

Methane to Markets Partnership Landfill Subcommittee Country-Specific Profile and Strategic Plan for Canada

1 Introduction

Canada joined the Methane to Market Partnership on July 14, 2005. In October 2005, Canada submitted a report profiling its landfill gas (LFG) activities, relevant programs, and opportunities to increase emission reductions for the Landfill Subcommittee.

This present submission updates and builds on the information contained in the 2005 report, and also outlines the strategy Canada is employing to promote methane emission reductions from landfills.

2 Summary of the solid waste management sector

The management of municipal solid waste (MSW) remains a challenge in Canada. The most recent national-level data shows that between 2002 and 2004, total MSW generated increased by 8%, from 30.7 to 33.2 million tonnes (Mt). The amount of MSW generated per capita also increased from 980 kg to 1,037 kg during the same period. In 2004, the quantity of MSW generated by each sector was distributed as follows: 40% Residential and 60% Non-residential. Non-residential waste includes Institutional Commercial & Industrial (IC&I) waste and Construction and Demolition (C&D) waste.

Between 2002 and 2004, the total amount of MSW disposed of in Canada increased by 5%, from 24.1 to 25.3 Mt. Over 97% of the total MSW disposed of in Canada is managed at sanitary landfill sites. Canada does not rely significantly on thermal treatment for volume reduction or energy production. Of the 25.3 Mt currently being disposed, almost half is recyclable (fibres, glass, metals, plastics) while approximately a quarter is made up of compostable organics.

Canadians are diverting also more waste from final disposal than ever before. Between 2002 and 2004, the total quantity of MSW diverted from final disposal through composting and recycling increased from 6.6 to 7.9 Mt, and the diversion rate rose from 22 to 24%. This represents an increase of 16% in waste diverted, from 212 to 246 kg per capita.

3 Key stakeholders in the solid waste disposal sector and LFG industry

As is the case with other member countries, Canada's growing LFG sector has a number of key players:

- **Private Landfill Owners** – Own/operate landfills. Some larger companies manage their own LFG utilization projects in addition to collecting and treating MSW. There are also a few small operators, some of which have contracts with specialized power project companies
- **LFG Utilization Specialists** – Operate LFG facilities and/or provide project management for LFG utilization
- **Environmental/Engineering Consulting Firms** – Design landfills and LFG collection and utilization systems. These firms may also perform feasibility studies, environmental assessments, and third party certification of emission reductions
- **Equipment Suppliers** – Provide equipment for the collection, combustion and monitoring of LFG. They may also service their equipment on an annual basis or other appropriate time-frame. These companies are mostly U.S. or European-based

- **Utility Companies** – Transport processed LFG for direct-use or purchase electricity generated by LFG-powered engines or steam turbines
- **Non-Governmental Organizations** – Advocate for environmentally sustainable practices
- **Municipal Governments** – Own/operate landfills. LFG utilization is often conducted through contracts with the private sector
- **Provincial/Territorial Governments** – Issue approval certificates and licenses and monitor MSW management operations. Some provinces regulate the management of LFG (through capture and/or utilization) from landfills over a certain threshold size
- **Government of Canada** – Advances the LFG sector through activities such as conducting LFG-related research, sampling LFG for releases of toxic substances, purchasing GHG emission reductions from LFG projects, preparing technical bulletins on LFG projects, producing a guidance document for LFG development and conducting a biennial LFG inventory

4 Overview of LFG potential from existing disposal sites

According to the 2006 national GHG Inventory, emissions of GHG from landfill sites are increasing. From 1990 to 2006, emissions from landfills rose 16%. In 2006, GHG emissions from landfills accounted for 3% of Canada’s GHG emissions. Table 1 below provides the trends in GHG emissions from solid waste disposal on land (i.e. landfills).

