



Corporate Clean Air Plan May 2008

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1.0 Background

Smog is a form of poor air quality that negatively impacts health, the environment and the economy. In 1998, the Ontario Medical Association (OMA) declared air pollution a “public health crisis.” This was based on strong scientific evidence linking air pollutants such as ozone, nitrogen oxides, carbon monoxide and particulate matter to a plethora of health effects. The OMA has since produced two reports, *The Illness Cost of Air Pollution in Ontario* (2000, 2005), to estimate the economic costs of health effects associated with air pollution over time. The 2005 report reveals that Lambton County consistently ranks among the top three counties in Ontario with respect to the number of premature deaths, hospitalizations, emergency room visits, and total health care costs per capita, attributable to air pollution.

In addition to the health impacts associated with air pollution, it is now widely accepted that climate change is occurring and that it may affect health through a range of pathways: as a result of increased frequency and intensity of heat waves; increased floods and droughts; and changes in the distribution of vector-borne diseases. It is clear that human activities such as the burning of fossil fuels and high rates of energy consumption are having multiple and long-lasting impacts on our communities.

The County of Lambton’s ‘Going Green’ committee was formed in fall 2007 to start an initiative within the County to encourage conservation. The group is comprised of a broad cross-section of the County’s Departments with representation from Community Services, Corporate Services, Infrastructure and Development Services, Social and Health Services, and the University of Western Ontario Research Park. The committee works to increase awareness of the part individuals’ personal choices can play in delivering sustainable development and to secure their cooperation and commitment to changing their lifestyles so as to reduce their impact on the environment.

As part of its ‘Going Green’ initiative, a Corporate Clean Air Plan was developed for the County of Lambton. The purpose of the Clean Air Plan is to reduce emissions of harmful greenhouse gases (GHG’s) into the air, to alleviate health and environmental impacts associated with air pollution and climate change in our community. The primary goal is to improve the health and quality of life of residents in Lambton County by reducing the amount of air pollution released through sustainable municipal actions. In demonstrating a leadership role, the County of Lambton hopes to encourage other local businesses and organizations to adopt similar Clean Air Plans to improve air quality. The County of Lambton plan is modeled on best practices from other municipalities in Ontario that have implemented Clean Air Plans.

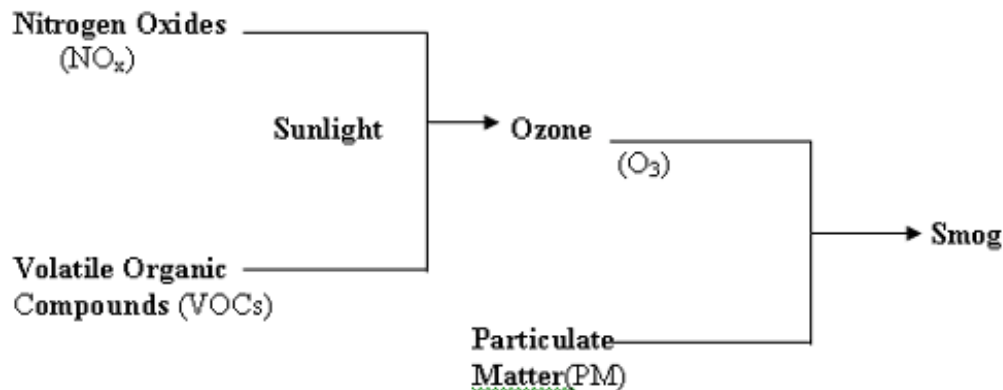
This document is targeted to County of Lambton employees. It begins with a brief overview of the main components of smog, followed by a section on health effects associated with air pollution. Next, Ontario’s Air Quality Monitoring system is explained. The final section reviews specific components of the County of Lambton Clean Air response including the employee notification procedure for smog events, specific corporate activities, and a communication and evaluation strategy.

2.0 Overview of Smog and its Sources

When we hear the word smog, many of us picture the brownish-yellow haze over cities. But smog isn't always visible. It is a mixture of air pollutants, including gases and particles that are too small to see. Smog often begins in urban areas, but smog levels can be just as high in rural and suburban areas.

The two main components of smog that have the largest impact on our health and the environment are ground level ozone (O_3) and fine particulate matter ($PM_{2.5}$).

