled to Sweden as part of FCM's annual community energy mission in 2004.

“That trip gave us a look at what can be done and gave us the confidence that we’re doing the right thing with the plan,” she says.

Although Ms. Goodger says that, in hindsight, the only thing she would have changed is the name of the plan—SWMMP is a bit of a mouthful—Hamilton is proof that involving the public in a meaningful way works to a city’s advantage when it comes to waste diversion. “Waste is something we all deal with every day, and, for many people, waste diversion is the first environmental behaviour they change,” she says. “It’s amazing to see how excited people get about garbage!”

RESULTS

- Hamilton has reached a 28 per cent waste diversion rate, up from 16 per cent in 2001, and has set a target of 42 per cent by the end of 2005.
- The city has extended the landfill’s lifespan, saving millions of dollars it would have incurred if it had been forced to site a new space. Estimates to site a new landfill are typically in the \$100-million range.
- The city produces and distributes an annual report card to update residents on the SWMMP’s progress.
- The city improved its recycling program for multi-residential buildings and is considering how to implement the Green Cart Project for apartments. Its first community recycling centre opened in the summer of 2005. “To date, we’ve focused on curbside recycling, but multi-residential buildings will be key if we’re to achieve 65 per cent diversion,” says Ms. Goodger.
- The city is now applying experiences gained over the course of developing the SWMMP in other departments. The city’s transit group, for example, has established a steering committee and a public advisory committee to create a transit master plan.

LESSONS LEARNED

- **Involve the public.** The city’s public advisory committee and task force were instrumental in developing the SWMMP recommendations and programs. “We involved the public from the beginning. Now, when we present action items before council, they know that it’s what their constituents want, and that carries more weight,” says Ms. Goodger.
- **Learn from others.** Ms. Goodger believes that the city has likely saved years of planning by visiting other municipalities, seeing their solutions first-hand and adapting them for Hamilton’s needs.
- **Educate early and often.** The more frequently a city can communicate its waste management plan to the public, the better people are able to absorb the information. “So much information is coming at people, so you have to keep the messages simple,” Ms. Goodger says. “We always talk about the waste diversion target and how every resident has to do their part to reach that goal...it’s been said so many times that even the local media use it.”
- **Take action while you plan.** Rather than spend years developing a plan and then implementing it, Hamilton chose to do both at the same time. “Recycling is a learned behaviour, and you can’t expect people to make all the changes immediately,” says Ms. Goodger. “You need to make changes as you go along and build up the theme of waste diversion. The key was to have the vision in place and then move systematically to implement it.”

RELATED AND FUTURE INITIATIVES

The city is considering a user-pay garbage system, in which residents would be charged a fee if they set out more than a certain number of garbage bags per week. “When we started the SWMMP, there was no money set aside to renew our infrastructure and that has impacted our municipal budget,” Ms. Goodger explains. A user-pay system would encourage waste diversion and provide additional revenue to fund waste management activities.

Hamilton and the Region of Niagara are exploring joint alternative disposal options. “We’re considering eight alternatives, including mechanical, biological and thermal treatment of waste,” Ms. Goodger reports. Each municipality funded half the cost of the study, the Hamilton–Region of Niagara WastePlan, which is now before the Ontario Ministry of Environment for approval.

Hamilton has been a member of Partners for Climate Protection, jointly supported by FCM and ICLEI–Local Governments for Sustainability, since 1996 and has received GMF loans and grants in the past to develop a community energy system and prepare a sustainable community plan.

PARTNERS

Internal city departments involved included the waste management division and the city’s finance and purchasing group. The city has also established political sub-committees, including the SWMMP steering committee and, most recently, a joint committee with the Region of Niagara.

External

Citizen Public Advisory
Committee
Waste Reduction Task Force
Region of Niagara

Partners for Climate Protection
Green Municipal Fund

PROMOTIONAL ACTIVITIES

The public was well represented on PAC and on the Waste Reduction Task Force. In addition, the city held open houses to introduce the Green Cart Project and held community workshops as part of the Hamilton–Region of Niagara WastePlan. The city also developed a waste collection calendar for all residents to explain changes to their various collection programs.

The city’s most successful campaign has been the print and television advertisements featuring the Blue Box Man, a superhero with a passion for recycling. These humorous advertisements depict the Blue Box Man rushing into people’s homes and collecting recyclables from bathrooms and kitchens. The city also uses the Blue Box Man to promote its education campaign in schools. In partnership with the *Hamilton Spectator* newspaper, the city developed curriculum resources for elementary teachers that provide information on recycling and composting.

The city conducted market research, including telephone surveys of residents, in 2004 to review what other municipalities are doing in communicating waste reduction initiatives to the public and to determine the make-up of Hamilton’s neighbourhoods (language spoken, type of residence, etc.). The city then developed a Communications Master Plan to help get its waste diversion messages across.

Community InReach is the city’s internal education program. Waste management staff hold regular training sessions for other municipal workers, including councillors, to teach them about waste issues and inform them of new program developments.

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SOLID WASTE

OTTAWA VALLEY WASTE RECOVERY CENTRE (OVWRC)

Ottawa Valley Waste Recovery Centre
Combined population: 42,941



SUMMARY

Supported by five municipal partners, the Ottawa Valley Waste Recovery Centre (OVWRC) expanded the area's existing landfill site to include facilities for hazardous waste, recycling, organics and construction and demolition

waste. The organics facility uses an Engineered Compost System (ECS), a system of closed containers that are filled with organic material and then heated to kill pathogens before being transferred to an outdoor composting area for further decomposition. The new facility has increased organics collection from less than 3,000 tonnes in 2002 to more than 4,200 tonnes in 2004. The collection rate for all other materials has also grown by about two-thirds over the same period.

BACKGROUND

The Laurentian Valley landfill serves five Renfrew County municipalities in Eastern Ontario: Petawawa, Pembroke, Laurentian Valley, North Algona Wilberforce and Sebastopol Ward of Bonnechere Valley. Residents in Petawawa, Pembroke and Laurentian Valley all receive curbside collection. Wilberforce and Sebastopol Ward residents transport their material to a transfer site in their communities.

The Laurentian Valley landfill was reaching capacity, and efforts to find a new space that could serve all five municipalities had not produced a suitable site. Instead, elected officials and community leaders came together to implement a waste diversion program that would extend the lifespan of the landfill.

Driving this decision was the position taken by officials and residents in the Township of Laurentian Valley. "Township leaders and residents said that they wouldn't support expansion of the existing landfill or take on new municipal partners unless a waste diversion program was included," says Elizabeth Kenrick, communications supervisor with the OVWRC.

The municipalities established a board of directors to oversee the project and signed a working agreement that covered all of the current waste diversion programs and included new ones. One council member from each municipality sits on the OVWRC board, and votes are based on each municipality's population. The board is responsible for overseeing the OVWRC's business plan, while a site manager reports directly to the board.

PROJECT DETAILS

The OVWRC board set a 65 per cent waste diversion target, five per cent above the Government of Ontario's province-wide goal. To meet that target, the region needed new facilities to process all recyclable and organic material and to act as a "one-stop shop" for its waste management activities.

A material recycling facility (MRF) and an organics processing facility (OPF) were constructed at the Laurentian Valley landfill, and operations began in January 2002.

The MRF processes container (glass, cans, plastics, etc.) and fibre (paper, cardboard, etc.) streams. It does certain sorting processes mechanically (for example, it sorts cans using a steel magnet); however, it does most sorting manually. With the exception of glass, the MRF bales all the recyclable material for easier shipping. There is virtually no contamination of materials; in the OVWRC's three years of operation, material purchasers have not rejected a single bale.

The OPF composts household organics, including soiled paper (wet newspaper, pizza boxes, tissues, etc.) and leaf and yard waste. It first sorts household organic waste to remove any inorganic material, then shreds and mixes it with wood chips. It then loads the material into a closed container system, where it stays and is heated to kill bacteria for about two weeks. The compost is then moved to an open area and turned regularly until it is cured. Finally, the OPF screens the compost and sells it for residential use. In 2002, the OVWRC's engineered compost system was the first such system in Canada.

The region amended residential collection programs to increase diversion. "We had been accepting paper and container recyclables in plastic bags. We stopped doing this to increase sorting efficiencies at the centre, as well as reduce the amount of plastic film we had to recycle," Ms. Kenrick explains. "But residents voiced their concerns that they were running out of space to put all of their recyclable material."

Starting in June 2003, the OVWRC distributed 110-litre (25-gallon) yellow cans to all curbside residents to use for their recyclable materials. "Just one month after we issued the yellow can, container recycling increased 20 per cent," says Ms. Kenrick. The centre also distributed blue boxes to depot residents, allowing them to easily transport recyclables to their transfer stations.

The region collects organic material using a 120-litre or a 240-litre wheeled green cart. It also collects extra leaf and yard waste on special collection days using reusable containers and paper bags. Residents who transport their organic material directly to the depot use small mini-bins or reusable containers.

In April 2004, the OVWRC initiated a Don't Scrap It metal recycling program, in partnership with Natural Resources Canada. During the pilot phase, it collected more than 18 tonnes of scrap metal, which included utensils, pots, pans and plumbing materials. Due to the success of the pilot, it has now expanded the residential recycling program to include scrap metal as part of the regular collection.

The OVWRC also worked with local home builders to increase diversion of construction and demolition waste from the landfill. Ms. Kenrick admits that the relationship was a bit rocky at the beginning. "Our first meeting with the local homebuilders association was somewhat negative, but that has completely turned around," she says. "They know that they have to get rid of their waste somehow—either at the landfill or through recycling—so they're starting to separate their waste in layers so that it's easier to sort once it reaches the centre."

The municipalities passed a bylaw in February 2005 to limit the number of garbage bags allowed and to specify all the recyclable materials allowed under the residential and commercial collection programs; however, the Province of Ontario must still approve the bylaw. In the interim, the OVWRC hired an environmental officer to conduct curbside audits and educate residents about the collection program.

"Aside from the audits, the officer also works on the day-to-day reports to the Ministry of Environment and is also focusing on completing the centre's ISO 14001 environmental management system," says Ms. Kenrick. "That's a huge project, and we hope to have it complete and be ISO self-declared by the fall of 2005."

The cost for the new facilities and collection programs was approximately \$8.5 million, financed primarily through property taxes. Although the OVWRC has not completed any cost-benefit analysis, Ms. Kenrick reports that taxpayers are now paying less for recycling than under the previous program. Revenues from sales of recyclable material and compost, approximately \$600,000 per year, offset the centre's operating costs.

Effective communication has been the key to the OVWRC's success. "We adopted an 'in-your-face' approach with lots of reminders to residents," says Ms. Kenrick. "If that communication wasn't there, material coming into the facility would be more contaminated, increasing our operating costs."

Ms. Kenrick reports that many residents who visit the OVWRC are amazed by the new facilities. "We started using the tag line 'Come see us...we're not any old dump' on promotional items and in our tours and presentations," she says. "Who knew a trip to the dump could be so much fun?"