Table 1: GHG Emission Summary (Kt CO₂ equivalent) – Solid Waste Disposal on Land

| 1990 | 2003 | 2005 | 2006 |
|--------|--------|--------|--------|
| 17 000 | 19 000 | 19 000 | 20 000 |

In 2005, emissions from Canadian municipal solid waste landfills accounted for 22% (24 Mt eCO₂) of the total national anthropogenic methane emissions. Methane emissions from municipal solid waste landfills have increased by 24% between 1990 and 2005, while there has been a 50% increase in LFG capture and combustion over the same period.

Every two years, Environment Canada conducts a national inventory of LFG recovery and utilization in Canada. This biennial LFG inventory is used to track Canada’s progress and to assist with the collection of data for the national GHG inventory. It is comprised of data provided by MSW landfill owners and operators regarding the operation of their LFG recovery, flaring, and utilization systems.

Based on responses received, there were 47 active landfills involved in capturing landfill gas in 2005 in Canada. An additional 5 known landfills involved in the capture of LFG did not respond to the inventory questionnaire, and their data is therefore not accounted for in the figures cited below.

In total, 306 kilotonnes (kt) of landfill methane (6.43 Mt CO₂e) was captured and combusted in 2005. From this total, 52% (159 kt) was utilized and 48% (147 kt) was flared. There were 21 sites that utilized the LFG and 26 sites that flared it.

Of the 21 sites which utilized the LFG, 13 facilities generated a total of 67 MW of electricity from 124 kt CH₄/year and 8 facilities utilized 35 kt CH₄/year for heating applications such as space heating, hot water and provision of fuel for a variety of facilities including a gypsum manufacturing plant, a steel refinery, a greenhouse and a recycling plant.

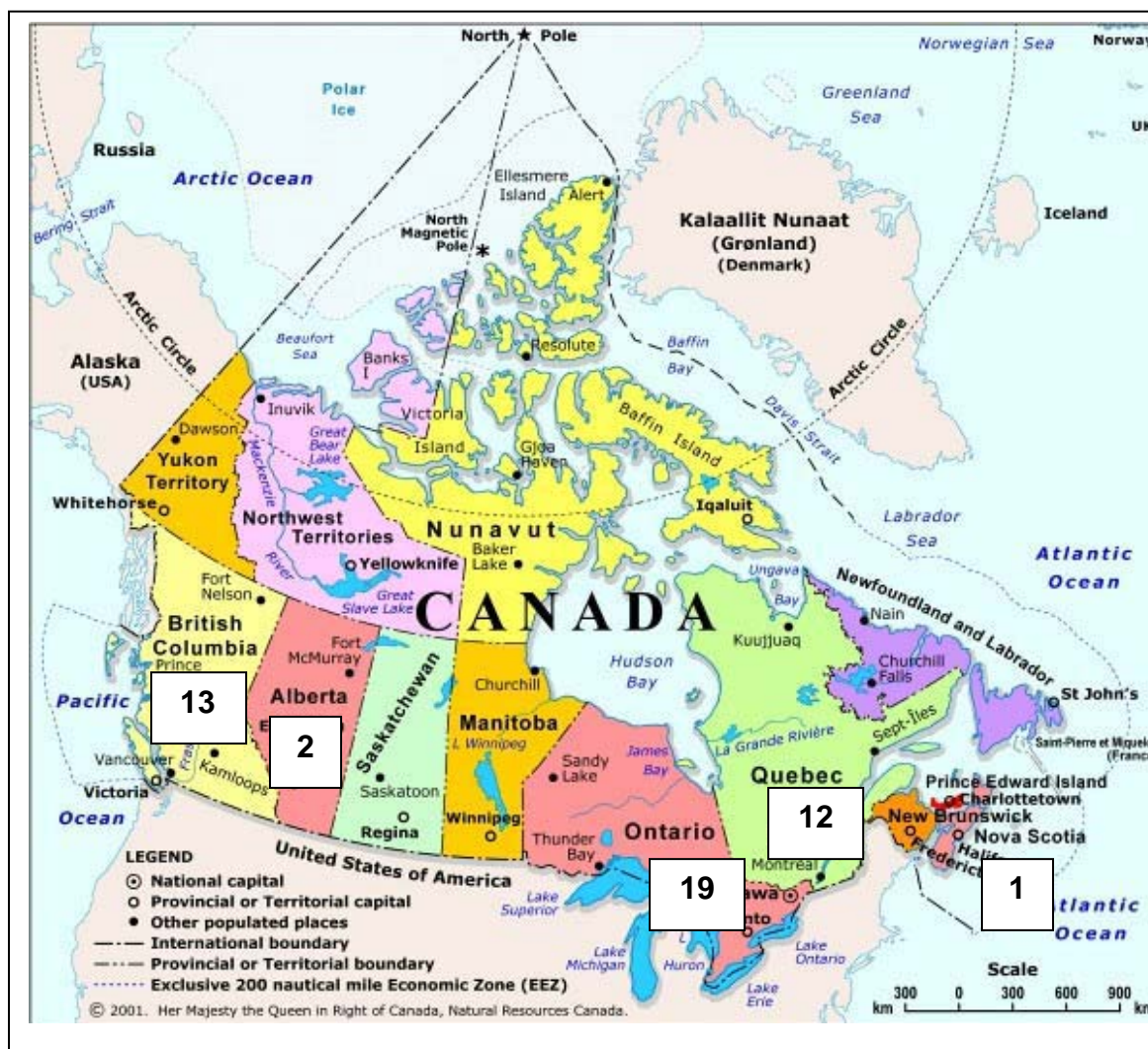
Table 2 below provides information on the quantities of GHG emission reductions obtained through LFG capture in Canada from 1997 to 2005. Note that the 2005 figure is low due to the 5 landfills which did not report to the inventory.

