

Endorsed by EEAC November 14, 2001

# **Discussion Paper:**

## **Air Quality and Official Plan Policy**

**FOR DISCUSSION PURPOSES ONLY**

This document has not been considered by  
Regional Council and does not reflect  
current Regional policies

As prepared by the Region of Halton's  
Ecological and Environmental Advisory Committee (EEAC)  
in consultation with Regional Staff  
for the Regional Municipality of Halton

October 2001

# CONTENTS

## PREFACE

### PART I: THE JUSTIFICATION

- **For Addressing Air Quality and Climate Change in the Region’s Official Plan**

### PART II: POLICY DIRECTIONS

- **That EEAC Recommends the Region Consider as Possible Official Plan Policy Regarding Air Quality and Climate Change**

### PART III: IMPLEMENTATION ACTIONS

- **That EEAC Recommends the Region Consider to Implement the Proposed Policy Directions Regarding Air Quality and Climate Change**

### APPENDIX A: FUNDAMENTAL ENVIRONMENTAL PRINCIPLES

- **Recommended Wording Respecting Fundamental Environmental L.A.W.S. to Provide Foundation and Context for Air Quality Policy Directions and Actions Raised in Parts II and III**

# PREFACE

This Discussion Paper has been prepared by the Region of Halton's Ecological and Environmental Advisory Committee (EEAC) and provided to the Commissioner of Planning and Public Works in order to promote the inclusion of air quality and climate change policies and implementation actions in the Region's Official Plan (ROP). This document provides a short outline of the issues, challenge and opportunities to be considered and provides the justification to encourage the Region to resolve to move forward and address air quality issues within the Region of Halton. It is hoped that this document will be sufficiently timely and persuasive to advise Regional staff in the preparation of their forthcoming Directions Report to Council.

A second document will be prepared as a Backgrounder to support the present Discussion Paper. The Backgrounder will more thoroughly address the science and technology of the issues as well as the range of implementation measures that are possible, that have been implemented elsewhere and that are to be recommended as the best strategic directions that the Region might pursue initially and subsequently.

A third document is contemplated which, it is hoped, will be prepared jointly by EEAC and Regional staff to detail and balance the specific directions suggested in the Discussion Paper, that are supported by the Backgrounder, in a manner that harmonizes with other Regional policy directions.

The Discussion Paper presents the argument that there is an air quality problem in Halton and that the fundamental reason to address it relates to a necessary defence and improvement of public health. Further, argument is presented that the Region has legitimate jurisdiction and the tools to help move toward a solution to the problems.

The simplest justification, if not a requirement, is for Halton to act in keeping with its motto of "A World Class Place To Be", and to at least match the targets and measures suggested by the Federal Government of Canada and the Province of Ontario, and such agencies as the Federation of Canadian Municipalities. These agencies have considerable scientific resources and expertise and have deemed it necessary to move forward.

For Halton to decide to adopt a different perspective than the Province and the Federal governments would require similar resources and expertise (as are relied upon by the Federal and Provincial governments) to argue for air quality being less significant in Halton than the rest of the Province or the rest of the Nation such that Halton need not act similarly. Published data of the Ontario Ministry of Environment (MOE) does not support this. Indeed the data suggest Halton's air quality is generally worse than that of Hamilton or Toronto.

For Halton to act appropriately and in keeping with the adopted policy directions of the Provincial and Federal governments would only require adoption of the targets and measures

adopted by those governments. Halton can learn successively from its own experience gained over time and subsequently improve on those targets and measures.

Halton can lead by example. Halton can voluntarily act to improve its own corporate actions. Such actions would be an example to the community of Halton. The Region can encourage, advocate and cajole others to act appropriately - both within and beyond its borders - and can also act to control and regulate, within the limits of its jurisdiction and powers, the actions of others, especially in the area of land use planning, transportation and infrastructure provisions. Whatever the Region decides to do, such actions will largely need support and direction to be expressed in its Official Plan. It is important to consider air quality issues within the context of the Official Plan and in balanced harmony with all other Regional policy directions.

For the sake of our children and our children's children – EEAC recommends that general policies and implementation permitting policies respecting Air Quality and Climate Change be considered as part of the Region's Directions Report toward enacting amendments to the Region's Official Plan.

