

REGION OF OTTAWA-CARLETON
RÉGION D'OTTAWA-CARLETON

REPORT
RAPPORT

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DATE 19 May 2000

TO/DEST. Co-ordinator, Corporate Services and Economic Development Committee

FROM/EXP. Planning and Development Approvals Commissioner

SUBJECT/OBJET **CLIMATE CHANGE CORPORATE ACTION PLAN**

REPORT RECOMMENDATIONS

That Corporate Services and Economic Development Committee recommend Council:

- 1. Endorse the Corporate Climate Change Action Plan distributed under separate cover, as the basis for setting the strategic direction required to meet the RMOC's greenhouse gas emissions reduction target.**
- 2. Recommend to the Transition Board inclusion of the Corporate Climate Change Action Plan in the new City's Business Plan beyond 2000.**

PURPOSE

The purpose of this report is to gain Council's endorsement for the Corporate Climate Change Action Plan to implement the Region's commitment to reducing greenhouse gas emissions in compliance with the *Partners for Climate Protection* program (formerly known as the FCM 20% Club). Specifically, this report:

- summarises the results of the corporate base year emissions analysis and forecasts
- illustrates that actions already underway have achieved measurable GHG emissions reductions since 1990
- identifies policies and measures that will achieve the 20% GHG reduction target
- identifies measures to implement in 2000 to establish the corporate climate change program
- outlines additional measures required between 2001 and 2007 to achieve the climate change commitment.

BACKGROUND

In February 1997, in response to the issue of global climate change, Regional Council approved a motion to reduce corporate and community emissions of greenhouse gases (which cause climate change), to 20% below 1990 levels by the year 2007. Specifically, Council became a member of *Partners for Climate Protection* (PCP), a national program which includes over 60 Canadian municipalities. (It was formerly known as FCM's 20% Club). As a member, municipalities commit to the following actions to reduce greenhouse gas (GHG) emissions and improve energy efficiency in their communities:

- conduct a base year emissions analysis and forecast of municipal and community- wide GHG emissions;
- develop a local action plan that sets a GHG reduction target and the policies and measures that will achieve that target;
- implement the emissions reduction measures contained in the local action plan;
- promote public education and awareness on global warming and climate protection.

In addition, Council's decision to join the PCP was motivated by the multiple benefits of addressing climate change at the local level, including:

- *local economic benefits:* In 1999 the City of Sudbury's energy efficiency specialist coordinated \$4.2 million worth of retrofits in municipal facilities, implemented over an 18-month period. Savings to the corporation are estimated to be \$990,000 per year in reduced utility costs. The City of Ottawa has reduced annual building operating costs by \$1 million through energy efficiency measures.
- *local job creation:* The City of Toronto's *Energy Efficiency Office* has generated \$60 million worth of community retrofit activity over the last three years, resulting in annual operating savings of \$6 million and emission reductions of 72,000 tonnes eCO₂. Using the industry standard of 20 local jobs created for every \$1 million invested in energy efficiency, the Better Buildings Partnership estimates that it has created over 1,000 jobs in the Toronto area to date.
- *health and community benefits:* Measures which reduce GHG emissions also help to improve local air quality. This reduces smog-induced health impacts such as asthma.

THE FIRST STEP: CORPORATE EMISSIONS INVENTORY

The first step in the Partners for Climate Protection program is the inventory of municipal corporate emissions.

The focus of this report is on RMOC's corporate emissions, and the measures required to reduce these emissions to 20% below 1990 levels by 2007. Corporate emissions are those from municipally owned or operated facilities or from activities for which the municipality is responsible, as determined using the

PCP protocols. The corporate inventory and implementation strategy was completed prior to developing a community-wide strategy in order to demonstrate Regional leadership on the issue of climate change. Work will commence on the community-wide emissions inventory and implementation strategy later this year.