Table 2: CH₄ Captured and eCO₂ Reduced through LFG Capture in Canada from 1997- 2005

| Year | CH ₄ Kt/year | eCO ₂ Reduced (Mt)/year |
|------|-------------------------|------------------------------------|
| 1997 | 268 | 5.62 |
| 1999 | 276 | 5.79 |
| 2001 | 313 | 6.57 |
| 2003 | 312 | 6.56 |
| 2005 | 306 | 6.43 |

5 List of existing or landfill gas capture and/or use projects

Figure 1: Location of Existing LFG Capture and/or Utilization Projects in Canada (2005)



6 Legal and policy frameworks for landfill methane recovery

6.1 Provincial landfill gas regulations and guidelines

Several Canadian provinces have regulations and/or guidelines pertaining to the recovery of methane from landfills.

British Columbia

In British Columbia, landfill gas emissions are governed by the June 1993 *Landfill Criteria for Municipal Solid Waste*. The criteria address the siting, design, operation and closure of three classifications of landfills: sanitary landfills, modified sanitary landfills and selected waste landfills. Landfill gas recovery and management systems are not required for landfills with a total capacity of fewer than 100,000 tonnes. For landfills exceeding this total capacity, an assessment of the potential emissions of non-methane organic compounds (NMOCs), the surrogate group of gaseous compounds associated with landfill gas, must be carried out. If the assessment indicates that the emission of NMOCs exceeds or is expected to exceed 150 tonnes/year, the installation and operation of landfill gas recovery and management systems are mandatory. Where a gas recovery and management system is installed, direct venting to the air of gases collected must be avoided. Utilization of the gas for energy recovery is recommended. Combustion, even by incineration or flaring, is encouraged over direct venting to the atmosphere to reduce odours and greenhouse gas emissions.