RESULTS

- All five municipalities have achieved a 55 per cent diversion rate.
- Following the February 2005 bylaw, curbside audits revealed that the number of garbage bags set out each week ranged from 0.9 to 1.7 per household (there is a two bag per week limit), indicating that the municipalities could reduce the garbage bag limit even further.
- Several other small municipalities within Renfrew County are now looking to the OVWRC to provide waste management options.
- Diversion rates for all types of materials have steadily increased since 2002 (see Table 1 below). Residential participation rates in all five municipalities also increased between 2003 and 2004. The participation rate for paper recycling in Petawawa, for example, jumped from 60 per cent to 90 per cent in one year.

Table 1: Diversion in tonnes for OVWRC 2002-2004

Material Type	2002	2003	2004
Containers	996.88	1,326.61	1,614.53
Paper	1,761.22	2,118.7	2,844.28
Agricultural Plastic (e.g., hay bale wrapping)	3.13	5.51	15.66
Organics	2,941.96	4,258.49	4,201.20
Construction & Demolition	1,542.16	1,528.44	2,458.16

LESSONS LEARNED

- **A community marketing plan is essential.** Although residents had no difficulty accepting the centre's location, as it was adjacent to the existing landfill, or the Blue Box program, OVWRC staff did have to contend with the "yuck" factor when it came to the organics program. "If you don't get acceptance from residents, it won't work," says Ms. Kenrick, who credits the OVWRC's strong communication strategy as being the key to educating residents.
- **Allow for public input.** During the centre's design phase, and as required by the Ontario Ministry of Environment, the municipalities established a public liaison committee to bring the public's concerns to the OVWRC board and gauge the community's response to policy or procedural changes. This public liaison committee still exists.
- **Partner with local organizations.** The OVWRC partnered with the Ottawa River Institute and Destination Conservation (DC), an organization that provides resources and tools to elementary schools to teach students about environmental issues. The OVWRC covered the cost to rent buses to bring students to the centre as part of the DC program. The centre also conducted a drawing contest with the local schools, selecting winners to include in a colourful community calendar.

- **Work with retailers.** Initially, the OVWRC accepted biodegradable plastic bags as part of its organics collection program, but there was confusion over which bags were acceptable. When the OVWRC decided to stop accepting the bags, many stores still had them in stock. "We could have made the transition easier for residents had we worked with the retailers first," says Ms. Kenrick.

RELATED AND FUTURE INITIATIVES

The hazardous waste depot at the Laurentian Valley landfill used to be open only on Saturdays from spring to fall, but it now accepts waste year round. The OVWRC also established mobile events so residents can drop off hazardous waste closer to their homes.

The OVWRC is currently landscaping the area surrounding the centre using native and drought-resistant plants, as well as the compost it produces. It is also looking to study the feasibility of gasification technology using residual or single-stream waste. Simply put, gasification converts any carbon-containing material into a synthetic gas that can then be used as a fuel to generate electricity or steam energy.

By the fall of 2005, the OVWRC plans to have its ISO 14001 environmental management system (EMS) completed. The EMS is part of the board's vision "To walk lightly on the environment," and will help staff ensure that all work the centre carries out complies with board policies and other legal requirements.

PARTNERS

Internal

The centre's five-member board consists of council members from each of the five participating municipalities:

Town of Petawawa	Township of North Algona Wilberforce
City of Pembroke	Sebastopol Ward of Bonnechere Valley
Township of Laurentian Valley	

Each municipality is responsible for curbside collection and transfer stations, so an inter-municipal working group was formed. The group meets regularly with centre staff to provide feedback from residents. The board members then communicate this information to each municipal council.

External

Natural Resources Canada for the Don't Scrap It program Educational programs with the Ottawa River Institute and Destination Conservation

PROMOTIONAL ACTIVITIES

The OVWRC has an ongoing marketing campaign to educate and remind residents about recycling, composting and other waste diversion issues. These activities include regular advertising and print articles in local newspapers, open houses and curbside audits. Twice a year, the OVWRC publishes and distributes a newsletter to all residents that contains seasonal tips.

In February 2004, the Association of Municipal Recycling Coordinators recognized the OVWRC as a runner-up in the Promotional Item category for its compost sample and tulip bulb and as the municipality with the best Web site.

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2005 Sustainable Community Awards Winners



SUSTAINABLE COMMUNITY PLANNING

Climate SMART

Halifax Regional Municipality, Nova Scotia

Population: 359,111



SUMMARY

Halifax Regional Municipality (HRM) partnered with all orders of government and the private sector to develop Climate SMART, a fully integrated planning approach that addresses the impacts of climate change. The program supports a wide

range of adaptation and mitigation activities, including creating models to determine potential climate change impacts, compiling up-to-date greenhouse gas (GHG) emission information and preparing emission management options for different community sectors. Climate SMART is HRM's umbrella strategy, under which it implements a variety of sustainability initiatives, such as a plan for a district energy system, a reduced idling campaign and the Halifax Harbour Solutions project. Climate SMART is the first municipal project to integrate GHG emission reduction and climate change impacts, as well as adaptation considerations, into its overall corporate decision-making process.

BACKGROUND

As a coastal city with more than 5,500 square kilometres of international sea between it and the next seaport to the east, Halifax Regional Municipality (HRM) is vulnerable to climate impacts. In recent years, severe weather events have become more frequent. Torrential rains and flooding in March 2003 were followed by Hurricane Juan the following September, and record snowfalls in February 2004 wreaked havoc on the region and cost millions of dollars to clean up and replace damaged property and infrastructure.

"Our geographic location makes us one of the most vulnerable cities in North America, but we had no plan to deal with the effects of climate change," says Stephen King, manager-senior advisor of HRM's sustainable environmental management office.

HRM has been committed to environmental protection for several years. It joined Partners for Climate Protection (PCP), jointly supported by FCM and ICLEI-Local Governments for Sustainability, in 1997, and its 2005 regional plan includes a recommendation to establish an emissions reduction plan. What HRM lacked were a mechanism to incorporate climate change issues into its decision-making processes and the resources to implement adaptation and mitigation activities.

PROJECT DETAILS

In 2003, select companies of ClimAdapt (a network of private-sector companies in Nova Scotia that provide climate change adaptation expertise) approached HRM to see what could be done about the impacts of climate change. "They were talking about adaptation strategies primarily, not mitigation," says Mr. King. "Our dilemma was money, so we decided to work on the adaptation side first and use that work to leverage resources from other levels of government to assist us with the mitigation piece."

HRM formed an action plan steering committee to develop the Climate SMART model. Committee members include municipal staff

members and private sector representatives. HRM also created an informal working group of senior federal, provincial and municipal officials to develop new policies and strategies.

One of HRM's first steps was to apply for a grant from FCM's Green Municipal Fund (GMF) to develop a local action plan. "For council, the biggest thing was financial risk, so that funding was key to their support of the program," Mr. King explains. HRM received the grant to implement Climate SMART, Halifax's response to PCP milestones three and four—preparing and implementing a local action plan.

As a public-private initiative, Climate SMART addresses mitigation and adaptation opportunities from a cost-benefit perspective, giving special consideration to the long-term sustainability of the measures to be implemented. The plan encompasses all of HRM's corporate and community assets and activities and includes a series of tools used to incorporate climate change information into its municipal decision-making processes.

Climate SMART was formally launched in March 2004 and includes several key deliverables:

1. Vulnerability assessments and sustainability analyses
2. Cost-benefit assessments
3. An emissions management and mitigation tool
4. A climate change risk management plan
5. An emissions management and adaptation methodology, which includes methodologies for each community sector
6. Communications and outreach

All of these deliverables form part of HRM's sustainable community development efforts, with Climate SMART playing a bridging role that integrates climate change information into all of its corporate decisions. "Climate SMART is just one piece of our overall planning process," says Mr. King. "It gives us the information to complete all the PCP milestones and make the tough decisions."

Collecting, analyzing and modelling energy use and emissions data is a vital part of the initiative, and HRM has deftly managed several high-level partnerships with the federal and provincial governments to complete the work. "Natural Resources Canada, Nova Scotia Energy and FCM provided direct cash, while Nova Scotia Environment and Labour and Environment Canada provided generous in-kind resources, such as mapping, data and air quality information," says Mr. King. "Many of the tools we developed from that can also be applied to other cities." Private sector companies in Halifax also provided in-kind resources, such as access to existing technical information and links to other partners.

The maxim "Success breeds success" proved to be true. "Once we had the nucleus—the federal and provincial government, HRM itself, FCM and the private sector—all of our work spun in the right direction," says Mr. King. "As more people came on board, that built synergies and momentum, and, once we got the cash flowing, we leveraged that to make a lot of things happen."

HRM leveraged the GMF financing toward the construction of three new sewage treatment plants to create a Sustainable Community Green Reserve. The new treatment plants will use state-of-the-art pollution control technology. Their design, which allows for a one-metre rise in sea level, will help them adapt to climate change.

Mr. King explains how HRM uses the financing to fund initiatives that support Climate SMART's direction. "We borrowed \$20 million from GMF, and the interest savings on the loan over a 10-year period generates between \$300,000 and \$400,000 a year," he says. "All of that money is pumped back into sustainable projects. FCM helped us develop a protocol to decide which projects to approve."

The list of Green Reserve projects is impressive:

- at-source water pollution prevention activities;
- a district energy system;
- a reduced idling program;
- installation of catalytic converters on older transit buses;
- green procurement strategies;
- biofuel use in buildings (the city's entire transit fleet, including ferries, is powered by biofuels);
- efforts to make bridges safer for cyclists; and
- a full sustainability analysis of the city using a tailored version of The Natural Step, a science-based sustainability planning framework.

In total, funding for Climate SMART, including in-kind resources, is approximately \$550,000. When asked how Halifax was able to leverage such a wide range of support over all orders of government with relatively few resources, Mr. King is pragmatic. "We had to do it. One of the best things about this project is that no one said 'this isn't my job'," he says. "This helped line up the stars for us."

In the fall of 2005, HRM redesigned its Web site to support its vision of a fully integrated approach to environmental sustainability. Along with the usual municipal information, the Web site also encourages readers to learn more about major HRM projects, including Climate SMART. "We don't want the site to be overloaded with information, but we need the right information to bring the whole community along," says Mr. King. "We have to show the community how climate change really has an impact on their lives."

RESULTS

- Climate SMART is the first municipally led initiative to integrate climate change mitigation and adaptation with an overall planning approach.
- An annual scorecard lists all of HRM's measuring activities and includes an indicator of success for each. Some of these activities include monitoring air quality and energy use in buildings, implementing new waste diversion activities, managing its urban forest and conducting water bacterial counts.
- Its emission management and mitigation tool exceeds PCP requirements and sets GHG-specific targets for each HRM business unit.
- As part of its anti-idling project, all of HRM's fleet managers and drivers (representing 1,800 vehicles) were provided with information on the negative effects of idling and taught energy-efficient driving techniques.
- HRM uses biodiesel in all of its transit buses and ferries. The biodiesel is made of 80 per cent diesel and 20 per cent fish oil, a by-product of the production of omega-3 oils refined from fish oil. HRM, in partnership with Environment Canada and Natural Resources Canada, will monitor the project for pollution reductions.
- Over the next two years, HRM will install new catalytic converters on older transit buses to make them run more efficiently and produce fewer emissions, which should delay the need to buy new ones.

