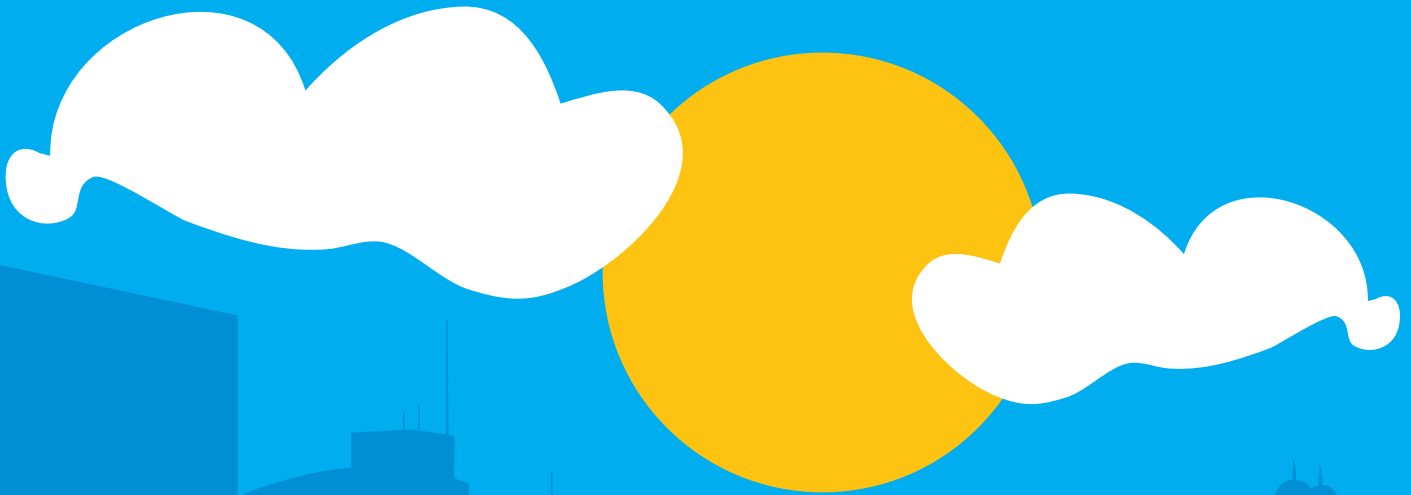


Air Quality

in Kitchener-2006



Environmental Committee



FIVE
Best Bets
for
Air Quality
Improvement
2006

1
ISO 14001 Environmental Management System

2
Reduce Non-Residential Point-Source Emissions

3
Increase Green Space

4
Reach Out to School Boards

5
Promote Residential Energy Conservation

Preface

Maintaining good air quality is a society-wide responsibility, and all levels of government have important roles to play in protecting the public from the dangers of poor air quality. Provincial and Federal efforts to improve air quality are important, but the role of our local government is vital. According to Councillor Berry Vrbanovic, Canadian municipalities directly control or influence more than half of Canada's total greenhouse gas emissions (The Record, April 22, 2005).

Municipalities are uniquely positioned to act on improving air quality. Cities around the world have used their capacity to implement educational campaigns, their purchasing practices, infrastructure investment, bylaws and other targeted initiatives to make a positive impact on local air quality. The City of Kitchener can play a vital role by advocating action from all levels of government, facilitate local action to clean the air and inform residents about air quality issues.

In October 2003, Kitchener's Environmental Committee recommended that staff be directed to develop and post *Stop Idling* signs outside City facilities, community centers, school zones and other significant areas. At the same time, the Environmental Committee also recommended that staff be directed to investigate the feasibility of incorporating into the City's Parking By-Laws designated "No Idling" zones within specified public areas. Staff reported back to Environmental Committee in October 2004 (Staff Report DTS-04-145) with the committee recommending that Council fund a one-time cost of \$21,500 for the manufacture and installation of *Stop Idling* advisory signs at idling "hot spots"—approximately 60 City facilities and 50 school zones; amendments to City parking by-laws to incorporate "no idling" provisions were determined by staff to be problematic from a legal perspective. This issue was considered at a number of Kitchener meetings (Council, Development and Technical Services Committee, Environmental Committee) through October and November of 2004 focussing on the proposed education campaign, the impact of drive-through restaurants on air quality, and Council's desire for a long-term, comprehensive plan for air quality. Ultimately, in November 2004, Council deferred the Environmental Committee's air quality recommendations and referred them back to that committee in order that a long-term, comprehensive plan be developed on air quality in the city of Kitchener.

This document sets out that comprehensive plan on air quality requested by Council and, as such, makes recommendations for initiatives to improve Kitchener's air quality to be implemented by all departments within the City's administration as well as by the citizens of the city of Kitchener. It is recommended that future Kitchener Environmental Committees continue to pursue, and present to Council, recommendations flowing from this document as well as update this report on an annual basis.

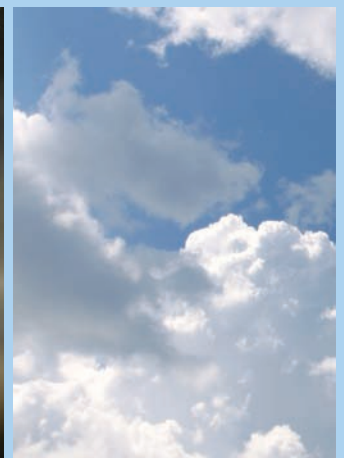
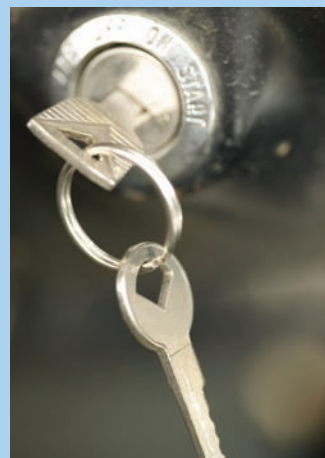


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Executive Summary

Air quality remains one of the pressing problems of modern cities, and the city of Kitchener is no exception. As rapid urbanisation continues at an increasing pace, health and environmental impacts resulting from air quality degradation demonstrate the breadth and magnitude of the challenge.

Local governments have a significant role to play in addressing air quality. Local communities are vulnerable to the impacts of air quality and thus have a stake in efforts to reduce emissions. It is important to note that local governments have regulatory authority over many direct and indirect sources of air pollution. For example, local governments: define land-use, zoning and transportation policy; and enforce the Ontario Building Code. Action at the local level is a key component of Kitchener's response to the impacts of poor air quality.



To effectively improve air quality in the city of Kitchener, emissions reduction will need to come from all sectors. Participating in an effort to address our air quality is an issue that requires the best from citizens, entrepreneurs, scientists, communities and governments. The Environmental Committee's report *Air Quality in Kitchener* identifies actions that will result in improved air quality and significant societal benefits.

This report

- is intended to provide a vision of a responsible, innovative, healthy and energy-efficient community
- strikes the balance needed to enable our local economy to flourish even as we reduce our polluting emissions
- aims to advance these goals without placing an unreasonable burden on the City of Kitchener in an attempt to make the successful transition to a less polluting, healthy community.