Two technical reports serve as the foundation for this report: the *Region of Ottawa-Carleton Corporate Climate Change Action Plan: Technical Report* (previously distributed), and *Achieving the Region's Greenhouse Emissions Reduction Target: Methods and Assumptions*. (available from the Regional Clerk). These reports provide information about the local economic, health and environmental effects of climate change, the detailed calculations involved in establishing the corporate emissions baseline, and a full explanation of the PCP protocols. Regional staff provided all baseline data for these reports, and have reviewed the resulting recommendations.

Corporate Emissions Target

The Region's corporate emissions reduction target is the difference between the 20% reduction from 1990 levels, and the emissions forecast for 2007 based on corporate growth. (See Table 1). Emissions are measured in tonnes eCO₂, (equivalent tonnes carbon dioxide). Any initiatives implemented since 1990, for which data was available and which have reduced emissions within

Table 1: Summary of Corporate Greenhouse Gas Emissions

Emissions	Emissions (tonnes eCO₂)
1990 emission level	66,050
2007 emission forecast	69,225 ¹
2007 corporate commitment	52,840 (at 20% reduction)
Corporate Reduction Target	16,385
(Corporate reductions to date)	(10,750)
Corporate reductions remaining	5,640

the corporation, have been recorded and measured. Opportunities to further reduce emissions to meet the target are outlined in the following section.

Progress to Date

¹ Municipal restructuring makes it difficult to forecast future emission levels with certainty. This report predicts a 5% increase in emissions by 2007 as the result of corporate growth and expansion of facilities, fleets and energy consumption. Once the new City is formed this number may increase, and the corporate target will have to be adjusted accordingly. 5,640 tonnes is therefore the absolute *minimum* level of reductions required to meet the 2007 target.

With **5,640 tonnes** of remaining emission reductions, the Region is already two-thirds of the way towards its corporate climate change commitment. This is a clear reflection of the effective measures initiated at the Region since 1990 - in all sectors - which have had a measurable impact on reducing emissions. Table 2 provides only a few of the examples of RMOC initiatives which have contributed to greenhouse gas emissions reductions.

Table 2: Examples of Emission - Reducing Corporate Measures Implemented Since 1990

Measure	Annual eCO₂ Reduction	Annual Cost Savings
ROPEC chiller and lighting retrofit, co-gen installation and methane digester	109 tonnes	\$27,000
oil to natural gas fuel switch at Champlain seniors residence	195 tonnes	\$135,000
corporate solid waste diversion measures, primarily attributed to programs at OC Transpo	1,657 tonnes	\$318,000

Energy Efficiency and Emissions Reductions

Corporate emissions are calculated using consumption totals for diesel, gasoline, electricity, oil and natural gas. Using these fuels more efficiently is the best way of reducing emission levels. Table 2 indicates that most measures to reduce emissions require some form of investment in energy efficiency. Table 2 also shows that efficiency measures can be paid back through reduced fuel and electrical costs, resulting in lower costs to the Corporation. Ultimately, investments in measures to improve efficiency permanently reduce operating costs for the corporation. As fuel and electrical prices continue to rise, the rates of return on efficiency investments become more attractive.

The Region's commitment to emission reductions is a commitment to improve the efficiency of the Corporation. The previously distributed Technical Report provides a cost estimate for each recommended climate change measure, as well as an estimated return on the investment. Those measures with the most attractive return will become an implementation priority.

SUMMARY OF CORPORATE EMISSIONS REDUCTION MEASURES

Measures to reduce corporate energy use and/or emissions and help to achieve Council's corporate climate change commitment are outlined by responsibility sectors. These actions will build on a strong foundation of successful measures that have already achieved emission reductions and cost savings within the corporation.

As required, PCP protocols were adhered to in the development of the corporate inventory. Following standardised PCP protocols facilitates comparisons between municipalities and annual reporting of progress.

Accordingly:

- the corporate building inventory only accounts for emissions from owned facilities, not including Water/Sewage treatment facilities which are treated separately;
- the corporate fleet inventory does not include emissions from OC Transpo buses;
- emissions from landfill gas are not included in the *corporate* total.
- all of the above emissions will be counted as part of the *community* inventory .²

Corporate Building Measures

Buildings owned by the Region account for 34% of corporate emissions. Measures to increase corporate building efficiency include:

- switching the fuel used to heat a given building to a source which is less eCO₂ intensive (ex: oil to natural gas);
- implementing a comprehensive building retrofit program to reduce the energy used to heat and light buildings;
- advanced efficiency design in new corporate buildings.