- Ground-level ozone (O_3) is formed when nitrogen oxides (NO_x) and volatile organic compounds (VOCs) react in the presence of sunlight and high temperatures in the lower atmosphere. Ground level ozone is a harmful pollutant and should not be confused with the protective ozone in the upper atmosphere which shields the earth from the sun's ultraviolet (UV) rays.
- Fine particulate matter ($PM_{2.5}$) is a mixture of microscopic particles of soot, ash, dirt, dust and metals in the air measuring less than 2.5 micrometers (about 1/30th the diameter of a human hair). $PM_{2.5}$ is primarily formed from chemical reactions in the atmosphere and through fuel combustion. It poses a health concern because it can pass through the nose and throat and get deep into the lungs.



Source: the Sarnia-Lambton Environmental Association

Other major precursors include sulphur dioxide (SO_2), nitrogen oxides (NO_x), volatile organic compounds (VOC's), carbon monoxide (CO) and ammonia (NH_3). A summary of pollutant characteristics, sources, and general health and environmental effects is presented in Table 1.

The highest smog levels in Ontario are typically observed in the southwest and central part of the province, due to both local pollution sources and smog precursor compounds generated in the United States. In southern Ontario, approximately 55% of ozone and fine particulate matter can be attributable to the trans-boundary contribution of pollutants from the United States. In the extreme southwest, including Lambton County, this estimate can be as much as 90%. Despite the large contribution of long range

transport, local sources of pollutants make a significant contribution to smog formation and localized poor air quality.

Sources of smog include:

- Exhaust emissions released from gasoline and diesel powered vehicles
- Pollutants from refineries and industrial processes
- Oil and gas emissions from homes
- Coal-fired generating stations
- Gasoline powered lawn and garden equipment
- Barbecues
- Pesticides
- Solvents
- Brake-lining, tire wear, road dusts, agriculture, construction and wood burning also contribute to fine particulate matter (PM_{2.5}).

Smog levels may also be elevated in areas of heavy traffic. In particular research has shown that truck line-ups caused by delays at the Bluewater Bridge may increase smog levels within 50 to 100 meters of the highway. Diesel emissions from idling trucks could potentially raise the air quality rating from moderate to poor.

Periods of smog are generally observed from May to September. However, smog levels can be high during all months of the year. Since ground-level ozone forms when pollutants react in heat and sunlight, high ozone levels generally occur on hot sunny days between noon and early evening. Fine particulate matter is formed from pollutants released from factories, power plants and vehicles, and can therefore remain elevated day and night, throughout the entire year.

Table 1: Summary of Pollutant Characteristics, Sources and General Health and Ecological Effects

Pollutant	Characteristics	Sources	AAQC¹	General Health Effects	General Ecological Effects
Ground-level ozone (O ₃)	An odorless, colorless and highly irritating gas that is a major component of smog. Ground-level ozone is distinct from stratospheric ozone.	O ₃ is not emitted from a source directly into the air, rather is created by a chemical reaction between NO _x and VOC's in the presence of sunlight.	1 hour average 80 parts per billion (ppb) 8 hour average 65 ppb	Irritation of the respiratory tract and eyes. Exposure in sensitive people can result in chest tightness, coughing and wheezing. Considered toxic under <i>Canadian Environmental Protection Act, (CEPA, 1999)</i>	Agricultural crop loss and visible leaf damage in many crops, garden plants and trees.

¹ Ambient Air Quality Criteria (AAQC) is used to indicate the maximum acceptable level of the pollutant.

Pollutant	Characteristics	Sources	AAQC²	General Health Effects	General Ecological Effects
Fine Particulate Matter (PM _{2.5})	Mixture of microscopic solid particles and liquid droplets in the air that are less than 2.5 microns in diameter, and is a major component of summer and winter smog. Composition varies with origin, residence time in the atmosphere, time of year and conditions.	Human sources include combustion of fossil fuels and biomass, dusts from mining and milling, and wind-blown road dust, and burning of residential fuel wood. Natural sources include: fog, dust, smoke from forest fires and volcanoes. Secondary PM is formed in the atmosphere.	24 hour average 30ug/m ³	Particles may penetrate deep into the respiratory system, aggravate existing heart and lung diseases, and can exacerbate symptoms such as chest pain, shortness of breath, wheezing and fatigue.	Corrosion, soiling, damage to vegetation and reduced visibility.
Sulphur Dioxide (SO ₂)	A colorless, gaseous pollutant that contributes to secondary particulate formation by combining with ammonia (NH ₃) in the atmosphere. The odor that comes from striking a match is SO ₂ . SO ₂ is one of the more persistent pollutants, combining with water molecules to form sulphuric acid, which contributes to the formation of acid rain, acid snow and acid fog.	Sources of SO ₂ include: smelters, utilities, iron and steel mills, petroleum refineries, and pulp and paper mills. Lesser sources include transportation, residential, commercial and industrial space heating.	1 hour average 250 ppb 24 hour average 100 ppb	Breathing discomfort, respiratory illness, aggravation of existing respiratory and cardiovascular disease. People with asthma, chronic lung or heart disease are most sensitive to SO ₂ . SO ₂ considered toxic under CEPA due to its contribution to formation of PM.	Leads to acid deposition that contributes to lake acidification, Corroded buildings, reduced visibility and damage to trees and crops.

