

Community Energy Planning Mission

Alberta, 2007

Program

Final
July 24, 2007



FCM is pleased to acknowledge the generous support of the following sponsors of the 2007 Community Energy Planning Mission: Alberta Association of Municipal Districts and Counties, Alberta Urban Municipalities Association, Climate Change Central, SAIC Canada, FVB Energy and Jacques Whitford Limited.

**Message from the Honourable Guy Boutilier,
Minister of International, Intergovernmental and
Aboriginal Relations**

On behalf of Premier Stelmach and the Government of Alberta, I extend a very warm welcome to the delegates of the Federation of Canadian Municipalities. I am pleased that your visit is centred on various energy efficiency and sustainability projects across our province. Alberta is proud of the leadership role we have taken in this field, and I am sure you will find your visit rewarding.

Best wishes and enjoy your time in Alberta.

Honourable Guy Boutilier
30 July 2007



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**Federation of Canadian Municipalities
Community Energy Planning Mission to Alberta
July 28-August 3, 2007**

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Saturday July 28

Delegates arrive in Edmonton

Hotel: The Westin Edmonton
10135 -100th Street
Edmonton, Alberta
T5J 0N7

Tel: 780-426-3636

Sunday July 29

13:00 – 15:30 First Meeting of the Delegation
Location: Strathcona Room
The Westin Edmonton

15:30 – 16:00 Walk to Edmonton City Hall (15 minute walk)

16:00 – 18:00 Mayor Stephen Mandel
Welcoming address and reception
City of Edmonton
Heritage Room

18:00 - Return to hotel

Monday July 30

City of Edmonton

Day at a glance

- The City of Edmonton's CO₂RE Project
- Riverdale Net Zero Project
- Millwoods Police Station – LEED Gold Building
- Edmonton Waste Management Centre of Excellence – municipal solid waste management

07:30 Depart Hotel

07:30 – 08:00 Walk to Edmonton City Hall (5 minute walk)

08:00 – 10:00 The City of Edmonton's CO₂RE Project
Riverdale Net Zero Project

City of Edmonton's Carbon Dioxide Reduction Edmonton (CO₂RE) Program

Presentation: The City of Edmonton's CO₂RE Project
Speaker: **Brenda Osborne**, CO₂RE Program Manager

Launched in 2004, the City of Edmonton's community-wide greenhouse gas emission reduction strategy (CO₂RE) is one of the most comprehensive, community-based Greenhouse Gas (GHG) emission reduction plans in North America and a 2005 FCM-CH2M HILL Sustainability Community award winner.

The strategy, developed by a multi-sector CO₂RE Team, attributes much of its success to establishing community business partnerships to develop promotional materials and incentives that encourage citizens reduce their GHG emissions.

This presentation will describe how CO₂RE was formed, its key education and energy efficiency incentive programs, results to date and strategic priorities for achieving significant greenhouse gas emission reductions across all sectors of the community.

For details see: www.co2re.ca

FCM's **Green Municipal Fund (GMF)** granted the City of Edmonton \$100,000 in 2001/2002 to support their community-wide greenhouse gas emission reduction strategy.

GMEF 3070 - Edmonton's Community-Wide Greenhouse Gas Emissions

GMF Category: Sustainable Community Planning/Integrated

Municipality: City of Edmonton

Total Project Value: \$200,000.00

Population: 616,306

Grant Amount: \$100,000.00

Project Contact: Mark Brostrom,
Environmental Engineer (780) 496-5992

FY Approved: 2002 - 2003

This is a key step in a multi-year process to implement a GHG emission reduction community action plan in five designated sectors (community leadership, industrial, commercial, institutional and residential). The \$100,000 GMEF funding of this \$200,000 study will inventory GHG reduction initiatives to develop a sector-specific project implementation plan for community action.

DOWNLOAD Report

Riverdale Net Zero Project

Presentation: Riverdale Net Zero Project
 Speaker: **Gordon Howell**, Howell-Mayhew Engineering

Site Visit: Riverdale Net Zero Project
 Site Visit Guide: **Peter Amerongen**, Habitat Studio & Workshop Ltd.

The Riverdale NetZero Project is one of the winners of Canada Mortgage and Housing's (CMHC) Equilibrium Housing competition. The Equilibrium projects demonstrate the feasibility of building housing in Canada that produces as much energy as it consumes in the course of a year. This next generation of houses will also demonstrate that is possible to create exceptionally healthy living environments in a very sustainable manner.

Net zero energy is achieved by first aggressively reducing the house energy needs for space heating, domestic hot water, and lighting and appliances. It is then possible to meet all of the house energy needs with solar energy.