EEAC

November 2, 2001

# Part I: THE JUSTIFICATION

## for Addressing Air Quality and Climate Change in the Region's Official Plan

### **SUMMARY:**

- *The fundamental reason for the Region to be concerned about Air Quality is concern for the public health of its citizens.*
- *Because of the vast variety of toxic pollutants present in the air that we breathe, it is enormously challenging to determine the human health risks from exposure to this mixture; it is also a very serious failure to ignore the problem due to its complexity.*
- *Air quality is not just a Hamilton problem or a Toronto problem – comparable data indicate that it is a more severe problem in Halton.*
- *The major sources of air quality problems include: power production/energy use based on combustion of fossil fuel; transportation based on combustion of fossil fuel; and, the consequences of land use decisions resulting in urban sprawl.*
- *The largest sources of Halton's poor air quality and smog episodes come from beyond Halton, however, other sources within Halton - such as vehicle use, industrial activities, and residential heating combustion - also make significant contributions.*
- *Recent data indicate that the impact of smog is being felt at considerable distances from the source of the problem, and that all areas of Halton are being impacted, not simply the main transportation corridors.*
- *Resolving the issue of the health dangers of smog is recognized as leading to resolution of the environmental problem of acid precipitation as well, which has been well known for many years and addressed in international agreements.*
- *Climate change and the causes of artificial warming of the atmosphere through greenhouse gas emissions is not disputed; only the future rate of such change and severity of its impacts are the subject of ongoing research.*
- *Many of the same sources, especially energy production and vehicle use, are responsible for a variety of related air quality issues, and addressing any single issue at source can result in multiple benefits for all issues.*

- *Municipalities do not have the resources to monitor, model or create clean air in the same manner as they might feel it necessary to address issues of clean water. Nor do municipalities have, or need to have, the scientific resources required to adjudicate the issues of air quality. The Region is simply advised to do its utmost to establish appropriate policies; to monitor the rate of response required; and to monitor the Region's successes in meeting the challenge.*
- *Halton should, adopt the Federation of Canadian Municipalities' "Plan to Achieve 20 Per Cent of the Kyoto Target" and reduce its total emission tonnage of greenhouse gases by 20 to 25 per cent, or better, and avail itself of federal funds to facilitate this.*
- *Halton should adopt the province's Anti-Smog Action Plan related emission reduction target of 45% for NO<sub>x</sub> and Ontario's response to the Canada-Wide Acid Rain Strategy reduction target of 50% for SO<sub>2</sub>.*
- *The Region should obtain available data, and consider supplementing it if and where necessary, to analyze the air quality in Halton.*
- *Public education and public consultation are essential to changing societal behaviours affecting air quality deterioration.*
- *Municipalities in Ontario have broad jurisdiction and responsibility over land use and transportation, both of which are significant determinants of air quality.*
- *Following the recent Supreme Court of Canada decision upholding a municipal by-law in Quebec to ban pesticides, opportunities may exist to enact municipal and regional by-laws for air quality which affect human health and safety in Ontario.*
- *The means to implement air quality initiatives requires expression in the Official Plan, including a determination and articulation of the Region's intended actions and policy directions for the health and safety of its citizens and the environment.*

## **Public Health is the Fundamental Concern**

The fundamental reason for the Region to be concerned about Air Quality is concern for the public health of its citizens. Smog (ozone and particulate matter) causes increased morbidity and increased mortality. Ground level (tropospheric) air toxics cause increased cancer incidence, and upper level (stratospheric) ozone depletion causes increased skin cancer incidence. Further, the general ground level contaminants (Ontario's ambient air quality criteria pollutants - ozone, sulphur dioxide, carbon dioxide, oxides of nitrogen, volatile organic compounds, toxic organics, particles, total reduced sulphur compounds) are all linked to adverse health impacts. Even the issue of acid deposition (also known as acid rain) which affects natural ecosystems (lakes and vegetation) is considered damaging to public health through the leaching of health-necessary trace elements (e.g. selenium) from soil and, therefore, from human food.

According to the government of the Province of Ontario, air pollution kills 1,800 people each year in Ontario. The figure according to the Ontario Medical Association is 1,900 per year. Thousands more suffer from respiratory ailments, such as asthma and bronchitis, which are associated with pollutants in the air. The Ontario Medical Association warns us that "air pollution is a public health crisis in Ontario".

## **Other Benefits**

Addressing air quality concerns for fundamental reasons of Public Health also provides for improvements in other areas of Regional interest. Limiting air pollution and climate change clearly benefits continuation of the present vegetation patterns, including arable agriculture, forests and woodlots, wetlands, environmentally sensitive areas and other natural heritage features of the Region. Under current business-as-usual scenarios, and at some uncertain date in the future, the Region's protection of ESA's may ensure that the land area is protected from development pressures – but the ecology of those lands will have become so altered as to no longer exhibit what was intended to be protected. The ecology of flora and fauna will have changed beyond present recognition as a result of temperature and precipitation regime changes.

Working towards a resolution of air quality problems (air pollution and climate change) can be too quickly seen as an economic expenditure in pursuit of changes that are socially not desired by those who wish to continue their life styles choices unimpeded by questions of public good. However, by taking advantage of grants and funds specifically identified for municipalities to address air quality, and by actively addressing air quality, including climate change, in policies and in actions that limit and mitigate against adverse economic and social effects, and by providing, along with all other stakeholders, the time required for the Region's economy to adapt to the changes that may otherwise overtake it – the Region will be acting to preserve and protect the present and future social and economic status of its citizens.