² Ambient Air Quality Criteria (AAQC) is used to indicate the maximum acceptable level of the pollutant.

Pollutant	Characteristics	Sources	AAQC³	General Health Effects	General Ecological Effects
Nitrogen Oxides (NOx)	Group includes the gases nitric oxide, nitrogen dioxide (NO ₂), and nitrous oxide. NOx react with VOC's in sunlight to form O ₃ . NOx play a part in the formation of secondary particulates when they combine with NH ₃ . NO ₂ combines with water molecules in the air to form nitric acid, contributing to acid rain, acid snow and acid fog.	All combustion in air produces NOx. Major sources include transportation, power plants, primary metal production and incineration	1 hour average 200 ppb (NO ₂) 24 hour average 100 ppb (NO ₂)	Increased sensitivity for people with asthma and bronchitis including coughing, wheezing, and shortness of breath. Lung function impairment and reduced resistance to respiratory infection. Nitrogen Oxide (NO) and NO ₂ are considered toxic under CEPA due to its contribution to formation of PM.	Leads to acid deposition that contributes to lake acidification, corrodes metals, fades fabric, degrades rubber and damages trees and crops
Carbon Monoxide (CO)	CO is a colorless, odorless, tasteless and poisonous gas.	Major source is the incomplete combustion of fossil fuels mainly in the transportation sector.	1 hour average 30 parts per million (ppm) 8 hour average 13 ppm	Impairment of visual perception, work capacity, learning ability and performance of complex tasks. People with heart disease are particularly susceptible.	

³ Ambient Air Quality Criteria (AAQC) is used to indicate the maximum acceptable level of the pollutant.

Pollutant	Characteristics	Sources	AAQC⁴	General Health Effects	General Ecological Effects
Ammonia (NH ₃)	A colorless gas with a pungent odor noticeable above 50ppm. It is a precursor to smog yielding ammonium sulphates and nitrates.	Sources include agricultural livestock and poultry waste management and fertilizer and pesticide application.		Gaseous NH ₃ considered toxic under CEPA due to its contribution to formation of PM.	Can contribute to the nitrification and eutrophication of aquatic systems.
Volatile Organic Compounds (VOC's)	Carbon containing gases and vapours. They are "volatile" because they easily and quickly evaporate into the air. VOCs contribute to form O ₃ and secondary PM.	Sources are mainly transportation, such as road vehicles, and the use of general solvents.		Health effects vary according to the specific compound. Several, such as benzene (a known carcinogen), have been declared "toxic" under the CEPA due to its contribution to formation of PM.	

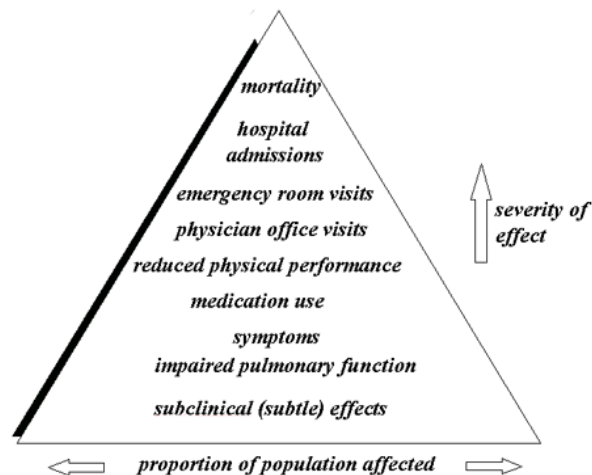
Source: Halton Clean Air Plan and Pollution Probe

⁴ Ambient Air Quality Criteria (AAQC) is used to indicate the maximum acceptable level of the pollutant.