The Riverdale Net Zero Project, a duplex close to downtown in Edmonton's Saskatchewan River valley, is the most northerly and the farthest along of any of the 12 Equilibrium projects. The house is framed and it is expected that the renewable energy systems will be partially installed. The developer, Peter Amerongen of Habitat Studio & Workshop Ltd. will give short power point presentation and then a guided tour.

For details see: www.riverdalenetzero.ca

10:15 – 10:30 **Travel to Millwoods Police Station and to the Edmonton Waste Management Centre via a hybrid bus provided by Edmonton Transit**

Edmonton Transit Technology

Presentation: Edmonton Transit Technology
 Speaker: **Tim Hoskins**, Training Instructor
 Mobile equipment Services

City Council directed the "Hybrid Bus Test Program" to investigate the most current propulsion technology available for Edmonton's transit bus fleet. The evaluation project is supported by the University of Alberta and Checkel Engineering, and consists of testing hybrid technology, electric trolley and the latest clean diesel engine.

Hybrids transform the braking energy into available propulsion energy by means of electric battery storage. Five bus types are being tested in the project. The project will be completed in the spring of 2008, with recommendations on benefits and costs for the

facilities. Currently under construction is a major electronics waste recycling facility that will complement Alberta's two-year-old electronics recycling legislation.

With offices and research facilities at the Waste Management Centre, the Edmonton Waste Management Centre of Excellence has objectives to develop, commercialize and provide training in sustainable waste management technologies. The Centre of Excellence is a unique public-private partnership now in its third year of operation. Through its contract partner, Sand Recycling Ltd., the Centre is providing a service to the City of Edmonton to recycle its used winter street sand while at the same time refining and improving the technology developed for this program with assistance from FCM's Green Municipal Fund. (See site visit, Wednesday, August 1)

For more details see: www.ewmce.com

Driving and walking tour will include:

- Recycling plant
- Composting plant
- Electronics recycling facility
- Landfill gas recycling facility
- Leachate Plant
- R&D building.

15:00 – 15:20 Coffee break, Administration Building

15:20 - 15:40 Edmonton's Waste Management System

Presentation: An overview of Edmonton's Waste Management Centre of Excellence, its waste management system, how the components complement each other, and plans for the future.

Speaker: **Roy Neehall**, Branch Manager

15:40 – 16:00 Edmonton's Municipal Solid Waste Gasification Project

Presentation: The presentation will provide an overview of the process that has led to Edmonton's choosing to implement gasification technology, a discussion of the technology itself and project implementation plans for the future.

Speaker: **Jim Schubert**, Manager, Major Capital Projects
Edmonton Waste Management Branch

16:00 – 16:30 Questions and Answers

16:30 – 17:00 Return to Hotel

Tuesday July 31

Nisku, Strathcona County, Town of Vegreville

Day at a glance

- AAMD&C Headquarters – Integrated Community Sustainability Plans, Sustainable Building
- Strathcona County – Sustainable Community Planning, District Energy System
- Alberta Research Council and Highmark Renewables Inc. – Biofuels, Biogas to Electricity Generation

08:00	Depart Hotel
08:00 – 08:30	Travel to Alberta Association of Municipal Districts and Counties' (AAMD&C) Headquarters, Nisku, AB
08:30 – 10:00	AAMD&C Presentation and Building Tour

Alberta Association of Municipal Districts and Counties

Presentation: AAMD&C's Integrated Community Sustainable Plans Toolkit
 Speaker: **Jill Pelton**, Policy Analyst

Site Visit: AAMD&C Headquarters
 Site Visit Guides: **Gerald Rhodes**, Executive Director, AAMD&C
Mark Cuglietta, Convergry
Larry Peters, React Energy

The AAMDC has developed an interactive toolkit to offer members assistance to complete their Integrated Community Sustainability Plans (ICSP) as required by the New Deal for Cities and Communities. Municipalities are provided with a guided process to identify their current situation and future vision and determine how they will close the gap. This tool enables municipalities to determine how their goals relate to the environmental, economic, social and cultural aspects of their communities. This presentation will provide a demonstration of the AAMDC ICSP Toolkit.

Delegates will be given a tour of the AAMDC building, including presentations of the various green energy features such as geothermal technology and solar energy panels.

FCM's **Green Municipal Fund** provided a \$350,000 grant to support the Alberta Solar Municipal Showcase, a field test involving the installation of up to 25 kilowatts (kW) of grid-connected solar photovoltaic (PV) systems on community buildings across the province in order to study the effectiveness of a variety of methods of promoting and deploying solar PV systems into communities. The AAMD&C building houses one of these systems.

