



CORPORATE SERVICES DIVISION
Corporate Services – Environment Section

TO: Chair and Members of the Community and Corporate Services Committee
SUBJECT: Air Quality Initiatives 2005 Update

Report Number: CORPSERV1/06 Report Date: February 13, 2006
Author(s): Fleur Storace-Hogan Date to Committee: February 28, 2006
Telephone: 905-335-7600 Ext. 7580 Date to Council: March 2, 2006
Ward(s) Affected: 1 2 3 4 5 6 All File Number(s): 210-05

APPROVALS: Department Head General Manager City Manager

To be completed by the Clerks Department

Committee Disposition & Comments
Council Disposition & Comments
01- Approved 02 - Not Approved 03 - As Amended 04 - Referred 05 - Deferred 06 - Received & Filed 07 - Withdrawn

1.0 RECOMMENDATION:

For Information Only

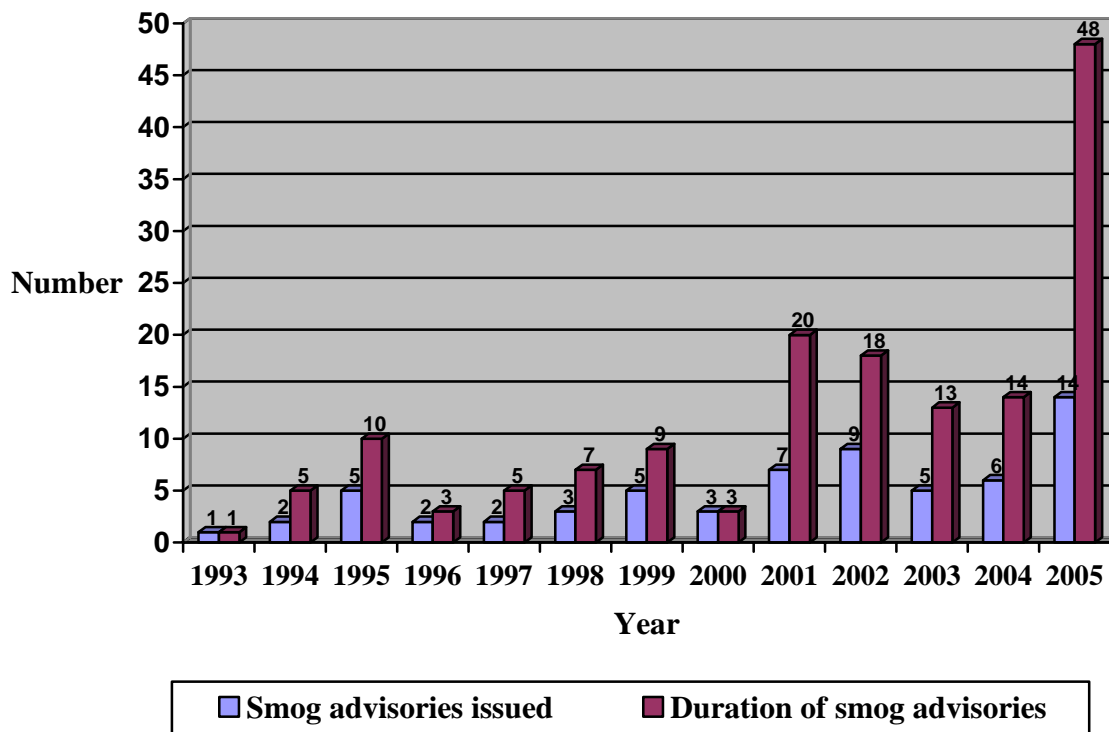
2.0 PURPOSE:

The purpose of this report is to provide an update of the air quality initiatives that were undertaken by City of Burlington staff in 2005 to reduce emissions that contribute to smog.

**3.0 BACKGROUND AND RELATIONSHIP TO STRATEGIC PLAN:**

In 2005, 14 smog advisories spanning 48 days were issued for the Halton-Peel region, making it the smoggiest year since data was first released in 1993 (Figure 1). The 2005 smog season began in February with a four day smog advisory, peaked in June with 19 smog days, and ended in October with another four day advisory.

**Figure 1: Number and duration of smog advisories issued in the Halton-Peel Region**



Many assume that the increased number and duration of smog advisories in 2005 is due to the ‘recent’ inclusion of particulate matter to the air quality index. However, this change occurred in August 2002 and at the time, Ministry of the Environment staff estimated that the addition of particulate matter would increase smog advisories by about 10%. It is clearly demonstrated in Figure 1 that a sudden spike in the number and duration of smog advisories issued did not occur in 2003, the first full year of reporting after the change to the air quality index was made.