3.0 Air Pollution and Your Health

The health effects of poor air quality principally affect the body's cardiovascular and respiratory system. Common effects include: irritation of the eyes, nose and throat, and can cause coughing, wheezing and breathing difficulties. Air pollution is also linked to the initiation and aggravation of asthma attacks, chronic bronchitis in children, chronic obstructive pulmonary disease (COPD), emphysema, cardiovascular disease, endocrine system effects, neurological effects and allergies.

The health impacts produced by air pollution can be seen as a pyramid of effects, with the relatively rare but most severe health effects such as premature death at the top and the more common milder conditions such as asthma symptoms and respiratory infections at the bottom of the pyramid. Severity decreases as the number of people impacted increases.



Source: Health Canada website, *Health Effects of Air Pollution*

Everyone is at risk from health effects of air pollution however some groups of people are at higher risk than others. Sensitive groups include:

- People with pre-existing heart conditions and lung diseases
- Seniors
- Children and newborns
- Pregnant women
- People with asthma
- Smokers
- People who work or exercise outdoors

The elderly and people suffering from cardiovascular and respiratory problems appear to be the most susceptible groups. Children and newborns are also sensitive because they breathe more air per kilogram of body weight, and consequently a higher level of pollutants than adults. People who work or exercise outdoors on smog days are also at greater risk due to increased exposure to air pollutants.

4.0 Air Quality Monitoring

Air quality is monitored federally by Environment Canada and provincially by the Ontario Ministry of the Environment (MOE). The Air Quality Index (AQI) is a rating scale for outdoor air quality in Ontario. The AQI is calculated based on six pollutants:

- Sulphur dioxide,
- Ground-level ozone,
- Nitrogen dioxide,
- Total reduced sulphur compounds,
- Carbon monoxide,
- Fine particulate matter.

The MOE collects and monitors concentration data for each of these six pollutants on an hourly basis at a network of 33 AQI monitoring stations across Ontario, including Sarnia and Grand Bend (summer station only). These data are compared to the Ambient Air Quality Criterion (AAQC) which represents the maximum safe level of each pollutant. If any of the six pollutants exceeds the AAQC the pollutant will begin to have an undesirable impact on people and the environment.

Using the AAQC, the monitoring data are converted to a number from zero upward on the AQI scale. The pollutant with the highest AQI number has the greatest impact and becomes the overall AQI for that location. For example, if the AQI for ozone is 20, and this happens to be the highest of the six pollutants, it would be reported as an "AQI of 20, reason: ozone."

The AQI scale ranges from 0-15 (very good) to 100+ (very poor). The lower the AQI, the better the air quality.

0 – 15 Very Good	16 – 31 Good	32 – 49 Moderate	50 – 99 Poor	100+ Very Poor
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If the AQI value is below 32, air quality is considered relatively good. If the AQI is in the range of 32 to 49 (moderate), sensitive people may experience some adverse effects. A value in the range of 50-99 may be associated with short term adverse effects to humans and animals, or could lead to significant vegetation and property damage. An AQI value that exceeds 100 may cause adverse effects on a large percentage of people exposed.

AQI readings are reported to the public and news media at set intervals each day. More information about the AQI can be found on the Ministry's web site at www.airqualityontario.com or by calling 1-800-387-7768.

5.0 Smog Watches and Advisories

An Air Quality forecast is a prediction of the air quality in the future. The Ontario Ministry of the Environment issues a 3-day outlook, or a smog prediction for today, tomorrow and the third day to notify residents of the likelihood of a smog day. This enables people to modify their daily routines to reduce their impact on and exposure to poor air.

A **Smog Alert** is issued for an area when poor air quality readings are predicted to be sustained over a period of time and over a wide area (i.e. AQI reading is expected to be at least 50). The MOE may issue two types of Smog Alerts:

- A **Smog Watch** is issued when there is at least a 50% probability that smog conditions will occur within the next three days.
- A **Smog Advisory** is issued when there is a high probability of elevated smog levels occurring within the next 24 hours or if smog conditions happened without warning.

A **Smog Advisory Termination Notice** is issued by the MOE after the weather changes, the air clears and a Smog Advisory is no longer required.

The historical number of smog days and smog advisories for Sarnia-Lambton and Ontario respectively, between the years 1995 to 2007 is graphically described in Figures 2 and 3. In 2007, Sarnia-Lambton experienced a total of 13 smog advisories, covering 29 days.