## **The Air Quality Issues**

The commonly recognized Air Quality Issues or “problem topics” - the issues and concerns that are of most significance - can be described by the following inter-related “issue set”:

- Air Toxics (carcinogens and other health hazards);
- General Air Quality (ambient air quality criteria contaminants);
- Smog (tropospheric ozone, its precursors, & particulate matter of various size fractions);
- Ozone Depletion (hydroflourocarbons);
- Acid Precipitation (suphuric and other acids); and
- Climate Change (carbon dioxide and other greenhouse gases).

The Air Quality Issues will be more fully explained and explored in the Background. Only elements that argue for or lead to justification for Regional action, rather than a full explanation of the phenomena, are included here.

## Air Toxics

As a result of a variety of human activities (e.g. agriculture, transportation, industrial processes) a large number of different toxic pollutants are emitted into the atmosphere. Among the chemicals that may pose a human health risk are pesticides, polychlorinated byphenyls (PCBs), polycyclic aromatic hydrocarbons (PAHs), dioxins, and volatile organic compounds (e.g. benzene, carbon tetrachloride). Because of the enormous variety of toxic pollutants present in the air that we breathe, it is an enormously challenging task to determine the human health risks from exposure to this mixture. It is also a very serious failure to ignore it due to its complexity.

There are huge gaps in our knowledge about the sources of toxic compounds released into the atmosphere of southern Ontario. Environment Canada's National Pollutant Release Inventory (NPRI) focuses on large point sources and the new MOE Regulation, Ontario Regulation 127/01 (under the *Environmental Protection Act*) will do the same at the provincial level. However, many of the air toxics emission sources within Halton are small and medium-sized commercial and industrial point sources, which require MOE Approvals but which are not included in the Federal emissions inventory. Such inventory information should be available to Regional staff for assessment and planning purposes. There is also a major contribution from distributed sources including mobile sources such as cars and trucks and area sources such as residential heating.

By and large, air toxics are released in someone's work place, someone's place of residence, or the routes between them. Currently, there is no publicly available information on occupational exposure levels experienced in Ontario workplaces. The Ontario Ministry of Labour used to systematically collect exposure information on selected chemicals and physical agents for Ontario workplaces but this data has not been collected for several years.

The air toxics found in outdoor ambient air are considered to be fugitive emissions from workplaces (but not always someone's indoor work place air). Air toxics tend to be local (source site and immediate environs) specific and research should be considered to test the quantity and quality of toxics in Halton's air. Recent research in the City of Toronto identified 10 carcinogens of concern in their air shed. The research in Toronto indicated two carcinogens to be present in outdoor air at levels that are ten times higher than the exposure levels considered tolerable – benzene and as polycyclic aromatic hydrocarbons (PAHs). Automobiles and gas stations are the most likely sources of significant benzene emissions originating in the Halton Region while diesel-operated vehicles are one of the most significant sources of PAHs.

Other air-borne toxic contaminants are also present in the atmosphere, and include inorganic chemicals (e.g. lead, copper, iron, mercury, arsenic and manganese) and organic chemicals such as polycyclic aromatic hydrocarbons (PAHs), polychlorinated dibenzodioxins (dioxins), polychlorinated dibenzofuran (furans) and volatile organic compounds (VOCs). Many of these hazardous pollutants are persistent in the air and are a hazard to human and ecosystem health. Upward of 160 different toxic chemical compounds have been detected in the Greater Toronto air shed, including 24 inorganic and 136 organic compounds.



Dioxins are released as unintentional by-products of the incineration of medical and municipal wastes, the burning of diesel fuel in vehicles, and to a lesser extent, the burning of wood in fireplaces. Food is the most significant pathway for exposure. Dioxins have also been found in high concentration in road dust. Dioxins have been identified for “virtual elimination” by a number of national and international agreements. For these reasons, the Region should consider the development of a strategy that supports the elimination of their sources in Halton.

## **General Air Quality**

General Air Quality reflects average situations as depicted from very limited spatial data. The resultant data are, therefore, not necessarily an accurate reflection of general air quality over a larger area. However, the Ontario Ministry of Environment does maintain a network of air monitoring stations across Ontario, including two within Halton – in Burlington and Oakville. This is similar to collecting rainfall measurements from two rain buckets in Halton and assuming that it represents a constant and uniform rain throughout the year. A more significant evaluation can be undertaken using emission inventory data coupled with general air quality dispersion modelling based on contributing source assessments and subsequent monitoring to verify the results obtained. However, the General Air Quality Index Summaries (MOE, 1996 through 1998) provide at least a reasonable comparative tool, and it should be remembered that the AQI values are generally conservatively protective of public health. (A currently ongoing health based re-evaluation of the parameters such as ozone, sulphur dioxide and others, may well lower the acceptable threshold values of some of them across the Province.).

