



Climate Protection Corporate Action Plan

Montréal 

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The challenges involve budgets and technology, but also people. If we are to succeed in making changes, we have to begin by convincing ourselves, and then bring our planners, urban planners, professionals and white- and blue-collar employees on board. For it is they, in their work, who will make this new vision of the city a reality.

Gérald Tremblay, Mayor of Montréal
Opening remarks at the 4th Municipal
Leaders Summit on Climate Change,
Montréal, December 2005



Fellow citizens,

Montréal's First Strategic Plan for Sustainable Development was released in April 2005. It proposed a series of actions intended to promote sustainable development in our metropolis. The issue of greenhouse gases, which is often in the headlines, was one of our central concerns at that time. In November 2005, Montréal set itself the corporate objective of reducing greenhouse gas emissions by 20% by 2012, a challenge three

times more demanding than the Canadian objective set under the Kyoto Protocol.

That is the goal underlying this Corporate Action Plan, the first step toward acquiring the expertise and fostering the awareness among members of our city's workforce that will lead us toward a sustainable community, one whose development will one day be based on renewable energy. By taking this approach and suggesting specific actions for its different administrative units, Montréal is leading the way when it comes to potential sustainable development solutions. We also hope that this initiative will elicit similar initiatives in the entire Montréal community, so that Montrealers will commit themselves to taking concrete action to reduce greenhouse gases.

After a first successful phase of reduction efforts over the 1990-2002 period, Montréal joined with 130 other Canadian cities in the "Partners for Climate Protection" program launched by the Federation of Canadian Municipalities (FCM), with the goal of reducing greenhouse gas emissions by 20%. This is a true environmental challenge for all municipal employees in the agglomeration, as well as an economic necessity that will allow us to maintain the quality of our services for Montrealers at a time when energy costs are rising sharply.

Our choice has always been clear: Use sustainable development as a foundation on which to build Montréal. Now we are giving ourselves the tools we need to reach that goal, and in so doing we hope to make Montréal a place where all Montrealers can enjoy the highest possible air quality.

Alan DeSousa, FCA
Executive Committee member responsible
for Sustainable Development,
Economic Development and Montréal 2025

Summary

This Corporate Action Plan is based on a series of twelve actions and three performance indicators:

- four actions relating to vehicles;
- one action related to processes;
- five actions relating to buildings;
- two actions relating to handling and sharing information.

The Plan takes a “management by results” approach. Its cornerstone is the creation of an “*Energy*” financial tool for optimizing resources and obtaining financial assistance for energy efficiency projects. The idea is to select projects with the best return on investment and the lowest dollar cost per tonne of carbon dioxide equivalent (CO₂e).

The plan calls for investment of \$10.7 M spread out over six years, with the objective of obtaining an additional \$5 M in grants. These two amounts, combined with the actions under the Plan, should generate close to \$5 M per year in long-term recurring savings. Saving energy in this way means protecting not only the climate, but also our economic ability to provide services for Montrealers.

	Reduction in tCO ₂ /yr	% reduction in 2002-2012	Additional investment in regular operations, in \$M	Savings \$M/yr
Savings 2002-2004	- 8,000	- 4.2	—	—
SMEC	- 9,040	- 4.7	Natural decrease	—
Museums	- 2,750	- 1.4	7	1
Wastewater treatment plant	- 2,000	- 1	Budget committed	0.15
Building energy efficiency	- 10,000	- 5.2	*10.7 over 6 yrs	2.8
Vehicle idling	- 200	- 0.1	Budget committed	0.07
Replacement of refrigerants	- 3,500	- 1.8	Required by law	—
5% ethanol fuel	- 1,200	- 0.6	Federal decision	—
Green policy for vehicle fleet	- 3,000	- 1.5	—	1.05
Police - vehicle fleet mgmt	- 1,200	- 0.6	—	0.42
Development of renewable energy	- 350	- 0.2	Budget committed	0.2
Total	- 41,200	- 21	—	—
2012 objective	- 39,200	- 20	*10.7 over 6 yrs + 7 for Museums	4.7 + 1 (museums)
2002 emissions	196,000			
2012 objective	156,800			

* Simulation based on the existence of an *Energy* Fund for reinvesting energy savings in energy efficiency measures subsidized at 20%.



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Chapter 1

Objective - 20%

1.1 2002-2012: Objective - 20%

On November 23, 2005, the city of Montréal adopted resolution CE05 5020, committing itself to reducing its corporate greenhouse gas emissions by 20% by 2012, based on 2002 emissions. After a first, successful phase in reduction efforts over the 1990-2002 period, the city undertook a second phase and joined forces with 130 other Canadian cities in the Partners for Climate Protection program launched by the Federation of Canadian Municipalities (FCM).