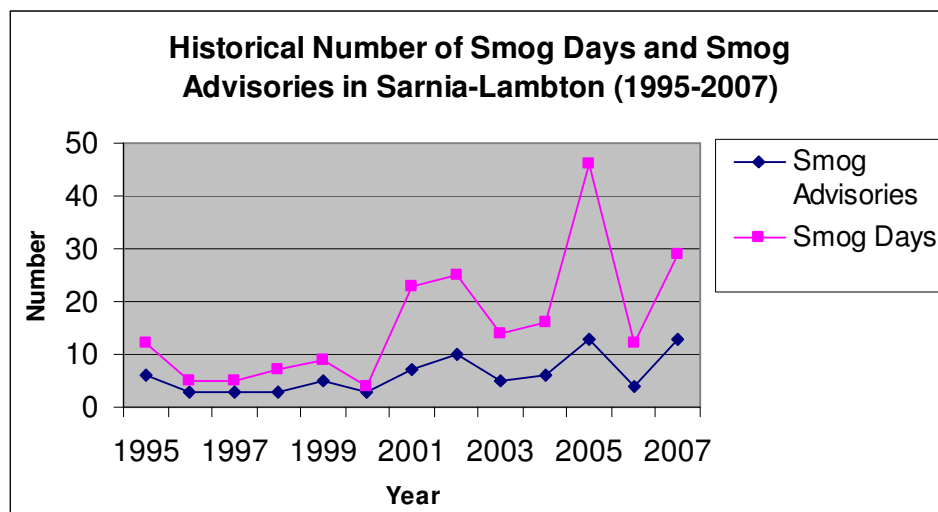


Figure 2: Sarnia-Lambton data

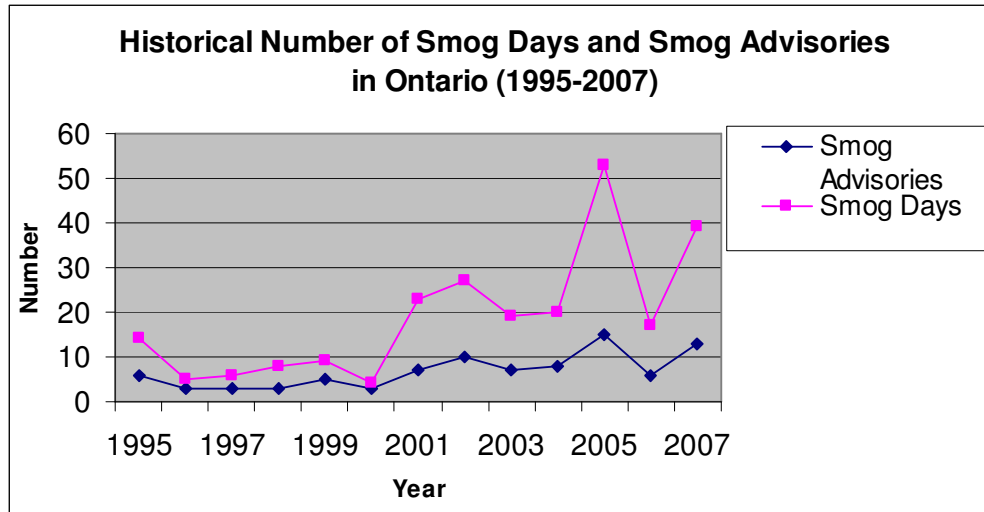


Figure 3: Ontario data

The Smog Alert Network is a year-round notification service offered by the MOE providing advanced warning for poor air quality. Individuals and businesses can subscribe to receive an automatic email notification of smog advisories affecting Sarnia-Lambton. Interested parties can subscribe to the Smog Alert Network at www.airqualityontario.com/alerts/signup.cfm. Additional information on smog advisories can be found on the MOE’s website: www.airqualityontario.com or by calling 1-800-387-7768.

6.0 Corporate Clean Air Plan

The County of Lambton Corporate Clean Air Plan addresses a range of strategies that can be implemented by staff to improve air quality. It includes four components:

- Employee notification procedure for MOE smog events
- Specific corporate/operations responses
- Communication strategy
- Evaluation strategy

6.1 Employee Smog Alert Notification Procedure

An internal notification system was created in 2001 to ensure that all County of Lambton staff are made aware when a Smog Advisory is issued by the MOE. In order to reduce the health and environmental impacts of smog, County of Lambton employees are urged to take action to reduce smog producing emissions.

When a Smog Advisory is announced by the MOE, a communication plan is immediately set into motion to disseminate the notification. In response, the County can make the necessary arrangements and alternations to operations, and individuals can modify their daily routines to reduce their impact on and exposure to poor air.