The British Columbia Ministry of Environment (MOE) is in the process of developing the *Landfill Gas Regulation* under the *Environmental Management Act*. This initiative forms part of the work undertaken by the British Columbia MOE to support the provincial government's commitment to reduce greenhouse gases by at least 33% below current levels by 2020. The proposed regulation would establish province-wide criteria for landfill gas capture from municipal solid waste landfills. The regulation would focus on greenhouse gas emission reductions from landfills with the objectives of maximizing reductions of landfill gas emissions and identifying potential opportunities to increase landfill gas recovery and its beneficial use. The ministry is considering setting a methane emission threshold that will be no higher than 1000 tonnes/year. By January 1, 2016, all landfills that generate methane in excess of the emission threshold will be required to have installed (and to ensure proper operation of) gas capture equipment with a capture efficiency target of at least 75% of generated gas.

Alberta

In Alberta, according to the *Waste Control Regulation* (A.R. 192/96), a landfill accepting hazardous waste or over 10,000 tonnes per year of non-hazardous waste or a compost facility accepting over 20,000 tonnes per year of mixed organic material requires an approval. A landfill accepting 10,000 tonnes of non-hazardous waste or less per year or a compost facility accepting 20,000 tonnes or less per year of mixed organic material must be registered with Alberta Environment. For a facility to be registered, it must be sited, designed and operated in accordance with a Code of Practice published by the Department. The Code of Practice requires these landfills to develop, maintain and implement an operating plan for the management of gas, which may include detection, interception, venting, or recovery.

Ontario

In Ontario, landfill gas emission standards are covered by Ontario Regulation 232/98, *Landfilling Sites*. It requires the collection of landfill gas for new or expanding sites larger than three million cubic metres (approximately 2.5 million tonnes). For sites not included under this mandatory trigger, air emissions control may still be required in some cases. For example, factors such as waste type, site location close to a populated area and operational practices may indicate that air emissions should be controlled even though the site is smaller than three million cubic metres. The Ontario Ministry of the Environment is currently reviewing comments received on a proposal

to amend the regulation to require mandatory landfill gas collection and utilization or flaring for all operating or proposed new or expanding landfills with total waste disposal capacities larger than 1.5 million cubic metres.

Quebec

In Quebec, the «*Règlement sur l'enfouissement et l'incinération de matières résiduelles*» entered into force on January 19th, 2006. It puts into action many of the Quebec government's plans contained in their «*Residual Materials Management Policy 1998-2008*». These regulations make several specifications with regards to landfill gas emissions. All landfills must have in place a system allowing them to capture all the landfill gas produced and to vent it, flare it or recover the energy it contains.

Nova Scotia

In Nova Scotia, any organization wishing to install, and have approved for use, systems for the production, handling, storage and utilization of digester gas, and landfill gas in newly-constructed wastewater treatment plants, and landfill gas systems, as well as additions to, and the upgrading of, existing systems requires an approval from the Public Safety Division of the Labour and Workforce Development Department. The legislative authority comes from the *Fuel Safety Regulations*, made under Section 3 of the *Fire Prevention Act*.

6.2 Policies or mandates that may affect waste streams (e.g., organic waste diversion, recycling)

In Canada, the responsibility for MSW management is shared among the federal, provincial/territorial and municipal governments. Collection, diversion (recycling and composting) and disposal operations are the responsibility of municipal governments, while the provinces and territories are responsible for the approval, licensing and monitoring of operations, including landfills.

The federal government is engaged in MSW management issues related to international movement, air emissions (including linkages with greenhouse gases), toxic substances, and federal lands and operations. In addition, the federal government is working to advance Canada's understanding of municipal solid waste management as it relates to sustainable development.

Federal, provincial and territorial governments are also working collaboratively, under the auspices of the Canadian Council of Ministers of the Environment (CCME), to address some specific waste issues such as extended producer responsibility, packaging and electronic waste. To date, the CCME has not specifically addressed landfill gas management.

Most provinces have waste policies, strategies and/or targets in place. A brief summary of initiatives in each province and territory is provided below:

British Columbia

The province of British Columbia had a waste diversion target of 50% by 2000. No updated target has been established. As of 2004, their diversion rate was 31%. The British Columbia *Recycling Regulations* was last updated in August 2007. Its primary focus is on product stewardship regulations for beverage containers, household special wastes, tires and electronics. Two new product categories will be added to the Industry Product Stewardship program every three years.