Our report on *Air Quality in Kitchener* proposes both short-term and long-term perspectives. Some things can be done now, such as the City's move towards certification in ISO 14001, working with School Boards on anti-idling measures, and providing businesses with the tools and incentives to make more energy-efficient decisions. Still other initiatives can be undertaken over a number of years, such as investing in more energy-efficient technologies.

The principal motivation for this report is to minimize the risk to public health from air pollution in the city of Kitchener. This report is intended to identify substantive, meaningful measures the City can implement to fulfill its responsibility to reduce polluting emissions.

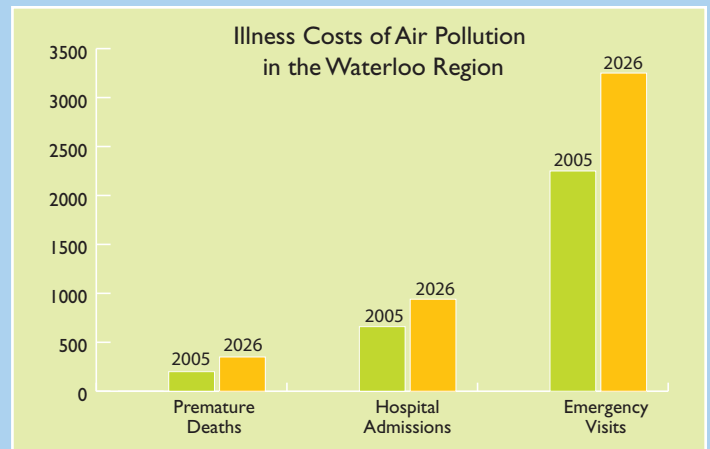
Background Information

This section provides a very short summary of the effects of air quality on health and climate change. Emissions produced through the combustion of fossil fuels, space heating and transportation degrade air quality, contribute to global warming, and can adversely affect human health.

1. Health Effects of Poor Air Quality

Studies done by Health Canada and community health departments and agencies have concluded that poor air quality and smog – caused in part by vehicle exhaust – are resulting in increased hospital admissions, heart attacks and strokes, respiratory illnesses and premature deaths, particularly in urban areas.

Health Canada estimates that more than 5,000 Canadians die prematurely each year because of air pollution, and thousands more become unnecessarily ill. Health Canada also estimated that over 1,900 Ontarians die each year directly related to air pollution.



Source: Ontario Medical Association

Did You Know? According to the Ontario Medical Association, air pollution triggers 5,800 premature deaths in Ontario a year - 200 of these occur in the Region of Waterloo

Children are particularly vulnerable to air pollution because they breathe faster than adults and inhale more air per kilogram of body weight. Air pollution also causes unnecessary difficulty for elderly people and those with respiratory problems, such as asthma, emphysema and chronic bronchitis. According to the Ontario Ministry of Health, asthma is currently the leading cause of hospitalization for children in Ontario. Asthma rates have markedly risen in Ontario over the past two decades with approximately 12 per cent of Ontario children and seven per cent of Ontario adults being diagnosed with asthma (Ontario Ministry of Health and Long term Care, report of the Chief Medical Officer of Health, October 2000, www.health.gov.on.ca).

Research in Ontario has shown a consistent and direct correlation between poor air quality and respiratory symptoms, medication use, and increases in hospitalization for respiratory disease (Ontario Ministry of Health and Long term Care, report of the Chief Medical Officer of Health, October 2000, www.health.gov.on.ca).

2. Climate Change

Global climate change is another reason to improve on air quality. Despite federal and provincial regulatory efforts, local air quality is not improving. According to Councillor Berry Urbanovic, Canadian municipalities directly control or influence more than half of Canada's total greenhouse gas emissions (The Record, April 22, 2005). Climate change will occur more rapidly in the future because of an increase of greenhouse gas emissions from human activities.

Did You Know? During the past 50 years in southern Ontario, the average summer temperature increased by about half a degree. But during the next 100 years, summers will be warmed by five or six degrees. Currently, there are 10 to 15 days a year when the temperature hits 30 degrees or higher. In 50 years, scientists expect to see 45 to 55 days a year when the thermometer hits 30 or more.

Actions to reduce greenhouse gas emissions will also improve regional air quality. Such actions include improved energy efficiency of buildings and heating systems, widespread use of cleaner fuels, and the implementation new green technologies.

Air Quality in the City of Kitchener

Six Ontario city regions, including the Region of Waterloo – of which the City of Kitchener is the most populous member municipality – now lead Ontario's economic growth. These six regions collectively represent a critical mass of urban activity and a regional pressure on air quality.

Did You Know? Since 1993, the region's population has increased by about 15 per cent. But the number of cars registered in the region has increased by about 34 per cent. Registered vehicles in the region totalled 288,000 in 1993. Today, that figure is up to 385,000. For every 10 kilometres you drive, about 2.5 kilograms of air pollutants are created.

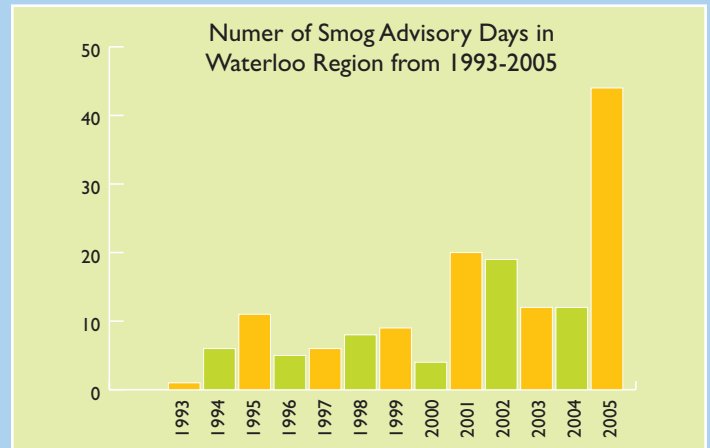
Southern Ontario has the worst level of air quality in the country with Waterloo Region ranked as high as bigger cities such as Hamilton and Toronto. According to a study printed in Canadian Geographic (May/June 2000), Waterloo region has some of the worst air quality in the country in terms of ground-level ozone and respirable particulate matter. From April to October, the region of Waterloo often experiences extended periods of poor air quality. In the past year, the area has also experienced smog days in the middle of winter.

Smog, traffic congestion and sprawl are the consequences of the way cities have developed and, in particular, the decisions made about the form of cities. If we conduct 'business as usual' and allow emissions to increase, ambient air quality and the quality of life in the city of Kitchener will deteriorate to irreversible levels.

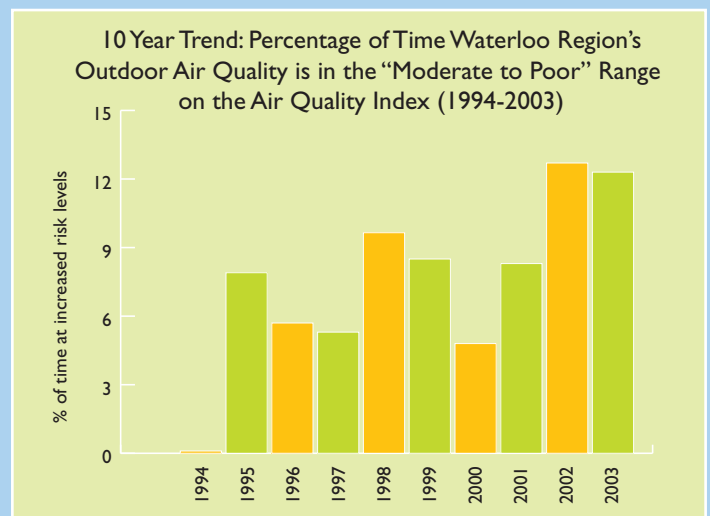
In an attempt to curb emissions, several initiatives exist in the city of Kitchener. Emission sources are managed and/or influenced by a number of government agencies. The responsibilities of each are identified below.