Achieving this corporate objective for the municipalities in the agglomeration, by adding up reductions since 1990, will lead to an 86% reduction over the 1990-2012 period in greenhouse gases from municipal operations.



Downtown Montréal

This resolution by the Executive Committee confirmed the desire of the Montréal community to reduce its ecological footprint and maintain the Earth's equilibrium. *Montréal's First Strategic Plan for Sustainable Development* (MFSPSD) proposes nine actions with a direct impact on greenhouse gas emissions. This Corporate Action Plan is one of the deliverables we committed ourselves to in the MFSPSD.



1.2 History of reductions

1.2.1 1990-2002

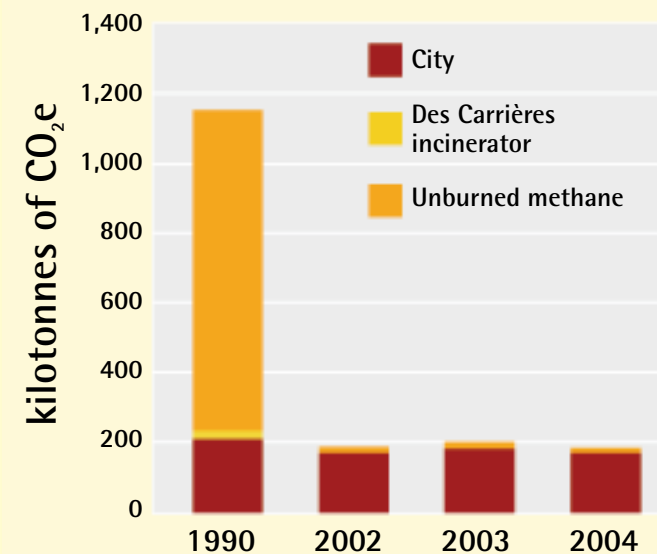
Corporate emissions in 1990 were estimated so as to compare the results of municipalities in the agglomeration for purposes of compliance with the Kyoto Protocol. However, obtaining detailed figures on energy consumption by the 29 municipalities (making up the Montréal Urban Community in 1990) after more than 10 years is no easy task. The estimate arrived at is thus highly uncertain and must be used with caution.

1990-2002 achievement:
Corporate emissions
down by 80%

The city of Montréal has the unusual characteristic of being the owner and operator of the Saint-Michel Environmental Complex (SMEC). Decomposing waste emits huge quantities of methane, a powerful greenhouse gas. In 1990, for instance, biogas emissions represented nearly 90% of greenhouse gas emissions from municipal operations. Capturing and burning this biogas to produce electricity made it possible to reduce site emissions by 98% and to cut emissions from the Montréal community as a whole by about 10%.

Since 2000, the site has been accepting only dry (non-decomposable) waste, so biogas emissions are declining naturally.

Figure 1
Historic reductions in greenhouse gas emissions thanks to biogas capture





1.2.2 2002-2004

The corporate inventory of greenhouse gas emissions from municipal operations on Montréal Island was 196 ktCO₂e in 2002, 204 ktCO₂e in 2003 and 189 ktCO₂e in 2004. In other words, emissions have remained relatively stable. Note that the inventory is intended as a tool for monitoring projects in the medium term, given its margin of error of more than 5%.

Figure 2

Corporate greenhouse gas emissions by municipalities in the agglomeration (2002-2004)





1.3 2002-2004 inventory

The two main sources of greenhouse gases from municipal institutions on the Island were:

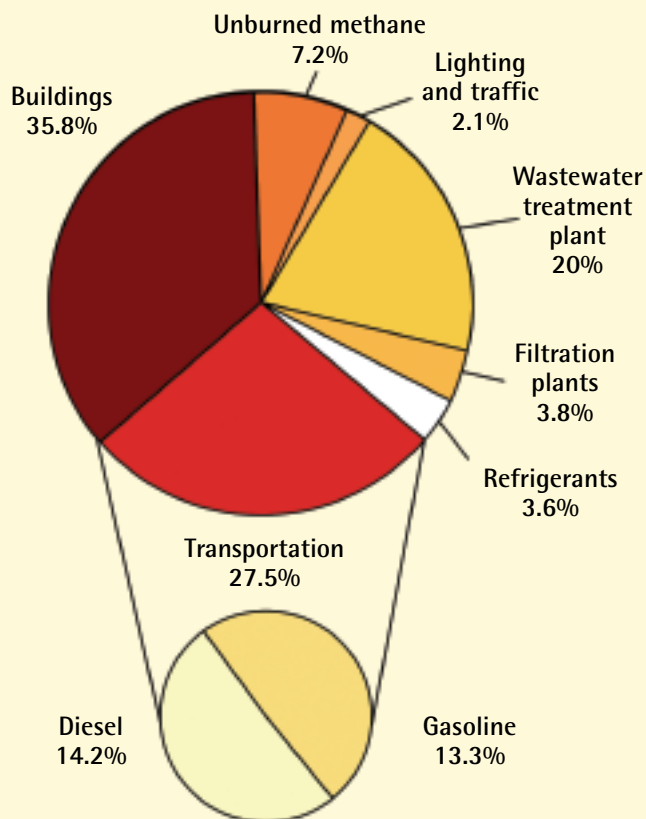
- energy consumption in buildings;
- fuel consumption by vehicles.