Alberta

The province of Alberta has a goal of decreasing waste going to landfill to 500kg/capita by 2010. There are five regulated stewardship programs in the province: used tires, electronics, beverage containers, used oil and paint and paint containers. Alberta has a waste strategy called *Too Good to Waste* to increase recyclables and reduce organics residuals at landfills in order to reduce

generation of GHGs. Proposed actions include developing disposal bans to facilitate waste reduction and stewardship programs for C&D materials.

Saskatchewan

Saskatchewan has no set target for waste disposal or diversion. Their Ministry of Environment administers regulations for e-waste, paint, beverage containers, scrap tires and used oil. The province has begun work on multi-material stewardship initiatives that will target plastic, glass, tin and paper packaging.

Manitoba

Manitoba has no set target for waste disposal or diversion. Stewardship programs exist under the *Waste Reduction and Prevention Act (WRAP Act)* of 1990 for the following products: used tires, used oil and multi-materials (residential recyclables).

Ontario

A 60% waste reduction target was originally set for 2008. In 2000 Ontario had a per capita disposal rate of 764 kg; in 2004 it had risen to 810 kg, a 6% increase. No revised target has been set. Product stewardship programs are in place for packaging and printed materials collected from households, e-waste, and household special waste.

Quebec

In its 1998-2008 *Residual Materials Management Policy*, Quebec has a target to reclaim 65% of recoverable non-hazardous residual material by 2008. More specific reduction targets for municipal sector materials are: 60% for glass, plastic, fibre and putrescible materials; 75% for oil, paint and pesticides; 50% for textiles; and 80% for beverage containers. Quebec has also established targets for IC&I and C&D materials: 85% for tires; 95% for metal and glass; 70% for plastic and fibre; 60% for putrescible materials; and 60% of recoverable C&D materials.

New Brunswick

New Brunswick has a ten point Action Plan on waste, which includes elements such as legislated diversion targets, support for local and regional waste reduction initiatives, advocating mandatory recycling, and the consideration of landfill bans. The legislated waste diversion standards set up mandatory programs including: cardboard, boxboard, newsprint, and office paper; PET and HDPE; and composting of all organics. New Brunswick does not have an overall waste diversion target.

Nova Scotia

Nova Scotia's current targets call for a 300kg per capita disposal rate by 2015. In 2004 the disposal rate per capita in Nova Scotia was 427kg. The Resource Recovery Board of Nova Scotia administers programs for used tires, beverage containers, paint, derelict vehicles, household hazardous wastes and cardboard and newsprint. An electronics recovery program is proposed to start in 2008.

Prince Edward Island

Prince Edward Island introduced their waste management strategy in 1998. They have a 3-stream source separated system. The province does not have an overall waste diversion target.

Newfoundland

The Newfoundland Strategy was introduced in 2002 and has a number of goals, including: 50% overall waste diversion, phasing out of the use of unlined landfills by 2010, eliminating open-burning at disposal sites by 2005 and phasing out the use of incinerators by 2010. A Multi-Material Stewardship Board was created in 1996. In 2003 the government introduced *Used Oil Control Regulations*.

Yukon Territory

The Yukon Territory has programs for beverage containers, paint, pharmaceuticals and used tires. The Territory also has drop-off points for recyclable containers from mid-May to mid-October. Household hazardous waste collection days are set up for used oil, antifreeze, aerosol cans, thinners/solvents/cleaners, pesticides, and automotive batteries.

Northwest Territories

There is no overall waste diversion target in the Northwest Territories. According to a discussion paper released in December 2007, residents will decide which materials among the following will be recycled: electronics, tires, lead acid batteries, fuel drums, plastic grocery bags, milk containers, paper and cardboard.