On a typical summer smog episode, high levels of particulate matter are reported in the morning and high levels of ground level ozone in the afternoon and early evening. Prior to the inclusion of particulate matter to the air quality index, ozone would have been the trigger for a smog advisory. Today, it is likely to be particulate matter. The difference now is that a summer smog advisory might be called earlier in the day. Wintertime smog, however, tends to be due to particulate matter since weather conditions are not conducive to forming ground level ozone.

The increase in smog days in 2005 was partly due to the exceptionally hot summer. If hot summers were to become the norm, then it is expected that multiple smog advisories will be issued. While approximately half of ozone and particulate matter in southern Ontario is attributed to the long-range transport of their precursors from the United States, locally generated emissions continue to be a factor. For example, during a smog episode in the GTA, approximately half of the PM<sub>2.5</sub> emissions are from human activities in Ontario.<sup>1</sup>

The production of energy from fossil fuel based sources creates greenhouse gases, such as carbon dioxide, that contribute to climate change. Also released are nitrogen oxide emissions, a major component of smog. Energy conservation initiatives will therefore reduce both smog precursors and greenhouse gas emissions.

Listed below are initiatives that the City of Burlington has adopted to reduce our impact on local air quality. Some are described in more detail in section 4.0 or in Appendix A.

- Joined Halton Partners for Clean Air in 1999, a regional team formed to consider what joint actions might be taken to address the health and environmental impacts of smog.
- Adopted the *Halton Public Sector Smog Response Plan* in 2000, a strategy developed to respond to smog days.
- Joined Partners for Climate Protection in 2002, a national network supporting municipal efforts to reduce greenhouse gas emissions through sustainable community planning.
- Adopted the *Healthy Green Spaces Strategy for Public Land* in 2002, developed to guide staff in the protection, restoration, and enhancement of City owned green spaces.
- Joined the Greater Toronto Area Clean Air Council (GTA-CAC) in 2002, an inter-governmental working group that promotes the reduction of air pollution emissions and increased awareness of regional air quality issues in the GTA through the collective efforts of all levels of government.
- A signatory since 2002 to the Inter-governmental Declaration on Clean Air at the annual Smog Summit.
- Participated in the Mayors' Megawatt Challenge since 2003, a GTA initiative bringing municipalities together to improve energy efficiency and environmental management.
- Purchased biodiesel (B20 and B50) for non-licensed off road vehicles every summer since 2003, allowing operations to continue during smog days, and introduced biodiesel (B5) for licensed vehicles in 2005.
- Supported the EnerGuide for Houses program by providing a \$25 subsidy in 2004 and an equivalent rebate in 2005 to Burlington residents who undertook a home energy audit.
- Adopted an idling control by-law in 2004 to prohibit unnecessary idling of vehicles, following an education campaign that has been ongoing since 2003.
- Installed automatic shut-off technology in a limited number of fleet vehicles to reduce idling.
- Added three hybrid gas/electric vehicles to the fleet.
- Replaced the City's street sweeper in 2005 with a more efficient model that improves overall ambient air quality while removing toxic loads from the street rather than being washed down the catch basins.

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<sup>1</sup> Yap, D. *et al.* June 2005. *Transboundary Air Pollution in Ontario*. Ministry of the Environment. <http://www.ene.gov.on.ca/envision/techdocs/5158e.pdf>

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- Developed a corporate energy management program in 2005 and allocated funding to carry out energy efficient initiatives in various City facilities.
- Improved the energy efficiency of the new Central Library addition by 44% over the Model National Energy Code for Buildings.
- Participate in annual commuter challenges, encouraging employees to use active or sustainable forms of transportation.
- Offered free transit on Clean Air Day 2005 and ongoing sustainable transportation options including an efficient urban transit system and network of bicycle and pedestrian paths.

The City's participation in air quality initiatives with the goal of reducing emissions corresponds with the long and short-term goals of the strategic plan, *Future Focus VI ... Pillars for Success*.

### Long Term Goal Statement – Liveable Community #2

- The City will be a leader in making a high level of environmental performance one of its primary goals of its policies, programs and operations, and in the actions of its citizens, to provide the highest quality of life for all.

### Short-term goals

- Burlington will maintain a corporate awareness of environmental improvement in all its daily operations.
- The City will enhance the quality of air, land, water and the City's natural heritage.
- The City will increase citizen and business awareness and participation in improving the environment.