Actions relating to these two sectors are required if we are to reach our corporate objective.

The Corporate Action Plan comprises twelve actions and three energy efficiency performance indicators:

Two main sources of
greenhouse gases:
36% from buildings
28% from vehicles

Figure 3
Breakdown of greenhouse gas emissions
by activity (2004)

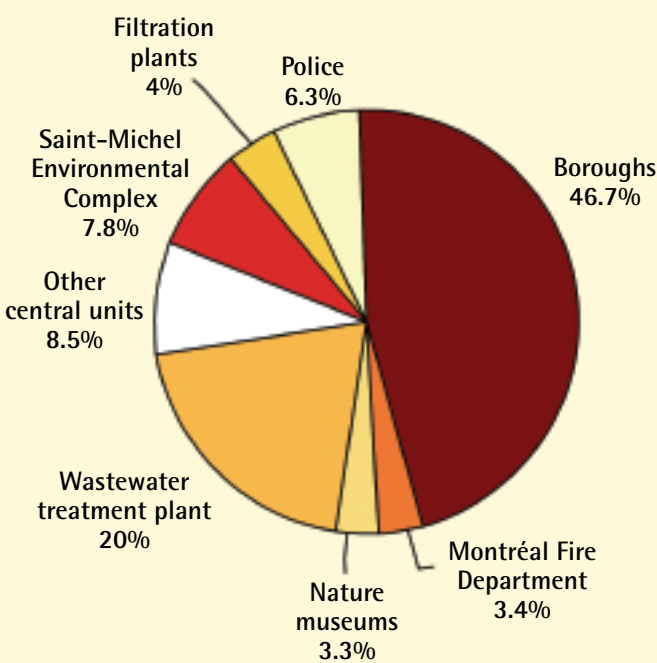


- three multi-sector actions;
- four actions relating to buildings;
- four actions relating to vehicles;
- one action relating to the wastewater treatment plant.



The agglomeration consists of 16 cities. The city of Montréal is itself subdivided into 19 boroughs and a number of central units that provide services for the entire agglomeration (environment, police, buildings, etc.). Emissions are shared equally between the boroughs and reconstituted municipalities on the one hand (local services) and central units (serving the entire agglomeration) on the other hand.

Figure 4
Relative contributions by administrative units to corporate emissions



To come up with this estimate, the emissions produced by central units were arbitrarily separated from those of the nine boroughs in the former city.

Chapter 2

Strategies

The strategy for reaching the objective of reducing greenhouse gases is based on four administrative tools:

1. An annual corporate inventory for measuring progress toward the objective set and shortfalls as shown by performance indicators.
2. An action plan translating the general objective into sector objectives and performance indicators (on greenhouse gases) by activity.
3. An *Energy Fund*, to be used as a lever for obtaining the necessary financial means.
4. An *Energy Intranet* portal for publicizing and sharing technical and financial information.

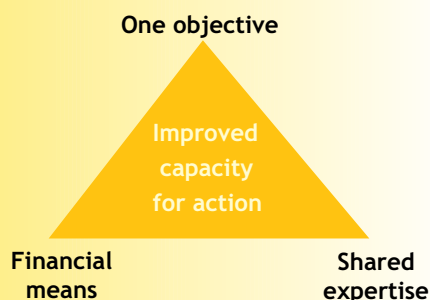
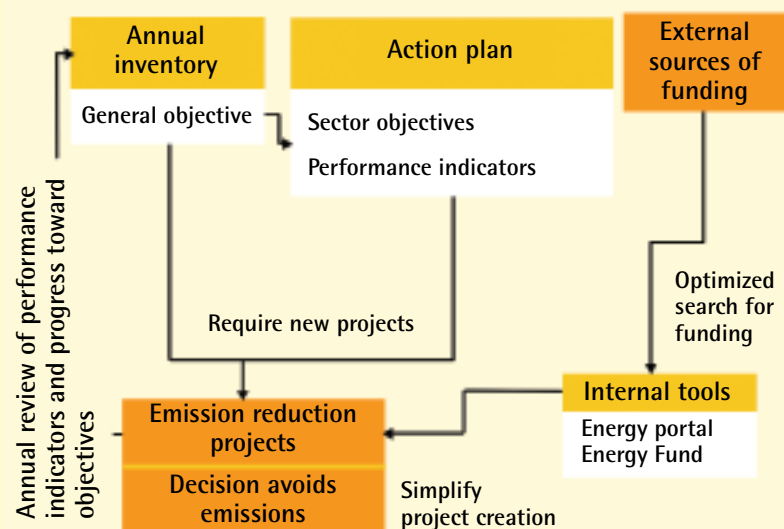