The City of Kitchener

- Kitchener Clean Air Plan
- Fleet Idling Protocol
- Residential Energy Efficiency Program (financial and in-kind support)
- Kitchener Energy Management Team initiatives
- Waterloo Region Partners for Clean Air
- Active and Safe Routes to School
- Walkable Communities: urban design approach
- Pedestrian Charter (2005)
- Partners for Climate Protection (member)
- Kitchener Bikeway Study
- Community Trail Planning



Source: Ontario Ministry of the Environment



Source: Ontario Ministry of the Environment annual air quality report

Region of Waterloo

- Region of Waterloo Clean Air Plan
- Waterloo Region Partners for Clean Air
- Regional Master Transportation Plan
- Clean Air Partnership (GTA, associate member)
- Fleet Idling Protocol
- Pedestrian Charter (2005)
- Cycling Master Plan
- Pesticide By-Law

The Provincial Government

The Ontario Ministry of the Environment collects and monitors air quality data using the Provincial Air Monitoring Network. The ministry issues official smog alerts. The Province also has new air quality regulations with respect to industrial emissions. The information collected is used to determine the state of air quality in Ontario and help develop abatement programs to reduce the burden of air pollutants, address key air issues and assess the efficacy of policies and programs.

The Federal Government

Environment Canada is responsible for regulating on-road vehicles and engines through standards for new vehicle performance and fuel composition. The federal government also has authority of the in-use fuel standards, the quality of fuel produced, imported and sold in Canada, and emissions from non-road vehicles and engines across Canada. Environment Canada and Health Canada share responsibility under the Canadian Environmental Protection Act (CEPA) to assess and manage threats posed by toxic substances. Environment Canada's National Pollutant Release Inventory has a community portal that allows the public to see pollution sources in their area.

In December 2001, the federal government ratified the Kyoto Protocol of the UN Framework Convention on Climate Change, committing to reduce the country's greenhouse gas emissions to 6 per cent below 1990 emission levels by 2008-12.

Non-Governmental Agencies

Citizens' Advisory Committee on Air Quality (CACAQ)

The Citizens' Advisory Committee on Air Quality for Waterloo Region (CACAQ) is an interest group comprised of representatives and volunteers from local member organizations, the community, regional staff and local municipal governments. CACAQ projects are citizen-driven.

CACAQ has been working to improve air quality through local action by raising awareness of air pollution via presentations to community groups about air quality, and encouraging behavioural change toward cleaner transportation modes.

In addition to local actions/projects, ongoing activities of CACAQ include monthly meetings of a steering committee and two sub-committees: Land Use Planning, and Green Transportation.

Residential Energy Efficiency Project (REEP)

The Residential Energy Efficiency Project (REEP) was formed in 1999 as a joint initiative of the University of Waterloo's Faculty of Environmental Studies and the Elora Centre for Environmental Excellence, a member of Green Communities Canada. REEP is now in its seventh year as a community-based partnership that, until very recently, provided home energy evaluations in Waterloo region. Local partners, including the City of Kitchener, provide funding and support to make REEP's service available to area residents. Research and public education are also undertaken by REEP.

Long Term Plan for Action

The table below identifies a list of over 50 recommended actions that the City of Kitchener should consider implementing over the long term.

These recommended actions fall under one of three overall objectives for improvement of air quality:

1. Reduce emissions from major regional sources

- Cars, trucks, and buses
- Construction and rail equipment
- Industrial, commercial and institutional sources
- Communities
- Agriculture

2. Develop and implement local air quality initiatives

3. Enhance air quality information and public awareness

It is important to note that there is no single action that can be taken to address air quality in the city of Kitchener. These recommended actions are inter-related and will require commitment from a range of organisations on a number of issues. Therefore, advocacy and partnerships will be an essential component.

Also, while all the following actions are highly desirable and recommended for implementation over the longer term, it is recognized that only a limited number of initiatives to improve air quality will be able to be addressed each year.

So, five “Best Bets” are identified for immediate consideration in 2006. These have been extracted from the larger list of 50+ potential air quality initiatives.

The intent is to keep this report, *Air Quality in Kitchener*, as a "living document" and annual project of the citizen-members of Environmental Committee. Their intent is to keep it up-to-date, monitor actions towards their recommended annual “Best Bets,” and recommend new “Best Bets” for action each year.



Objective 1.0: Reduce Emissions from Major Regional Sources

Reducing emissions from the major sources in the general area will help to decrease risk to public health from air pollution. Reducing greenhouse gas emissions will minimize the City's contribution to global climate change. This objective has the following recommended actions, grouped by source:

Recommended Actions The City of Kitchener can:	Emission reductions for CARS, TRUCKS & BUSES
1.1 Seek the continuation of emission inspection and maintenance programs that effectively reduce emissions from existing light and heavy-duty vehicles	With the provincial government, the City of Kitchener can assist in the design and implementation of a more effective and user-friendly emissions inspection and maintenance programs for both light and heavy-duty vehicles. Focus can be on the vehicles that pollute the most. Support higher fines for not achieving environmental standards. The City of Kitchener can support/suggest improvement to the new emission standards agreement just signed with auto manufacturers and examine the feasibility of putting more emphasis on diesel emissions, as diesel vehicles are expected to increase in popularity in the future.
1.2 Seek to reduce diesel particulate matter, nitrogen oxide and greenhouse gas emissions from existing on-road diesel engines by facilitating retrofits and accelerating the use of cleaner fuels	The City of Kitchener can partner-e.g. with Waterloo Region Partners for Clean Air-with interested public and private on-road diesel fleet managers to identify promising emission reduction measures, and to seek funding from senior levels of government to help defray costs of equipment retrofits and/or cleaner fuels.
1.3 Request that Grand River Transit purchase the cleanest public transit vehicles feasible and report on transit vehicle purchases in their annual reports	The potential exists for diesel transit vehicles to actually increase some common air contaminant emissions (especially particulate matter) that can lead to negative health outcomes. Therefore, the City of Kitchener can encourage Grand River Transit to specify stringent, but achievable, emission standards for the transit vehicles under consideration, and to seek funding to help defray costs.
1.4 Request that Grand River Transit retrofit older public transit vehicles to support continuous improvement, and optimize 'express' transit service, (on demand for) bicycle carry-on service and cycle storage	To decrease exposure to diesel particulate matter, the City of Kitchener can encourage Grand River Transit to investigate funding sources for retrofitting older public transit vehicles. The City of Kitchener can support existing and future GRT 'Express' transit service to major commercial centres, businesses; and cycle storage at transit locations.
1.5 Examine the need for an expansion of the Go Train. Examine the benefits of making the LRT on a separate rail vs. on-road	The City of Kitchener can advocate for an expansion of the Go Train, suggest incentives and examine the feasibility / benefits of the LRT on a separate rail system.
1.6 Recommend the use of commuter lanes / transit supportive plans	The City of Kitchener can implement and recommend that the Region implement commuter lanes (HOV) to accommodate traffic congestion on major roads instead of constructing new or expanded roads. The City of Kitchener can also support GRT initiatives to increase ridership via transit supportive community development.