LESSONS LEARNED

- **Collaboration is key.** HRM could not have achieved so much in a relatively short period without the strong partnerships it developed with a variety of stakeholders. "No question, collaboration helped us maximize all of our resources and bring in new ones. Our partners also have a lot of input into the process," says Mr. King.
- **Harness political champions.** "Political will has to be there if you want to successfully tie sustainability into corporate planning," says Mr. King, adding that all of Climate SMART's strategies must support HRM's overall vision for its community. "Ideally, you want champions at each level."
- **Take an integrated approach to planning.** "There's no need to work in silos because it's clear that you can save so much in the long-term if you integrate climate change adaptation and mitigation strategies into your decisions," says Mr. King.

- **Use a social marketing approach.** Determining barriers to change and then finding ways to overcome them is at the heart of social marketing theory, a practice that HRM has taken to heart. "You have to continually build support as you go, within your own organization and within the community," says Mr. King. "You'll always run into walls so you need a strategy to deal with that. Although it can be difficult, you need to take a grassroots approach."

RELATED AND FUTURE INITIATIVES

HRM is working with federal, provincial and private-sector partners on a comprehensive airshed management strategy, which includes Climate SMART's GHG emission plans, community energy plan and other related initiatives.

One such project, which will have a major impact on improving air quality, is a proposed district energy system for the Halifax peninsula. Major project players include universities, hospitals, HRM's port authority, the Department of National Defence and potentially major business districts, as well.

A number of local community groups and non-governmental organizations, such as the Sierra Club's Atlantic chapter, are also working with HRM to implement a community challenge, funded by the Government of Canada's One-Tonne Challenge. The program will focus primarily on home energy-efficiency and transportation.

The Halifax Regional Water Commission won the 2005 FCM-CH2M HILL Award for its water accountability study (see related case study on page 36). That program supports the actions and strategies of Climate SMART by, among other things, reducing GHG emissions with a decrease in chemical requirements at its water treatment plants.

PARTNERS

Internal

The main HRM business units involved were:

Environmental Management Services	Finance and Procurement
Transportation and Public Works	Regional Planning
Real Property and Asset Management	Planning and Development
	Halifax Regional Water Commission

External

ClimAdapt Network	Nova Scotia's Department of Environment and Labour and Department of Energy
Natural Resources Canada's Climate Change Impacts and Adaptation Program	Environment Canada
Green Municipal Fund	Several community groups and local businesses
	Partners for Climate Protection

PROMOTIONAL ACTIVITIES

Concurrently with the launch of Climate SMART, HRM staff prepared and distributed an information report to each regional council member.

Communicating with the general public has been a key component of Climate SMART. HRM publishes and distributes its quarterly newsletter, *Naturally Green*, to 150,000 households. In addition, it sends out regular public service announcements, updates information on its municipal Web site and holds public information sessions and workshops.

Contact Information

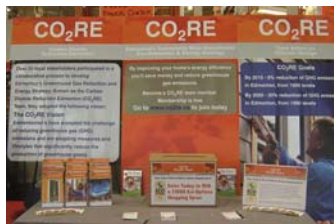
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SUSTAINABLE COMMUNITY PLANNING

CO₂RE RESIDENTIAL MARKETING PROGRAM

City of Edmonton, Alberta

Population: 666,104



SUMMARY

More than 20 organizations first developed the Carbon Dioxide Reduction Edmonton (CO₂RE) emission reduction strategy in 2000. CO₂RE developed its latest program, Home\$avers, in partnership with Natural Resources

Canada and delivered it in partnership with Home Depot. Using statistics from Natural Resources Canada, CO₂RE produced a series of booklets that provide energy efficiency information specific to Edmonton homes. Residents who participated in Home\$avers also had the chance to win an eco-products shopping spree at local Home Depot stores. As a result of the campaign, more than 10,000 residents have become CO₂RE members. CO₂RE is now developing a membership database that will allow it stay in touch with residents and track energy efficiency improvements across the city.

BACKGROUND

The City of Edmonton has been incredibly successful in several areas of sustainable development. Early in 2005, for example, Edmonton was one of the first two cities in Canada to complete all five of the Partners for Climate Protection (PCP) milestones (jointly supported by FCM and ICLEI-Local Governments for Sustainability). It also boasts one of Canada's leading waste management research centres, has been capturing methane gas from its landfill to provide electricity to homes for several years and won a 2004 FCM-CH2M HILL Award for its Ribbon of Steel multi-use trail.

CO₂RE is the city's community-based greenhouse gas (GHG) reduction strategy. Initiated in 2000, the strategy was developed in partnership with the city and a group of more than 20 community and business organizations. It supports the goals of the city's environmental strategic plan.

Even with so many early successes, Edmonton recognized that sustainability involves a commitment to continuous improvement. Working under that philosophy, CO₂RE staff saw an opportunity to reduce emissions in the community by targeting the residential sector with Home\$avers, a social marketing program to increase home energy efficiency.

PROJECT DETAILS

Home\$avers is one of several programs under the city's multi-year process to implement a GHG emission reduction plan in five designated sectors: community leadership, industrial, commercial, institutional and residential. The city received funds from the Green Municipal Fund (GMF) and the Government of Canada's One-Tonne Challenge to take an inventory of GHG reduction initiatives and develop sector-specific projects.



"Strategically, our city operations don't make up a large amount of the emissions in Edmonton," explains Mark Brostrom, director of Edmonton's office of the environment. "But we needed to show leadership in the field, and Home\$avers was a test for the community-wide plan."

The idea behind Home\$avers is simple. Analyze information about residential energy consumption using locally relevant data, then develop and distribute a series of booklets targeted specifically at Edmonton homeowners.

In early 2004, CO₂RE staff asked Natural Resources Canada (NRCAN) to compile information gleaned from EnerGuide for Houses home energy audits performed in Edmonton. "The data was based on 4,000 home audits in the Edmonton area and allowed us to see historical energy trends," says Mr. Brostrom. "NRCAN provided the information, and we did the analysis over a five-month period."

At the same time, CO₂RE spearheaded an initiative to give 400 city employees a discounted EnerGuide for Houses audit and included the information from those audits in the data received from NRCAN.

Homes were divided into groups based on building characteristics and the year they were built. Estimated GHG reductions were then calculated based on a range of improvements for each age grouping of homes. "The older houses were very drafty, which wasn't much of a surprise, but even some of the homes built up to 1989—before building codes were changed—had significant air leakage," Mr. Brostrom recalls.

Using the analysis, CO₂RE produced nine information booklets that cover a range of themes: insulation, ventilation, water and electricity conservation, and heating systems. Canada Mortgage and Housing Corporation reviewed each booklet for technical accuracy.

To deliver the Home\$avers program, CO₂RE developed a partnership with local Home Depot stores. Brian Mitchell, CO₂RE's manager, held training sessions with Home Depot employees to provide them with more information about the Home\$avers series, energy and environmental issues and energy reduction initiatives.

CO₂RE launched Home\$avers in the fall of 2004. Six Home Depot stores carried the booklets as part of large colourful displays, and, because of the additional training CO₂RE provided, employees were able to answer customers' questions about the program and opportunities to reduce energy and water use in their homes. Home Depot also offered customers a chance to win a \$1,000 shopping spree of EcoOptions environment-friendly products. EPCOR Utilities Inc. also provided a \$50 discount voucher towards the purchase of a low-flow toilet.

"Our partnership with Home Depot came at a great time because they had just announced their EcoOptions program," says Mr. Brostrom. "They also have a sustainability policy and were willing to test this as a pilot in their Edmonton stores." He also reports that Home Depot may expand the program to all of its stores in Alberta.

Mr. Brostrom explains how NRCAN could use Edmonton's experience to help other municipalities implement similar programs. "With EnerGuide, residents get only the audit and recommendations for improvement," says Mr. Brostrom. Home\$avers enhances the EnerGuide audit and provides locally relevant information about how to improve energy efficiency at home. "A lot of Canadian municipalities could really benefit from our work."

RESULTS

- All those who entered the Home Depot contest were asked if they wanted to become CO₂RE members and receive additional information. As a result, more than 10,000 people became CO₂RE members.
- CO₂RE continues to work with Home Depot, which has distributed more than 70,000 booklets through its stores. “We usually stay away from distributing booklets because you’re never sure the information is going to get into the right hands,” says Mr. Brostrom. “Distributing them at the point of sale, when people have already shown that they’re interested in saving energy, means that it’s more likely the information will be used.” Booklets are also available in electronic format on CO₂RE’s Web site. More than 7,000 have been downloaded.
- In combination with the EPCOR discount voucher and the HomeSavers series, sales of low-flow toilets increased by more than 80 per cent in 2004 compared to the same period in 2003.
- CO₂RE surveyed 400 Edmonton residents after the launch to determine awareness of HomeSavers. Twenty per cent of those surveyed had heard of the program.

LESSONS LEARNED

- **Partner with the retail sector.** CO₂RE’s partnership with Home Depot helped spread awareness of the issues. Home Depot prominently displayed the booklets in stores, and, as a result, has increased its sales of energy-efficient products. There were, however, certain challenges to working with the retail sector. “Employee turnover can be high, and a company is driven by different philosophies than government is,” says Mr. Brostrom.
- **Engage political champions.** Mr. Brostrom indicated that councillors have been very supportive of CO₂RE’s work over the years. “I think that our councillors see the benefits for the community, for employment and business opportunities,” he says.
- **Use available data to promote local benefits.** By using NRCan data, CO₂RE was able to cut down on the time and resources required to compile customized information specific to Edmonton area homes. To Mr. Brostrom’s knowledge, no other municipality has requested similar information from NRCan.
- **Funding caused some delays.** CO₂RE did not secure long-term funding for the series of booklets prior to the launch of HomeSavers, which delayed some follow-up activities, such as a membership benefits package.

RELATED AND FUTURE INITIATIVES

Currently, the city funds CO₂RE’s annual operating budget, so its long-term goal is to achieve non-profit status. This would enable CO₂RE to secure additional community partner funding by providing tax-deductible receipts for donations from local businesses, individuals and community organizations. Another source of financial support the city is exploring is a public benefits service surcharge, which would apply to energy sold in the Edmonton marketplace.

In the immediate future, CO₂RE will produce seven more booklets that will cover transportation, re-siding, landscaping, new homes, green power and two additional insulation booklets.

CO₂RE has put the information gathered from the shopping spree contestants into a database, which it plans to use for future targeted marketing. For example, it will be launching a newsletter for members in 2005, which may include a Home Depot coupon for energy-efficient products. “As the program expands, we’d like to include a CO₂RE membership card that would offer discounts on other energy-efficient products like windows or high-efficiency furnaces,” says Mr. Brostrom.

CO₂RE may also use the database to quantify GHG emission reductions from members who renovate their homes for energy efficiency. “That will be challenging, but the idea is to get verifiable emission reductions from members and other partners,” Mr. Brostrom explains. “If we can aggregate the reductions, we may be able to sell them on the carbon market to fund additional programs.”

“We are using a social marketing approach in our waste management areas to address the behaviours we want to see from our residents with respect to recycling, for example,” says Mr. Brostrom. CO₂RE used this experience in developing the HomeSavers booklet series.