Figure 5
Action plan strategy



The purpose of this strategy is to promote and simplify energy efficiency efforts in the field. It is also designed to allow municipalities in the agglomeration to make maximum use of the energy-management support funding available under provincial and federal programs and from energy distributors. The team of experts managing the city's *Energy Fund* will be able to make sure that each project funded receives all the available assistance, without wasting efforts seeking funding. An *Energy Intranet* portal will also be set up to share technical and financial information throughout the municipal administration.



2.1 Environmental cost effectiveness

Anyone can compare the prices of gasoline, diesel, natural gas and electricity. But each joule of energy consumed also has a hidden cost, paid unknowingly by our society as a whole. In economic terms, this environmental cost is called an externality, meaning that the environmental cost of energy is not included in its price.

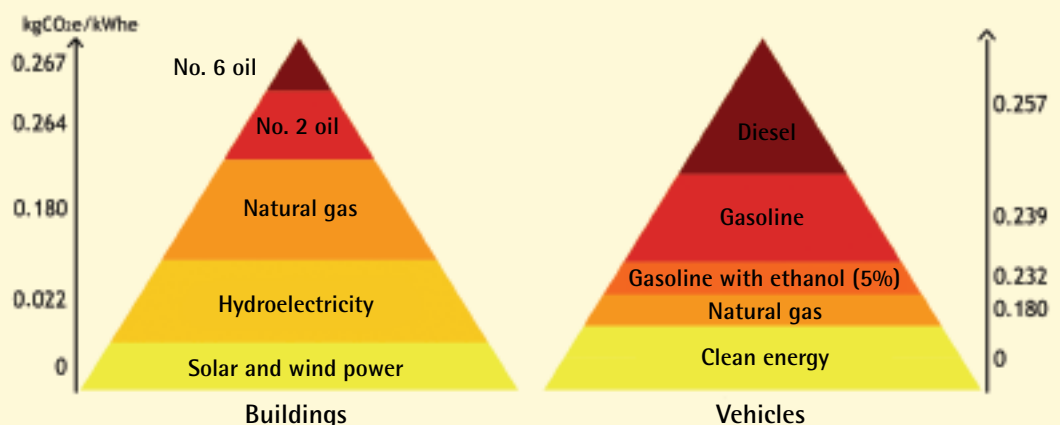
Greenhouse gases are a perfect example of the externality of energy. Each litre of heating oil burned causes greenhouse gases to be released into the atmosphere. Today we know that climate change has a major financial impact on infrastructure, in particular that of cities. The costs to cities of adapting to climate change and maintaining their infrastructures must be borne by taxpayers.

The two pyramids below show the greenhouse gases emissions caused by different types of energy for vehicles and buildings (the two major sources of municipal energy consumption). Each tonne of greenhouse gases emitted has a hidden adaptation cost.

Strategy 1

Investment efficiency:
Find the best compromise
between the cost in
\$ invested/tCO₂e and
the payback period
of the investment

Figure 6
Energy sources with greenhouse gases emitted, per kWh





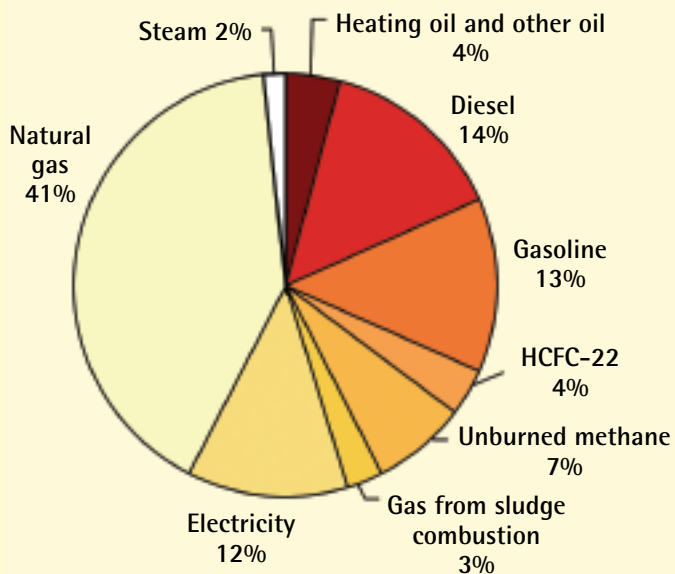
Strategy 2

Consider the environmental
cost of energy

To avoid emitting one tonne of CO₂e, we must save ten times more electricity than heating oil. Savings on the most polluting forms of energy present the lowest investment cost in dollars invested per tCO₂e avoided.

