



# County of Lambton Corporate Clean Air Plan



Revised 2018



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## 1.0 Background

As part of its 'Going Green' program, the County of Lambton developed a Clean Air Plan in 2008, and has updated the document in 2018 as part of its 10 year review. The purposes of the Clean Air Plan are to set out steps to reduce emissions of harmful greenhouse gases (GHGs) into the air and 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 linked to municipal actions while pursuing environmental sustainability.

## 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 1/30<sup>th</sup> 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.

Other major precursors to smog include sulphur dioxide ( $SO_2$ ), nitrogen oxides ( $NO_x$ ), volatile organic compounds (VOCs), carbon monoxide (CO) and ammonia ( $NH_3$ ).

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.

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<sub>2.5</sub>)
- Smog levels may also be elevated in areas of heavy traffic

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.

### 3.0 Air Pollution and Your Health

The health effects of poor air quality primarily affect the body's cardiovascular and respiratory systems. 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.

Everyone is at risk from health effects of air pollution; however, some groups of people are at higher risk than others. These 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 and the AQHI

Air quality is monitored federally by Environment and Climate Change Canada and provincially by the Ontario Ministry of the Environment, Conservation and Parks (MECP). The [Air Quality Health Index](#) or "AQHI" is a scale designed to help you understand what the air quality around you means to your health.

It is a health protection tool that is designed to help you make decisions to protect your health by limiting short-term exposure to air pollution and adjusting your activity levels during increased levels of air pollution.





## The AQHI:

1. Measures the air quality in relation to your health on a scale from 1 to 10. The higher the number, the greater the health risk associated with the air quality. When the amount of air pollution is very high, the number will be reported as 10+.
2. Assigns a category that describes the level of health risk associated with the index reading (e.g. Low, Moderate, High, or Very High Health Risk).
3. Provides health messages customized to each category for both the general population and the 'at risk' population.
4. Shows current hourly AQHI readings and maximum forecast values for today, tonight and tomorrow for specific locations.

## How is the Air Quality Health Index calculated?

The formula developed to calculate the Air Quality Health Index is based on research conducted by Health Canada using health and air quality data collected in major cities across Canada. The Air Quality Health Index represents the relative risk of a mixture of common air pollutants which are known to harm human health. Three pollutants were chosen as indicators of the overall outdoor air mixture:

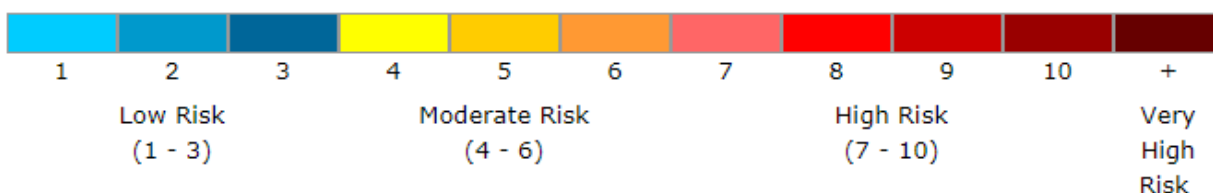
- [Ground-level Ozone \(O<sub>3</sub>\)](#)
- [Fine Particulate Matter \(PM<sub>2.5</sub>\)](#)
- [Nitrogen Dioxide \(NO<sub>2</sub>\)](#)

For more information on how the AQHI has been modified for reporting in Ontario, please visit the [Frequently Asked Questions](#).

## What is the scale for the Air Quality Health Index?

The Air Quality Health Index provides a number from 1 to 10+ to indicate the level of health risk associated with local air quality. Occasionally, when the amount of air pollution is abnormally high, the number may exceed 10.

The higher the number, the greater the health risk and need to take precautions.





## Air Quality Health Index Categories and Health Messages

Health Risk	Air Quality Health Index	Health Messages	
		At Risk Population*	General Population
<b>Low</b>	1 - 3	Enjoy your usual outdoor activities.	Ideal air quality for outdoor activities.
<b>Moderate</b>	4 - 6	Consider reducing or rescheduling strenuous activities outdoors if you are experiencing symptoms.	No need to modify your usual outdoor activities unless you experience symptoms such as coughing and throat irritation.
<b>High</b>	7 - 10	Reduce or reschedule strenuous activities outdoors. Children and the elderly should also take it easy.	Consider reducing or rescheduling strenuous activities outdoors if you experience symptoms such as coughing and throat irritation.
<b>Very High</b>	Above 10	Avoid strenuous activities outdoors. Children and the elderly should also avoid outdoor physical exertion.	Reduce or reschedule strenuous activities outdoors, especially if you experience symptoms such as coughing and throat irritation.