Recommended Actions The City of Kitchener can:	Emission reductions for CARS, TRUCKS & BUSES
1.7 Assist transport centres, i.e. train and bus terminals with the introduction of anti-idling measures. The City of Kitchener can adopt an anti-idling bylaw, or recommend that the Region of Waterloo do so	With the federal and provincial governments, the City of Kitchener can assist with the development of idling emission reduction policies for train and bus terminals. In an effort to address local air quality, the City of Kitchener can bring awareness to this issue, adopt its own bylaw and/or support a regional anti-idling bylaw.
1.8 Embrace ISO 14001 for Fleet	The City of Kitchener can embrace ISO 14001, inform local businesses about the benefits of such and assist them with application of ISO to their own fleets. The City of Kitchener can enhance their own Fleet Idling Protocol.
1.9 Promote trip reduction services in business and residential outreach programs. Encourage incentives for those that use the bus	The City of Kitchener can inform businesses and residents about combining multiple errands in one-vehicle trips and promote the transportation demand management initiatives of Grand River Transit that provide alternatives to single-occupancy vehicle transportation. The City of Kitchener can encourage the federal/provincial governments to allow tax incentives to individuals / businesses that use the bus.
1.10 Recommend that the federal government implement stringent national fuel efficiency standards for light-duty vehicles	The City of Kitchener can encourage the federal government to implement stringent national fuel efficiency standards for light-duty vehicles similar to those of California, with the proviso that they will not result in increased particulate matter emissions.
1.11 Recommend that the federal and provincial governments promote cleaner, fuel-efficient vehicle purchases by providing financial incentives	To encourage cleaner, fuel-efficient vehicle purchases and increase their representation in the private vehicle fleet, the City of Kitchener can recommend that the federal and provincial governments provide private vehicle owners with additional incentives such as reduced sales taxes and rebates.
1.12 Recommend that the City manufacture and install Stop Idling advisory signs at City facilities and school zones per: Kitchener staff report DTS-04-045	This could be a powerful way for the City to “lead by example,” and encourage businesses and citizens to change to healthier behaviours.
Recommended Actions The City of Kitchener can:	Emission reductions for CONSTRUCTION & RAIL EQUIPMENT
1.13 Seek ongoing federal government actions to reduce particulate matter, sulphur dioxide, nitrogen oxides, volatile organic compounds and greenhouse gas emissions by improving national non-road engine emission and fuel standards	Environment Canada is aligning with the US EPA to develop national regulations that will restrict the level of sulphur in non-road diesel fuel and establish emission standards for a number of non-road sources (e.g. small spark-ignition engines, compression ignition engines and other categories of non-road engines - outboard engines and personal watercraft, recreational vehicles, and large spark-ignition engines). Environment Canada is also examining the non-road sector with the goal to determine how emissions of greenhouse gases can be reduced. The City of Kitchener can recommend that the federal government implement the strictest feasible new non-road engine and fuel emission standards in the shortest timeframe possible.

Recommended Actions

The City of Kitchener can:

**Emission reductions for
CONSTRUCTION &
RAIL EQUIPMENT**

1.14 Seek to reduce particulate matter sulphur dioxide, nitrogen oxides, volatile organic compounds and greenhouse gas emissions from existing non-road engines by facilitating retrofits and accelerating the use of cleaner fuels

The City of Kitchener can seek funding from federal sources to help defray costs of their own non-road equipment retrofits and/or using cleaner fuels. Kitchener can also partner with other public and private interests to encourage such in those sectors (e.g. construction companies)

1.15 Seek to reduce nitrogen oxide and diesel particulate matter emissions from locomotives and railway maintenance equipment

Since the federal government regulates rail emissions, the City of Kitchener can recommend that they establish a railway emission-working group to investigate nitrogen oxide and diesel particulate matter; emission reduction measures for diesel locomotives. For example, the rail industry could reduce fuel consumption and emissions by using idling control devices, changing rail lubrication to reduce rolling resistance, utilizing electronic fuel injection and automatic stop/start systems and using new hybrid electric switcher locomotives in local rail yards.

Recommended Actions

The City of Kitchener can:

**Emission reductions for
INDUSTRIAL, COMMERCIAL AND
INSTITUTIONAL (ICI) SOURCES**

1.16 Seek continuous improvement from ICI point sources by developing a tiered approach that includes incentives and flexible regulatory approaches

In consultation with ICI point sources, the City of Kitchener can:

- Develop business assistance and recognition programs to encourage businesses to adopt pollution prevention and eco-efficiency measures (LEED incentives).
- Adopt pollution prevention and eco-efficiency measures (LEED) on new and existing City buildings
- Request that industrial developments be designed to accommodate bicycles, walking, showers etc., promote and provide incentives for businesses to naturalize their land.
- Establish sector-based emission standards and/or set performance standards for process or equipment modifications, i.e. ISO 14001
- Include plans and opportunities for continuous support of new and retrofitted green practices / technologies.
- Manage local effects of emissions from ICI point sources in conjunction with local air quality planning initiatives.

1.17 Recommend Ohio Valley State authorities implement ICI actions that support continuous improvement

In southern Ontario, as much as 50 per cent of local air pollution is blown in from the Ohio Valley and other heavily industrialized areas in the US. These same airflows also carry pollution generated in Ontario through to the US eastern seaboard (*Building Strong Communities, Ontario Case Studies for Cleaner Air, OMMAH*). The City of Kitchener can recommend that Ohio State authorities require these facilities to upgrade to the best available technology while municipalities in Ontario do the same.