However, we must also consider the investment payback period. Each dollar invested in energy efficiency leads to energy savings that can then be reinvested. The best investment is a combination of the highest internal rate of return and the lowest investment cost per tonne of carbon.

Figure 7
Breakdown of emissions by energy source



Chapter 3

12 actions for 2012

Action 1: Create an *Energy Fund*

Who: Service des finances – Direction de l'environnement
et du développement durable

Sector: Multi-sector

Impact: Support activity

Deadline: 2007

Many large cities in North America and Europe (Toronto, Phoenix, Edmonton, London) have created *Energy Funds* to give themselves the means to achieve their energy management objectives. These experiments have proved tremendously successful. We need to create a similar financial tool for municipalities on the Island, to make the most of the available financial assistance and reach our objectives. The managers consulted on this subject are all in agreement with this approach.

Once this financial tool is in place, it will essentially be self-supporting; its operating principles, based on the strategies outlined in this Plan, will encourage the projects most likely to keep it operating.

Funding:

\$10.7 M invested over six years, assuming a 20% subsidy for energy efficiency projects, an average payback period of seven years and a payback rate of up to 80% of the annual return on investment until the principal is repaid, to encourage project promoters.

Energy Fund simulation

- Investment objective: \$24.4 M over 6 years
- Grants: 20%
- Average gross payback period: 7 years
- Margin for the promoter on the return on investment: 20%

Year	Initial investment	Reinvestment	Grants	Return on investment	Total investment
1	3.0	0.0	0.8	0.4	3.8
2	2.7	0.4	0.8	0.9	3.9
3	2.0	0.9	0.7	1.3	3.6
4	1.5	1.3	0.7	1.7	3.5
5	1.0	1.7	0.7	2.1	3.4
6	0.5	2.1	0.6	2.4	3.2
7	0.0	2.4	0.6	2.8	3.0
Total	10.7	8.8	4.9	11.6	24.4



Action 2: Create an *Energy* Intranet portal

Who: Direction de l'environnement et
du développement durable

Deadline: 2007

Sector: Multi-sector

Impact: Support activity

The way that the city is divided up into independent boroughs and reconstituted municipalities can lead to a “silo” approach that results in duplication of expertise. This makes it all the more essential to share information so as to integrate the operations of the different entities responsible for managing energy, in particular their technical and financial expertise.

The *Energy* Intranet site, which could later be made available over the Internet, will make it possible to share experience, both good and bad, in the agglomeration and to identify valuable expertise. Specifications and calls for tender, as well as technical and economic analyses of projects completed, will be made available on-line via this portal.

Funding: Regular budget of the Direction de l'environnement et du développement durable

Action 3: Install a solar wall and solar water heaters

Who: Direction des immeubles –
Direction de l'environnement et
du développement durable

Deadline: 2007

Sector: Buildings

Impact: Support activity

Renewable energy production units (such as solar walls and geothermal units) will be installed in municipal buildings as pilot projects, for a total investment of close to \$200,000. These two projects will allow us to develop expertise in equipment and prepare standard specifications for use with later renewable energy projects.

Funding: \$180,000 already allocated to projects underway, of which 50% comes from the FCM Green Fund under the Partners for Climate Protection program.



Action 4: Develop renewable energy

Who: Direction des immeubles

Deadline: 2012

Sector: Buildings

Impact: -0.2% (- 350 t/yr)

With the experience gained from Action 3, the Direction des immeubles is committed to carrying out at least one renewable energy project per year for three years in city buildings. A project summary sheet will be drawn up for each project and posted on the *Energy* Intranet portal, and technical reference documents will also be made available there.

Funding: \$250,000 from the budget of the Direction des immeubles, grants, and the *Energy* Fund created in Action 1.

Action 5: Replace heating oil

Who: Direction de l'environnement et
du développement durable

Deadline: September 2007

Sector: Multi-sector

Impact: Support activity

The Direction de l'environnement et du développement durable will draw up a list of users of No. 2 and No. 6 oil, based on the annual inventory of corporate greenhouse gas emissions, and will consult with each user to evaluate the possibility of replacing this polluting energy source with a cleaner one.

The cost of replacing all heating oil in municipal buildings in the agglomeration is estimated at \$6 M. This form of energy also comes with high operating and maintenance costs. Only projects considered cost-effective under the Fund criteria will be carried out as part of this action.