The following table shows Air Quality Index (AQI) comparisons between Hamilton (Downtown), Burlington, Oakville, Mississauga and Toronto (Downtown) for the years 1995, 1996, 1997 and 1998. Data for 1999 and subsequent (more recent) years has yet to be released. The data has been extracted from the MOE’s annual reports on “Air Quality in Ontario – 1996” through to “Air Quality in Ontario - 1998” (the most recent update available). Figures are taken from the appropriate annual General Air Quality Index Summary which provides a comparative tool used here to describe Halton’s air quality. All available years are included to better indicate the relative nature of annual data. The stations in Burlington and Oakville are here presented as sandwiched between Toronto (downtown), Mississauga and Hamilton (downtown) data sets – again for relative comparative purposes.

Essentially, the AQI summary data in Table 1 shows Burlington, Oakville and Mississauga to be similar, but Hamilton and Toronto to be generally “better” than the stations in Halton.

Typifying Air Quality data from only one year of records is here considered to be a dubious exercise. Just as “climate” is officially only determined from 30 years of “weather” data, and changes of climate are examined as a moving average, so to should air quality be viewed as a moving average. Individual AQI years may be anomalous and should not be deemed to necessarily indicate a significant change. For example, the increased Moderate and Poor air quality throughout Ontario in 1998 (the last reported year) compared to 1997 was due primarily to weather conditions that were more favourable for ozone formation and transport in 1998.

Blank for Page 1 of Table 1

PLEASE INSERT TABLE 1 -- AQI COMPARISON – from separate file

– ie TWO PAGES WITH “LANDSCAPE ORIENTATION”

NB Please Insert at a natural page break if format changes from this one!!

Blank for Page 2 of Table 1

The Ontario Air Quality Index program began in 1988. Reported data categories have changed as the understanding of the basic measurements and the methods of communication have improved. Here it is considered appropriate to assess a recent set of reported values since 1995. The exclusion of previous years in Table 1 was adopted for brevity rather than for any other reason.

Table 1 identifies AQI readings at five stations (Hamilton downtown, Burlington, Oakville, Mississauga and Toronto downtown) for the years 1995, 1996, 1997 and 1998. The expected inclusion of 1999 data has not been possible. The table depicts three major categories of data: the number of hours when the AQI is in a specified “quality range” (Very Good, Good, Moderate, Poor or Very Poor); the pollutant responsible for AQI being higher than 31 (i.e. having a value of Moderate, Poor or Very Poor) by number of hours; and the number of days when the AQI was greater than 31 for at least one hour. These three categories are referred to here as sub-set A, sub-set B, and sub-set C respectively.

The number of hours the AQI is in a specified range (i.e. sub-set A) is simplified and discussed in the context of Table 2. The relationship between the number of hours when the AQI is in a specified range (i.e. sub-set A) and the pollutant responsible (i.e. sub-set B) can be understood by looking at an example. For Oakville in 1999 the number of hours of Moderate AQI was 646, the number of hours of Poor AQI was 37, which when added together totals to 683 hours. Data from sub-set B indicates that of those 683 hours the responsible AQI trigger pollutant was suspended particles for 6 hours, total reduced sulphur for 2 hours, and ozone for 675 hours – these three when added also total to 683 hours. For the same Oakville example, the number of days of “worse than Moderate” (AQI >31) and “worse than Poor” (AQI > 49) indicates that the 683 hours of AQI > 31 occurred over the course of 109 days and the 37 hours of AQI > 49 occurred over 10 days.

Examination of the data in Table 1 reveal three important points.

- One, ozone is the most frequent and significant trigger pollutant of “worse than Moderate” air quality (AQI >31).
- Two, in as much as ozone “develops” photo-chemically over time and distance from other source pollutants, there is a clear downwind consequence of upwind inputs. In other words, though the air quality of Hamilton and Toronto is better than that of Burlington and Oakville, the greater number of ozone problem hours and days in Burlington and Oakville is related to upwind sources as generally blow from the west – i.e from Hamilton and further west. Equally though Toronto downtown has a better air quality, downwind stations further east of Toronto (e.g. Scarborough) receive an adverse downwind impact.
- Three, certain Air Quality Index pollutants such as SO<sub>x</sub>, NO<sub>x</sub> and CO never trigger a “worse than Moderate” (AQI > 31). (Changes to the AQI are currently being considered that may result in changes to this.) In essence, the AQI summary is only triggered by ozone or suspended particle exceedances. These are the major pollutants of smog. Therefore, the AQI though used to depict general air quality is more reflective of smog events than general air quality. It is, however, all that is available.

Table 2 presents a simplified summary of Table 1’s sub-set A data. It is difficult to compare total hours by AQI category at AQI stations because the total number of recorded hours at each differs (see note beneath Table 2). However, with the exception of Mississauga, which has been omitted for the purposes of preparing Table 2 as it has a significant 10% less reported hours, the other four stations show sufficient similarity to justify a simplistic comparison.