Recommended Actions The City of Kitchener can:	Emission reductions for INDUSTRIAL, COMMERCIAL AND INSTITUTIONAL (ICI) SOURCES
1.18 Introduce measures to ensure that school boards and businesses take necessary actions to reduce idling	The City of Kitchener can request that the school board and businesses implement an anti-idling policy for their fleet. The City of Kitchener can assist the school boards in developing a strategy that can include signage (See Recommended Action 1.12) and volunteers to educate parents / service vehicles from idling on school property. Business can also adopt a similar strategy to prevent idling on their property.
1.19 Develop, promote and implement best management practices for non-manufacturing businesses	The City of Kitchener can develop and implement best management practices that will reduce emissions from non-manufacturing businesses by using a mix of regulatory tools, economic instruments and voluntary approaches as appropriate. The City of Kitchener should act to end drive-through designs within this framework.
1.20 Support federal and provincial government ICI emission reduction programs in their development, and implement locally relevant actions that support continuous improvement	The City of Kitchener can participate in the development of locally relevant national and provincial ICI emission reduction initiatives, and strive for the most stringent regulations feasible.
Recommended Actions The City of Kitchener can:	Emission reductions for COMMUNITIES
1.21 Partner with businesses and major utilities to develop and promote clean and efficient energy sources and technologies for space heating	The City of Kitchener can assist in the development and promotion of clean and energy efficient space heating (such as low-energy-use building design and operations, community energy systems, and heating alternatives to fuel combustion like geo-exchange, passive solar gain, active solar etc.), to reduce emissions of particulate matter, nitrogen oxides and greenhouse gases.
1.22 Encourage the provincial government to enact a minimum efficiency regulation for new residential furnaces and boilers, and develop public education programs to achieve early introduction of these more efficient units	The City of Kitchener can encourage the provincial government to enact their planned energy-efficiency regulation for residential furnaces and as early as possible. Through homeowner information programs (REEP), the City of Kitchener can encourage (businesses, school boards) the early introduction of high-efficiency heating and cooling (HVAC) equipment, and the use of clean heat sources.
1.23 Encourage the provincial and federal government to provide incentives on appliances	The City of Kitchener can encourage the provincial and federal governments and agencies to provide incentives to purchase energy-efficient appliances.
1.24 Encourage the provincial government to enact a wood-burning appliance regulation, and develop public education programs to aid in the implementation of this regulation	The City of Kitchener can proactively partner with the provincial and federal governments to develop and enforce a wood-burning appliance regulation that would effectively control the types of appliances manufactured, sold or used in Canada with a goal of reducing common air contaminant and greenhouse gas emissions from residential wood burning. Should this regulation not come into place, the City of Kitchener in collaboration with the Region of Waterloo or alone could enact a bylaw to the same effect.

Recommended Actions

The City of Kitchener can:

Emission reductions for COMMUNITIES

1.25 Implement the LEED® rating system to new civic buildings and develop partnerships with key interest groups to encourage application of LEED® to new private sector projects (e.g. Eco-tech village in Milton, Village Homes in Davis CA.)

The City of Kitchener can increase the proportion of new green building construction with the use of the Leadership in Energy & Environmental Design (LEED®) rating system for their civic buildings. The City of Kitchener can promote acceptance and application of green building principles, strategies, and technologies among professionals and building developers by education through building permits.

1.26 Provide partners with educational materials and assessment tools to demonstrate the business case for municipal energy retrofit initiatives and application of ratings systems such as LEED-EB®

Through education and outreach efforts the City of Kitchener can support the application of a rating system, such as LEED for Existing Buildings (LEED-EB®), to civic building retrofits and operations and encourage its application to private sector retrofit projects for commercial and institutional buildings.

1.27 Pilot and/or demonstrate the use of shared or renewable energy source technologies

With a goal of ultimately increasing the use of alternative or renewable energy source technologies, the City of Kitchener can pilot and demonstrate innovative projects based on potential benefit, ease of replication, effectiveness, funding and partnership opportunities, and market acceptance.

1.28 Partner with other organizations to investigate the health risk associated with road dust and, if necessary, develop locally relevant best management practices to control road dust

The City of Kitchener can examine its road dust emission estimates based on the most up-to-date and locally relevant methodologies in its regularly scheduled current emission inventory. If estimates continue to show road dust as a large source of particulate matter and further investigation determines that exposure to road dust poses a significant health risk, the City of Kitchener can develop locally relevant best management practices for road dust control (e.g. increase the length of driveway aprons on unpaved industrial sites).

1.29 Design and implement the delivery of a natural yard care outreach program for homeowners; promote tree planting and community gardens in residential areas; educate the benefits of buying local (e.g. food)

In partnership with area community groups, the City of Kitchener can develop a residential Natural Yard Care program that encourages homeowners to adopt more sustainable yard care practices such as reducing or eliminating the use of chemical fertilizers, gasoline-powered lawn mowers and other yard care equipment. Promote residential tree planting; work with community groups to develop this program to reach more residents; encourage Region to continue to educate re: reasons to “buy local” (esp. food).

1.30 Mobilize public opinion

The City of Kitchener can work with the community to shape land use and transportation to encourage “clean-air” lifestyles. The objective will be to create a more liveable city and sustain the better quality of life.

1.31 Incorporate “Clean Air Goals” into long-range plans, especially the Official Plan and Master Transportation and Community Plans

To protect air quality, the City of Kitchener should consider the implications for air quality and global climate change during the development phase of long-range plans. The City of Kitchener can provide an air quality framework for transportation planning and development.

Recommended Actions

The City of Kitchener can:

**Emission reductions for
COMMUNITIES**

1.32 Undertake “Community Energy Plans” that promote energy conservation and protect local air quality

Community energy planning looks at a community's energy use from the perspective of long-term integrated resource planning, energy efficiency and sustainable practices. The City of Kitchener can develop planning tools to assist with aligning new Community Energy Plans with this report on air quality.

1.33 Establish a greenhouse gas emission reduction target and track implementation progress

The City of Kitchener can develop a regional greenhouse gas emission reduction target and inform the public about progress toward meeting this target.

1.34 Adapt and deliver existing greenhouse gas reduction initiatives developed by other levels of government and non-government organizations

The City of Kitchener can collaborate with other levels of government and non-government organizations to help deliver targeted outreach programs i.e. federal initiatives replacing the cancelled One-Tonne Challenge, Waterloo Region Partners for Clean Air.

1.35 Establish a bylaw against idling

The City of Kitchener can address the issue of idling in the community by developing an anti-idling bylaw to address the issue of idling in the City of Kitchener.

Recommended Actions

The City of Kitchener can:

**Emission reductions for
AGRICULTURE**

1.36 Partner with other governments to investigate and implement measures that will reduce ammonia and particulate matter emissions from agricultural operations

Regulatory authority for environmental management on agricultural lands in the city of Kitchener rests mainly with the provincial and federal governments. Therefore, the City of Kitchener can work with the appropriate policy-making bodies to identify and implement an effective and harmonized primary particulate matter and ammonia emission reduction strategies that will also reduce secondary particulate matter formation and odour complaints, and improve visibility.



Objective 2.0 Develop & Implement Local Air Quality Initiatives

Local air quality can become degraded while regional air quality remains acceptable. By developing and implementing local air quality management programs, the City of Kitchener will help to lessen the risk to public health from air pollution. This objective has the following recommended actions:

Recommended Actions The City of Kitchener can:	LOCAL AIR QUALITY INITIATIVES
2.1 Continue to support and implement energy efficiency initiatives	<ul style="list-style-type: none"> - Continue to provide support to REEP; - Publish on its webpage EnerGuide ratings and evaluations; - Support Hydro SmartMeter; - Purchase Green Energy and; - Provide citizens with information on Renewable Energy Certificates (RECs). By purchasing RECs, customers can choose to support clean, renewable energy. The money generated by the sale of RECs goes to new and existing renewable energy facilities, providing a financial incentive for developers to build more renewable energy projects.
2.2 Partner with the appropriate governments, health agencies, the public and emission sources to develop and implement Local Air Quality Action Plans	<p>Following the identification of local air quality priority areas, the City of Kitchener can work with the appropriate governments, health agencies, the public and emission sources to develop and implement Local Air Quality Action Plans.</p>
2.3 Support compact urban development	<p>The City of Kitchener will follow principles outlined in the Provincial Policy Statement (focusing on growth into existing urban areas) and the Transit-Supportive Land-Use Planning Guidelines (e.g. "New Urbanism," Village of Angus Glen in Markham, Ontario).</p>
2.4 Expand the existing Kitchener Clean Air Plan to include a smog alert advisory / strategy and management program targeted at the general public, not just City operations	<p>In conjunction with Waterloo Region and with the help of the local media, the public and key emission sectors, the City of Kitchener can expand the existing procedures in the Kitchener Clean Air Plan to include smog alert advisory/strategy and management program; and allow for voluntary and mandatory curtailment measures for industry, commerce and residents.</p>
2.5 Enhance Green Space Management	<p>The City of Kitchener can preserve and acquire parklands in existing developments; communicate the City's Tree Mgmt. Policy and promote tree planting & maintenance on non-City lands. The City of Kitchener can also investigate partnerships to educate citizens re: benefits of trees, particularly native species and provide incentives for planting trees i.e. reimplement <i>Trees for Our Future</i>. The City of Kitchener can provide incentives for / further promote community gardens, plant trees for roadside management and naturalize as an alternative to augmentation of tree planting.</p>
2.6 Implement the principles of LEED, provide 'self-sustained' systems' i.e., on-site wastewater treatment, localized / renewable power generation, solar energy	<p>The City of Kitchener can investigate a number of innovative approaches to air quality management including: localized, smaller power generation plants (saves on electricity transportation, less risk of power grid failure); option of using excess heat for residential / commercial use; educational / behavioural initiatives; and land use efficiency.</p>

Recommended Actions

LOCAL AIR QUALITY INITIATIVES

The City of Kitchener can:

2.7 Review and/or complete Master Transportation Plan(s), request updates on the City's Bikeway Study (1998) and the Regional Cycling Master Plan

The Waterloo Region Transportation Master Plan is expected to reflect the community's desire to provide a balance between an 'efficient road transportation system and also shifting away from auto reliance and towards a greater use of transit, pedestrian and bicycling facilities.' The City of Kitchener can review this mission statement to understand what defines an 'efficient road transportation system' and how this 'efficiency' is expected to provide a shift away from auto reliance toward alternative transportation. In addition, the City of Kitchener can review and suggest necessary changes to the Region's Transportation Master Plan to adopt an integrated approach to transportation and air quality planning which gives higher priority to walking, cycling, transit and goods movement than private vehicles. With all of this in mind, the City can undertake its own Master Transportation Plan. The City of Kitchener can request that the Region provide regular updates on the progress of the Cycling Master Plan's efforts to connect trails, and provide safe cycling routes for all, and increase and improve walking and cycling routes to reduce vehicle use; the City's own Bikeway Study can also be similarly reviewed.

2.8 Retrofit roads to include bike lanes/bike paths/sidewalks (per: the Council-adopted Pedestrian Charter), roundabouts / traffic circles, smart traffic lights/priority roads

The City of Kitchener can retrofit roads to provide commuters with safe alternative transportation; retrofit roads with off-street bicycle and pedestrian paths that could link to trails etc. in an attempt to provide safe routes and mix recreational routes and encourage more users. The City of Kitchener can provide creative measures to curb idling at traffic lights e.g. turn traffic lights off after hours.

2.9 Reduce the reliance on automobiles; enhance non-vehicular accessibility

The City of Kitchener can provide incentives and educate re: reasons why citizens should live close to work. The City of Kitchener can enhance non-vehicular accessibility in subdivisions / community centres to allow for small business to be located within walking distance of residential areas; prevent further designs that allow drive-throughs.

2.10 Continue to partner with school boards to encourage walking

The City of Kitchener can continue to partner with school boards to encourage walking to school (Active and Safe Routes to School), work with school boards to examine school boundaries to locate within walkable distance by all students, examine bus guidelines and aim to fill buses, and erect Stop Idling signs in school zones.

2.11 Continue to partner with school boards to green yards

The City of Kitchener can continue to collaborate with school boards to green school yards with incentive programs. Also, the City of Kitchener can recommend / retrofit areas of school yards that can benefit from tree-planting, i.e. JK and SK students are required to line up outside during year, trees in these areas can reduce excessive sun or wind.

Recommended Actions

The City of Kitchener can:

2.12 Publish the City's air quality initiatives regularly in the paper

LOCAL AIR QUALITY INITIATIVES

City staff can lead by example and car pool, bike, or bus to work. Provide updated results of this and other air quality initiatives by the City, regularly in local newspaper. The City of Kitchener can build its profile of Kitchener as a "Healthy Community."

2.13 Seek long-term solutions in aid of better air quality

The City of Kitchener can suggest / submit changes to the Ontario Building Code and Planning Act, i.e. energy efficient standards, efficient building designs (LEED), parkland dedication requirements.



Objective 3.0: Improve Air Quality Information and Public Awareness

To determine the quality of air in the city of Kitchener at any given time and longer-term air quality trends, it is essential that the Province enhance monitoring of ambient air quality within the region. It is recommended that regular detailed emission inventories and forecasts be conducted, that research studies be carried out with all being reported to the public. Residents, businesses, researchers and policy makers can use this information to make informed decisions that will reduce the risk to public health from air pollution, improve visibility and lessen the City of Kitchener's contribution to global climate change. This objective has the following recommended actions:

Recommended Actions

The City of Kitchener can:

3.1 Conduct and enhance detailed emission inventories in concert with other jurisdictions in Canada

PUBLIC AWARENESS

As knowledge about health risk of air contaminants continues to grow, the City of Kitchener in collaboration with the Region of Waterloo can improve and enhance its emissions inventories and forecasts. Adding more priority contaminants to the inventories and moving to geographic-information-system-based emission inventories will help to identify potential localized areas of concern. Emission inventories can be used to evaluate the success of emission reduction measures recommended herein.

Recommended Actions

PUBLIC AWARENESS

The City of Kitchener can:

3.2 Update and improve the ambient monitoring network to respond to ongoing changes in regional and local air quality management priorities and needs

As air quality issues continue to emerge and monitoring technology improves, the City of Kitchener and the Region of Waterloo can encourage higher levels of government to update and improve the monitoring network. This will ensure that the network continues to provide accurate, reliable and pertinent air quality information on issues of local, regional and national concern, as well as for the continuing assessment of the success of Kitchener initiatives.

3.3 Communicate Kitchener Clean Air Plan and Air Quality Initiatives discussed herein, general air quality information and associated research studies to residents, businesses, researchers and policy makers

Awareness surrounding Kitchener's Clean Air Initiatives will need to be developed so that residents and businesses become cognizant of their role in improving air quality. This can be incorporated into current outreach and education programs such as Earth Day celebrations.

The City of Kitchener can make ambient air quality information publicly available on their web page and through an automated phone messaging system. Via the media, the City of Kitchener can make regular updates on the local air quality index (compare success of UV index) and provide researchers and policy makers with information on ambient air quality, emissions, emission reduction studies and other research so they can make informed decisions.

3.4 With the Region of Waterloo's Public Health Department, develop and implement education strategies to make residents aware how their personal actions and choices affect air quality

The City of Kitchener can cooperatively fund a (preferably) Region-wide and Regionally-coordinated public education program (funding for signage, campaigns, and advocacy). Its goal should be to inform residents on the linkages between their personal actions, e.g. driving short distances, and air quality and health (publish local facts related to the increase of asthma in children-attempt to personalize/relate to the data).