GMF 7292 Renewable Energy - Field Test - Alberta Solar

GMF Category: Energy

Municipality: City of Medicine Hat, Alberta

Total Project Value: \$700,000.00

Population: 51,000

Grant Amount: \$350,000.00

Project Contact: Mr. Simon Knight, Vice President (780) 408-4581

FY Approved: 2005 - 2006

This field test involves the installation of up to 25 kilowatts (kW) of grid-connected solar photovoltaic (PV) systems on community buildings across the province in order to study the effectiveness of a variety of methods of promoting and deploying solar PV systems into communities. Small (1-2 kW) grid-connected systems will be installed on residential, institutional and commercial buildings as a means of growing a decentralized renewable energy supply option for electricity consumers in Alberta. By situating the test systems in a mix of urban and rural communities, the study will demonstrate how the technology can be deployed under differing circumstances. By identifying successful methods and addressing barriers encountered, the Municipal Showcase will help to demystify the photovoltaic deployment process and encourage other interested communities and individuals to install grid-connected solar PV systems. Prior to installing systems in each of the participating communities, information workshops on installing and operating PV systems will be held for local inspectors, municipal government personnel, general public and students. It is estimated that the Municipal Showcase will result in annual electricity generation of 35,040 kWh and CO₂e emission reductions of 30.2 tonnes per year.

10:00 – 10:30

Travel to Sherwood Park

Strathcona County

10:30- 10:45

Welcome Delegates
Mayor **Cathy Olesen**

10:45 - 12:00

Concurrent Site Visits

Centre in the Park (CITP)

Site Visit Guides: **Rudy Koop**, Project Manager, CITP
Bard Golightly, Christensen Developments

This site visit will consist of a walk through Strathcona County's first comprehensive sustainable community development. Centre in the Park is a multi-use area being developed in Sherwood Park over the next five to seven years. It will include residential buildings, retail services, walkways, a central plaza and public spaces. The vision: to create a centre for Strathcona County within the heart of Sherwood Park.

FCM's **Green Municipal Fund** granted Strathcona County \$55,000 in funding in 2004/2005 to do a technical, environmental, community and financial analysis on the feasibility of constructing and operating a district energy system for Centre in the Park, a town centre being developed in the hamlet of Sherwood Park. Centre in the Park is being developed as an integrated community with multiple residential dwellings, offices, shops in an area of existing schools and municipal buildings.

GMEF 5344 Community District Energy System Feasibility Study

GMF Category: Energy

Municipality: Strathcona County

Total Project Value: \$110,000.00

Population: 64,176

Grant Amount: \$55,000.00

Project Contact: Mr. Diehl Townsley, Manager
of Facility Services, Strathcona County (780)
464-8408

FY Approved: 2004 - 2005

Centre in the Park (CITP) is a high density, integrated town centre being developed in the Strathcona County hamlet of Sherwood Park. It is adjacent to a petro-chemical industrial park that has a substantial amount of waste steam/heat and possibly hydrogen that could be used to generate electricity. This study will scope out the possibility of installing a district energy system (DES) with the potential to link not only new commercial and residential buildings but also seven or more existing school and municipal buildings that are currently in the planning stages of replacing their heating and cooling systems. The proposed DES has the potential to reduce greenhouse gases (GHG) by 1,400 tonnes per year over current individual building heating systems.

[DOWNLOAD](#) Report

Community Energy Centre

Site Visit Guides: **Jeff Hutton**, Manager, Utilities
Diehl Townsley, Manager, Facility Services

12:00 – 13:00

Lunch Hosted by the Canadian District Energy Association

Canadian District Energy Association

Presentation: **Jim Manson**, Vice-Chair, CDEA

Lunch MC: **Gerry Gabinet**, Manager Economic Development and Tourism

13:00 – 13:20

Presentation on Emerald Hills Urban Village

Emerald Hills Urban Village

Speaker: **Peter Vana**, Manager, Planning & Development Services

FCM's **Green Municipal Fund** provided a \$350,000 grant to Strathcona County to plan the Emerald Hills Urban Village.

GMF 9030 Emerald Hills Urban Village -Planning Project

GMF Category: Sustainable Community Planning/Integrated

Municipality: Strathcona County, Alberta

Total Project Value: \$1,046,000.00

Population: 15,000

Grant Amount: \$350,000.00

Project Contact: Mr. Bard Golightly,
Development Project Manager, Christenson
Developments Ltd., (780) 431-5180

FY Approved: 2006 - 2007

Building upon the success of its Center-in-the-Park sustainable town centre project, Strathcona County will collaborate with Christenson Developments Ltd on the Emerald Hills Urban Village project, a sustainable urban neighborhood. The developer will use the Sustainable Urban Neighborhood Holistic Planning Process (SUN HPP), endorsed by Natural Resources Canada. The SUN HPP is a seven phase planning methodology for developing a complete and integrated implementation plan for achieving neighbourhood-scale sustainability. It takes a systems approach to sustainable community development by integrating social, environmental, economic, and cultural strategies into the planning process. It provides also a methodology for anticipating potential barriers and conflicts. Fostering sustainable behavior through community-based social marketing (CBSM) techniques is integral to the SUN HPP approach. The project's goal is to demonstrate that demand-side approaches to municipal services and infrastructure result in smaller scale and lower costs than current development patterns and can foster long-term sustainable lifestyles. An important result will be an increased awareness by all stakeholders of the economic, environmental and social benefits of this type of growth. A toolkit of guiding ideas, institutional frameworks, engagement processes and practical tools for developers and municipal planners will be produced.