The following protocol is currently in place:

1. The Community Health Services Department subscribes to the Ministry of the Environment (MOE) Smog Alert Network in order to receive Smog Alerts for Lambton County by email. (<http://www.ene.gov.on.ca>)
2. The CHSD Resource Coordinator, the Manager of Environmental Health and Prevention Services and the Manager of Health Promotion and Program Support receive the email notices from the MOE Smog Alert Network.
3. The Resource Coordinator forwards the MOE smog advisory email to the Marketing and Communications Coordinator. A copy is also sent to the Manager of Environmental Health and Prevention Services, and to the Manager of Health Promotion and Program Support.
4. In the absence of the Resource Coordinator: 1) the Manager of Environmental Health and Prevention Services (or designate) or 2) the Manager of Health Promotion and Program Support (or designate) forwards the smog advisory email to the Marketing and Communications Coordinator.
5. The Marketing and Communications Coordinator will then forward the MOE smog advisory email to all County of Lambton employees.

Notes:

- While the MOE issues three types of notices (smog advisory, smog watch and termination), only **Smog Advisory Notices** will be issued to County of Lambton staff.
- When the first smog advisory of the year is issued, the Resource Coordinator attaches the fact sheet 'Smog and Your Health' to the smog advisory email and this will be forwarded to all County staff. (The fact sheet will not be attached to subsequent advisories.)
- If the Resource Coordinator is away from the office during 'smog season' (May-September), the Managers of EHPS and HPPS are notified in advance.
- If the Marketing and Communications Coordinator will be away from the office during 'smog season' (May-September), an alternate should be identified to forward the smog advisory email to all county staff.

6.2 Specific Corporate Operational Responses

This section of the report outlines specific operational responses to reduce air pollution by lowering greenhouse gas emissions through corporate actions. Strategies focus on County operations and also individual employee actions. The plan contains both short-term and long-term actions. Many short-term responses may be implemented on days of poor air quality to temporarily reduce or suspend activities and/or operations. The responses that have been identified here are not a comprehensive list, as other activities may be identified in each department in the future.

Item / Activity	Department / Responsibility
<i>Transportation</i>	
<ul style="list-style-type: none"> Establish a GHG emission reduction maintenance program for all corporate vehicles with regular inspection to ensure vehicles are well tuned and operating efficiently 	All Departments
<ul style="list-style-type: none"> Establish a Green Fleet procurement policy 	All Departments
<ul style="list-style-type: none"> Establish an anti-idling policy for corporate vehicles (emergency services as an exception) 	All Departments
<ul style="list-style-type: none"> Encourage all facilities to establish anti-idling drop-off/pick-up zones (ie: taxies, couriers) 	All Departments
<ul style="list-style-type: none"> Encourage employee car or van pooling by providing preferential parking spaces or by subsidizing parking fees 	All Departments
<ul style="list-style-type: none"> Encourage employees to bicycle to work on non-smog days by providing secure bike racks and shower facilities 	All Departments
<ul style="list-style-type: none"> Encourage employees to use public transit by providing free transit tokens on Smog Alert days and subsidizing transit passes throughout the year 	All Departments
<ul style="list-style-type: none"> Do not refuel corporate vehicles on smog alert days; reschedule refueling of other gasoline vehicles (before sun-up or after sunset). Put a 'time of day' column in the fuel section of the vehicle transportation log as a reminder. 	All Departments
<ul style="list-style-type: none"> Blend fuels from renewable sources such as ethanol or biodiesel with regular fuels, switch to B20 (winter) or B5 (summer) 	Infrastructure and Development
<ul style="list-style-type: none"> Build support for walking, biking, and transit use planning policies 	Infrastructure and Development
<ul style="list-style-type: none"> Reduce emissions from transit operations by retrofitting existing diesel vehicles with advanced pollution control equipment. 	Infrastructure and Development