3.5. Implement educational / target programs to school boards

The City of Kitchener can recommend and support the school board with an anti-idling (air quality) program in their curriculum (compare the anti-litter initiative). It is expected that students would help educate parents on idling. This can be accomplished by engaging willing student, staff or parent volunteers.



Five (5) “Best Bets” for Air Quality Improvement in 2006

From the extensive list above, Kitchener's Environmental Committee identified five (5) specific areas to be addressed as Kitchener's first (2006) step towards comprehensively improving air quality in this community. Other areas will be addressed in subsequent years and so on. This report itself – by necessity – will remain a work in progress, or “living document,” for future members of the Environmental Committee and the City of Kitchener to monitor and update. It will evolve over time as we learn from our efforts and adapt to new possibilities and technologies.



This section outlines proposed next steps for 2006's recommended five (5) “Best Bets.”

Reducing Emissions from Major Sources

- 1.0 ISO 14001 Environmental Management System Registration, starting with the City's Fleet
- 2.0 Reduce Non-Residential (ICI) Point-Source Emissions

Local Air Quality Initiatives and Enhanced Public Awareness

- 3.0 Increase Green Space including Natural Yard Care
- 4.0 Reach Out to School Boards
- 5.0 Promote Residential Energy Conservation

For each of the five (5) areas identified, a number of questions and queries were made into the City of Kitchener's operations. Based on responses received from the various City departments, the Environmental Committee's findings and recommendations are given below.

1.0 Corporate Social Responsibility: ISO 14001 EMS Registration

International Organisation for Standardization (ISO) [www.iso.org] promotes the development and implementation of voluntary international standards. ISO 14001 is a series of voluntary standards to help operations improve their environmental performance and make greater use of pollution prevention approaches. Potential benefits include:

- Improvements in overall environmental performance and compliance
- A framework for using pollution prevention practices to meet EMS objectives
- Increased efficiency and potential cost savings when managing environmental obligations (reduced raw material/resource use, reduced energy consumption, reduced waste generation and disposal costs, and utilization of recoverable resources).

- Promote predictability and consistency in managing environmental obligations
- More effective targeting of scarce environmental management resources
- Enhance public posture with outside stakeholders

Environmental responsibility begins with a sound EMS. ISO 14001 sets the standard for a municipality to maintain compliance with environmental laws, demonstrate leadership through sustainable initiatives, remain accountable for environmental performance and practice stewardship by reducing environmental impacts.

Main Findings

On February 25, 2002, staff report BPS-02-007 made the following recommendations, which were approved by Kitchener Council on February 25, 2002:

That the City of Kitchener take no action on the request by the Federation of Canadian Municipalities (FCM) to participate in four workshops over two years starting in January 2002 and designed to assist and encourage municipalities to create their own Environmental Management System or register to ISO 14001; and, That the City of Kitchener explore the development of its own 'Made in Kitchener' Environmental Management System based, in part, on ISO 14001; and further,

That should the City wish to move towards certification in ISO 14001 at a later date, such certification would not be on a corporate-wide basis but would focus on a specific single municipal operation such as Utilities.

The Environmental Committee commends City Council for its vision in 2002 to pursue an Environmental Management System. However, the Environmental Committee questions: the accountability of a 'Made in Kitchener' plan where an independent monitoring institution is non-existent; and the City's commitment to develop its own EMS plan which was recommended in 2002.

The ISO 14001 is an accountable mechanism designed to ensure that all parties fulfill their obligation. It is a true indication of progress toward making environmentally responsible decisions. As is standard for ISO 14001 programs, the initiatives would be reviewed regularly thereafter and be re-evaluated against newly proposed initiatives for energy reduction.

By its very nature, the ISO 14001 program will facilitate communication and promotion of these initiatives to City staff, City Council and city residents. There is good reason to expect that the outcome of these efforts will be a larger, better-funded program that can justify its investment economically, socially, and environmentally.

As a first step, the Environmental Committee recommends that **City Fleet** operations be the first municipal operation to pursue ISO 14001 certification.

The Environmental Committee recognizes that the City's Green Fleet Policy includes a number of principles that are common to ISO 14001. The Committee commends the City for its efforts to establish these initiatives, many of which appear to have been successful. However, a review of the City's Green Fleet initiatives suggests a lack of organization as to where to apply resources to best achieve reductions in both energy consumption and greenhouse gas emissions. As a result, the fleet operations might prove a natural place for the City to implement its first ISO 14001 program. The ISO 14001 standard is flexible and will not require Fleet to necessarily "retool" their existing activities. The standard will establish a management framework by which Fleet's impact on the environment can be systematically identified and reduced. This suggestion by the Environmental Committee to initiate ISO 14001 EMS Program for Fleet, "a specific single municipal operation," would be in line with Kitchener City Council's recommendations made in 2002.

The Environmental Committee recommends that the City of Kitchener:

- Dedicates resources to achieve and maintain certification to the ISO 14001:2004 Standard for several of its operations, beginning with Fleet (see below).
- City Councillors and City staff review each of the city's operations to establish a priority matrix identifying those operations with the greatest environmental impacts to be next to work towards ISO 14001 certification. Results to be presented to the Environmental Committee.
- City Councillors and staff commit to an implementation schedule for each of the identified city operations.
- Initiates ISO 14001 EMS Program for the City of Kitchener's Fleet Operation.
- Informs local businesses about the benefits of such a program and assists them with its application to their unique fleets.



2.0 Reduce Non-Residential (ICI) Point-Source Emissions

This report is aimed at exploring potential emission reduction strategies for major sources of air pollution. Industrial, commercial and institutional (ICI) businesses can be significant sources of emission of air contaminants. There are a considerable number of point-source control measures, including voluntary measures (e.g. idling reduction) and consumer energy-efficiency strategies to reduce electricity usage. Natural Resources Canada (NRC) offers programs and incentives that embrace energy efficiency innovation. The Office of Energy Efficiency (NRC), manages energy efficiency for ICI point sources and offers programs related to these ICI sectors.

Main Findings

In response to enquires from the Environmental Committee, staff stated that, “City officials and City staff may be aware of some environmental programs sponsored by others but, undoubtedly, are not fully aware of all such programs.”

The Environmental Committee recommends that the City of Kitchener:

- Leads by example and manufactures and installs *Stop Idling* advisory signs at City facilities and school zones per: Kitchener staff report DTS-04-145.
- Becomes familiar with – and refer ICI site plan and building permit applicants and enquirers to – the up-to-date list of incentives and rebates found at the website for Natural Resources Canada's Office of Energy Efficiency (www.oeenrcan.gc.ca) and click on *Rebates and Incentives*.
- Becomes aware of informative publications and considers making them available to applicants and enquirers at City Hall, e.g.:
 1. Canadian Industry Program for Energy Conservation (CIPEC);
 2. Energy Innovators Initiative (Commercial/Institutional); and
 3. EnerGuide for Industry.

Go to the Office of Energy Efficiency's website (www.oeenrcan.gc.ca) and click on *Publications*.