The picture that emerges from Table 2 is simplicity itself. When comparing the number of hours in the years 1995, 1996, 1997 and 1998 that are above and below the Moderate (AQI 32 to 49) range, Hamilton and Toronto have more “Very Good plus Good” (AQI <31) hours and less “Poor plus Very Poor” (AQI > 49) than Oakville or Burlington. Oakville and Burlington have a worse average air quality than Toronto or Hamilton.

**Table 2: SUMMARY of AQI RANKINGS at FOUR SELECTED STATIONS\***  
 - to show comparison of “Better than Moderate” (i.e. Very Good and Good) and  
 “Worse Than Moderate”(i.e. Poor and Very Poor) AQI reported hours, 1995-8

	<b>Very Good + Good AQI 0 to 31</b>	<b>Poor + Very Poor AQI 50 to 100+</b>
<b>HAMILTON Downtown</b>		
<b>Total Hours Over 4 Years</b>	21096 + 11964 = 33060	70 + 0 = 70
<b>Comparative Ranking</b>	<b>2<sup>nd</sup> Best</b>	<b>2<sup>nd</sup> Best</b>
<b>BURLINGTON</b>		
<b>Total Hours Over 4 Years</b>	19356 + 12720 = 32076	138 + 0 = 138
<b>Comparative Ranking</b>	<b>1<sup>st</sup> Worst</b>	<b>2<sup>nd</sup> Worst</b>
<b>OAKVILLE</b>		
<b>Total Hours Over 4 Years</b>	20546 + 12200 = 32746	150 + 0 = 150
<b>Comparative Ranking</b>	<b>2<sup>nd</sup> Worst</b>	<b>1<sup>st</sup> Worst</b>
<b>TORONTO Downtown</b>		
<b>Total Hours Over 4 Years</b>	26079 + 7820 = 33899	35 + 0 = 35
<b>Comparative Ranking</b>	<b>1<sup>st</sup> Best</b>	<b>1<sup>st</sup> Best</b>

*Note: For the stations compared here the total hours recorded are: Hamilton, 34,948; Burlington, 34,238; Oakville, 34,858; Mississauga, 31,151; and Toronto, 34,627. All stations are relatively similar except Mississauga where approximately 10% less hours than the average number of hours of the other four stations were recorded. The maximum possible number of hours for each station over four years is 35,064.*

The commonly expressed perception suggests that the air quality of Halton’s neighbours, Hamilton to the west of Halton and Toronto to the east of Halton are, as perhaps influenced by the greater amount of media coverage they receive, worse than that in Halton. The Province’s

data does not support this perception. The common perception is the reverse of the recorded reality.

Perhaps Table 2, as much as or more than any other fact or argument presented, shows the need for appropriate consideration of air quality matters by the Region. Air quality is not just a Hamilton problem or a Toronto problem – it is a Halton problem.

## **Smog**

Smog is formed when nitrogen oxides (NO<sub>x</sub>) and volatile organic compounds (VOCs) react together in the presence of sunlight to form ground-level ozone. Smog is a mixture of ground-level ozone and microscopic airborne particulate matter (PM) better distinguished as inhalable and respirable particles (IP/RP). Respirable particles are essentially too small to be filtered out of the air before being absorbed via the lungs into the blood stream. Inhalable particles are bigger, albeit still too small to see with the naked eye, and more of them are caught and held in the lining of the lungs.

When fossil fuels (e.g. gasoline) are burned, a variety of pollutants are emitted into the earth's troposphere, i.e. the region of the atmosphere in which we live - from ground level up to about 15 km. Two of the pollutants that are emitted are hydrocarbons (e.g. unburned fuel) and nitric oxide (NO). When these pollutants build up to sufficiently high levels, a chain reaction occurs from their interaction with sunlight in which the NO is converted to nitrogen dioxide (NO<sub>2</sub>). NO<sub>2</sub> is a brown gas and at sufficiently high levels can contribute to urban haze. However, a more serious problem is that NO<sub>2</sub> can absorb sunlight, and break apart to produce oxygen atoms that combine with the O<sub>2</sub> in the air to produce ozone (O<sub>3</sub>). Ozone is a powerful oxidizing agent and a toxic gas. In North America elevated levels of tropospheric ozone cause several billion dollars per year damage to crops (estimated at \$45 million/per year in Ontario), structures, forests, and human health. It is believed that the natural level of ozone in the clean troposphere is 10 to 15 parts-per-billion (ppb). Because of increasing concentrations of hydrocarbons and NO in the atmosphere, ozone levels in "clean air" are now approximately 30 ppb.

In Halton, the largest sources of smog-causing emissions are cars, trucks and buses. Other sources in Halton, including industrial activities, and beyond Halton, including power generation and heating combustion, also make significant contributions to smog

Recent monitoring data and modelling results indicate that the impact of smog is being felt at considerable distances from the source of the problem and that all areas of Halton are being impacted -- not simply the main transportation corridors. There is no safe refuge in cottage country or in distant rural areas when Smog events occur.