13:20 – 13:30 **Strathcona County Wrap Up**

Speaker: **Ken Lesniak**, Councillor

13:30 – 14:30 Travel to Vegreville

14:30 – 17:00 **Presentations and Site Visit Alberta Research Council and Highmark Renewables Inc.**

Alberta Research Council

Presentation: Possibilities, Trends and Issues of Advanced Landfill Gas Treatment Technologies

Speaker: **Dr. Christian Felske**
Research Scientist- Solid Waste Management
Alberta Research Council

Current trends and activities with regards to landfill gas management (utilization and treatment) will be discussed and assessed. That includes theoretical considerations and goals and more importantly practicability currently tested in field-scale and full-scale application. Two ongoing FCM projects with Alberta cities and municipalities will be

presented. These are (a) the implementation of bioreactor landfill technology, in order to speed up the MSW degradation process and at the same time enhance landfill gas production; (b) the operation of methane oxidation filter beds which represents a feasible technology for medium-sized and small landfills for reduction of their landfill gas emissions into the atmosphere if no active landfill gas collection and treatment system is existent.

Presentation: BioRefineries using Integrated Manure Utilization System (IMUS):
Economy through Efficiency

Speaker: **Trevor Nickel**, Technology Commercialization Manager, Highmark
Renewables Inc.

Site Visit: IMUS™ prototype lab

16:00 – 16:30 Travel to IMUS Site

16:30 – 17:00 IMUS Site Visit

Highmark Renewables Inc.: IMUS-1

Site Visit Guide: **Mike Kotelko**, Vice President, Highmark Renewables Inc.

IMUS-1 is Highmark's first large scale installation, located near Vegreville, Alberta. This 1 megawatt facility is the largest feedlot manure-to-energy plant in the world.

IMUS-1 processes about 15% of the manure from a 36,000 head feedlot owned by Highland Feeders Ltd.

IMUS-1 produces about 20 tonnes of premium biofertilizer along with up to 24,000 kWh of Green electricity that Highmark puts directly into the Alberta power grid each and every day!

For more information go to www.highmark.ca

FCM's **Green Municipal Fund** provided a \$800,000 grant and a loan of \$1,600,000 in 2003/2004 to Highmark Renewables Inc. to support the installation of an integrated manure utilization system (IMUS) that will convert animal manure and municipal wastes into heat and electricity, bio-based fertilizer and reusable water.

GMIF 1483 - An Integrated Manure Utilization System (IMUS) Phase III

GMF Category: Solid Waste Management

Municipality: Town of Vegreville - Town of Two Hills - County of Two Hills

Population: 9,084

Project Contact: Mr. Mike Kotelko, Vice-President, Highmark Renewables (780) 768-2466

Total Project Value: \$6,435,000.00

Grant Amount: \$800,000.00

Loan Amount: \$1,600,000.00

FY Approved: 2003 - 2004

This project will develop (and eventually commercialize) an integrated manure utilization system (IMUS) that will manage animal manure and municipal wastes as valuable resources. Direct products will be heat and electricity, bio-based fertilizer and reusable water; indirect benefits include the potential to reduce manure-handling costs at feedlots (or organic waste disposing cost for small municipalities) and a reduction or elimination of the use of land for manure and/or organic disposal and the associated water contamination and odour problems. A further benefit is the reduction of greenhouse gas (GHG) emission through the generation of green electricity.

17:00 – 18:30

Return to Edmonton

Wednesday August 1

City of Edmonton, City of Red Deer, Olds College, Olds

Day at a glance

- Edmonton Waste Management Centre of Excellence Street Sand Recycling Project (Sand Recycling Ltd.)
- Storm retention pond at Red Deer
- Olds College - Presentation on Municipal Sustainability Planning, BioFuel Technology Centre

08:15 – 08:45

Street Sand Recycling Presentation

Sand Recycling Ltd.