Funding: \$6 M, from the city's *Energy* Fund budget



Action 6: Eliminate certain refrigerants

Who: Arena and building managers

Deadline: 2010

Sector: Buildings

Impact: -1.8% (-3,500 t/yr)

Stopping the use of refrigerant gases with high global warming potential would result in major reductions in greenhouse gases. Some of these gases, in particular those used in arenas (HCFC22), must be replaced in any case, since their sale and then their manufacture will be prohibited by 2010 under the Montreal Protocol on Substances That Deplete the Ozone Layer. Cities will reduce their greenhouse gas emissions by complying with the protocol.

Funding: \$50 M, not budgeted under this plan, since the conversion of these arenas is required under the Montreal Protocol on Substances That Deplete the Ozone Layer.

Action 7: Introduce a PPP Energy Savings Plan

Who: Nature Museums – Scientific Institutions

Deadline: 2008

Sector: Buildings

Impact: -1.5% (-2,800 t/yr)

Montréal's Nature Museums have very special roles and truly unique buildings. They include the Biodôme, with its four ecosystems; the Botanical Garden, with its greenhouses; and the Insectarium, with its live collections. The Scientific Institutions Department is launching a vast energy efficiency project, involving investment on the order of \$7 M, to reduce greenhouse gas emissions from the different institutions by nearly 50% (2,800 tonnes of CO₂).

Funding: Budget request specific to the Nature Museums.



Action 8: Save on natural gas at the wastewater treatment plant

Who: Wastewater treatment plant

Deadline: 2007

Sector: Processes

Impact: -1% (-2,000 t/yr)

Sludge from the city of Montréal wastewater treatment plant is incinerated. Upgrading the burners has made it possible to reduce natural gas consumption in the post-combustion chamber, while maintaining the necessary temperature. This is a \$400,000 investment, which works out to \$200/tCO₂e, with a payback period of three years. This project shows that reducing greenhouse gas emissions can also mean reducing energy costs.

Each litre of water saved represents energy savings, for both production and treatment. The agglomeration's programs for supporting water savings and better managing rainwater as part of adaptations to climate change also play a part in reducing greenhouse gas emissions.

Funding: Budget already committed by the treatment plant

Action 9: Discourage vehicle idling and implement Project O-zone

Who: All departments

Deadline: Late 2007

Sector: Vehicles

Impact: 0.1% (-100 t/yr)

Stopping drivers from idling their vehicles is a concrete action that the city of Montréal committed itself to applying under the *First Strategic Plan For Sustainable Development*. Thanks to its "If you're not driving, don't leave it running!" program, about 4,000 municipal employees will take training on not idling vehicles and on "green" driving techniques. In co-operation with the Syndicat des Cols bleus regroupés de Montréal (SCFP- Local 301), all employees who drive municipal vehicles will take part in awareness sessions.

Project O-zone:

The city Police department (SPVM) will be installing 20 electric systems in its vehicles at two neighbourhood stations to measure how often they are left idling, with the goal of reducing fuel consumption and greenhouse gas emissions.

Funding: Budget already committed for this action.



Action 10: Implement a new purchasing policy for police vehicles

Who: City of Montréal Police Department (SPVM)

Deadline: N/A

Sector: Vehicles

Impact: -0.6% (-1,200 t/yr)

The city of Montréal Police Department (SPVM) uses energy for both buildings and vehicles. Most of its greenhouse gas emissions, however, come from gasoline used by its vehicles.

The SPVM has already considerably improved the energy efficiency of its vehicle fleet in recent years. While respecting performance standards for police vehicles (“Police Pack” standard for call-response vehicles), the SPVM will be including fuel consumption criteria in its calls for tenders and purchasing policy, and giving preference to more economical vehicles.

Funding: N/A (no additional expenditure)

Action 11: Use gasoline with 5% ethanol

Who: All departments

Deadline: Quebec Action Plan

Sector: Vehicles

Impact: -0.6% (-1,200 t/yr)

In its 2006-2012 climate change action plan, the Quebec government followed the federal government’s lead by announcing that it intended to oblige fuel distributors to make their brands of gasoline include 5% ethanol. To simplify access to this fuel, the Quebec government “aims to have gas distributors include a minimum 5% of ethanol in their total fuel sales by 2012.” According to Environment Canada emission factors, this measure will reduce greenhouse gas emissions per litre of fuel by 4.3%. Municipal departments in the agglomeration consume close to 10.5 million litres of gasoline per year. This measure would result in a 0.6% reduction in corporate emissions.