## **Stratospheric Ozone Depletion**

For over two decades, warnings have been issued that chlorofluorocarbons (CFCs) and halons (bromine-containing fluorocarbons) may deplete the stratospheric ozone shield that screens the

earth from some of the sun's harmful ultraviolet rays. Increased radiation can result in an increase in skin cancers, suppression of the human immune system, and decreased productivity of terrestrial and aquatic organisms, including some commercially important crops. CFCs have been widely used as refrigerants, solvents, foam blowing agents and as aerosol propellants; halons are used primarily as fire fighting agents.

More than 120 countries have now signed on to the “Montreal Protocol on Substances that Deplete the Ozone Layer”, of 1987. The phase-down schedule in the Montreal Protocol has been accelerated twice. The completed phase-out of halon production occurred at the end of 1994 and for CFC production at the end of 1995. The protocol's coverage has also been extended to include hydrochlorofluorocarbons (HCFCs) and other substances such as solvents that contain chlorine and bromine, and methyl bromide, a widely used soil fumigant. At their meeting in Vienna (1995) the parties to the Montreal Protocol agreed to phase-down the use of HCFCs in developing countries, to phase-out production of methyl bromide in developed countries by 2010, and to cap its production in developing countries in 2002.

About one-third of the demand for the primary ozone depleting substances has been eliminated through conservation. Another one-third has been replaced by ozone friendly technologies. The remaining one-third, largely in air conditioning, refrigeration, and rigid foam blowing, is being transferred to substitute substances such as HCFCs (which have one percent to 10 percent of the ozone depleting potential of CFCs and are also on a schedule to be phased-out by 2030), HFCs (some of which have significant global warming potentials) and light hydrocarbons (which are flammable and tend to be less energy efficient).

Halton should lead by example and ensure that refrigeration and air conditioning units in the Region's buildings and vehicles meet or surpass current standard requirements.

## **Acid Precipitation (Deposition)**

When fossil fuels, and particularly coal, are burned, the sulphur in the fuel is emitted into the atmosphere as sulphur dioxide (SO<sub>2</sub>). In the atmosphere, this SO<sub>2</sub> can be oxidized to sulphuric acid (H<sub>2</sub>SO<sub>4</sub>) which exists as an aerosol of small droplets. This sulphuric acid aerosol ultimately falls back to the earth's surface, with a variety of environmental consequences. At sufficiently high concentrations these aerosols can cause severe respiratory problems in humans. However, most of the sulphur falls in unpopulated regions where it can cause damage to vegetation, and causes the release of metals from the soil into lakes and streams where these metals can be toxic to fish. Acidic pollutants in rainwater also cause substantial damage to building materials. As a result of deposition of acidic pollutants, thousands of lakes in Canada and the U.S.A. are described as having suffered serious losses of aquatic life.

The problem has been recognized for many years and has been addressed in international agreements. Despite the volume of work, however, the problem has not been eradicated and it still needs to be addressed. In large measure, resolving the more modern issue of the health dangers of smog (and especially ozone – which has been appended as the ozone annex to Canada's international acid precipitation agreement with the U.S.A.) is also recognized as

leading to resolution of the environmental problem of acid precipitation (including acid rain, acid snow, and acid dew etc.).

Acid deposition in Halton's wetlands, on Halton's forests and on Halton's farm lands and on Halton's buildings and structures is still having a deleterious effect and should be addressed in policy and actions that minimize the problem by the Region.

## **Climate Change**

Climate change can be naturally or artificially induced. Change can occur in the same or opposite directions. Currently, natural causes of change largely appear to be causing a cooling, whereas artificial causes of change largely appear to be encouraging a warming. Artificial change due to "greenhouse gas emissions" (such as carbon dioxide) is outpacing natural cooling, and even artificially induced cooling trends. The causes of the artificial warming - which is clearly understood from knowledge of the basic physics of radiation and the behaviour of gases in the atmosphere - is not disputed. Only the future rate of such change and the severity of its impacts are the subject of ongoing research.

Global warming does not result in a uniform global effect. Some parts are warmed more than others. Some parts may even cool during global warming. Some parts become wetter and some parts become drier. Some economic benefits may accrue to global warming (such as year round Great Lakes freight transportation), but largely the economic effects of such global warming are negative and relate adversely to food production. Climate "belts" may shift, but if they do so faster than the soil can develop - the ability to produce the same food is lost. For example, if Halton were to come to experience the climate of Virginia, a new "Virginian agriculture" may be appropriate in Halton. But the "Virginian soils" do not move nor can they be quickly duplicated. Equally, the present agriculture of Halton would have to move north with the climate shift to Shield areas without similar soil (soil takes much longer to balance to a climate than a climate does to move). Farmers and their farms will eventually either have to adapt or move to new areas. How soon and how far is uncertain - but seemingly, eventually, inevitably.