- Location: Edmonton Westin, Room to be announced
- Presentation: The City of Edmonton's Street Sand Recycling;
An Environmentally Sustainable Practice for a Changing World
- Speakers: **Phil Haug**, Business Manager, Sand Recycling Ltd.
Bob Dunford, General Supervisor, Roadway Maintenance,
City of Edmonton

Sand Recycling Ltd. is a private company operating in affiliation with the Edmonton Waste Management Centre of Excellence. With extensive experience in the aggregate and transportation industries, the management team of Sand Recycling Ltd. has played a major role in the development and ongoing improvements of an innovative process for recycling winter street sand. The company is currently operating a production plant capable of processing 150,000 tonnes of used street sand, removing contaminants such as salt, hydrocarbons and deleterious materials including litter, clay, unwanted fines and organic matter. The resulting product, recycled sand, is suitable for re-use at a cost below market value for natural material.

The presentation will cover the development of the street sand recycling process from the conceptual stage through implementation to commercial production capability. The economic and environmental pressures that set the stage for the development of the process will also be covered from the City's perspective. Current process improvements and future plans for system enhancements will round out the presentation. A brief video illustrating the process will be part of the presentation.

08:45 – 09:15 Travel to Edmonton Waste Management Centre

09:15 – 10:30 **Edmonton Waste Management Centre**
Sand Recycling Ltd.

Site Visit: Street Sand Recycling Facility
Site Visit Guides: **Phil Haug**, Business Manager, Sand Recycling Ltd.
John Mundy, Operations Manager, Sand Recycling Ltd.

The site visit will tour the Sand Recycling facility at the City of Edmonton's Poundmaker Snow Storage facility. There, the various components of the process will be seen in operation combined with an overview of the demands for inventory management, materials handling and processing prior to secondary usage. Quality control testing will be demonstrated to show the effectiveness of the process. Several vantage points during the tour will ensure a comprehensive overview of the process.

FCM’s **Green Municipal Fund** provided a \$619,000 to the City of Edmonton in 2003/2004 to support the development of a process to recover up to 70 per cent of the street sand for re-use as a traction aid the following winter. This translates into an over 20 per cent reduction in total material landfilled. Related smaller benefits would take the form of reduced mining of virgin sand deposits, reduced fuel consumption, and related impacts of long distance trucking of sand.

GMIF 5095 - Street Sand Recycling - Ten Year Pilot Project

GMF Category: Solid Waste Management

Municipality: City of Edmonton, Alberta

Population: 616,306

Project Contact: Mr. Bud Latta, Director of Engineering, Processing and Disposal, Waste Management Branch (780) 496-5415

Total Project Value: \$1,996,640.00

Grant Amount: \$618,923.00

Loan Amount: \$0.00

FY Approved: 2003 - 2004

The City of Edmonton has researched available technology and established that washing of street sand has never been done on a large-scale production basis. Staff has developed a process that they expect will recover up to 70 per cent of the material for re-use as traction aid for the following winter. This translates into an over 20 per cent reduction in total material landfilled. Related smaller benefits would take the form of reduced mining of virgin sand deposits, reduced fuel consumption, and related impacts of long distance trucking of sand. The street sand recycling project consists of four major processing functions: primary processing of waste and recyclable materials where street sweepings will be separated into three streams: litter (plastics, paper, wood, etc.), large aggregates (stones, etc.) and, fine sands that will continue to the washing system; sand washing and fine sand removal; fines sand recovery and de-watering; and final product stockpiling. The large (10 millimetres (mm) and greater) size aggregate material will be blended with crushed concrete and asphalt to produce base coarse aggregates used in roadway construction and maintenance programs. Plastics, paper and other non-aggregate materials will be transferred to the City’s on-site composting and recycling facilities or landfilled (as appropriate). The system has been designed for low energy and minimal water use and has a high potential for replication.

Winner: Transportation Association of Canada’s Environmental Achievement Award, 2004

10:30 – 12:15

Travel to Red Deer

12:30 – 13:30

Lunch at the City of Red Deer’s Council Chambers
Welcome by Mayor Morris Flewwelling

13:30 – 14:15

Travel to Olds College

14:30 - 15:45

AUMA's Municipal Sustainability Planning Pilot Project

Alberta Urban Municipalities Association

Speaker: **Shelleen Lakusta**, AUMA

AUMA is currently in phase 3 of the Municipal Sustainability Planning (MSP) project. In phase 1 and 2 resources and tools were developed to assist communities in moving forward with planning for sustainability. Phase 3 focuses on working with 5 pilot communities to support them in developing a municipal sustainability plan. This session will provide information on the AUMA pilot municipal sustainability planning project. As part of the presentation, Mayor Judy Dahl and Nina Gales from Olds will share their experience with planning for municipal sustainability.

15:45 - 17:00 **Olds College School of Innovation (OCSI)**

OCSI Biofuel Technology Centre

Site Visit: Biofuel Technology Centre (biodiesel)
Site Visit Guide: tbd

In May, 2007 the OCSI opened the Biofuel Technology Centre to showcase renewable energy technologies, including a 740 ft² biodiesel production facility. This facility is used to conduct applied research, technology verification, workshops and demonstrations of biodiesel technology.