PARTNERS

Home Depot Inc.
Canada Mortgage and Housing Corporation
Natural Resources Canada
Government of Canada’s One-Tonne Challenge
Climate Change Central
EPCOR Utilities Inc.
Partners for Climate Protection
Green Municipal Fund

PROMOTIONAL ACTIVITIES

The HomeSavers series media launch was well-timed, coinciding with the winter season. Local journalists received some sample home renovation products. CO₂RE also promoted the project to residents via direct mail and advertising. And, over a two-month period, a series of vignettes about energy efficiency aired on Global TV in Edmonton. CO₂RE continues to promote the series and its other initiatives on its Web site.

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SUSTAINABLE COMMUNITY PLANNING

WHISTLER 2020 — MOVING TOWARDS A SUSTAINABLE FUTURE

Resort Municipality of Whistler, British Columbia
Population: 8,896



SUMMARY

Whistler 2020 is the community's long-range strategic plan. Using the scientific principles of The Natural Step framework as its base, the plan addresses 16 strategy areas, including economics, residential affordability and the natural and built environment. More than 140 community experts were involved in creating the strategy area plans. During public consultation, Whistler

used QUEST, an interactive software program that allows people to see the long-term impact of various scenarios. As a result of the plan, Whistler amended its community grant process; applicants must now demonstrate how their project contributes to the community's sustainability. The municipality has also signed a dozen partnership agreements with local organizations and businesses that are committed to supporting the plan.

BACKGROUND

The Resort Municipality of Whistler has long been aware of the need to protect its local environment. As a community that depends on a healthy environment for much of its economy, Whistler faces some unique challenges.

A large segment of its population—owners of second homes, a portion of the workforce and tourists, for example—don't live in Whistler, and the emissions from so much transportation to and from the community affect local air and water quality and raise land-use issues. "We're also not your typical economy because so much of it is tied to the worldwide market," says Mike Vance, general manager of community initiatives. "We have to balance many competing interests."

Over the years, Whistler's permanent and tourist populations have grown considerably. Beginning in the late 1980s, Whistler realized that it would need to cap development if the community was to retain its social fabric and natural ecology. A decade later, Whistler was nearing its development limit and the community knew that, to deal with issues related to growth, it would require a new way of planning.

PROJECT DETAILS

Whistler adopted its Environmental Strategy in 1999, and, a year later, a bit of good fortune arrived by way of one of its many tourists. The founder of The Natural Step (TNS), Dr. Karl-Henrik Robèrt was vacationing in Whistler and made time during his trip to give municipal officials a presentation on the program. TNS is a science-based framework that moves communities and organizations toward sustainability by providing a common language and planning process.

Five "early adopter" organizations emerged—local businesses that were interested in becoming more sustainable. Whistler worked with them, using the TNS principle of "back casting" as a guide. "Back-casting" is a visioning process that identifies opportunities and vulnerabilities and focuses on a holistic view of the community.

Building on its Environmental Strategy and the TNS process, Whistler began developing Whistler 2020, its highest-level policy document. Based on TNS principles, Whistler 2020 sets forth a long-term plan to maintain Whistler as a premier mountain resort while moving toward sustainability.

As a first step to applying the TNS framework, Whistler held community and business workshops to identify the factors that make resort communities successful and begin to define Whistler's future. It formed a citizens' advisory committee (CAC) to review the results of the public consultations. The CAC identified 16 specific issues and created a task force for each to guide development and recommend actions for the future. "We saw real progress once we turned the process over to the community," says Mr. Vance. "Once the community became engaged at the task force level, the pace of the development of the strategies moved very quickly."

Each task force identified the current conditions, developed a description for success and identified and prioritized actions for achieving success using four strategic questions:

1. Does the decision move us toward our vision, priorities, directions and success factors?
2. Does the action move us toward our TNS sustainability objectives?
3. Is the action a good financial investment?
4. Is the action a flexible platform for future actions toward success and sustainability?

"Our challenge initially was how to integrate the TNS framework into our decision-making processes," says Mr. Vance. "But, by using the TNS framework and principles, the members of the task forces found it to be quite an efficient enterprise because the framework gave everyone a common language."

While Whistler used a range of public consultations tools, such as open houses, workshops and meetings, technology also played a significant role in engaging the community. Anyone who wasn't able to participate in person had access to online workbooks and questionnaires. "We didn't rely on any single tool. That was important in reaching the maximum number of people. We were able to respond quickly to their ideas and maintain the momentum," Mr. Vance explains.

One of the tools Whistler used was QUEST, an interactive software program that shows the long-term impact of different scenarios. "We could visually show the impacts of sprawl, for example, on our visitation rates, on GHG emissions and on the economy," says Mr. Vance. "It was a very efficient way to respond to 'what if?' questions, and we continued to use it to measure and monitor the impacts of our actions."

QUEST helped the community assess five different futures for Whistler. These were blended into a first draft of Whistler 2020, which was released to the public in May 2004. Whistler Council adopted volume I, which contains the values, sustainability principles, vision, priorities and directions, later that year. The plan was then fine-tuned and, a second version (including volumes II and III, which contain the strategies and appendices) was presented to council in the summer of 2005.

Each community sector has benefited from the process. "For the average resident, they see their ideas turned into actions. They realize that they can make a difference," says Mr. Vance. "NGOs and government organizations began reviewing their agendas and could reframe some of their programs to be consistent with the TNS framework and other organizations."

Whistler's business community also saw benefits. "We've seen many business partnerships form that weren't there in the past, so there is a cross-pollination of ideas and resources," says Mr. Vance. "Several members of the energy task force with historically divergent interests are working together on a long-term plan to move away from fossil fuels. One of the initiatives they're reviewing is the feasibility of a district ground source heat pump heating system for the 2010 Winter Olympics Athletes Village and ultimately other commercial centres, such as Whistler Village."

Whistler is now implementing many of the action items within Whistler 2020. For example, the municipality revised the criteria for Whistler's Community Enrichment program, which provides grants to community groups for environmental projects, so that applicants must demonstrate how their project contributes to Whistler's sustainability. Mr. Vance explains how one of Whistler's community organizations plans to operate community greenhouses to provide organic vegetables for the food bank, as well as provide community members with the opportunity to become partially self-sufficient in food growth.

Whistler has also kept new housing development within the current development boundaries and is developing a green residential building strategy that will apply to all new housing units.

"For the first time, we have seen a work plan that came directly from the community," says Mr. Vance. "We're also moving towards community-wide budgeting on common tasks that have an ultimate goal: sustainability."

RESULTS

- Whistler will amend its Official Community Plan to reflect the vision and goals of Whistler 2020, and council has made a long-term commitment to implement and monitor the strategy.
- Whistler signed partnership agreements with 14 local businesses and organizations that have formally endorsed the vision and sustainability principles.
- Members of the 16 task forces represent more than 140 community experts and stakeholders.
- Whistler aligned its annual budget with the Whistler 2020 criteria to incorporate sustainability into corporate decision-making.
- Whistler signed an agreement with the 2010 Olympic organizing committee to ensure that the games fit with Whistler 2020. For example, development guidelines for the Athletes Village require that the village and future housing neighbourhood comply with the strategy's vision and principles.

LESSONS LEARNED

- **Engage your community in a meaningful way.** Community residents conducted most of the research required to move Whistler 2020 forward, making them a key part of the planning process, rather than simply a sounding board for municipal plans. "If we had done it differently, we might not have been so successful," says Mr. Vance. "We used local expertise—members of the community—so we have that resource for the future. We used external experts for advice and review as necessary or to validate what we did."
- **Maintain momentum with community partners.** Encouraging organizations to adopt the vision and principles of the plan created a true sense of ownership within the community. "The task forces were convened to prepare a short-term plan in the interim, which enabled our partners to start on the work program as the long-term strategies were being developed, keeping the momentum going," says Mr. Vance.
- **Identify a common framework.** Using TNS provided all participants with a common language to identify challenges and opportunities. "With TNS, we created a description of success and then worked towards it," Mr. Vance explains. "This planning approach focuses on building a forward-looking and adaptable resort community."

- **Dedicate in-house resources.** Whistler made considerable investments in research, public consultation and preparing communication materials for the community. Municipal staff members continue to facilitate the task forces' meetings, provide them with written materials and document their findings. "It is very labour-intensive," Mr. Vance admits. "But, by investing a significant amount in local resources to engage the community, we have helped the community understand how complex sustainable development can be, and that remains a Whistler legacy."

RELATED AND FUTURE INITIATIVES

Whistler joined Partners for Climate Protection (PCP), jointly supported by FCM and ICLEI-Local Governments for Sustainability, in 1997 and is working on milestone four—implementing a local action plan—of PCP's five-milestone framework.

The task forces identified several long-term actions, which the municipality is now considering. "We want to provide post-secondary opportunities and education in Whistler for our community," he says. "Having a satellite campus in Whistler would allow us to offer learning vacations for visitors and learning opportunities for residents."

Whistler is working with its local chamber of commerce on an economic strategy and has held discussions about establishing arts and culture programs and initiatives as an important part of that strategy.

Whistler has also accessed FCM's Green Municipal Fund for several projects, including an investment fund loan to renovate its conference centre and grants to conduct feasibility studies of geothermal energy and to develop a car-sharing project.

PARTNERS

Internal

All municipal departments within the Resort Municipality of Whistler

External

The Natural Step Canada
Whistler-Blackcomb
Tourism Whistler
Capilano College
Whistler Museum and Archives Society
Whistler Arts Council
Whistler Public Library
Mature Action Committee

Healthy Communities Committee
Whistler Housing Authority
Terasen Inc.
Whistler Chamber of Commerce
Whistler Community Services Society
Partners for Climate Protection
Green Municipal Fund

PROMOTIONAL ACTIVITIES

Whistler continues to engage its community through the Whistler Centre for Sustainability, a Web site that provides tools and resources, such as sustainability toolkits for individuals, schools and businesses.

Whistler 2020's first performance report, which will become an annual exercise, will be available in 2006. The task forces remain intact and meet annually so that the community can stay connected and evaluate and monitor the success of their actions.

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SUSTAINABLE TRANSPORTATION

U-PASS PROGRAM

Greater Vancouver Transportation Authority
(TransLink), British Columbia

Population: 2,133,000



SUMMARY

TransLink's universal pass program serves 60,000 students at Simon Fraser University (SFU) and the University of British Columbia (UBC) and was designed to increase transit ridership and build a transit culture over the long term. The U-Pass allows students unlimited travel on the area's bus, SeaBus and SkyTrain transit systems for a significantly discounted price. It also provides a \$2 discount on rides on the West Coast Express commuter rail service, as well as new bus routes and increased bus service to both universities. Full- and part-time students supported the U-Pass with their approval of a referendum, which made it a mandatory program, the costs for which are shared by the entire student body. Transit is now the leading mode of transportation to and from both universities, and automobile traffic at both sites has decreased by between 10 and 12 per cent, for associated greenhouse gas (GHG) emission reductions of about 21,000 tonnes per year.