Funding: N/A (no additional expenditure)



Action 12: Implement a green policy for the city vehicle fleet

Who: Direction du matériel roulant et des ateliers

Deadline: 2007 (implementation)

Sector: Vehicles

Impact: -1.5% (-3,000 t/yr)

Under *Montréal's First Strategic Plan for Sustainable Development* and this action plan, the Direction du matériel roulant et des ateliers has drawn up a green plan for the city's vehicle fleet (attached), based on four principles:

- Choosing the most fuel-efficient engines, adapted to users' needs, when purchasing new vehicles;
- Reducing or limiting equipment that consumes large amounts of energy in fleet vehicles (e.g., air conditioning);
- Making vehicle users aware of the ecological consequences of their behaviour;
- Integrating advanced technology to reduce pollution by vehicles when its cost-effectiveness has been proven.

In addition, the Direction du matériel roulant et des ateliers is committed to co-operating closely with the Direction de l'approvisionnement and the STM to issue a call for tenders for an agreement to provide ethanol (E10) and biodiesel (B) fuel over a five-year period, in that the existing contract will expire in November 2007. If oil companies or recognized fuel distributors submit tenders at acceptable prices, this will allow the city of Montréal to exceed the provincial and federal commitments aimed at making E5 available on the market.

Funding: N/A (no additional expenditure)

Chapter 4

Performance indicators

Table 1
Performance indicators for municipal buildings

	kWhe/m ₂ in normal DDs	Eff GG kg/(m ₂ /yr)
Libraries and Maisons de la culture	255	30
Arenas	520	40
Indoor pools	765	90
Sports centres	500	55
Shops and garages	460	55
Administration and offices	350	35

Table 2
Water temperature standards in municipal buildings

Municipal buildings	Temperature °C
Indoor pools <ul style="list-style-type: none"> • all pools • exceptions: <ul style="list-style-type: none"> • Joseph-Charbonneau therapeutic swimming pool • Georges-Vernot swimming pool 	27 to 29 27 to 30 27 to 30
Hot water <ul style="list-style-type: none"> • hot water heaters for taps and showers • taps and showers (with mixer) • housekeeping • restaurants (dishwasher) 	60 (***) 40 60 80
Arenas <ul style="list-style-type: none"> • water for making ice • water for melting snow • brine or glycol: <ul style="list-style-type: none"> • feeding the rink • drain from the rink 	52 water main -9,5 -8

4.1 Indicator 1: Energy efficiency in buildings

Energy efficiency in buildings, in kgCO₂e/(yr.m₂)

These energy efficiency indicators were developed in collaboration with the city's Direction des immeubles (DI). They show the current average performance of the buildings managed by the DI, which are relatively old and require investment in maintenance; these are average values.

The purpose of these indicators is to identify buildings that are consuming abnormal amounts of energy and to improve their management. The goal is to provide a benchmark for comparing and identifying the buildings with the highest energy use. More than the absolute values in the table, it is the comparative values that are important.

4.2 Indicator 2: Temperature standards

Temperature standards in buildings

The following temperature standards have been proposed for adoption in all municipalities and boroughs on the Island. Their implementation by the Direction des immeubles has already led to savings of several million dollars.



Table 3
Temperature standards in municipal buildings

Winter conditions (heating)	Occupied °C	Unoccupied °C
Buildings and office spaces	21	16
Computer rooms	21	21
Fire stations		
• ground floor	18	18
• upstairs	21	21
Stores and warehouses		
• occupied spaces	21	16
• warehousing	18	16
Municipal yards and service centres		
• offices	21	16
• shops	18	16
• storage garages	10	10
Restaurants	21	16
Libraries	21	18
Recreation centres	21	16
Sports centres		
• offices and public spaces	21	16
• locker rooms	22	16
• gyms and exercise rooms	18	16
Indoor pools	28 to 30	28 to 30 (**)
Arenas		
• bleachers	14 to 15 (*)	7
• dressing rooms	22	16
Park shelters	19	10
Vestibules	16	16

Summer conditions (air conditioning)	Occupied °C	Unoccupied °C
Buildings and office spaces	25	(A)
Computer rooms	21	(C)
Fire stations		
• ground floor	O/T	O/T
• ground floor	25	(C)
Stores and warehouses		
• occupied spaces	O/T	O/T
• warehousing	O/T	O/T
Municipal yards and service centres		
• offices	25	(A)
• shops	O/T	O/T
• storage garages	O/T	O/T
Restaurants	25	(A)
Libraries	25	29
Recreation centres	25	(A)
Sports centres		
• offices and public spaces	25	(A)
• locker rooms	25	(A)
• gyms and exercise rooms	25	(A)
Indoor pools	28 to 30	28 to 30 (**)
Arenas		
• bleachers	(A)	(A)
• dressing rooms	(A)	(A)
Park shelters	O/T	O/T
Vestibules	O/T	O/T



Notes for tables 3 and 4

- All values are in international units;
- Temperatures may vary by $\pm 1^{\circ}\text{C}$;
- (A) Means that the system is off;
- (C) Means that the system is in continuous operation, so the temperature remains constant;
- O/T means that the system depends on the outdoor temperature(ventilation only);
- (*) Temperature measured at the centre of the bleachers;
- (**) Temperature may be lowered if the pool is covered to prevent evaporation;
- (***) To prevent growth of bacteria responsible for Legionnaire's disease.