In a joint project with Biofuel Canada Ltd. and Lakeland College, and with additional support from the community, industry and government, the facility is slated to produce 45,000 litres in its first year of operations. The primary feedstock will be canola of various grades. Studies will be conducted on new opportunities for using by-products and on an economic assessment of on-farm biodiesel production.

The OSCI is committed to developing Alberta's potential in agriculture and agri-food applied research and commercialization.

17:00 – 18:15 Travel to Calgary

18:30 Arrive at **Westin Hotel**
320 4th Avenue SW
Calgary, AB
T2P 2S6
Phone: (403) 266-1611

Thursday August 2

City of Calgary, City of Airdrie, McBride Lake Wind Farm

Day at a glance:

- City of Calgary Overview
- eCycle Solutions – electronic waste processing
- City of Airdrie Environmental Education Centre – Sustainable Building
- Visit to McBride Lake Wind Farm

07:45 Depart Hotel

08:15 – 09:30 **City of Calgary Presentation**

City of Calgary

Presentation:	Introduction and Welcome
Speaker:	Bob Hawkesworth , Deputy Mayor
Presentation:	City of Calgary Overview
Speaker:	Dave Day , Director, Environmental & Safety, City of Calgary
Presentation;	Green Energy and Sustainable Building Policy
Speaker:	Chris Wade , Director Infrastructure Services, City of Calgary
Presentation:	Methane Capture/Reuse - Landfill Gas, Sewage Treatment
Speaker:	Kevin Colbran , Landfill Engineer, Waste & Recycling Services The City of Calgary Andy Dutton , Leader, Wastewater Treatment Plant Engineering The City of Calgary

FCM's **Green Municipal Fund** provided a \$350,000 grant to the City of Calgary in 2004/2005 to develop The Imagine Calgary Plan, a comprehensive study designed to address long-term urban sustainability issues in the City of Calgary. It consists of the preparation of a 100-year community plan that integrates environmental, social, economic, infrastructure and governance systems into a holistic municipal vision. The Plan is a City-driven process developed in full partnership with the community through multi-stakeholder consultations.

GMEF 5779 Imagine Calgary: A Long-Term Urban Sustainability Plan

GMF Category: Sustainable Community Planning/Integrated

Municipality: City of Calgary, Alberta

Total Project Value: \$1,400,000.00

Population: 934,000

Grant Amount: \$350,000.00

Loan Amount: \$0.00

Project Contact: Ms. Patricia Gordon,
Sustainable Cities Project Manager (403) 268-6720

FY Approved: 2004 - 2005

The Imagine Calgary Plan is a comprehensive planning study designed to address long-term urban sustainability issues in the City of Calgary. It consists of the preparation of a 100-year community plan that integrates environmental, social, economic, infrastructure and governance systems into a holistic municipal vision. The Plan is a City-driven process developed in full partnership with the community through multi-stakeholder consultations. The City will utilize several tools, including MetroQuest, triple bottom line accounting and the Melbourne principles, to create its 100-year vision with targeted goals that can be achieved by adhering to 30-year consecutive targets and strategies. Calgary will implement these strategies to improve environmental conditions by way of key City Plans within the community and municipal operations. Currently, the City estimates that the Plan will lead to an annual reduction of 46,700 tonnes of CO₂e, a reduction of 2,045,460 m³ of potable water, and a reduction of 9,246 tonnes of solid waste from the Plan.

Winner: FCM-CH2M HILL Sustainable Community Award 2007 (Planning category)

09:30 - 10:00 Travel to eCycle Solutions

10:00 – 11:30 **eCycle Solutions and
Airdrie Environmental Education Centre**

eCycle Solutions

Note: Due to space limitations the group will be divided in half and will alternate between eCycle Solutions and the Airdrie Environmental Education Centre.

eCycle Solutions operates one of the most advanced and secure electronics recycling facilities in North America. The company is a government approved and certified eWaste processor in the province of Alberta under the provincial recycling program.

see: www.ecyclesolutions.com

Airdrie Environmental Education Centre

Winner: FCM - CH2M HILL Sustainable Community Awards 2003 (Buildings category)

This sustainable building houses the Environmental Services Department for the City of Airdrie and is the only Canadian municipal facility of its kind. The building's features include:

- Straw bale, tight envelope construction solar radiant in-floor heating system;
- Photovoltaic electrical system;
- Potable water collection and filtration system;
- Environmentally sound and healthy construction materials including paints & wood treatments;
- Energy efficient windows;
- Recycled materials throughout the building;
- Solar wall used to warm the fresh air for the “Life Breath” heat recovery ventilator; and,
- Naturalized and xeriscaped green spaces