Implementing these measures also lowers building operating costs.

Since 1990, the Region has moved towards increasing the energy efficiency of its facilities, and has achieved a slight decline in energy use in administrative buildings, day care centres and shelters, largely due to fuel switching. Fuel switching from oil to natural gas in the Region's *Centre d'accueil Champlain Long Term Care Centre* has saved 195 tonnes of eCO₂ and \$135,000 annually. Energy efficiency was included in the design of the *Peter D. Clark Long Term Care Centre* which has received the maximum grant of \$80,000 under the *Federal Commercial Building Incentive Program (CBIP)* for energy efficient design.

Under municipal restructuring, many facilities may be disposed of as redundant assets. The implementation of some corporate building energy efficiency measures may be delayed until the list of buildings for the new City is clarified.

Corporate Fleet Measures

Regional fleets account for 15% of 1990 corporate emissions. Corporate Fleet Services have many well established measures to reduce energy use and emissions including route optimisation, the consideration of energy efficiency and alternative fuels in purchasing and a strong maintenance program.

Each Regional sub-fleet has its own specific needs and opportunities with respect to reducing emissions, and not all actions recommended in the technical report are appropriate in each instance. It will be the responsibility of Environment and Transportation to develop a clear target and strategic plan to improve

² Emission calculation protocols are discussed in detail in Section 1.5 of the *Corporate Climate Change Action Plan Technical Report*.

fleet efficiency and reduce emissions. Climate change staff will work with fleet managers to integrate efficiency strategies where practical, and to include annual monitoring of progress.

Potential measures to be considered in a Fleet Strategy include: increased uptake of alternatively fuelled and efficient vehicles; increased efficiency of the existing fleet; reducing personal vehicle use and providing departmental incentives.

Corporate Solid Waste Diversion Measures

Solid waste produces greenhouse gas emissions from landfills. Corporate solid waste accounts for an estimated 5% of the Region's 1990 corporate emissions. Successful waste diversion measures have a large positive impact on reducing emissions, and have been responsible for 5,292 tonnes of eCO₂ reductions, or almost half of the Region's emission reductions, since 1990. This progress is anticipated to continue as a new waste diversion program is launched in year 2000. To demonstrate community leadership, Regional facilities will continue to strive to achieve the highest level of diversion rates in Canada. It will be essential to provide accurate waste statistics from throughout the corporation to ensure that the new system achieves its diversion goals and can quantify its accomplishments.

Corporate Water / Sewage Treatment Measures

Energy use at Regional water and sewage facilities, used mainly to power pumps and equipment, was responsible for 45% of corporate emissions in 1990.

The Region's sewage treatment facility (ROPEC) provides a clear example of the benefits which result from increasing efficiency. Between 1992 and 1997, fine bubble aerators and dissolved oxygen monitors were installed, a co-generation facility was constructed, and a lighting retrofit and chiller re-sizing were undertaken. The result is an estimated 115 tonnes of reduced eCO₂ emissions per year, and annual cost savings of \$27,000.

Another example demonstrating the potential benefits of increasing efficiency through decreased energy use occurs at the Regional water treatment plants. The Region has proactively sought out to identify and control sources of Unaccounted For Water (UFW) currently estimated at 24% of production. Since 1995, the Region of Ottawa-Carleton's UFW has been reduced by approximately 20%. The reduction of this UFW value can help reduce the diesel consumption and the corresponding greenhouse gas emissions at the Britannia and Lemieux Island treatment facilities. In addition, ongoing treatment plant and pump station pump replacement programs are scheduled within the next five years to install pumps better sized to demand thus replacing less efficient equipment

According to PCP protocols, many measures which would reduce energy consumption at the water / sewage treatment facilities will be addressed in the community implementation strategy. For example, it is estimated that a community-wide program which achieved a 10% reduction in water use could yield annual energy reductions of 16,576 GJ, 916 tonnes of eCO₂, and cost savings of as much as \$229,164. Climate change staff will work with staff in ETD to determine the most cost effective measures - either corporate or community - for reducing future emissions from the Region's water and sewage treatment plants.