\* People with heart or respiratory problems are at greater risk. Follow your doctor's usual advice about exercising and managing your condition.

Source: MECP, What is the Air Quality Health Index, Accessed May, 2018





## 5.0 Special Air Quality Statements and Smog and Air Health Advisories

The purpose of these alerts is to advise people with breathing difficulties to avoid unnecessary exposure to smog. They also inform industries that are major sources of pollution that they should consider, if possible, reducing their emissions. Additionally, these advisories solicit everyone's help in lessening the problem by curtailing activities that produce smog.

If a high risk Air Quality Health Index value is forecast to last for 1 to 2 hours, then a Special Air Quality Statement (SAQS) will be issued. The purpose of a Special Air Quality Statement is to be precautionary and to assist individuals in being vigilant about their health as it relates to the Air Quality Health Index.

If the high risk Air Quality Health Index is forecast to be persistent for a period of at least 3 hours, then a Smog and Air Health Advisory (SAHA) will be issued.

Both Special Air Quality Statements and Smog and Air Health Advisories are issued jointly by Environment and Climate Change Canada and the Ontario Ministry of the Environment, Conservation and Parks ([www.airqualityontario.com/alerts/smog\\_alert\\_network.php](http://www.airqualityontario.com/alerts/smog_alert_network.php)).

### 5.1 Clean Air Sarnia and Area (CASA)

The [Clean Air Sarnia and Area \(CASA\)](#) community advisory panel was formed in September 2015 and is made up of representatives from the public, government, First Nations and industry, who are dedicated to providing the community with a clear understanding of ambient air quality in the Sarnia area. The advisory panel developed the Clean Air Sarnia and Area (CASA) website as a tool to provide the community with a clear understanding of ambient air quality in the Sarnia area and how it compares to Ontario's standards. The site shows real time air monitoring readings from seven (7) monitoring stations operated by the MECP, the Aamjiwnaang First Nation and the Sarnia-Lambton Environmental Association.

## 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 Ministry of Environment, Conservation and Parks (MECP) smog events
- Specific corporate/operations responses
- Communication strategy
- Evaluation strategy





## 6.1 Employee Notification Procedure

An internal notification system was created in 2001 to ensure that all County of Lambton staff is made aware when a Smog Advisory and subsequent Special Air Quality Statements and Smog and Air Health Advisories are issued by the MECP. 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 Special Air Quality Statement or a Smog and Air Health Advisory are issued by the MECP, 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 daily routines to reduce the impact on and exposure to poor air.

The following protocol is currently in place:

Lambton Public Health subscribes to the MECP to receive Special Air Quality Statements and Smog and Air Health Advisories for Lambton County by email.

1. Lambton Public Health forwards the Special Air Quality Statements and Smog and Air Health Advisories to the Communications & Marketing Coordinator.
2. The Communications & Marketing Coordinator will then forward the Special Air Quality Statements and Smog and Air Health Advisories email to all County of Lambton employees.

## 6.2 Specific Corporate Operational Responses

The original Corporate Clean Air Plan (May 2008) outlined specific operational responses to reduce air pollution by lowering greenhouse gas emissions through corporate actions. Strategies focused on County operations and also individual employee actions organized around the following themes: Transportation, Buildings/Energy, Maintenance, Landscaping, and Procurement. Many of these responses are complete or are part of ongoing, routine business activities of the Corporation. Clean air responses are no longer considered novel or new but part of standard practices across all municipalities. Efficient, green practices are proven to save municipalities operating expenses over the long-term.

Please refer to **Appendix A - Updated Corporate Operational Responses 2018**.

## 6.3 Evaluation Strategy

It is important to have a method to measure success of the County of Lambton Corporate Clean Air Plan. Annual progress reports or updates should be published 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 successful projects that began with the first Corporate Clean Air Plan (May 2018)







- 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

The report may take the form of a Committee Report to County Council. This can be included in the Going Green Committee update to County Council.

## **7.0 Summary**

The implementation of the Corporate Clean Air Plan (2008-2018) established 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. The Plan will enhance ongoing public education activities related to the health impact of poor air quality and the promotion of individual actions that reduce harmful emissions.