For more information go to www.airdrie.com/environment/eec

11:30 – 12:00	Return to Calgary
12:00 – 13:00	Lunch hosted by the City of Calgary
13:00 – 15:00	Travel to Fort McLeod/ McBride Lake Wind Farm
15:00 – 16:30	McBride Lake Wind Farm

McBride Lake Wind Farm

Site Visit: McBride Lake Wind Farm
 Site Visit Guide: **Hal Jorgensen**, Operations Manager, TansAlta Wind

16:30 - 17:00	Travel to Head-Smashed-In Buffalo Jump Heritage Site
17:30 – 19:30	Dinner and Museum Tour: Head-Smashed-In Buffalo Jump

Head-Smashed-In Buffalo Jump Heritage Site

For thousands of years, the bison provided the Aboriginal peoples of North America's Great Plains with many of life's requirements — meat for food, hides for clothing and shelter, sinew, bone and horn for tools, and dung for fires. The principal means of killing large numbers of bison was the buffalo jump, where herds were stampeded over cliffs and butchered at the bottom. Buffalo jumps were common on the northern Plains. But the biggest, oldest and best-preserved buffalo jump in North America is the Head-Smashed-In (or estipah-skikikini-kots in Blackfoot) Buffalo Jump in the Porcupine Hills of southwestern Alberta.

In 1981, the United Nations Educational Scientific and Cultural Organization (UNESCO) designated the jump as a World Heritage Site placing it among other world attractions such as the Egyptian pyramids, Stonehenge and the Galapagos Islands.

19:30 – 21:30

Return to Calgary

Friday August 3

City of Calgary, Town of Okotoks

Day at a glance

- Calgary Water Centre – LEED Gold Building
- Climate Change Central
- Town of Okotoks – Sustainable Community Planning, Wastewater treatment, Solar Energy, Drake Landing Solar Thermal Storage Project
- Final Banquet in Okotoks

08:00

Depart Hotel

08:00 – 08:30

Travel to Calgary Water Centre

09:00 – 10:30

Calgary Water Centre – LEED Gold Building

Calgary Water Centre

Site Visit Guides: tbd

The Water Centre is the city's latest and largest (183,000 square feet) green building initiative. This facility has been strategically designed and constructed with the wellbeing of the environment — both natural and built — in mind.

An essential part to maintaining Calgary's high quality water and wastewater services, the Water Centre will accommodate approximately 800 Water Services employees, combining both field and administrative support staff together in a dynamic and healthy work environment. In addition, the Centre's open floor plan is designed, in part, to foster a better flow of information, increase communication, teamwork and healthy working relationships amongst co-workers.

10:30 - 11:00 Travel to Climate Change Central

11:00 – 12:00 Climate Change Central

Climate Change Central

Presentation: Sensible Action on Climate Change
Speaker: **Simon Knight**, Chief Executive Officer, Climate Change Central

Sensible action on climate change is the tag line of Alberta's Climate Change Central (C3). But C3 is not the only organization taking action, all across the province initiatives that address energy creation and energy use are happening at the municipal level, some with the help of C3, but many are simply through the leadership of progressive communities. This presentation will highlight some projects that are just in the planning stages or others initiatives that the tour participants will not be able to see during the mission due to time and distance constraints.

Some of these examples will include Hinton's eco-industrial park, Medicine Hat's proposed aquifer thermal energy storage (ATES) system, waste to energy initiatives and even some policy initiatives.

C3 is delighted to host a lunch to follow the presentation and question period.

12:00 – 13:30 Lunch hosted by Climate Change Central

13:30 – 14:15 Travel to the Town of Okotoks

14:30 – 17:00 Town of Okotoks presentations and site visits

Town of Okotoks

Presentation: Sustainable Okotoks, Leaving a Legacy
 Speaker: **Rick Quail**, Municipal Manager

The presentation will provide an overview of the "Vision of Sustainable Okotoks" including a brief background of the community vision and planning framework that engaged residents in decisions and actions towards a sustainable community, and some of the partnerships, activities and accomplishments that have helped the Town of Okotoks reach some of the milestones in becoming a sustainable community. Particular emphasis will be placed on water and sewer conservation and management, solid waste management and energy efficiency/innovation initiatives.

Site Visits: State-of-the-Art Wastewater Treatment Plant
 Recycling Depot
 Drake Landing
 Site Visit Guide: **Rick Quail**

FCM's **Green Municipal Fund** provided a \$150,000 grant Town of Okotoks in 2001/2002 to develop an innovative solids separation and composting technology to completely eliminate sludge as a by-product of its sewage treatment process. Once the town has installed the technology, its sewage treatment system will produce compost, a marketable product, instead of sludge, which is increasingly difficult to dispose of and expensive to process. The process is also expected to produce operating cost savings of up to 30 per cent a year.