## **Commonality of Problems and Solutions**

The Air Quality Issues share a common set of problem pollutants. Not surprisingly, the sources of almost all of these problems also have a simple commonality. This provides the opportunity of multiple benefits that can be achieved when addressing any one issue. The commonality of problem sources for air quality issues leads to the obvious conclusion that benefits accrue to many issues when addressing any one single issue.



Table 3: Commonality of Problems -- Links between Air Quality Issues and Primary Pollutants

<u>Air Quality Issues</u>	General Air Quality	Inhalable / Respirable Particulate Matter	Ground Level Ozone	Acid Precipitation	Climate Change	Stratospheric Ozone Depletion
<b>Primary Pollutants</b>						
<b>Nitrogen Oxides</b>	X	XX	XX	XX	X <sub>1</sub>	
<b>Sulphur Dioxide</b>	X	XX		XX		
<b>Inhalable / Respirable Particulate Matter</b>	X	XX			X	
<b>Volatile Organics</b>	X	XX	XX		X <sub>2</sub>	X <sub>2</sub>
<b>Carbon Dioxide</b>					XX	
<b>Chloroflouro-carbons</b>					X	XX

- XX significant contributor in Ontario airshed
- X less significant contributor in Ontario airshed
- X<sub>1</sub> Nitrous Oxide ( N<sub>2</sub>O) only
- X<sub>2</sub> Only certain VOCs are active in climate change and stratospheric ozone depletion

After: Table II.3.1 in “A Compendium of Current Knowledge on Fine Particulate Matter in Ontario” (MOE 1999).

The sources of the air contamination issues display a simple commonality, though the percentage contribution to deleterious air quality issues varies. Some contaminants are primary while others are secondary and are only formed after their emission into the air in the presence of other factors (e.g. sunlight creates secondary smog forming pollutants from primary pollutants or “smog precursors”). The “solutions” to reducing air quality issues and concerns exhibit a similar commonality as expressed in the subsequent section.

Clearly, two of the major components of Smog Particulate Matter (PM<sub>10</sub> and PM<sub>2.5</sub>) and Ground Level Ozone(O<sub>3</sub>) link to the release of Nitrogen Oxides (NO<sub>x</sub>) and Sulphur Dioxide (SO<sub>2</sub>). The presence of these gases in the atmosphere together with the presence of moisture also leads to acid precipitation.

Ozone is not emitted directly, but it is formed as a secondary source pollutant through atmospheric chemical reactions with the precursors, NO<sub>x</sub> (nitrogen oxides) and VOC (volatile organic compounds). The sources and fate of ozone's precursors are an important aspect of ozone concentrations.

Emissions of NO<sub>x</sub> and VOCs are an integral part of the chemistry of ground level ozone, which is a major component of smog. Particulate matter is connected also to the issue of hazardous air pollutants through organic carbon particles and metals, many of which are themselves toxic, and by the adsorption and absorption of other contaminants (such as semi-volatile organic compounds such as polycyclic aromatic hydrocarbons and chlorinated organics) onto existing particles.

Essentially, anthropogenic NO<sub>x</sub> is the product of stationary and mobile combustion processes. Nitrogen in the fuel source combines with atmospheric oxygen at high temperatures to form several NO<sub>x</sub> species of which NO<sub>2</sub> and NO are the most common. Within North America, emissions from the transportation sector (61%) and from electrical utilities (12%) plus selected industries (including natural gas processing, non-ferrous mining and smelting, and the pulp and paper industry) account for 98% of total emissions. (after: Federal-Provincial Working Group on Air Quality Objectives and Guidelines Ground Level Ozone Science Assessment Document - Environment Canada, 1999).

VOCs are released to the atmosphere by both combustion and evaporation processes. The largest anthropogenic sources of VOCs are industrial processes and transportation, other contributors are waste disposal facilities and stationary power plants. Solvent use, petroleum refining and distribution and chemical manufacturing are the principal industrial sources. In 1990 the transportation sector produced 31% (with 22% of that coming from light duty passenger cars and trucks) and the industrial sector 33% of the total emissions. Application of surface coatings, general solvent use and other miscellaneous uses accounted for a further 24% of total VOC emissions.

Smog is also linked to other environmental issues such as acid rain, air pollution and climate change. Significant ozone concentrations may also damage exposed vegetation, including agricultural crops, forest vegetation and other plant communities.

Clear linkages have been established between the benefits of reducing PM and secondary pollutants. Controlling inhaleable particles and respirable particles (IP/RP) will help with other environmental issues such as acid rain, ground level ozone and climate change.