Nunavut

Communities maintain open-pit garbage sites where waste is burned. An important goal for the Government of Nunavut is the establishment of safer, healthier, waste management practices throughout the Territory, based on technologies that are effective in permafrost and Arctic conditions.

7 Provincial renewable or green energy standards

As part of the 2007 British Columbia Energy Plan, A Vision for Clean Energy Leadership, an Innovative Clean Energy Fund was introduced which includes biomass, gasification, fuels such as ethanol, and waste energy capture and utilization. A provincial Bioenergy Strategy was proposed to produce heat, electricity, liquid fuels and other forms of energy from biomass resources such as woody debris, agricultural crop residues, animal manure and organic municipal wastes. According to the Plan, these resources are renewable, well-distributed throughout the province, and suitable for either large-scale or smaller, community-based energy production opportunities.

In 2004, the Saskatchewan Ministry of Environment released Saskatchewan's Green Strategy. In this strategy, the Government states that it is "looking at new ways to eliminate energy waste by taking advantage of waste fuel sources that would otherwise contribute to greenhouse gas emissions." Their list of waste fuel sources includes biomass such as municipal waste. In addition, the Saskatchewan Power Corporation has adopted a strategy to meet new load growth over the next several years using Environmentally Preferred Power (EPP). Their definition of EPP includes power generated from facilities using wind, low impact hydro, biomass, biogas, solution flare gas, heat recovery from an existing waste heat source or solar generation technology to create the power.

In 2004, Ontario announced its Renewable Portfolio Standard, where it set a target for the province to produce five per cent (1,350 megawatts) of its electricity from renewable sources by 2007 and 10 per cent (2,700 megawatts) by 2010, and 15 700 MW by 2025. In order to meet these targets, Ontario has set a Renewable Energy Standard Offer Program, run through the Ontario Power Authority. Wind, water, biomass and landfill gas are targeted by the program. In 2005, two contracts were awarded to landfill gas facilities, totalling 7.7 MW of power.

In February 2008, the Quebec government announced the provincial Biogas Program. The program includes a call for proposals to landfill owners interested in implementing LFG capture and flaring and or/utilization projects. The landfills must not be covered by the "Règlement sur l'enfouissement et l'incinération des matières résiduelles". The program has a budget of \$38 million over six years and aims to reduce GHG emissions by 3.7 Mt of eCO₂. The program forms part of the provincial government's 2006-2012 Plan of Action on Climate Change.

On February 1, 2007, Nova Scotia's new Renewable Energy Standards took effect. By 2013, Nova Scotia aims to generate almost 20% of its electricity through renewable energy. Landfill gas is included in the list of renewable low impact electricity sources.

8 Federal financing options

Pilot Emission Removals, Reductions, and Learnings (PERRL) Initiative

Through PERRL, the federal government entered into agreements to purchase verified greenhouse gas emission reductions from eligible projects in four strategically important sectors on a fixed price per tonne basis. One of the strategic areas identified was landfill gas capture and combustion. No “carbon credits” or any other tradable commodity were created through PERRL, and the Initiative did not affect Canada’s commitments under the Kyoto Protocol.

PERRL was conducted using a public reverse-auction process in which applicants would propose an emission reduction/removal project and state the payment-per-tonne they were willing to accept for the proposal. For example, a potential bidder could submit a proposal to reduce greenhouse gas emissions from a landfill gas capture and combustion project by 100,000 tonnes between 2003 and 2007 for a payment of \$1.00 per tonne. If this bid was successful and all the terms and conditions were met, PERRL would pay the seller \$100,000 for 100,000 tonnes of verified emission reductions over the 5 year period.

The first round of PERRL landfill gas projects selected four projects with prices ranging from CAN\$1.70 to \$6.90 per tonne, for a total cost of \$3 million. The second round focused on agriculture and forest carbon sinks and therefore did not include any LFG projects. The third and final round selected three landfill gas projects with prices per tonne ranging from \$6.49 to \$13.50. In total, the landfill gas projects have the potential to result in the purchase of approximately 840,000 tonnes of eCO₂. All contracts for the purchase of verified emission reductions extended until the end of 2007, and will not be renewed. More information is available at www.ec.gc.ca/perrl.