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BACKGROUND

Sustainable transportation is one of the cornerstones of the *Livable Region Strategic Plan*, the Greater Vancouver Regional District's (GVRD's) long-term growth management strategy. The GVRD also endorsed the University of British Columbia's Official Community Plan (OCP), which recognizes that increased transit use is a leading success factor in reducing GHG emissions and improving air quality. UBC incorporated ambitious targets in its OCP to reduce single-occupant vehicle travel. To achieve these targets, it was clear that a major transit initiative, combining supply, transit pricing and parking demand and pricing, was necessary.

The GVRD has been active in sustainable development issues for years and has been a member of Partners for Climate Protection (PCP), jointly supported by FCM and ICLEI-Local Governments for Sustainability, since 1996. The GVRD is currently working on milestone three (preparing a local action plan) of PCP's five-milestone framework and is working to implement the plan through its Sustainable Region Initiative, its overall sustainability framework. It has also received Green Municipal Fund (GMF) loans and grants for a number of transit, planning and energy projects.

TransLink, the Greater Vancouver Transportation Authority (GVTA), serves the 21 municipalities that make up the GVRD and is responsible for planning and providing funding for transportation services and major capital transportation projects, and for delivering, through operating subsidiaries, bus, light rail, commuter rail and ferry services. TransLink is committed to increasing transit ridership to support the GVRD's sustainable development initiatives.

PROJECT DETAILS

TransLink saw an opportunity to increase transit ridership to and from the GVRD's two main universities: the University of British Columbia (UBC) and Simon Fraser University (SFU). TransLink decided to introduce a deeply discounted student pass, known as the "universal pass program" or U-Pass for short, to entice more students to use public transit.

"We had been speaking with UBC and SFU about a discounted pass program since 2000," says William Lambert, TransLink's manager of planning projects. "At first, there was a misconception that TransLink was simply out to make money or that we would introduce the program and not improve service. But we were very open about the revenue we would be receiving and transit service improvements we would make, and, by working closely with the student associations, we gained their trust."

The combined student population of the two universities is roughly 60,000, and, by 2001, transit services to both campuses were already operating at near capacity. Surveys conducted in 2001 and 2002, in partnership with each university's student association, revealed that transit accounted for 26 per cent of trips to and from UBC and 34 per cent of trips to and from SFU.

All of TransLink's partners agreed that, if the U-Pass was to be successful, it should be mandatory for the majority of students and revenue-neutral to TransLink. UBC and SFU held student referendums, with a majority of students voting in favour of the program (at UBC, 75 per cent of students voted in favour of the program, while the SFU vote was closer, with just about 50 per cent of students in favour).

TransLink worked to improve transit service and frequency to accommodate the estimated increase in transit users. "We introduced a non-stop bus route from the Broadway/Commercial SkyTrain station to UBC, put larger buses on certain routes, improved route frequency and increased the number of hours of service," says Mr. Lambert. In all, TransLink increased bus service to the two universities by 61,000 service hours annually, at a yearly cost of about \$4.5 million.

TransLink then negotiated a fee per student with each university—UBC subsidizes the pass at a rate of \$23 per student per month, while SFU subsidizes the pass at a rate of \$25 per student per month—and guaranteed the price for the first two years of the program. "Our price was based on fare revenue. Mode share was higher at SFU, that's why the fare was higher," Mr. Lambert explains. The universities pay these fees directly to TransLink to guarantee the number of passes. Since the U-Pass is mandatory, students pay the cost of the pass, allowing the universities to recoup the fees.

The cost per student pass at each university differs because UBC and SFU used different revenue streams to subsidize the fees paid to TransLink. SFU students pay \$23 per month, while UBC students pay \$20 per month. Independent of TransLink, UBC negotiated deals with retailers to give U-Pass holders discounts at restaurants, shops, hotels and movie theatres.

In addition, TransLink signed a corporate sponsorship agreement with Vancity Credit Union. In return for advertising on the transit system and placing its logo on the U-Pass, Vancity has provided a three-year contribution of \$900,000 to defray a portion of the program's administration costs. "It was a good match because they have a good reputation as an environmentally conscious company, and it is a company that is well-regarded by students," says Mr. Lambert.

TransLink launched the U-Pass at both universities in September 2003 with the expectation that ridership would increase by between 30 and 35 per cent. Instead, ridership numbers exceeded all expectations—a 53 per cent increase at UBC and a 39 per cent increase at SFU.

“We wanted to create a transit culture,” says Mr. Lambert. “We’re a very broad transportation agency, so improving ridership helps our transit system by taking cars off the road, which reduces expenditures on maintenance and new road construction.”

RESULTS

- Transit is now the leading mode of transportation at both universities. Automobile traffic to UBC and SFU decreased by 12 per cent and 10 per cent, respectively, translating into GHG emission reductions of 21,000 tonnes.
- Students have saved on average between \$200 to \$800 per four-month semester on transportation costs since the implementation of the U-Pass.
- In marketing research surveys conducted by TransLink, about half of all students reported that the U-Pass has increased their access to employment opportunities and social and recreational activities and has expanded their choice of residential locations.
- Demand for parking on both campuses has decreased. The cost to build a 500-space parking lot is approximately \$15 million, and UBC has already been able to remove several hundred parking spaces as a result of the U-Pass program.
- Student referendums held in the spring of 2005 approved a price increase of \$2 per month for UBC and \$1.75 per month for SFU. At UBC, 93 per cent of students voted in favour of the increase, while 83 per cent of SFU students voted in favour.

LESSONS LEARNED

- **Build effective partnerships.** Implementing the U-Pass required the efforts of many people. Establishing partnerships with the school administrations, student societies and Vancity on a solid foundation of trust was critical. “TransLink’s planning, finance and legal departments had to be involved, along with a technical team and the universities themselves,” says Mr. Lambert. A steering committee was formed to implement the program. The team’s philosophy—to design a program that met the needs of all stakeholders—fostered a high level of commitment from all parties. As part of the partnership, UBC changed its class start times to assist TransLink in its scheduling of transit resources.
- **Plan for the unexpected.** “You definitely need to have contingency resources if demand is higher than anticipated,” says Mr. Lambert. Even though TransLink performed thorough estimates of the service changes that would be necessary to support the program, ridership was higher than anticipated. “There was an adjustment period when we introduced it, and there was some overcrowding at first, so we had to put on more resources to address that.” Some routes continue to be problematic, and TransLink has committed additional funding to continue to improve transit service.
- **Implement an evaluation process.** TransLink, UBC and SFU hired an independent consultant to conduct a comprehensive review of the program in the fall of 2004. This included interviews with all stakeholders, student focus groups and a marketing research survey to identify program benefits, costs, transportation impacts and operational issues and opportunities. The evaluation confirmed the costs and benefits of the program for all parties. TransLink will use the information to improve and expand the program in future.

RELATED AND FUTURE INITIATIVES

TransLink plans to expand the U-Pass to eight other post-secondary colleges and is in negotiations with the administrations and student

societies of those institutions. This will potentially expand the program to another 40,000 students.

It is also using the experience gained by the U-Pass program to develop a Community Transit Pass for residents of existing and new sustainable communities being built at the SFU Burnaby Mountain campus (UniverCity) and the UBC main campus. Similar to the U-Pass, the Community Transit Pass would be the first of its kind in Canada, providing residents with lower-cost passes. “Each institution would guarantee that half of all residents would buy a pass for a year,” says Mr. Lambert. “The price would be higher than the U-Pass, but would still be a significant discount on regular passes.” The Simon Fraser University Community Trust, which manages the UniverCity, worked with TransLink to negotiate a corporate sponsorship for the Community Transit Pass with Vancity Credit Union. Translink and its partners hope to introduce the Community Pass at UniverCity in January 2006 and at UBC in the spring of 2006.

TransLink also offers an Employer Pass Program, which allows companies to offer cost-reduced annual transit passes to their staff when 25 or more employees enrol in the program. There are more than 10,000 employees registered in this program.

FCM’s Green Municipal Fund have supported two other transit initiatives, jointly implemented by TransLink and the GVRD. Its station car pilot program in the City of Burnaby allows people to take transit and then use a car parked at transit stations for inner-city travel. TransLink will purchase new electric trolley buses with a \$20-million GMF reinvestment loan, using the interest savings from the loan to purchase renewable energy, solar-powered transit stops and hybrid buses.

PARTNERS

University of British Columbia
Simon Fraser University
Simon Fraser Student Society
UBC Alma Mater Society

Vancity Credit Union
Partners for Climate Protection
Green Municipal Fund

PROMOTIONAL ACTIVITIES

During the program launch in the fall of 2003, TransLink and Vancity spearheaded several on-campus promotional events and distributed transit system maps to students. TransLink advertises the U-Pass program in newspapers and on the transit system and holds information sessions at each university twice a year. It has also devoted a portion of its Web site to information about the program. UBC and SFU provide dedicated Web pages about the U-Pass on their respective Web sites, with links to TransLink’s trip planning and transit schedules.

TransLink, university staff and the student associations administer the program. The U-Pass agreements established a service review committee for each university, which meets three times a year to review transit service and administrative issues and to identify possible program improvements. The GVTA board of directors is also informed of the program through regular board reports.

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WATER

WATER ACCOUNTABILITY—THE NEW WAY Halifax Regional Water Commission (HRWC), Nova Scotia Population: 359,111



SUMMARY

The Halifax Regional Water Commission (HRWC) took a whole new approach to reducing leakage in its water distribution systems. It was the first North American utility to adopt the International Water Association (IWA) methodology, which uses an

integrated and proactive approach to water loss control, including leak detection and programs for pipe renewal. For example, the use of noise-mapping surveys and a computerized monitoring system to detect leaks allows the HRWC to pinpoint problems and immediately dispatch crews to the area. Between 1998 and 2004, the HRWC reduced water leakages in the Dartmouth and Halifax systems by 27 million litres annually, a yearly cost saving of \$500,000.

BACKGROUND

The HRWC was formed in 1996 when four municipalities were amalgamated into the Halifax Regional Municipality (HRM). Following amalgamation, the HRWC began construction of a water treatment plant and transmission main to serve the Dartmouth area. The new plant produced some of the most expensive water in the region, due in part to the requirement to boost water to the distribution system.

To reduce operating costs and capital costs for future system upgrades, the HRWC created a cross-departmental team to determine and implement best practices in water loss control. As much as 30 per cent of a system's water can be lost through leaks from pinpoint holes or broken seals in the pipes. In addition, leaky pipes can pose a public health risk because they are potential entry points for contaminants.

Initially, the HRWC team concentrated on North American best practices, but eventually expanded its search, discovering that the International Water Association (IWA)—an England-based network of water professionals—had recently formed a task force to study water loss control techniques. "They had come up with a new methodology on water loss control, and we got in on the ground floor," says Carl Yates, the HRWC's general manager.

PROJECT DETAILS

In 1999, the HRWC hired an international expert associated with the IWA to introduce the approach; it formally adopted the methodology in 2000. The IWA methodology takes an integrated approach to water loss control and stresses accountability at all stages. "It's really an audit that you use to assign water losses. You keep breaking it down between the categories and subcategories," Mr. Yates explains.

Water utilities historically take a *status quo* view of water loss, Mr. Yates continues. "The term 'unaccounted for water' is part of the ingrained culture and can lead to a lot of excuses for not doing anything about it," he says. "The first thing we needed to do was to ban that term."