The Region of Halton Health Department considers poor air quality to be a significant health issue and has taken a lead with air quality initiatives. In 2004, Regional Council endorsed the following strategic goal:

- Work to improve air quality in cooperation with other orders of government, businesses and the community.

One of the actions set out in support of this goal was:

- To identify the appropriate number of air quality monitoring stations required in Halton and to work in partnership with industry and other levels of government to establish the stations.

The Ministry of the Environment's air monitoring stations in Halton are currently only located in the southern parts of Burlington and Oakville. In 2005, Region of Halton staff were successful in their request that the Ministry of the Environment donate five air monitoring stations, valued at \$346,000, that became available with the completion of the Clarkson Airshed Study. The addition of these stations will allow for a comprehensive monitoring of local air quality and the assessment of the impact of urban growth, transportation and industry on local public health. More information is provided in regional staff reports MO-14-05 and MO-56-05.

Region of Halton staff are also involved in an air modelling project being undertaken by the Air Quality Monitoring Subcommittee of the GTA Clean Air Council. One of the goals of the project

is to estimate air quality contaminant levels where no monitors are available. Such information will help to influence health-based public policy and regulations, develop informed public education regarding air quality including more targeted messaging, expand and enhance the ability to comment on planning and siting decisions from a public health perspective, and prioritize emissions reduction options.

#### **4.0 DISCUSSION:**

##### **Smog Response Plan**

The *Halton Public Sector Smog Response Plan* was created to reduce the impact of public sector operations on local air quality. The emphasis was on curbing emissions once a smog advisory was issued with a few suggestions for long term initiatives. Since the Plan was adopted in 2000, the number and duration of smog advisories have greatly increased impacting City operations. In response, the City has adopted longer term initiatives such as the use of biodiesel, allowing staff to meet maintenance needs while also minimizing impacts on the environment.

In 2005, Halton Partners for Clean Air expanded its 12 member public sector committee to include members from the private sector and also the community. With the expanded partnership of 25 official members and 2 advisory roles providing health and environmental expertise as required, and with smog days being experienced year-round, it became necessary to revise the existing Plan. A new proposed Clean Air Plan will move away from a reactive response to smog days to a more proactive year-round approach. A separate staff report will recommend that Council adopt this new Clean Air Plan when it is finalized in spring 2006.

##### **Idling Awareness Campaign and Bylaw**

The City implemented an idling awareness campaign in June 2003. In June 2004, Council adopted an idling control by-law that became enforceable in May 2005.

In June 2005, the City of Burlington joined forces with other GTA municipalities for Idle Free Week. Through the generous funding of Natural Resources Canada, three City parking enforcement officers raised the profile about unnecessary idling by handing out information cards or “tickets” to drivers and asking them to turn off their vehicle engine. Drivers were for the most part appreciative of the City's effort in light of the number of smog advisories already issued prior to the idling blitz. Please refer to Appendix A for more information about the campaign and for a list of local, national and international media where the City's campaign was profiled.

##### **EnerGuide for Houses Service Evaluations**

EnerGuide for Houses service evaluations focus on how a house can be improved in order to reduce energy costs and increase comfort. Advisors make their assessments by using energy analysis software to model a home's energy systems, evaluate its energy performance and calculate an energy rating. The assessment is valued at between \$300 and \$350 but a federal subsidy brings the cost to approximately \$175.

One-time funding was approved in 2004 but was extended for one additional year. The City worked in partnership with the Halton Residential Energy Efficiency Project (REEP) from 2004 to early 2005, providing a \$25 subsidy to 290 Burlington homeowners. Funds totalling \$2,550

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were also allocated in 2004 for marketing. Between August and December 2005, an additional 90 rebates were issued to Burlington residents regardless of which licensed company they chose to complete the evaluation as long as the City's criteria were met.

The City's objectives - to increase awareness, to improve accessibility of the program to Burlington residents, and to decrease community greenhouse gas emissions – have been met. Staff will continue to promote the program through in-kind measures (i.e. Environment page on the City website and Environmental Corner in the Burlington Post).

### **Energy Management Team**

A new corporate team was struck in 2005 called the Energy Management Team. Representation includes Environment, Finance, Fire, ITS, Parks and Recreation, Roads and Parks Maintenance and Transit. A budget of \$100,000 was allocated in 2005 to implement energy conservation measures. A breakdown of these measures is highlighted in Appendix A.