Item / Activity	Department / Responsibility
<ul style="list-style-type: none"> • Include a pressure gage with the transportation log and request employees check and record tire pressure every 1000 km 	All Departments
<ul style="list-style-type: none"> • Replace gas caps on vehicles with broken seals or stripped threads 	All Departments
<ul style="list-style-type: none"> • Encourage employees not to refuel personal vehicles on smog alert days 	All Departments
<ul style="list-style-type: none"> • Encourage staff not to drive fleet or personal vehicles with extremely low fuel levels as this increases tail pipe emissions 	All Departments
<ul style="list-style-type: none"> • Encourage employees to plan outside of work activities and errands to reduce driving time 	All Departments
<ul style="list-style-type: none"> • Use teleconferencing in place of commuting to meetings 	All Departments
<ul style="list-style-type: none"> • Have a special smog alert lunch menu in the lunch room, to encourage employees to stay in to avoid driving at lunchtime. 	All Departments
<ul style="list-style-type: none"> • Promotion of ride sharing through a corporate Ride Board set up on the intranet 	All Departments
<i>Buildings / Energy</i>	
<ul style="list-style-type: none"> • Minimize the use of non essential lighting, electrical, and office equipment 	All Departments
<ul style="list-style-type: none"> • Investigate new technology 	Infrastructure & Development, Research Park
<ul style="list-style-type: none"> • Energy audits of County facilities 	Research Park
<ul style="list-style-type: none"> • Emissions Inventory – identify and quality current sources and volume of air pollution emitted by municipal operations, as well as indirect influence of local planning policies and bylaws 	Research Park
<ul style="list-style-type: none"> • Promote use of cogeneration, district heating and cooling 	Infrastructure and Development, Research Park
<ul style="list-style-type: none"> • Procure electricity from alternative power (non-coal fired) sources 	Infrastructure and Development, Research Park
<ul style="list-style-type: none"> • Investigate retrofitting existing municipal buildings, recreation facilities and operations (such as water and waste water treatment and transport) to be more energy efficient (e.g. more efficient lighting, pumps, and adding insulation). 	Infrastructure and Development, Research Park
<ul style="list-style-type: none"> • Promote energy efficiency in new design and construction 	Infrastructure and Development, Research Park

Item / Activity	Department / Responsibility
<ul style="list-style-type: none"> Require new public buildings constructed within municipality to meet the LEED Gold or Silver certification standard 	Infrastructure and Development, Research Park
<ul style="list-style-type: none"> Require developers to submit energy efficiency and conservation plans for new developments 	Infrastructure and Development
<ul style="list-style-type: none"> Involve transit agencies in land-use planning and ensure that official plans, zoning by-laws, proposed subdivisions and site plans incorporate needs of transit and pedestrians 	Infrastructure and Development
<ul style="list-style-type: none"> Replace windows and glass entry doors with low-E, argon gas filled windows and doors (energy efficient) 	All Departments
<ul style="list-style-type: none"> Encourage green roofs through education and outreach to developers 	All Departments
<i>Maintenance</i>	
<ul style="list-style-type: none"> Avoid painting on smog alert days 	Works Department
<ul style="list-style-type: none"> When painting on non-smog alert days, substitute water based paints for oil based paints; if it is necessary to use oil based paints, stains, or sealers, use those with low VOC content 	Works Department
<ul style="list-style-type: none"> Establish a fuel tank inspection program to identify leaks and maintain fuel tanks to specifications 	Infrastructure and Development, Works Department
<ul style="list-style-type: none"> Keep all fuel-powered maintenance equipment working efficiently and repair any improper seals that may lead to fuel leaks or evaporative loss 	Works Department
<ul style="list-style-type: none"> Where possible, switch to aqueous (water-based) solvent cleaning systems to reduce VOC emissions 	All Departments
<i>Landscaping</i>	
<ul style="list-style-type: none"> Defer lawn mowing and the use of other fuel-powered landscaping equipment (eg. Leaf blowing, trimming, etc) use to non-smog alert days 	Works Department
<ul style="list-style-type: none"> Do not use pesticides on smog alert days; better still, eliminate pesticide use or establish pesticide reduction programs 	All Departments
<ul style="list-style-type: none"> Ensure all fuel powered landscape maintenance equipment is operating efficiently and repair any improper seals that may lead to fuel leaks or evaporative loss 	Works Department
<ul style="list-style-type: none"> Encourage tree / plant planting; maintain present trees 	All Departments