Good practices for municipal buildings

Lighting:

- Reduce lighting for playing fields after play has finished, and turn lights off after midnight;
- Turn lights off outside of hours of use;
- Turn general lighting off in arenas, outside hours of use, and use bleacher lighting for maintenance work.

Window-mounted air conditioning units:

- Turn off air conditioners when premises are not in use;
- Do not use air conditioners when windows are open.

Other:

- Close outside doors and windows in winter;
- Do not allow hot water taps to run unnecessarily;
- Do not use baseboard heaters or portable electric heaters.



4.3 Indicator 3: Drinking water production

10 g CO₂e /m³ of water produced

The average amount of greenhouse gases emitted per cubic metre of drinking water distributed (not including the Sainte-Anne plant) is 10 gCO₂e/m³. This is a target that can reasonably be reached by all the filtration plants on the Island. Only two plants are significantly above this target: those in Sainte-Anne-de-Bellevue and Pointe-Claire, because of the considerable use of heating oil at the Sainte-Anne plant and natural gas at the Pointe-Claire plant. Reaching this objective in the two plants would reduce greenhouse gas emissions by 250 tCO₂e per year.

Table 4
Greenhouse gas emissions per litre of drinking water produced

	gCO ₂ e/m ³ produced	MJe/m ³ produced
Sainte-Anne	46	3.1
Pierrefonds	11	1.7
Dorval	8	1.3
Lachine	9	1.6
Pointe-Claire	15	1.4
Atw/C-d-B	8	1.2



Conclusion

On November 23, 2005, when the Executive Committee adopted its resolution, the city of Montréal committed itself to reducing its corporate greenhouse gas emissions by 20% between 2002 and 2012. This effort to protect the climate and cut the energy bills of municipalities on the Island represents a reduction of 39,200 tonnes (CO₂e) per year in carbon emissions.

This plan sets an overall objective for all municipal operations on the Island, and then breaks the objective down by activity sector, into twelve actions and three performance indicators. These twelve actions were chosen because of their potential for cutting greenhouse gas emissions at the lowest investment cost (in \$/tCO₂e) and best cost effectiveness (payback period). This objective is also expressed in the form of performance indicators, in particular for managing buildings.

To reach these objectives, this Corporate Action Plan also calls for an *Energy Fund* and an *Energy Intranet* site to be created, to provide municipalities and boroughs with technical and financial tools. The *Energy Fund* is to be used as a lever for obtaining all possible financial assistance, at the lowest administrative cost, while the *Energy Intranet* site is a means of sharing and publicizing expertise in energy management and preventing duplication of work between administrative units.

The investment required to bring the energy efficiency of municipal services up to the level set in this plan is estimated at \$10.7 M, assuming financial assistance of \$5 M under the different programs offered by governments and energy distributors. Based on past experience, we can estimate that these investments, with an average internal rate of return of 14%, accompanied by fuel energy savings under this plan, over the long term will generate recurrent savings on the order of \$5 M/yr.



Municipalities on the Island will have the opportunity to protect the climate - and we know how costly, in social and economic terms, adapting to climate change will be - while at the same time reducing their energy bills. The climate protection expertise, standards and leadership developed for the management of buildings and vehicle fleets will lead the way in helping the community to reduce its greenhouse gas emissions and adopt a sustainable development approach.



Abbreviations

UNFCCC: United Nations Framework Convention on
Climate Change

SMEC: Saint-Michel Environmental Complex

CO₂: Carbon dioxide

CO₂e: Carbon dioxide equivalent

DD: Degree-day

FCM: Federation of Canadian Municipalities

GG: Greenhouse gas(es)

kt: Kilotonne (metric)

t: Tonne (metric)

PPP: Public/private partnership

MFSPSD: *Montréal's First Strategic Plan for Sustainable
Development*

Photographs

Cover page

Car-free Day in Montréal

Source: RSQA



Foreword

Mayor Gérald Tremblay at
COP11/MOP1 of the UNFCCC

Source: Denis Labine



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801, rue Brennan
Administrative building



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Botanical Garden

Source: RSMA



Chapter 2

Jean Drapeau Park beach

Source: RSMA



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Source: RSMA



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Place Bonaventure



Conclusion

Path in Grou Basin

Source: RSMA