The HRWC uses a performance measure called the Infrastructure Leakage Index (ILI) to compare the ratio of actual system losses to unavoidable system losses. Unavoidable system losses are related to the length of piping in the public system, the density of service connections and normal system operating pressure.

A high ILI indicates higher losses in the system. When the HRWC first adopted the IWA methodology, its ILI was quite high at 9.0, so it set a goal to reduce it to 3.0 within six years.

The IWA methodology breaks down into four key strategies:

1. Active leak detection
2. Pressure management
3. Repairs, focusing on speed and quality
4. Asset management

The HRWC conducts system-wide leak detection activities twice a year using noise mapping surveys. Staff use acoustic listening devices on hydrants, valves, etc. to detect sound or vibrations caused by water escaping from pipes under pressure. The noises are tracked and background sounds are filtered out. Finally, maps of the leakage areas are produced using the HRWC's geographic information system (GIS).

The HRWC also employs pressure management techniques to minimize water loss. Using the HRWC's supervisory control and data acquisition (SCADA) system, pressure management activities typically take place overnight, when there is very little demand for water and a natural rise in water pressure.

The SCADA system automatically controls water flow to a particular zone. The HRWC has more than 60 district metered areas (DMAs), and a typical DMA serves about 2,500 customers. Once the flow is reduced, pressure begins to increase and, if there are leaks, they will be easier to detect. "If there are drips in the system, they'll weep less if we use pressure management," says Mr. Yates. "It really works to control background leakage that you may not be able to find otherwise."

Water flow and pressure can also be manipulated during other off-peak hours, such as between 9 a.m. and noon and again between 2 p.m. and 5 p.m., when people are at work.

These techniques help the HRWC speed up repairs. "Once a leak is detected, we send out our leak detection crew to pinpoint the exact location; then we set up a time to do the repairs," says Mr. Yates. "Everyone in the area is notified in advance, and we can then shut the system down quickly."

Other parts of the program include banning water withdrawal from hydrants to reduce the amount of unmetered water removed from the system. Instead, to meet the demand of water haulers and contractors, the HRWC's engineering department co-ordinated the design and construction of automated bulk fill stations. In addition, the HRWC's finance and customer service department carried out a review of all large meters to eliminate any unauthorized water consumption.

The HRWC also adopted an asset management strategy, each year setting aside a certain amount of its operating budget to replace or repair aging and leak-prone water mains.

“Some up-front investments had to be made for additional meters and monitoring devices,” says Mr. Yates. In 2004, capital investments that supported the water accountability program totalled about \$475,000, and an additional \$200,000 will be invested in 2005. “Once we get to an ILI of 3.0, we’ll be saving another five million litres of water each day, so even the investments we have made will be paid back within three to five years.”

HRWC’s water accountability program supports HRM’s strategic plan and sustainability goals. For example, the municipality uses the ILI measurement as a scorecard in its goals to preserve the environment. Using the IWA methodology not only helps to detect and repair leaks early, it also helps cut greenhouse gas emissions because, with reduced water system inputs, water treatment plants use fewer chemicals and less energy.

“Reducing leakage in the distribution system is like doing the laundry—it’s never done,” says Mr. Yates. “It’s easier to get your ILI down in the early years because you’re going after low-hanging fruit. Now we have to buy ladders and get the apples farther up the tree.”

RESULTS

- As of March 31, 2005, the HRWC’s ILI stood at 3.8, an overall reduction of about 27 million litres of water and a cost saving of about \$500,000 annually. HRWC was also the first North American utility to adopt the IWA methodology.
- Reducing the amount of time spent on repairs and minimizing property damage have improved customer service. “Since we’re proactive, it’s more service friendly for customers because they’re warned before the water main is shut down,” says Mr. Yates.
- The HRWC has also reduced its liability. “In terms of paying out claims for property damage caused by water main breaks, the IWA methodology has given us a strong defence in court against claims,” says Mr. Yates.
- Public health is protected. For each month between January 2003 and March 2005, the HRWC surpassed its target for bacteriological safety.

LESSONS LEARNED

- **Involve all departments and personnel.** Staff members from all departments were trained in the IWA methodology early and receive ongoing training as needed. The steering committee initially created to conduct the best practices review continues to meet three or four times per year to prioritize actions. “Interdepartmental co-operation can sometimes be a double-edged sword,” says Mr. Yates. “But when initiatives go well, like they did in this case, it can produce breakthrough results.”
- **Practise what you preach.** Mr. Yates says that it increases the municipality’s and the HRWC’s credibility to show customers that the water utility is doing everything it can for future generations. “Customers recognize that if there is less usage in the distribution system, then we can defer system upgrades to water treatment plants, and that saves them money.”
- **Share results.** Every HRWC facility displays the progress made as a result of the water accountability program on charts so that staff can take ownership of the results. The charts are updated every three months, and the results are shared with HRM council as part of the HRWC’s annual report presentation.

RELATED AND FUTURE INITIATIVES

In 2004, HRM received a \$20-million reinvestment loan from the Green Municipal Fund (GMF) as part of its \$300-million Harbour Solutions project to construct three new sewage treatment plants. The plants will use “DensaDeg” technology, a compact system that combines four wastewater treatment functions into a single unit. Savings from the loan—an estimated \$300,000 to \$400,000 per year—are placed in a green reserve, which finances other environmental protection projects, including water pollution prevention programs.

“Plant operators will need to adjust their processes somewhat, but there hasn’t been much impact on the Harbour Solutions project yet,” says Mr. Yates. “Using the IWA approach will mean, however, that those plants will probably last longer.”

The water accountability program also supports the actions and strategies under Halifax’s Climate SMART initiative (see related case study), an integrated planning approach that addresses the impacts of climate change.

HRM has also received GMF funding for several other projects, including a district energy study, a compost marketing study and Climate SMART, and has been a member of Partners for Climate Protection, jointly supported by FCM and ICLEI-Local Governments for Sustainability, since 1997. As of 2005, HRM was in the midst of completing milestone three.

PARTNERS AND COLLABORATION

Internal

Engineering, plant operations, finance and customer service departments

External

Partners for Climate Protection
Green Municipal Fund

PROMOTIONAL ACTIVITIES

The HRWC distributes a newsletter to customers and includes an annual water quality report in every customer’s normal invoice.

The HRWC water accountability program was profiled on CTV News in September and December 2004 and also in the Winter 2005 edition of InfraNet, the official newsletter of InfraGuide, a network of experts in all areas of municipal infrastructure.

HRWC and the IWA are the co-sponsors of Leakage 2005, a conference that took place in Halifax in September 2005 to bring leading-edge water loss control strategies to the North American market.

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BUILDINGS

TOWN OF STRATFORD, Prince Edward Island

Population: 6,314

Stratford Town Centre

Like many smaller municipalities, Stratford wanted to streamline operations by incorporating multiple uses into its new town hall. The building is now home to all town staff, the offices of the local school board and a recreational centre. Heated and cooled with ground source heat pumps, the building is 38 per cent more efficient than a conventional building, and the town expects to save about \$80,000 in annual energy costs. The location of the facility was chosen to open up a new area of the town for residential development, and 60 new high-density units have already opened adjacent to the town hall.

CITY OF SAINT JOHN, New Brunswick

Population: 69,661

Municipal Energy Efficiency Program (MEEP)

As a model for other New Brunswick communities, Saint John's MEEP aims to cut energy consumption by one-quarter by 2009. It has already completed more than 50 energy retrofits of municipal facilities, including an energy management program for all city arenas. In 2004 alone, the city saved more than \$1 million in energy costs. Looking to the future, the city plans to implement energy management programs at all water and wastewater pumping stations, construct a heat system that uses the Bay of Fundy to heat and cool waterfront buildings and develop a 30-megawatt wind farm.

CITY OF AIRDRIE, Alberta

Population: 20,382

Airdrie City Hall

Airdrie has transformed a vacant grocery store and strip mall into a mini-mall concept, with its city hall as the anchor building. The renovated strip mall also houses the public library and, in future, will allow individual city departments to have their own storefront offices. Using a high green standard, the new city hall incorporated reused and natural materials, natural and energy-efficient lighting, low-flush toilets and energy-saving heating systems. For example, ceiling-mounted hot water radiant panels heat the entire perimeter of the building. The city also reclaimed part of the mall's parking surface for greenspace. Compared to what it had been paying for rented office space, Airdrie expects to save about \$100,000 a year.

CITY OF SPRUCE GROVE, Alberta

Population: 15,983

City of Spruce Grove City Hall Retrofit

Co-operation was the name of the game when Spruce Grove decided to retrofit its city hall to Leadership in Energy and Environmental Design (LEED) standards. More than one-quarter of all city staff was involved—either in managing the construction and operations or providing energy-saving ideas. Some ideas included adding new bicycle racks and change rooms to encourage active transportation and reducing the number of parking spaces. The city recycled half of all construction waste and purchased 20 per cent of all new materials locally. The building uses 100 per cent green power, and energy and water consumption has been cut by 35 and 80 per cent respectively.

CITY OF PORT COQUITLAM, British Columbia

Population: 51,257

Hyde Creek Recreation Centre

Solar heating and an automated control system have rejuvenated the Hyde Creek Recreation Centre. The 42-panel solar system provides heat for the domestic hot water system, reducing the load on the centre's new high-efficiency boiler, and heat pumps reclaim heat from the pool area's warm, humid air. Computerized controls co-ordinate the entire system, transferring heating loads to the more efficient heat pumps when necessary. The system will reduce annual GHG emissions by almost 100 tonnes. Yearly energy savings are estimated at \$30,000, and there will be a four-year payback on upgrades.

CITY OF VANCOUVER, British Columbia

Population: 545,671

Centre for Interactive Research on Sustainability (CIRS)

CIRS is intended to be a living laboratory for sustainability research and is expected to be the most innovative green building in North America. The preliminary design calls for the building to consume 85 per cent less energy than a conventional building of the same size. Other benefits will come from retaining rainwater for domestic use, on-site wastewater treatment and a green roof. The city has partnered with dozens of public, private and non-governmental organizations on this project, many of which will be tenants once CIRS is built. These partners will conduct research into technical solutions for buildings and will also collaborate on developing public policy to promote sustainable urban development. Construction is set to begin in 2005–2006.

Energy/Renewable Energy

CITY OF BURLINGTON, Ontario

Population: 150,836

Environmental Management Plan (EMP)

Burlington's EMP concentrates on improving energy-efficiency in municipal facilities and provides information and support to city staff who are responsible for these operations. Workshops identified which best practices city staff already use and which new practices they should adopt. Emissions from the transportation sector were specifically highlighted as a problem area, so the city implemented an idling control policy, notifying all staff members who have access to municipal vehicles. The EMP also spurred Burlington to perform a city-wide review of all operations. The city will also use it as a springboard to develop a more comprehensive corporate GHG reduction plan, as well as a greenspace strategy for its public lands.

Solid Waste

CITY OF BARRIE, Ontario

Population: 103,710

Barrie Spring Into Clean!