## Appendix A - Updated Corporate Operational Responses 2018

Item / Activity	Department / Responsibility	Status 2008-2018
<i>Transportation</i>		
<ul style="list-style-type: none"> <li>Establish a GHG emission reduction maintenance program for all corporate vehicles with regular inspection to ensure vehicles are well tuned and operating efficiently</li> </ul>	All Departments	As per regular maintenance
<ul style="list-style-type: none"> <li>Establish a Green Fleet procurement policy</li> </ul>	All Departments	Ongoing
<ul style="list-style-type: none"> <li>Establish an anti-idling policy for corporate vehicles (emergency services as an exception)</li> </ul>	All Departments, Going Green Committee	Complete
<ul style="list-style-type: none"> <li>Encourage all facilities to establish anti-idling drop-off/pick-up zones</li> </ul>	All Departments, Going Green Committee	Complete
<ul style="list-style-type: none"> <li>Encourage employee car or van pooling</li> </ul>	All Departments	Ongoing
<ul style="list-style-type: none"> <li>Encourage employees to bicycle to work on non-smog days by providing secure bike racks</li> </ul>	All Departments	Ongoing
<ul style="list-style-type: none"> <li>Do not refuel corporate vehicles on smog alert days, if possible</li> </ul>	All Departments	Ongoing
<ul style="list-style-type: none"> <li>Blend fuels from renewable sources such as ethanol or biodiesel with regular fuels, switch to B20 (winter) or B5 (summer)</li> </ul>	Infrastructure & Development Services	As per vehicle recommendations
<ul style="list-style-type: none"> <li>Build support for walking, biking, and transit use planning policies</li> </ul>	Infrastructure & Development Services	Ongoing
<ul style="list-style-type: none"> <li>Encourage employees not to refuel personal vehicles on smog alert days, if possible</li> </ul>	All Departments	Ongoing
<ul style="list-style-type: none"> <li>Encourage staff not to drive fleet or personal vehicles with extremely low fuel levels as this increases tail pipe emissions</li> </ul>	All Departments	As per vehicle recommendations
<ul style="list-style-type: none"> <li>Use teleconferencing in place of commuting to meetings</li> </ul>	All Departments	Ongoing
<ul style="list-style-type: none"> <li>Promotion of ride sharing through a corporate Ride Board set up on the intranet</li> </ul>	All Departments	Carpooling occurs but unofficial (not through Corporate site)
<i>Buildings / Energy</i>		
<ul style="list-style-type: none"> <li>Minimize the use of non-essential lighting, electrical, and office equipment</li> </ul>	All Departments	Ongoing
<ul style="list-style-type: none"> <li>Energy audits of County facilities</li> </ul>	All Departments	As per maintenance schedule
<ul style="list-style-type: none"> <li>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).</li> </ul>	Infrastructure & Development Services	As per maintenance schedule





Item / Activity	Department / Responsibility	Status 2008-2018
<i>Buildings / Energy</i>		
<ul style="list-style-type: none"> <li>Promote energy efficiency in new design and construction</li> </ul>	All Departments	As per maintenance schedule
<ul style="list-style-type: none"> <li>Require new public buildings constructed within municipality to meet the LEED Gold or Silver certification standard</li> </ul>	Infrastructure & Development Services	Limited action
<ul style="list-style-type: none"> <li>Replace windows and glass entry doors with low-E, argon gas filled windows and doors (energy efficient)</li> </ul>	All Departments	As per maintenance schedule
<i>Maintenance</i>		
<ul style="list-style-type: none"> <li>Avoid painting on smog alert days</li> </ul>	Public Works Department	
<ul style="list-style-type: none"> <li>When painting on non-smog alert days, substitute water based paints instead of oil based paints; if it is necessary to use oil based paints, stains, or sealers, use those with low VOC content</li> </ul>	All Departments	As per maintenance schedule and recommendations
<ul style="list-style-type: none"> <li>Establish a fuel tank inspection program to identify leaks and maintain fuel tanks to specifications</li> </ul>	Infrastructure & Development Services	Ongoing
<ul style="list-style-type: none"> <li>Keep all fuel-powered maintenance equipment working efficiently and repair any improper seals that may lead to fuel leaks or evaporative loss</li> </ul>	Infrastructure & Development Services	Ongoing
<ul style="list-style-type: none"> <li>Where possible, switch to aqueous (water-based) solvent cleaning systems to reduce VOC emissions</li> </ul>	All Departments	As per maintenance recommendations
<i>Landscaping</i>		
<ul style="list-style-type: none"> <li>Defer lawn mowing and the use of other fuel-powered landscaping equipment (e.g. Leaf blowing, trimming, etc.) use to non-smog alert days</li> </ul>	All Departments	Ongoing
<ul style="list-style-type: none"> <li>Do not use pesticides on smog alert days; eliminate pesticide use or establish pesticide reduction programs</li> </ul>	All Departments	Ongoing
<ul style="list-style-type: none"> <li>Ensure all fuel powered landscape maintenance equipment is operating efficiently and repair any improper seals that may lead to fuel leaks or evaporative loss</li> </ul>	Infrastructure & Development Services	Ongoing
<ul style="list-style-type: none"> <li>Encourage tree planting; maintain present trees</li> </ul>	All Departments, Going Green Committee	Ongoing