GMIF 0392 - Okotoks Integrated Wastewater Treatment/ Composting System

GMF Category: Water

Municipality: Town of Okotoks, Alberta

Population: 8,510

Project Contact: Will Pearce, Municipal Manager (403) 938-8900

Total Project Value: \$2,000,000.00

Grant Amount: \$150,000.00

Loan Amount: \$425,000.00

FY Approved: 2001 - 2002

The Town of Okotoks will develop an innovative solids separation and composting technology to completely eliminate sludge as a by-product of its sewage treatment process. Once the town has installed the technology, its sewage treatment system will produce compost, a marketable product, instead of sludge, which is increasingly difficult to dispose of and expensive to process. The process is also expected to produce operating cost savings of up to 30 per cent a year. The solids separating equipment uses a process developed by Pollution Control Technologies of Finland. It has not been installed in Canada before but has a successful record in Europe. Stantec Engineering of Calgary will be the project engineer. The project's total cost is estimated to be \$2 million. The potential for replicating this technology across Canada is considered high.

FCM’s **Green Municipal Fund** provided a \$100,000 grant to the Town of Okotoks in 2003/2004 to study the feasibility of building a new subdivision consisting of 52 high energy efficiency homes heated by solar thermal energy collected and stored underground. The intent is to build energy efficient housing that will get approximately 90 per cent of its required heat and hot water from a district thermal solar heat source.

GMEF 3742 - Large Scale District Solar Heating Systems Utilizing Seasonal Storage

GMF Category: Energy

Municipality: Town of Okotoks

Population: 8,510

Project Contact: Mr. Richard Quail,
Infrastructure Service Mgr (403) 938-4404

Total Project Value: \$349,000.00

Grant Amount: \$100,000.00

FY Approved: 2003 - 2004

This is an opportunity for the Town of Okotoks (a member of the Eco-Efficient Communities Initiative) to pilot a 52-home seasonal solar district heating demonstration project, based on a European concept that the Technology for Early Action (TEAM) program of Natural Resources Canada has been looking for an opportunity to test. The intent is to build energy efficient housing that will get approximately 90 per cent of its required heat and hot water from a district thermal solar heat source. The study consists of five phases: a site environmental study; a system technical study; a market acceptance study; an implementation cost study; and business case development. Four workshops and one focus group session are included. It is estimated that it could reduce greenhouse gases (GHG) by 50 tonnes per year per house.

[DOWNLOAD](#) Report

FCM’s **Green Municipal Fund** provided a \$2,479,454 grant and a \$300,000 loan to the Town of Okotoks in 2004/2005 to construct a subdivision consisting of 52 high energy efficiency homes heated by solar thermal energy collected and stored underground. This is the first installation of solar seasonal storage technology in North America. Solar collectors will collect heat during the spring, summer and fall and store the thermal energy in underground boreholes for extraction during the winter. A district-heating network will distribute the thermal energy.

GMIF 5182 - District Heating Utilizing Solar Seasonal Thermal Storage Technologies

GMF Category: Energy

Municipality: Town of Okotoks

Population: 8,510

Project Contact: Mr. Richard Quail,
Infrastructure Services Manager (403) 938-8908

Total Project Value: \$19,148,454.00

Grant Amount: \$2,479,454.00

Loan Amount: \$450,000.00

FY Approved: 2004 - 2005

In this pilot project, a 74-home subdivision will be built in the Town of Okotoks to demonstrate the concept of solar seasonal storage technology - the first introduction of the technology in North America. Solar collectors will collect heat during the spring, summer and fall and store the thermal energy in underground boreholes for extraction during the winter. A district-heating network will distribute the thermal energy. The project consists of four major phases: pre-construction, energy system infrastructure construction, home construction and connection, and system performance monitoring. A systems approach was used in the feasibility study of the work and continues to drive project implementation. With approximately 90 per cent of energy consumption provided by solar energy, the net performance over the baseline is approximately 2.4 tonnes of greenhouse gas (GHG) emissions reductions per home per year or a 72 per cent reduction for the baseline case. The installation of water conservation measures will reduce water consumption per home to 200 L/home/day, a savings of 16 per cent. Moving to the R-2000 standard for home construction will reduce the thermal energy load. Without R-2000, about 45 per cent more thermal energy would be needed to deliver to the homes for space heating compared to the current design load. In addition to environmental benefits, this project will also generate economic, social and technological benefits.

17:00 – 18:00 Relax time

18:00 – 21:00 Final Banquet in Okotoks

Final Banquet

Hosted by the Alberta Ministry of International, Intergovernmental and Aboriginal Relations

21:00 – 21:45 Travel to Calgary

22:00 Return to Hotel