Corporate Traffic Signals / Street Lighting Measures

The Region is responsible for the maintenance and energy costs of traffic signals across the region, which were responsible for 1% of corporate emissions in 1990.

In the past eight years, measures have been undertaken to improve energy efficiency and reduce the cost of traffic signals by reducing bulb wattage. LED technology, which is currently being piloted by the Region, has the potential to further reduce energy use in traffic lights. Barriers encountered in previous studies have been high capital costs and long pay back periods. However, as LED technology continues to improve, payback time is decreasing. Regional staff will continue to explore the use of LED fixtures and newer technology, and be encouraged to implement when cost effective.

Corporate Tree Planting Measures

There is considerable interest in off-setting emissions through the use of trees as carbon reservoirs or sinks. Another benefit is the ability of trees to shelter buildings, reducing energy use and emissions associated with heating and air conditioning. Tree planting is included as a measure in the corporate implementation strategy because of Regional control of the program, and because of potential emission credits in the future.

Some development work is required with respect to proper calculations and the ability to verify emission reductions, but the Region's tree planting programs may become an important component of the climate change strategy. This is especially true if planting programs are strategically developed to enhance the energy efficiency of buildings.

Employee Awareness and Action Measures

Employee awareness and participation in activities that reduce emissions are key elements of municipal corporate climate change strategies. One of the main features of employee participation is in demonstrating corporate leadership on the issue of climate change to the community. For example, the City of Peterborough offers a \$1,500 low interest loan to employees who wish to increase the energy efficiency of their homes. This is being done to demonstrate leadership in the City's "Sustainable Peterborough" community campaign.

A climate change component can be integrated into existing and proposed employee initiatives at the Region such as: the Green Steering Committee, the Green Rep Program, the Environmental Code, the Corporate employee Transportation Demand Management *SmartCommute* program and the proposed new employee toolkit. New programs can also be developed, with the option to expand them to corporate partners as part of the community implementation strategy.

Table 3 below summarises the recommendations for reductions in corporate emissions, highlighting the expected impacts, initial costs, and estimated payback period. These energy efficiency measures should be viewed as an investment. After the initial payback period is finished, long-term cost savings will

result from enhanced efficiency. As fuel prices continue to rise, energy efficiency measures will become even more attractive.

Table 3: Summary of Recommended Measures: 2001 and Beyond

Recommendations	Impact (t eCO₂)	New Money Estimate (\$000)	Return (years)
Buildings Sector			
Fuel-switch at Carleton Lodge, Elgin Police HQ	1,100	\$100	1.5
Advanced efficiency in design of new buildings	80*	\$140*	10
Comprehensive Building Retrofit Program · conduct feasibility study / energy audits · implement retrofits · enhanced operator training courses	2,000 600	\$50 - \$70 \$3,700 \$10	7 - 10 <3
Corporate Fleets			
Integrate efficiency targets into Corporate Fleet Strategy · increased gas efficiency · increased diesel efficiency · route optimization, operator incentives · decreased use of personal vehicles · departmental incentives · increase uptake of alternatively fuelled vehicles		\$75 - \$100	2 - 3
Corporate Waste Management			
Support Region's enhanced solid waste diversion program; monitor results for eCO ₂	800	\$0	

*Estimates of cost and return on investment are per building and will depend on building size and efficiency measures selected.