Green Municipal Funds (GMF)

The GMF was established by the Government of Canada to stimulate municipal investment in innovative environmental infrastructure projects and practices to: improve air, water and soil quality; protect the climate; remediate brownfields; and promote the use of renewable resources. The GMF is managed at arm’s-length by the Federation of Canadian Municipalities (FCM), which uses grants, loans or loan guarantees to support feasibility studies, sustainable community plans, field tests and capital implementation projects. These GMF investments in Canadian municipalities, which aim to generate significant environmental as well as economic and social benefits, may be leveraged further by partnerships with public or private entities. Canadian municipalities or a public non-governmental organization or private sector organization applying in partnership with a municipality are eligible to apply.

Since the program's inception, a number of MSW management projects have benefited from the GMF. In particular, many LFG capture and utilization feasibility studies have been funded, as well as studies on obtaining bio-energy from animal wastes. On February 13, 2008 FCM issued a GMF Request for Proposals (RFP) for financing to support implementation of leading edge municipal solid waste diversion projects. GMF will award a total of up to \$10 million in loans and up to \$1.5 million in grants under this RFP. Eligible applicants can request up to \$3 million in loans and \$300,000 in grants for each project. More information is available at www.fcm.ca.

ecoENERGY for Renewable Power

The federal government program “ecoENERGY for Renewable Power” will invest \$1.48 billion to increase Canada's supply of clean electricity from renewable sources such as wind, biomass, low-impact hydro, geothermal, solar photovoltaic and ocean energy. It will encourage the

production of 14.3 terrawatt hours of new electricity from renewable energy sources, enough electricity to power about one million homes.

Canadian businesses, municipalities, institutions and organizations are all eligible to apply. Projects will receive an incentive of one cent per kilowatt-hour for up to 10 years to eligible low-impact, renewable electricity projects constructed from April 1, 2007 to March 31, 2011. Several waste management projects have already registered under the program. More information is available at www.ecoaction.gc.ca.

EcoLogo^M Program

Environment Canada's EcoLogo^M Program determines and promotes higher standards of environmental performance against which products and services can be assessed. This program may be of assistance to companies in validating and marketing their products. The EcoLogo^M program made a commitment to promote electrical energy sources that have greatly reduced environmental impacts. The EcoLogo^M Program recognizes electricity that has been generated from naturally occurring energy sources and from power sources that, with the proper controls, add little in the way of environmental burdens such as LFG. More information is available at www.ecologo.org.

Building Canada Fund

The Building Canada Fund is the Government of Canada's new flagship infrastructure program. It advances national priorities that are important to all Canadians: a stronger economy, a cleaner environment, and better communities, while addressing local and regional infrastructure needs. One of the five priority areas is green energy. Building Canada will promote investments in municipal solid waste processing infrastructure that can reduce the environmental impacts resulting from municipal solid waste management, such as emissions of methane. More information is available at www.buildingcanada-chantierscanada.gc.ca/

Gas Tax Fund

Part of the Building Canada Funding includes the Gas Tax Fund. With a total investment of \$13 billion from 2005-2014, and \$2 billion per year beyond 2013-2014, the Gas Tax Fund has become a permanent measure. The Fund will allow all municipalities, both large and small, to better plan and finance their long-term infrastructure needs. The Fund redistributes a portion of gas tax revenues to the provinces and territories to be directed at environmentally sustainable municipal infrastructure such as MSW management projects. More information is available at www.infrastructure.gc.ca.

Tax Measure- Accelerated Capital Cost Allowance

In 1996 the Department of Finance introduced Class 43.1 which provides an accelerated capital cost allowance rate of 30 % for certain types of renewable energy and energy efficiency equipment used to capture and utilize landfill gas. More information is available at www.fin.gc.ca.