The 2nd annual Barrie Spring Into Clean! campaign evolved from a waterfront clean-up that attracted about 150 participants in 2003, to a city-wide event that drew thousands of people in 2004. Despite cold, wet weather, students, business owners and residents took part in the two-day campaign, cleaning up parks, greenspaces, trails, residential and waterfront areas throughout Barrie. Almost 12,000 students participated, picking up litter from school yards and parks. Several local retailers also took part, donating clean-up kits, promotional cards and food for community events.

CITY OF BARRIE, Ontario

Population: 103,710

Fix it Up, Wear it Out, Make it Do, or Do Without!

A high number of requests for waste management presentations at schools prompted Barrie's environmental waste management staff to launch the Fix it Up program, a resource for elementary school teachers. The program, which includes an introductory workshop, workbooks, a graphics CD-ROM, fact sheets and a lending library, meets all Province of Ontario curriculum guidelines. Fix it Up has turned what could have been a negative—not enough staff members to make presentations to students—into a positive—increasing the community's knowledge about waste reduction. The program also supports the city's goal to reduce waste by 60 per cent by 2008.

CITY OF PICKERING, Ontario

Population: 87,139

Dog Waste Diversion Program

Pickering has taken a traditional “poop & scoop” dog waste program one step further. The city set up diversion stations in five city parks, stocked with biodegradable bags that pet owners use to collect their dogs' waste. The city picks up all the waste weekly and sends it to a farm where it is combined with manure for agricultural use. Pickering is the first Ontario municipality to try this type of program. Based on the results of the first six months, it will divert more than 2.5 tonnes of waste from landfill. The program also helps reduce the risk of surface water pollution from dog feces left on the ground in city parks.

CITY OF TORONTO, Ontario

Population: 2,481,494; metropolitan area pop.: 4,682,897

Green Bin Program

Toronto's Green Bin Program exceeded the city's goal of 30 per cent waste diversion by 2003 and is well on its way to meeting the city's 2006 target of 60 per cent waste diversion. Almost 400,000 homes in the Greater Toronto Area collect household food waste, paper towels, diapers and animal waste and litter in green bins that the city picks up weekly and takes to an anaerobic digestion facility. Each tonne diverted saves the city \$52 in disposal costs, which offsets the cost of the program. In 2003, participating residents diverted 287,000 tonnes of organic waste. The city is also studying whether methane can be captured at the facility to generate electricity.

TOWN OF NEEPAWA, Manitoba

Population: 12,411; combined population

Evergreen Environmental Technologies

Evergreen Environmental Technologies is the result of eight municipalities coming together to address regional waste management. A new waste facility, which opened in 2004, is the only one of its kind in Manitoba to use a state-of-the-art waste compactor, eliminating site litter and odours. The site also includes recycling and hazardous waste depots, a compost facility and pesticide container. Co-ordinating waste management at one regional landfill has eliminated groundwater contamination concerns and reduced the cost of transporting waste. By working together, all the partners will reduce their long-term costs for waste disposal while providing a first-rate facility for their residents.

CITY OF BURNABY, British Columbia

Population: 193,954

Burnaby Environmental Centre of Excellence for Waste Reduction

One small recycling depot in Burnaby has been transformed into an Environmental Centre of Excellence that includes multi-stream recycling, hazardous waste collection, a compost demonstration garden and a composter and rain barrel sales centre. An on-site environmental classroom provides several educational initiatives, including Cut the Garbage, a waste reduction program offered to elementary school students. By 2003, the city had reduced its annual waste by 42 per cent and diverted more than 8,000 tonnes of recyclable material, which, if landfilled, would have cost the city more than \$500,000 in disposal fees.

CITY OF CHILLIWACK, British Columbia

Population: 62,927

Single Stream Recycling Curbside Collection Program

In less than a year, Chilliwack increased its recycling rate from 13 to 30 per cent by replacing its voluntary recycling system with a user-pay curbside recycling program. The city has combined all recyclable material, making it convenient for residents to participate. Recognizing that seniors tend to generate less waste, Chilliwack provides a Senior's Service, which allows residents 65 and older to request bi-weekly, instead of weekly, collection at a lower rate. The city pays less in tipping fees and has decommissioned several recycling depots for a total savings of about \$330,000 a year.

CITY OF PORT COQUITLAM, British Columbia

Population: 51,257

Automated Solid Waste Collection Program

Port Coquitlam initiated an automated waste collection system for all three waste streams—garbage, recycling and organics. Residents deposit their waste, recyclables and organic waste into separate carts, which are then picked up by a truck equipped with an articulated hydraulic arm. The program has helped the city achieve a 50 per cent diversion rate well ahead of schedule, with the weight of organics up 74 per cent and recyclable weight up 46 per cent. The program has saved costs in several areas, allowing the city to reduce residential taxes. For example, there were fewer workplace injuries in 2004 than in 2003, and tipping fees were cut by about \$50,000.

Sustainable Community Planning

CITY OF BOISBRIAND, Quebec

Population: 26,729

Salix in Boisbriand

Boisbriand is conducting a series of pilot projects using Salix, commonly known as basket willow, to reduce noise and air pollution, stabilize banks, reduce surface runoff and purify leachate water. Salix grows up to six metres high and can remove up to 10 tonnes of carbon dioxide per year. In its first pilot project, Boisbriand built a Salix test barrier at the intersection of two highways in a residential area. This reduced noise by 10 decibels and was less expensive to build than a concrete wall. Costs for professional fees are lower as a result of the city's partnership with the Montreal Botanical Garden, and, since the plant is grown locally, it costs less to purchase.

CITY OF LAVAL, Quebec

Population: 343,005

Remediation Program for Snow Disposal Sites

Laval completely refitted two of its seven snow disposal sites to comply with provincial environmental regulations and enhance groundwater protection. It resurfaced the Dagenais site using a synthetic, impermeable membrane for the first time. The city also uses this site for leaf and yard waste composting in summer. Laval outfitted its St. Rose site with a Stormceptor unit, which recovers floating contaminants and treats melt water on-site. The city also installed a network of water table sampling wells and regularly monitors groundwater quality. To offset the renovation costs, the city charges private-sector snow removal contractors for use of the municipal sites.

CITY OF LONGUEUIL, Quebec

Population: 128,106

Municipal Assets and Maintenance Program (MAMP)

When Longueuil was amalgamated in 2002, it did not have the tools to manage its infrastructure assets. The MAMP is a comprehensive inventory of all assets—roads, sewers and water supply pipes—and a management plan. The city first compiled all infrastructure information into a database, then analyzed the results and prepared economic projections. Finally, the city integrated the information into its decision-making process so that, for example, when ranking municipal assets that have several infrastructure types, the city can prioritize the work that needs to be done. Longueuil believes that the MAMP will ensure maximum return on each dollar invested since it now takes into account all infrastructure systems and opportunities for action.

QUEBEC CITY, Quebec

Population: 169,076

Greenhouse Gas (GHG) Emission Reduction Program

The GHG Emission Reduction Plan aims to reduce emissions by more than 20 per cent by 2010. Beginning with its waste incinerator, which generates steam power for a local paper mill, the city has initiated a project to capture carbon dioxide using a bioreactor that will transform the gas into calcium bicarbonate, which has a number of industrial and commercial uses. The city is also capturing and using landfill gas. It estimates that these two projects combined will reduce GHG emissions by more than 50,000 tonnes of equivalent carbon dioxide. Other projects under the plan include a green fleet initiative, which incorporates energy-efficient driver training and the use of alternative fuels, and a computerized management system to control energy use in all city facilities.

CITY OF OTTAWA, Ontario

Population: 774,072

Ottawa 20/20 Growth Management Strategy

After amalgamation, the City of Ottawa integrated five strategic plans into one, known as Ottawa 20/20. During a two-year public consultation process, the city employed a number of initiatives to gain residents' input, including a Smart Growth Summit, online surveys, Web casts and special sessions for young adults, as well as traditional workshops and open houses. Some of Ottawa 20/20's key features include an emphasis on higher-density development, increased investment in public transit and diversifying the local economy. During the Ottawa 20/20 process, city officials recognized the need for even longer-term planning and are now engaged in a continuous planning cycle that projects 50 to 100 years in the future.

TOWN OF RICHMOND HILL, Ontario

Population: 132,030

Clean Air Initiatives Local Action Plan

Richmond Hill's Clean Air Plan includes both corporate and community actions to cut GHG emissions and save energy costs. For example, the town linked eight buildings to a computerized system and now monitors them for energy efficiency from a central location, a move that saves about \$12,000 a year in staff costs. The town is also a member of the Mayor's Megawatt Challenge, a campaign to collectively reduce one megawatt of electricity from 12 participating municipalities. Energy-efficiency measures implemented at its town hall cut electricity by 18 per cent of the Challenge's collective target, making it the most efficient town hall of all participants. To date, corporate energy savings total more than \$400,000 annually.



2005 Awards Submissions

CITY OF TORONTO, Ontario

Population: 2,481,494; metropolitan area pop.: 4,682,897

ReActivate TO!

ReActivate TO! is an ambitious 15-year plan to make Toronto a leader in environmental stewardship. Thirty recommendations address issues affecting city parks and natural areas, some of which include planting 16,000 trees annually, extending and protecting all natural areas, ensuring that city staff have the tools they need to get the job done and educating the public about issues like waste management, pesticides and pest infestations. The program links to the city's official plan and other initiatives, such as the smog alert and bike plans. More than 6,000 people—staff, residents and other stakeholders—participated in the consultation process, and city council has now adopted a parks, forestry and recreation strategic plan, which is the key plan under ReActivate TO!

REGIONAL MUNICIPALITY OF NIAGARA, Ontario

Population: 410,574

Glenridge Quarry Naturalization Site

The Regional Municipality of Niagara took an old landfill and quarry and turned it into a vibrant public space. Central Park, as it is now known, comes complete with trails, an education centre, a weather station and a boardwalk. All stormwater is managed overland, and permeable paving systems and materials promote groundwater percolation. The municipality constructed habitat for target species of fish and birds, and Brock University is now conducting a biological diversity research project at the site. A cogeneration facility will also use the landfill gas for electricity generation to power the region's Shaver Hospital.

CITY OF REGINA, Saskatchewan

Population: 178,225

Road to a Plan: The Development of Regina's Community Greenhouse Gas Reduction Plan

As part of its commitment to the Partners for Climate Protection Program, Regina has crafted a community-wide GHG reduction plan. Citizens and community and business groups came together to form the Green Ribbon Committee (GRC), which was divided into different community sectors by subcommittee. Members on each subcommittee developed a series of short-, medium- and long-term objectives. For example, the Green Book is a short-term project providing energy tips to residents. Regina is also implementing the GRC as part of its participation in the Government of Canada's One-Tonne Challenge.

CITY OF AIRDRIE, Alberta

Population: 20,382

Airdrie City Plan

Airdrie's city plan will help this growing municipality use its land resources more efficiently. The city amended land-use bylaws and regulatory frameworks and consulted citizens' groups and the private sector to develop new policies that consider economic, environmental and social factors. New neighbourhood structure plans, which require a mix of housing types, have increased densities from fewer than two units per hectare to almost three units per hectare, and new development applications call for more transit and pedestrian amenities. Other areas of the plan that affect growth, which the city is now actively pursuing, include stormwater management and the need for more affordable housing.