Item / Activity	Department / Responsibility
<i>Procurement:</i>	
<ul style="list-style-type: none"> • Adopt environmental purchasing policy 	All Departments
<ul style="list-style-type: none"> a) Give preference to products that are durable, re-usable and/or contain maximum content 	
<ul style="list-style-type: none"> b) Give preference to products that are energy efficient 	
<ul style="list-style-type: none"> c) Give preference to products that reduce or eliminate toxicity and minimize emissions to air and water 	
<ul style="list-style-type: none"> d) Consider costs and environmental impacts over the full life-cycle of a product 	
<ul style="list-style-type: none"> • Establish a Green Fleet procurement policy to purchase alternative fuel powered vehicles such as electrical, methanol and ethanol (mixtures containing not less than 85% alcohol), natural gas, propane or hybrids (electric/gasoline) 	All Departments
<ul style="list-style-type: none"> • Purchase appliances with the Natural Resources Canada (NRCan) energy efficiency label. Select the most energy efficient model. 	All Departments
<ul style="list-style-type: none"> • Consider purchasing electric powered landscaping equipment where viable 	Works Department
<ul style="list-style-type: none"> • Purchase water based paints, stains, and sealers 	All Departments
<ul style="list-style-type: none"> • Avoid the purchase of aerosol sprays and cleaners - When oil-based paints, stains and sealer must be purchased, sure they have low VOC content 	All Departments
<ul style="list-style-type: none"> • Take an inventory of diesel and traditional fuel vehicles and equipment and identify options for upgrading or replacing vehicles/equipment 	Infrastructure and Development, Works Department, Research Park
<ul style="list-style-type: none"> • Take an inventory of the various green power resources in the area (e.g. landfill, wind, micro-hydro) to determine which technologies are most appropriate for development 	Research Park
<ul style="list-style-type: none"> • For small engines, give preference to 4-cycle over 2-cycle engines 	Infrastructure and Development
<i>General</i>	
<ul style="list-style-type: none"> • Provide information about the health effects of smog 	Community Health Services

6.3 Communication Strategy

The communication strategy is intended to outline a series of initiatives to support smog and greenhouse gas emission reduction in Lambton County. The objectives of the communication strategy are as follows:

- To raise awareness about air pollution and its sources,
- To raise awareness about the effects of air pollution on human health and the environment,
- To raise awareness about how to reduce health risks associated with air pollution exposure,
- To educate County of Lambton employees about how to reduce GHG emissions and the benefits of GHG emission reduction activities,
- To encourage County of Lambton employees to use smog reduction activities, and promote behaviour change,
- To promote corporate leadership and encourage other businesses and organizations in Lambton County to adopt similar clean air activities and initiatives.

6.3.1 Internal Communication Initiatives

- a) Promotional Material
 - Events organized through the County of Lambton Going Green committee including motivational speakers.
 - Going Green, anti-idling, or clean air decals, signage, posters
 - Education and information through the Going Green newsletter (including the sources of smog and GHG emissions, health related messages, individual actions to reduce air pollution)
- b) Intranet
 - Post links to air quality related websites and alerts on the intranet
 - Going Green newsletter

6.3.2 External Communication Initiatives

- a) County of Lambton website www.lambtononline.ca
 - Promote the County of Lambton's 'Going Green' initiative on the Corporate internet
- b) Media
 - Advertisements and campaigns to demonstrate corporate leadership

6.4 Evaluation Strategy

It is important to have a method to measure success of the County of Lambton Corporate Clean Air Plan. An approach may be to prepare an annual progress report where appropriate. The report may include:

- Trends in air pollution in Lambton County
- Annual progress in reducing smog and GHG emissions and improving air quality
- Summarize the initiatives in the Corporate Clean Air Plan and the extent to which they were implemented
- Determine whether awareness of air quality issues and behaviour change has increased among County of Lambton employees (i.e. through pre-post survey)
- Assess barriers to implementing the clean air responses
- Assess means to improve the Corporate Clean Air Plan.

7.0 Summary

The implementation of the Corporate Clean Air Plan will establish a framework for the County of Lambton to implement actions, procedures and practices aimed at improving local air quality, the health of the community and protecting the environment. Furthermore, the Corporate Clean Air Plan represents one component of the County of Lambton's overall Clean Air Strategy. The Plan will enhance ongoing public education activities related to health impact of poor air quality and the promotion of individual actions that reduce harmful emissions.

Appendix of Abbreviations

AAQC	Ambient Air Quality Criterion
AQI	Air Quality Index
B5	Biodiesel B5 Blend
B20	Biodiesel B20 Blend
CEPA	Canadian Environmental Protection Act
CO	Carbon Monoxide
COPD	Chronic Obstructive Pulmonary Disease
GHG	Greenhouse Gases
MOE	Ministry of Environment (Ontario)
NH ₃	Ammonia
NO _x	Nitrogen Oxides
NO ₂	Nitrogen Dioxide
NRCan	Natural Resources Canada
O ₃	Ground-level Ozone
OMA	Ontario Medical Association
ppb	Parts per billion
ppm	Parts per million
PM	Particulate Matter
PM _{2.5}	Particulate Matter (<2.5 micrometers in diameter)
UV	Ultraviolet (sunlight)
VOC's	Volatile Organic Compounds