3.0 Increase Green Space

With increased growth in Waterloo region, it is imperative that the City of Kitchener increases green space. Among many other functions, forests, wetlands, valleylands, parks and other green spaces help to moderate climate and provide a place to grow food locally – sometimes in community gardens. Focussing on planning and building “green connections” can also serve to provide greater trail access to public green spaces within the network and more options for walking, biking and alternative, healthy modes of personal transportation.

A **Natural Yard Care** program will encourage homeowners to adopt more sustainable yard care practices such as reducing or eliminating the use of chemical fertilizers, gasoline-powered lawn mowers and other yard care equipment.

The Environmental Committee recommends that the City of Kitchener:

- Requires that developers dedicate the maximum (2 per cent) parkland conveyance for industrial developments.
- Requires that developers dedicate the maximum (5 per cent) parkland conveyance for institutional developments.
- Establishes the proposed Natural Lands Acquisition Fund (staff report DTS-05-209) for purchasing imperilled lands.
- Embraces LEED (Leadership in Energy and Environmental Design) principles in the creation of new developments (industrial, commercial, institutional and residential).
- Encourages the use of native plantings and low-maintenance plants (drought- and pest-resistant) in all future landscape designs (purpose: discourage the use of gas-powered machinery, chemical sprays etc.).
- Makes rain barrels available to all high-intensity development to offset the use of municipal water (purpose: reduces the need for water, and the need for treated water).
- Increases the size of garden plots per residential unit to offer citizens the opportunity to grow their own vegetables (purpose: discourage car use, encourages non-paved surfaces and local food production).

4.0 Reach Out to School Boards

Main Findings

Based on data received from the Ontario Ministry of Health and Long Term Care, asthma rates amongst Ontario school-aged children have significantly increased. Local school boards have an important role to play in addressing the problem of respiratory diseases. Schools need to provide a supportive, healthy environment for students. Learning about air quality and how it affects our lives can prepare our students to become responsible, decision-making adults. School boards are in a position to provide a direct link of information about air quality to a large number of students and parents. For example, school boards can with the support from the City of Kitchener: request that vehicles do not idle on school property; plant more trees; and promote walk-to-school incentives. These initiatives will minimize exposure of students to harmful pollutants and demonstrate the City of Kitchener's and the school boards' initiative in promoting a healthier lifestyle to parents and children alike.

The Environmental Committee recommends that the City of Kitchener:

- Places anti-idling signs on/near school parking lots and nearby streets as per: Kitchener staff report DTS-04-145.
- Offers support through public awareness and promotional assistance, such as through the *Your Kitchener* publication.
- Works with the School Boards to develop a closer working relationship with the City on environmental programs.
- Establishes a new Environmental Stewardship Grant Program strictly for “greening” school lands and for school environmental projects. This program will require both the city and school boards to commit cash to the awarded projects leaving the current stewardship grant program to be strictly for non-school property use.
- Requests that vehicles do not idle on school property.
- Requests assistance from schools/school boards to provide volunteer students, parents, teachers etc. to promote this initiative by asking that vehicles turn off engines, providing idling vehicles with information pamphlets on the current status of respiratory diseases amongst school-aged children, information on idling and information on walk-to-school programs.

5.0 Promote Residential Energy Conservation

Main Findings

Development and promotion of clean and energy-efficient space heating (low-energy-use building design and operations, community energy systems, and heating alternatives to fossil fuel combustion like geo-exchange, passive solar gain, active solar, etc.), will help reduce emissions of particulate matter, nitrogen oxides and greenhouse gases. The City of Kitchener can play an important role in promoting these technologies and incentives.

The Environmental Committee recommends that the City of Kitchener:

- Kitchener Utilities partner with Kitchener-Wilmot Hydro and establish test homes to demonstrate new energy-saving technologies.
- Kitchener Utilities to display energy-saving appliances for the home during Earth Day, perhaps at City Hall.
- Kitchener Utilities continue working with Kitchener-Wilmot Hydro on space heating projects and information campaigns.

Conclusions

This report presented by Kitchener's Environmental Committee outlines a comprehensive approach, as requested by Council on November 29, 2004, to planning for air quality improvement in the City of Kitchener.

Among the report's findings:

- Environmental responsibility begins with a sound EMS. ISO 14001 sets the standard for a municipality to maintain compliance with environmental laws, demonstrate leadership through sustainable initiatives, remain accountable for environmental performance, and practise stewardship by reducing environmental impacts. The ISO 14001 is an accountable mechanism designed to ensure that all parties fulfill their obligation. It is a true indication of progress toward making environmentally responsible decisions.
- Natural Resources Canada offers a considerable number of point-source control measures, including voluntary measures and consumer energy-efficiency strategies to reduce electricity usage. The City's awareness and promotion of these programs and incentives to site plan / building permit applicants and enquirers will aid local businesses and institutions to embrace energy-efficient innovation.
- Green space moderates climate. Urbanisation threatens what is left of the City's natural lands, making it important that the City conserve and create more green space. Focussing on planning and building "green connections" can also serve to provide greater trail access to public green spaces within the network and more options for walking, biking and alternate, healthy modes of personal transportation. The promotion of a Natural Yard Care program will encourage homeowners to adopt more sustainable yard care practices such as reducing or eliminating the use of chemical fertilizers, gasoline-powered lawn mowers and other yard care equipment.
- Data from the Ontario Ministry of Health and Long Term Care show that asthma rates amongst Ontario school-aged children have significantly increased. Local school boards have an important role to play in addressing the problem of respiratory diseases. Schools need to provide a supportive, healthy environment for students. School boards can, with the assistance from the City of Kitchener, provide a direct link of information about air quality to a large number of students and parents. The City can also be a leader and install anti-idling signs on roadways in school zones and at their facilities used by families and children.
- Through Kitchener Utilities, the City of Kitchener is in a position to lead by example by developing and promoting clean and energy-efficient space heating and household appliances. The City of Kitchener can play an important role in promoting such technologies.

Local governments have a significant role to play in addressing air quality. Local communities are vulnerable to the impacts of air quality and thus have a stake in efforts to reduce emissions. It is important to note that local governments have regulatory authority over many direct and indirect sources of air pollution. For example, local governments define land-use, zoning and transportation policy, as well as enforcing building codes. Action at the local level is a key component of Kitchener's response to the impacts of poor air quality.

There are several steps that the City of Kitchener can take when preparing to act on air quality. They have started by establishing the Environmental Committee to advise on the process of reducing the City's impact on the environment. This committee, in this living document, has recommended a comprehensive approach to air quality improvement through specific proposals and planning processes for developing and implementing responsive strategies and actions. Government agencies, the private sector, local non-governmental organisations, and others should be involved.

The City of Kitchener can educate citizens and work with the private sector to determine voluntary actions they can take. Natural Resources Canada offers significant opportunities for cost-effective efforts that can trim expenses while helping the environment. These, and other opportunities, make good economic and environmental sense. The City can take a leadership role by making improvements in government operations. They can make their own operations more efficient, gradually convert government fleets to alternative-fuel vehicles, retrofit government buildings for energy efficiency and demonstrate the feasibility and cost-effectiveness of a variety of methods to reduce harmful air emissions.



Acknowledgements

CACAQ (www.airqualitywaterlooregion.org).

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