### **Planned Initiatives in 2006**

Below is a list of initiatives that staff members plan to carry out in 2006 to reduce the corporation's impact on local air quality. For further details, please refer to Appendix A.

- Adoption of a Clean Air Plan to replace the existing *Halton Public Sector Smog Response Plan*.
- Implementation of initiatives recommended in the Central Arena energy audit, as appropriate.
- Purchase energy management software which tracks all municipal utility consumption (electricity, water, gas, fuels, etc.) helping to manage accounts, analyze data, conserve energy and reduce costs.
- A signatory to the 2006 Inter-governmental Declaration on Clean Air at the 7<sup>th</sup> annual Smog Summit.
- Ongoing participation in the Mayors' Megawatt Challenge, Halton Partners for Clean Air and the GTA Clean Air Council.
- Continued use of alternate fuels and cleaner vehicles/equipment in our fleet, as appropriate.
- Promotion of active and sustainable forms of transportation by participating in annual commuter challenges.
- Development of a corporate action plan, as part of our commitment to Partners for Climate Protection.
- Participation in upcoming local events such as the Upwind Downwind Conference, Halton Ecofestival, and the Smog Summit to promote air quality messaging and actions.

## **5.0 FINANCIAL MATTERS:**

### **Idling bylaw**

The 2005 costs were approximately \$3100 with \$2700 being funded by Natural Resources Canada. The cost breakdown is highlighted in Appendix A.

### **EnerGuide for Houses program**

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The 2005 costs associated with this program were \$3125 for 125 audits (\$7500 was budgeted to support 300 audits) and approximately \$300 for two Environmental Corners advertising the program.

### **Biodiesel**

Fuel costs have greatly increased since 2004. A marked increase was also noted between May and September 2005, when biodiesel is predominately used. Costs per litre for clear and marked diesel and for clear and marked biodiesel are highlighted in Appendix A.

## **6.0 ENVIRONMENTAL MATTERS:**

Poor air quality continues to negatively impact one's health, the environment and the economy. In 2005, the Ontario Medical Association estimated the number of Ontarians admitted to hospitals with health problems related to air pollution exposure was approximately 17,000, while the number of emergency room visits was estimated at almost 60,000. By 2026, these rates are expected to jump to over 24,000 and 88,000 respectively. The 2005 estimates for Halton included 190 premature deaths, 540 hospital admissions and 2,010 emergency room visits per year resulting in \$16.94 million in healthcare costs (not including visits to family doctors) and \$12.85 million in lost productivity costs (as employees were too sick to go to work due to poor air).<sup>2</sup>

## **7.0 COMMUNICATION MATTERS:**

Communication is an integral component of all environmental initiatives. Environment staff will continue to work closely with their communications advisor as necessary.

## **8.0 CONCLUSION:**

It is important that the Corporation of the City of Burlington show leadership regarding environmental issues and encourage others to follow. Environment staff will continue to raise the profile associated with air quality issues among City staff and also the community in 2006.

Respectfully submitted,

Fleur Stora-Hogan  
Environmental Projects

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<sup>2</sup> Ontario Medical Association. 2005. *The Illness Costs of Air Pollution: June 2005-2026 Health and Economic Damage Estimates*. Available at [http://www.oma.org/Health/smog/report/ICAP2005\\_Report.pdf](http://www.oma.org/Health/smog/report/ICAP2005_Report.pdf)

**Appendices:**

A: Air Quality Related Initiatives
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**Staff / Others Consulted:**

Name	Telephone
Air Quality Initiatives Team	
Environmental Management Team	
Energy Management Team	
Sustainable Development Committee	
Beckie Jas, Halton Health Department	905-825-6000 x7678
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**Notifications:**