Recommendations	Impact (t eCO₂)	New Money Estimate (\$000)	Return (years)
Water/ Sewage Treatment			
integrate emission reduction goals into water / sewage treatment work plans and budgets		\$0	
optimize energy efficiency at facilities by: · reducing freshwater distribution losses · re-sizing, replacing equipment	1,450 600	\$500 - \$1,500 \$1,000	3 - 5 5
Traffic Signals			
Ongoing application of efficient fixtures; integrate emissions monitoring	n/a		
Tree Planting			
develop strategic tree planting strategy and emissions verification; integrate with Region's existing tree planting program	4,000	\$50 - \$100	
Employee Awareness and Action			
integrate a climate change component into new and existing employee programs		\$50	
TOTAL ESTIMATED COSTS OF IMPLEMENTATION / CO2 SAVINGS	11,880	\$5, 675- \$6,770	

CORPORATE POLICY RECOMMENDATIONS

To achieve the Region's climate change goals, it will be necessary to develop corporate policies to support GHG emissions reductions and energy efficiency. Staff have identified a few key policy directions which merit further investigation, and will be brought forward to Council at a later date.

Financing Options

Recommendations for financing corporate energy efficiency measures in 2001 and beyond will be developed with the Regional Finance Department, and brought forward in the context of the 2001 budget. As previously shown, most of the energy efficiency measures identified will pay for themselves with reduced fuel and electrical costs, resulting in a savings to the Corporation after a pay-back period. Some of the financing options to be considered include:

- the use of federal grant and matching loan funding;
- funds coming directly from capital and operational budgets of participating departments;
- the use of internal reserve funds;
- external financing of energy efficiency measures, to be repaid through electrical and fuel cost savings;
- the creation of a capital program in the form of an internal revolving fund used to match operational funds from within departments. This revolving fund would be repaid through electrical and fuel cost savings.

“Green” Power Purchasing

In the de-regulating utility market, the Region can purchase electricity from its choice of power plants, rather than being restricted to the fuel mix of the Ontario Power Corporation generating stations. Fuels with the highest concentration of greenhouse gases are usually the least expensive. If the corporation’s electricity is purchased only from sources using higher-intensity fuels, then no amount of energy efficiency measures will offset the corresponding rise in emissions.

Staff are investigating opportunities to integrate climate change and other environmental priorities with electrical purchase decisions, (ex: a minimum % of corporate electricity to be purchased from non-emitting sources).

Development of Corporate Strategy for the Sale / Retention of Landfill Gas Emission Credits

PCP program protocols dictate that *emissions* from landfill be included as part of the community-wide inventory. However, as the owner and manager of the municipal landfill, the Region retains ownership of the landfill gas emission *credits*. These credits are a tradable commodity, and may represent a significant amount of money. It is estimated that credits from existing Trail Road flaring could be worth between \$200,000 to \$700,000 annually.

The actual value of the emission credits needs to be confirmed with a detailed study. This study will also explore how the Region registers credits, options for selling, and options for retaining the credits for later use. The study may also examine the Region’s recent interest in a private sector partnership to utilise the biogas at the Trail Road Site from the standpoint of greenhouse gas emissions.

Climate change staff will work closely with the Region’s Solid Waste Division to conduct the necessary studies to formulate a corporate position with respect to landfill emission credits, and the impact on emissions from the use of landfill biogas.

Emissions/ Energy Impact Statement

Integrating operational, financial and other corporate decisions with the goal of reducing emissions and increasing energy efficiency is a guiding principle of the Region’s climate change plan. Climate change staff will be working with other Regional staff on guidelines for an emissions impact statement to be completed for major new initiatives or purchases.

Departments may initiate activities which actually increase corporate emissions. An impact statement would document that every effort has been made to consider energy efficiency, and that increased emissions are accepted in order to achieve other environmental benefits or to enable the Region to reduce community emissions. An impact statement would acknowledge that emission reductions are only one component of the Region's environmental and corporate affairs to be considered during the development of new initiatives.

CLIMATE CHANGE COMMITMENT WORKPLAN FOR 2000

During this year, Regional staff will identify which energy efficiency/ emission reduction measures to implement as we move towards one City, and how best to integrate these actions into work plans and budgets for 2001 and beyond. Climate change staff will provide direct support to departments and coordinate the overall integration of corporate efficiency targets.