9 Country Strategy

On March 10th, 2008, the Government of Canada published details of the regulatory framework originally announced on April 26, 2007. The overall federal plan to reduce GHG and air pollution is known as *Turning the Corner*. The plan includes mandatory reductions for industry, along with additional new measures to address two of Canada's key emitting sectors: oil sands and electricity. Federal regulations of industry's greenhouse gas emissions will help achieve the Government's commitment to reduce Canada's total greenhouse gas emissions by 20% below 2006 levels by 2020. The long-term goal of the plan is to achieve gas emission reductions of 60 to 70% by 2050.

Within the Turning the Corner is a domestic Offset System for Greenhouse Gases. The Offset System is designed to encourage cost-effective domestic reductions or removals in activities that are not expected to be covered by proposed industrial air emissions regulations. Projects that meet the eligibility criteria can generate offset credits that can be sold in the market.

There will be six eligibility requirements for projects under the Offset System:

- **Scope**
 - The project must take place in Canada
 - The project must achieve reduction in one or more of the following GHGs: CO₂, CH₄, N₂O or HFCs
 - The activity must be included in Canada's inventory of GHGs
- **Reductions in GHG Must be Real**
 - The project must result in a net reduction of GHGs after accounting for all relevant sources, sinks, reservoirs, and leakages
- **Incremental**
 - Projects must have started on or after January 1, 2000
 - Credits may be issued for reductions achieved after January 1, 2008
 - Reductions achieved must go beyond the baseline (hypothetical reference case) defined for the project type
 - Reductions are surplus to all legal requirements (federal, provincial/territorial and regional)
 - Reductions are beyond what is expected from receipt of other climate change incentives (federal, provincial/territorial)
- **Quantifiable**
 - GHG reductions from projects must be quantified as specified in an Offset System Quantification Protocol for the project type
- **Verifiable**
 - A recognized verifier must be able to provide a reasonable level of assurance that the reductions claimed from the project have been monitored/estimated, quantified and reported
- **Unique**
 - A GHG reduction can only be used once to create an offset credit

There will be four steps required to generate offset credits from a project that achieves incremental reductions in greenhouse gases:

Step 1: Creation of a quantification protocol for the project type

Step 2: Registration of a project

Step 3: Reporting and verification of reductions from a registered project

Step 4: Certification of reductions and issuance of offset credits

A Guide for Protocol Development is anticipated to be released in Summer 2008. A Guide for Project Proponents along with a Guide for Verification Bodies is anticipated later in 2008. It is expected that protocols will be developed for the capture of LFG. More information is available at: www.ec.gc.ca.

10 “Wish List”

In general, Canada’s objectives for participation in the Landfill Subcommittee are similar to those described by other member countries, that is, improve the cost-competitiveness of LFG and advance LFG technologies. More specifically, Canada is interested in working collaboratively to:

- Reduce GHG emissions from landfills;
- Increase LFG capture and utilization;
- Advance knowledge related to the efficiency of LFG capture and utilization, including the bioreactor concept;
- Reduce the cost of LFG treatment and utilization.
- Export its expertise to other countries

11 Conclusions and observations

The collection of LFG is a well-established activity in Canada. Many provinces have regulations or guidelines covering the recovery of LFG. The domestic Offset System for GHG, which is in the process of being implemented by the federal government, will provide an incentive for landfills not currently covered by provincial regulations to recover LFG. In addition, provincial green energy programs and federal funding programs provide financial assistance towards LFG projects.

The overall trend in Canada is still towards an increase in GHG emissions from landfills. While an emphasis will continue to be placed on the recovery of LFG, the focus in Canada is moving towards improving waste diversion, including recycling and the treatment of organics. Increasing diversion will help reduce the quantity of waste being sent to landfills. The treatment of organics, which may include anaerobic digestion and/or composting, will reduce methane emissions from landfills over the longer term in Canada.

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