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**Special Instructions:**

Consent agenda
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<b>Appendix A: Air Quality Related Initiatives</b>
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<b>Initiative</b>	<b>Description</b>	<b>Status and Plans for 2006</b>
<b>Air Quality Index (AQI)</b>	Ministry of the Environment (MOE) staff monitor six air pollutants. Data for each pollutant is gathered and converted to a number on the air quality index (AQI) scale. The pollutant with the highest AQI number has the greatest impact on human health and the environment. It becomes the "overall" AQI for a particular location.	Staff from MOE, Environment Canada and Health Canada are working to improve the current AQI by developing a health based AQI that will take into consideration more than one pollutant. This new index was piloted in BC in the summer of 2005. A pilot in Ontario will soon follow, likely in 2006.
<b>Bio-diesel</b>	<p>Bio-diesel is considered to be a "greener" alternative to regular diesel. The City uses B20 marked diesel in May, June and September and B50 in July and August, allowing staff to maintain operations on smog days. B20 is comprised of 80% diesel and 20% animal fat or vegetable based fuel while B50 is 50% of each diesel and animal fat or vegetable based fuel. Marked diesel is used only for unlicensed, off road vehicles.</p> <p>Between May and September 2005, marked diesel (used for off road non-licensed equipment) rose from 0.6023 to 0.6613 while clear diesel (used for all other diesel vehicles) rose from 0.7467 to 0.8154 cents a litre. There is a premium to use bio-diesel. The cost to use B20 marked diesel rose from 0.6608 to 0.7530 while B50 marked diesel rose from 0.7940 to 0.8730 cents a litre. B5 clear diesel also increased from 0.8530 to 0.9220 cents a litre.</p>	Piloted in 2003, continued use in 2004 and 2005, and planned use in 2006. Introduction of B5 clear diesel to all licensed diesel vehicles in 2005 and planned use in 2006.
<b>Clean Air Plan</b>	This is proposed to replace the <i>Halton Public Sector Smog Response Plan</i> adopted in 2000. The proposed Clean Air Plan is proactive and includes tips for smog days and for year round activities that will help curb emissions.	The Clean Air Plan will be brought forward for Council's consideration in Spring 2006.
<b>Commuter Challenge/ Environment Week/ Clean Air Day</b>	<p>57 staff members participated in the 2005 Commuter Challenge.</p> <p>Burlington Transit was free on Clean Air Day, June 8, 2005.</p>	<p>Staff will assess whether to participate in the national Commuter Challenge or in a GTA-based challenge that requires fewer staff resources in 2006.</p> <p>In March 2006, Transit and Traffic Department staff will consider offering free transit on Clean Air Day (June 7, 2006).</p>
<b>Energy Management Team</b>	2005 funds were spent on energy efficient lighting including approximately 350 LED exit lights, 250 T8 lights, and light replacement in City Hall's lobby/common space. Funds were also allocated to a pilot building audit of	Proposed initiatives for 2006 include: providing seed funding to facilities to offset costs of installing new energy efficient lighting; identifying other potential projects for lighting improvements; implementing

Initiative	Description	Status and Plans for 2006
	<p>Central Arena; Eddy Draft Regulators reducing heat loss through the stack or flue at RPM, Transit, Mainway and Appleby arenas; lighting consultant fees; and a fee to participate in the Mayor's Megawatt Challenge.</p> <p>Note: there is a focus on lighting retrofits due to the significant energy savings and short payback period (less than 2 years).</p>	<p>recommendations from the Central Arena energy audit, as appropriate; and conducting more energy audits through the corporation's participation in the Mayors' Megawatt Challenge.</p> <p>Staff will endeavour to work with external partners for potential funding opportunities such as Burlington Hydro, Ontario Power Authority and Natural Resources Canada.</p>
<b>Healthy Green Spaces / Naturalization</b>	<p>Reducing pesticide use and promoting healthy green spaces reduces our impact on the natural environment. In 2005, staff along with students at Charles Beaudoin school planted a naturalized site at Taywood Park as part of Arbor Day festivities. Council also approved that in those limited instances where pesticides need to be used on City property, that the operator be IPM accredited.</p>	<p>Staff will continue to promote naturally green practices for turf maintenance and promote events such as Arbor Day.</p> <p>The Sustainable Development Committee will be hosting an organic gardening workshop in March 2006 at Central Library.</p> <p>It is anticipated that staff will be participating in the 4<sup>th</sup> annual Pesticide Exchange with the Partners for Naturally Green in June 2006.</p>
<b>Idling Awareness Campaign and Bylaw</b>	<p>Since 2003, approximately 40,000 bookmarks, 250 posters, and over 120 outdoor metal signs have been distributed throughout Burlington's municipal facilities, schools, businesses, etc. Reports about the City's bylaw and awareness campaign have appeared in the Burlington Post, Hamilton Spectator, Burlington Free Press (Vermont), Conservation Halton's newsletter, the City's staff and community newsletters, national newsletters including Idle Free Zone and the One Tonne Challenge, Ontario's Smog Alert Response: A Municipal Guide to Action publication, the City's intranet and internet, CH TV, CHML radio and more. Inquiries about our bylaw have been received from several GTA municipalities as well as Chatham, Hamilton, London, Peterborough, St. Catherine's, Cochrane Alberta, Fredericton New Brunswick, and Burlington Vermont.</p>	<p>Since November 2004, a total of 799 information tickets have been handed out by parking enforcement officers, 731 during the Idle Free Week and 68 outside that period. Another member of staff, who is an appointed Municipal Law Enforcement Officer (bylaw 101-2005), has taken the initiative to hand out the information tickets when he comes across someone idling unnecessarily. Since May 2005, he has handed out approximately 70 information tickets. In 2005, Environment staff also mailed six letters to residents when a complaint was received regarding unnecessary idling. In addition, enforcement officers went to one site on two separate occasions based on complaints. At the time of the visits, there was no idling activity. No tickets or summons have been issued.</p> <p>The breakdown costs to carry out the 2005 Idle Free Week blitz are:</p> <ul style="list-style-type: none"> <li>• Colour copies for form letters mailed as complaints are received = negligible</li> <li>• One-time fee to the Ontario Ministry of Transportation allowing enforcement officers to use the license plate databank to track owners of vehicles who are idling = \$250</li> <li>• Idle Free Week (June 13-17) = \$2717.60 (outside funds) covering parking enforcement officer salaries, car rentals</li> </ul>