Council's 2000 Budget provides for the work needed to carry out the corporate climate change work this year. The Region's corporate climate change focus in 2000 is the integration of energy efficiency measures into departmental work plans and budgets for 2001, and the commencement of the community-wide emissions inventory. In addition to the policy initiatives identified in the previous section, staff will carry out the following climate change activities this year. Table 4 provides a summary.

Pursue Federal Climate Change Funding

Many of the emission reducing measures identified in this report will be eligible for a portion of the \$125 million in new federal funding currently available through the Federation of Canadian Municipalities. The \$25 million *Green Municipal Enabling Fund (GMEF)* provides up to 50% of the cost of conducting efficiency feasibility studies within municipal operations. The \$100 million *Green Municipal Investment Fund (GMIF)* is a revolving loan fund which supports emission reducing measures. Grant funding is also available through the \$270 million *Climate Change Action Fund* and various other federal programs. Climate change staff will pursue federal funding in year 2000 for efficiency projects on behalf of Regional departments.

Integrate Priority Efficiency Measures with Other Activities

To achieve the Region's corporate climate change goal, it is necessary to integrate energy efficiency targets with operational, financial, safety, health and other departmental decisions. Climate change staff will provide direct support as departments select which efficiency measures to implement in 2001 and beyond. This will involve the adoption of those efficiency measures with the most attractive rates of return, or those which the department feels it is in the best position to implement.

The Green Steering Committee is established for promoting the integration of environmental goals at the Region. Recently, Council approved the Environmental Code developed by the Green Steering Committee to serve as a policy foundation for environmental responsibility within the corporation. Council also recommended it for adoption by the new City. Integrating some of the energy efficiency measures outlined in this report is a concrete way for Regional departments to put the Environmental Code into practice as the new City is created. Climate change staff will work closely with the GSC throughout year 2000.

Develop Community Inventory

As part of Council's PCP commitment, an inventory will be conducted of community-wide greenhouse gas emissions throughout the Region in 2000. This inventory will include emissions from the following sectors: residential, commercial and institutional / industrial buildings; transportation (including OC Transpo bus fleets); and waste. This inventory will also identify measures and programs being implemented within these sectors, and will form the basis of the new City's community-wide emissions reduction strategy.

Prepare Climate Change Submission for the new City of Ottawa

Climate change staff will prepare a submission to the new City Council early in 2001 to reaffirm the PCP commitment to corporate and community emissions reduction. Once the new City of Ottawa is established, emission baselines and targets will be re-calculated.

Table 4: Summary of Region's Corporate Climate Change Activities in 2000

Measure	Costs
integrate emission reduction measures and monitoring into 2001 work plans and budgets in the following municipal sectors: <ul style="list-style-type: none"> • buildings • fleets • solid waste diversion • water / sewage treatment • traffic signals • tree planting program • existing and proposed employee initiatives 	\$0*
pursue federal climate change program funding	\$0*
develop a corporate strategy for sale / retention of landfill gas emission credits	To be determined
prepare measures financing options for Council	\$0*
commence community-wide emissions inventory (underway)	\$100,000

prepare corporate climate change submission for new City Council	\$0*
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* Denotes use of existing staff resources.

FINANCIAL IMPLICATIONS

Funds are available in Account 900004 to carry out the program requirements in 2000.

CONSULTATION

Since the Corporate Action Plan provides internal direction to the RMOC, consultation was directed primarily towards Regional staff, with additional input sought from the Environment and Health Advisory Committee. Their comments were very supportive of this initiative, and emphasised the importance of linking air quality to climate change, of recognising the need to enhance and protect carbon sinks, and of tracking energy use. A comprehensive public consultation program will be carried out during the next program phase, the preparation of the Community Action Plan.

CONCLUSION

This report, along with the previously distributed *Region of Ottawa Carleton Corporate Climate Change Action Plan Technical Report*, provides the information needed to set the Region's direction for climate change action. The example set by the Region as it implements the measures recommended in these reports will demonstrate community leadership prior to the next phase of the climate change commitment, which will develop programs to reduce emissions within the new City of Ottawa.

Approved by
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