CITY OF CALGARY, Alberta

Population: 878,866

The Seton Plan

The Seton Plan outlines a 150-hectare development for a vibrant live-work-play community in Calgary's southeast end. Working with the developer, the city developed a land-use plan that incorporates a high-density, mixed-use town centre, featuring a major medical facility, with excellent access to transit and pedestrian amenities, such as open plazas and greenspaces. Providing employment opportunities, together with housing, shopping and recreational areas, achieves a number of city goals: it reduces pressure on the city's transit system, encourages sustainable modes of transportation and eliminates or defers the need to build new roads or transit infrastructure. The plan will also serve as a model for future urban development in Calgary.

CITY OF FORT SASKATCHEWAN, Alberta

Population: 13,121

Fort Saskatchewan Urban Forest Project

More than 200,000 vehicles travel along Fort Saskatchewan's freeway corridor every day. In an effort to cut air and noise pollution over the next 20 years, volunteers will plant more than 100,000 native trees and shrubs along the corridor. This new urban forest will create recreational trails as well as a natural learning environment for students. The city is working with Tree Canada to provide carbon credits to their partners, including Shell Energy Canada and Dow Chemical. Ultimately, this natural buffer will cut carbon dioxide emissions and lead to cleaner local air.

CITY OF BURNABY, British Columbia

Population: 193,954

UniverCity Highlands Neighbourhood

When Simon Fraser University opened its doors in 1965, a residential community was envisioned on Burnaby Mountain. Today, UniverCity is setting the standard for sustainable community practices. Residents occupy 360 units in this transit-oriented, high-density development, and its first mixed-use building uses geothermal energy for heating and cooling. Under the planning framework, more than 300 hectares of environmentally sensitive forest was transferred to the city as a park. Its stormwater management practices, which include green roofs, permeable surfaces and on-site infiltration systems, have also formed the basis for B.C.'s proposed Stormwater Planning Guidebook.

CITY OF RICHMOND, British Columbia

Population: 9,267

Richmond's Energy Management System (EMS)

Richmond's EMS covers a host of energy-related initiatives from green buildings and development standards that encourage high-density development, to municipal and community energy management and water conservation programs. Introducing hybrid gas-electric cars into its municipal fleet has cut operating costs by one-third. The city is also certified by BC Hydro's Power Smart program. Its community initiatives included compact fluorescent light bulb giveaways and an awareness training program for city staff. This has helped cut electricity costs by \$500,000 annually and GHG emissions by more than 1,500 tonnes annually.

DISTRICT OF LAKE COUNTRY, British Columbia

Population: 9,267

Mayor's Task Force on Agriculture

The Mayor's Task Force on Agriculture is helping members of the district's agricultural community expand their businesses with a variety of tools and information. Industry experts, farmers, municipal staff, agricultural associations and provincial departments all took part in the task force. Measures include a forum and workshops that highlight new agribusiness opportunities and a mentoring system that partners farmers with industry experts, allowing them to obtain the best and latest information, in person or online. Municipal staff reviewed the district's policies and adjusted regulations or wrote new policy to remove the most common barriers. The district is also in discussions with other jurisdictions on how they can change or unify their collective policies.

RESORT MUNICIPALITY OF WHISTLER, British Columbia

Population: 8,896

Integrated Energy, Air Quality and Greenhouse Gas Management Plan (IEP)

Whistler's IEP integrates energy and GHG reductions planning with air quality. The IEP uses the internationally renowned science-based framework, The Natural Step, to evaluate every energy infrastructure decision. Whistler is now moving towards developing a regional air quality plan with other municipalities, First Nations and industry. Some of the initiatives the municipality will undertake as a result of the IEP include improving its fleet efficiency, switching to natural gas over propane, implementing renewable energy projects and increasing its purchase of green electricity. Whistler's IEP also meets milestone three—developing a local action plan—of the Partners for Climate Protection Program.

Sustainable Transportation

CITY OF MONCTON, New Brunswick

Population: 61,046

Active Transportation Plan

Moncton's Active Transportation Plan was designed with the city's future health, active living and transportation needs in mind. Founded almost entirely on public input, the city identified a number of interconnected measures that can reduce automobile traffic. For example, residents identified their priority destinations within the city, which will help staff plan for new roads, bus routes and trails. Residents also placed emphasis on educating cyclists and motorists first, so that little or no changes to the existing infrastructure—such as bike lanes—would be necessary. Although still in its early stages, this long-term plan has been integrated in all city departments, including engineering, planning and transportation.

TOWN OF MARKHAM, Ontario

Population: 208,615

Transportation Demand Management

With its commuter options program, the Town of Markham has introduced transportation demand measures for its employees. The program includes an online carpool matching service with preferred parking for carpoolers, new facilities for cyclists and transit support programs. A levy of town-wide development charges funds these measures. The

town has also recruited business leaders to participate in transportation management associations (TMAs), which bring the public and private sector together to offer a range of commuter travel options. The Markham TMAs will also form part of the Smart Commute Association, a TMA for the entire Greater Toronto Area.

REGIONAL MUNICIPALITY OF YORK, Ontario

Population: 729,254

Save-A-Life Road Safety Program

In York Region, health care costs resulting from traffic collision injuries total more than \$4 million each year. In response to community concerns, the region formed the Traffic Safety Strategy Committee to provide a multi-disciplinary approach to road safety. The Save-A-Life program uses statistical information to identify areas of concern and responds to each with education and police enforcement programs. For example, York reviewed problem intersections and, in some cases, improved road lanes or modified the timing of traffic signals. It has also installed red-light cameras at 12 of these intersections. Another initiative, Operation Winter Blitz, monitors winter driving conditions and advises motorists through radio advertisements.

Water

CITY OF GUELPH, Ontario

Population: 106,170

WaterWISE Guelph

Guelph's WaterWISE public education program uses several initiatives to get its message across, including a green roof gardening project, a rainwater harvesting demonstration and a toilet rebate program. The rebate program has processed more than 900 rebates since it began in 2003 and motivated 135 residents to have a full energy audit of their homes done. Twelve youth were hired for the Guelph Water Project, which promotes water conservation at community events, and the city also helped the local school board install water-efficient upgrades. Its outside water use program cut summertime water use in 2003 and 2004 by a total of 200,000 cubic metres by encouraging people to adapt their water use according to the current water supply.

CITY OF HAMILTON, Ontario

Population: 490,268

Rennie Street and Brampton Street Landfill Sites Erosion Control and Leachate Management

Hamilton had historically used the Red Hill Creek floodplain as a landfill, but in recent years leachate from the closed site had been leaking into the creek. The city needed to take immediate measures to protect groundwater and address residents' concerns. It covered the landfill and plugged storm sewers to direct surface water to a stormwater management ditch. It also stabilized the steep landfill slopes and installed a leachate collector system. The reconstruction followed the natural design of the creek so that seepage is directed to the leachate collector. Discharge of leachate has stopped completely, and the city continues to regularly monitor ground and surface water.



2005 Awards Submissions

CITY OF THUNDER BAY, Ontario

Population: 109,016

Upgrade to Water Supply

More than a decade of planning has resulted in upgrades to Thunder Bay's water supply facilities. Concurrently with its award-winning Pollution Prevention and Control Plan (see 2004 Best Practices Guide), the city expanded its treatment plant to include using membranes to remove parasites and viruses, converting the chlorine disinfection process to hypochlorite, which reduces the risk of chlorine spills, and introducing a computerized monitoring system to optimize the treatment process. The plant's heating systems are powered by natural gas instead of electricity, reducing pollution from coal-fired power generating stations. The city also launched a public education campaign, which helped to reduce water demand by 22 per cent between 1999 and 2002.

REGIONAL MUNICIPALITY OF NIAGARA, Ontario

Population: 410,574

Niagara Children's Water Festival

More than 5,000 students, teachers and volunteers participate in Niagara's annual Children's Water Festival, an event that promotes smart water use and conservation. Niagara has a complex watershed—with more than 75 waterways, including Lake Ontario, Lake Erie and numerous wetlands, as well as the Welland Canal and feeder canals for hydropower generation—so the importance of water to the region is substantial. Organizers contact schools ahead of time, provide them with a resource kit and organize student activities at the festival. The region believes that by educating children today, it will protect its future water supply and reduce the need for capital upgrades.

REGIONAL MUNICIPALITY OF PEEL, Ontario

Population: 988,948

Peel Children's Water Festival

The Peel Children's Water Festival offers more than 60 water-themed activities to the 1,000 students who attend every year. New to the festival is the Peel EcoFair, which helps students make the link between environmental actions and the need to conserve and protect Peel's watersheds. On the final day, the festival opens its doors to the general public. High school students are trained to facilitate many of the festival's activities. This provides them with a mentoring opportunity and gives them credit toward their Province of Ontario curriculum community-hour requirements.

CITY OF CALGARY, Alberta

Population: 878,866

194th Avenue Roads Maintenance Depot

The 194th Avenue depot minimizes the chances of road salt entering sensitive waterways, such as wetlands, ponds and lakes. (Environment Canada declared road salt a toxic substance in 2000.) The city built an enclosed tent for salt storage atop interlocking concrete blocks, under which a PVC liner prevents moisture from seeping in and around the tent base. Calcium chloride brine (a liquid solution used to de-ice roads) is contained in a separate tank, also built atop an impermeable surface. In addition, a containment pond stops any surface runoff and helps to protect a wetland adjacent to the depot.

TOWN OF DRAYTON VALLEY, Alberta

Population: 5,801

Solar Bee Pond Circulators for Wastewater Treatment Facility

Drayton Valley is the first Western Canadian municipality to use solar energy to treat wastewater. The town had been using aerators that ran centrifugal blowers to bring oxygen into wastewater lagoons, but the high cost of electricity to run the blowers had become a concern. Solar Bee pond circulators float on top of the lagoons, harness solar energy and produce electricity to run water circulation machines. Conservative estimates show the system will reduce more than 2,000 tonnes of greenhouse gas (GHG) emissions each year, and, with annual energy savings of \$130,000, it will pay for itself within four years.

TOWNSHIP OF LANGLEY, British Columbia

Population: 86,896

Water Wise Public Education Program

Door-to-door public education has raised awareness of water issues in Langley, a community that relies heavily on groundwater for its drinking water supply. Water Wise volunteers, trained in groundwater basics, visit homeowners, providing customized information about water conservation. They have contacted more than 4,500 households since the program began, about one-third of which have reduced chemical and pesticide use on their property and had their septic systems pumped. Feedback from respondents is entered into a database and linked to the township's geographic information system, which will in turn help guide future program planning and water resource development.

CITY OF WHITEHORSE, Yukon

Population: 19,058

Watershed Management Plan (WMP)

Whitehorse's WMP uses a risk management framework to pinpoint activities or land uses that could contaminate the city's water supply. It is one of the first studies into land use-planning issues specifically in the context of watershed protection for a northern community's drinking water. Recommendations include increasing and restoring riparian areas, protecting well water and groundwater recharge areas and reducing the use of fertilizers and pesticides. One of the 14 recommendations is a planned relocation of the float plane refuelling facilities on Schwatka Lake, which would reduce the risk of fuel spills.