Initiative	Description	Status and Plans for 2006
		<p>and fuel costs.</p> <ul style="list-style-type: none"> <li>• Advertising – Environmental Corner = approximately \$170</li> </ul> <p>In 2006, staff will continue to raise the profile regarding idling while tracking complaints, letters, informational tickets and fines issued. Staff have already published an Environmental Corner issue concerning winter idling and have also accepted to sit on a panel at an Idling Bylaw and Enforcement Workshop in Toronto on March 9<sup>th</sup>.</p>
<p><b>Mayors’ Megawatt Challenge</b></p>	<p>The program relies on three basic principles to achieve its goals:</p> <ul style="list-style-type: none"> <li>• Collaboration: municipalities working together on benchmarking and best practices, sharing experience and creating economies of scale.</li> <li>• Action: support for individual and collective action on energy and water efficiency.</li> <li>• Recognition: monitoring and evaluation of performance improvement to support continuous learning and celebration of successes.</li> </ul>	<p>Facilities staff will participate in the Mayors’ Megawatt Challenge again in 2006. Plans are being developed for a targeted project in all arenas where municipalities would only have to pay 50% of the cost of energy audits. The City of Burlington is proposing to participate in six audits at a cost of \$18,000 and a savings of \$18,000 on the total price of the audits (funded through the City’s Energy Management Program).</p>
<p><b>Partners for Climate Protection</b></p>	<p>The City of Burlington joined the Partners for Climate Protection program in 2002. Since then staff have completed an inventory of our corporate and community greenhouse gas emissions, which is the first of five milestones.</p>	<p>Staff will be purchasing a license for a software program to help track energy use and also greenhouse gas emissions. This has already been approved in the 2006 capital budget. A corporate action plan to reduce greenhouse gas emissions is under development.</p>
<p><b>Smog Summit and Shared Air Summit</b></p>	<p>The first Smog Summit was organized in June 2000 as a result of a report on smog released by Toronto’s Medical Officer of Health. The report, <i>Air Pollution Burden of Illness in Toronto</i> stated that 1,000 Toronto residents die prematurely each year due to poor air quality.</p> <p>Federal, provincial and municipal government leaders gathered at the 6<sup>th</sup> annual Smog Summit to announce new commitments to reducing smog, air pollution and greenhouse gases with the signing of the Toronto and Region 2005 Inter-governmental Declaration on Clean Air. New in 2005 was the “Tell us your air pollution solution” essay contest for grade 5 students. Also new was the Fresh Air Fair, a free, family event featuring a variety of activities, games and entertainment that focused on how our transportation decisions</p>	<p>Plans are underway for a transboundary Smog Summit on June 7 and 8<sup>th</sup> and the Shared Air Summit on June 14<sup>th</sup>, 2006. It is anticipated that the City will be participating in the 2006 Smog Summit and signing the annual Intergovernmental Declaration on Clean Air.</p>

<b>Initiative</b>	<b>Description</b>	<b>Status and Plans for 2006</b>
	<p>can affect the quality of our air and our health. An air quality sampling project was conducted on May 30<sup>th</sup> with participating GTA politicians to alert GTA residents that air pollution is both a local and a regional issue that must be tackled by all levels of government.</p> <p>The first Shared Air Summit was held on June 20, 2005 spearheaded by the premier of Ontario to bring together colleagues on both sides of the border to clean up the air we share.</p>	