Table 4: Commonality of Solutions -- Links between Sources of Pollution and Air Quality Issues

Air Quality Issues	General Air Quality and Air Toxics	Smog: Ground Level Ozone & IP & RP Particulate Matter	Acid Precipitation	Climate Change	Stratospheric Ozone Depletion
<b>Sources</b>					
<b>Transportation Sector (Cars, Trucks, Boats, Trains, Planes)</b>	X	XX	X	XX	XX
<b>Energy from Coal</b>	X	XX	XX	XX	
<b>Energy from Oil or Gas</b>	X	X	X	XX	
<b>Industrial Sources</b>	XX	X	XX		
<b>Residential Sources</b>	X	X	X		XX

- IP = Inhalable Particulate Matter  
(syn. PM<sub>10</sub> = less than or equal to 10 micrometres in aerodynamic diameter)
- RP = Respirable Particulate Matter  
(syn. PM<sub>2.5</sub> = less than or equal to 2.5 micrometres in aerodynamic diameter)
- XX = significant contributor in Ontario airshed
- X = less significant contributor in Ontario airshed

### Sources of Air Quality Concerns

The commonly recognized major “problem sources” of Air Quality problems, is largely (but not completely) described by the following source contributor listing:

- Power Production / Energy Use: based on combustion of fossil fuel (especially coal power plants, but gas, though an improvement on coal, is far from being fully “clean”);
- Transportation: based on combustion of fossil fuel (all vehicles using gasoline and diesel, including boats, planes and trains);
- Land Use: (sprawling developments that lack accessible community function and do not support public transport provision or gridlock reduction); and
- Other: such as methane from rice paddy fields, methane from grazing cattle and other livestock, methane from sanitary landfill, particulate matter from arable tilling, construction sites and unpaved roads, particulate matter from paved highways (deposited

vehicle exhaust products re-suspended by subsequent vehicle disturbance or re-entrainment).

## Power Production and Energy Use

Coal based power plants emit contaminants (sulphur dioxides, nitrogen oxides, particulates, carbon dioxide) that significantly impact smog, general air quality acid rain, climate change. Electricity generation by coal fired power stations is a major source of air pollution. The impact of Ontario Power Generation's (OPG) Nanticoke, Lakeview and Lambton Power Generating Stations on Halton varies with wind direction, wind strength and other meteorological parameters.

The relative and absolute contributions of air contaminations by source clearly vary with meteorological conditions. When the meteorological conditions encourage smog events, approximately 50% of the smog in Ontario (according to MOE) comes from transboundary sources (albeit that still means power plant and transportation sector sources) in the USA). When the meteorological conditions do not encourage a smog event, the relative contribution of transboundary sources to Halton's general air quality are significantly less. The absolute amount of pollutants emitted into Halton's air shed by sector during general air quality condition (aka non smog events) varies non-linearly. It is too simple to suggest that there is no transboundary source impacts at such times – if there were none, all the non transboundary sources would be seen to double in relative terms during non-smog events. Given the upwind location of Nanticoke and Lambton power stations their impact on the Halton air shed varies with meteorological conditions and especially with stability, wind direction and strength. But as a general guide to relative contributions the following applies in Ontario (after MOE).

During one smog event in 1999 the Province has estimated that the direct sources of smog pollutants (ozone and particulate matter) are as follows:

<u>Sources</u>		<u>Relative Percentage</u>
Transboundary (USA)	(edge sources)	50
Transportation	(line sources)	32
Ontario Power Generation	(point sources)	7* (see note)
Industry	(point sources)	7
Residential	(area sources)	4

*\* Note: However, examination of smog precursors (i.e. non ozone and particulate matter gaseous pollutants that are converted into smog pollutants through photo-chemical reactions in the presence of sunlight as they move downwind over time) suggest power generation in Ontario is responsible for 23% of the sulphur dioxide and 14% of the nitrogen oxides released during smog events. Thus making the OPG contribution to smog events much greater than 7%, and probably closer to 20%.*

## **Land Use and Transportation**

Transportation vehicles emit contaminants (nitrogen oxides, sulphur dioxide, VOCs, carbon monoxide and carbon dioxide) that significantly impact smog, general air quality and climate change. According to the most recent Ontario Ministry of Environment data (from various years and varying with contaminant), the transportation sector (automobiles, heavy duty trucks, and off-road diesel vehicles) is responsible for about 80% of the nitrogen oxides and 60% of the sulphur dioxide released in the Greater Toronto Area. The transportation sector is also the greatest contributor of carbon monoxide (90%) and the biggest contributor of volatile organic compounds (VOCs 37%). The data also suggest that wood burning fireplaces, with 8% of the carbon monoxide, 16% of the volatile organic compounds (VOCs) and 47% of the total particulates, are an important source of air pollution in the area. Non-industrial solvents and paint releases (i.e. residential sector sources) were responsible for about 35% of the VOCs.

The impact from transportation sources are thought to more than double from about 25 to 30% during a smog event to approximately 50 to 60% during non-smog events.

## **Don't Sweat the Science**

Many arguments of “science” (data, information, analysis and conclusions) are apparent between many stakeholders, for example, between industry representatives and environmental activists, as between Ontario Power Generation (OPG) and Ontario Clean Air Alliance (OCCA) – as to just how polluting coal generation is; as seen between industry and industry, as between the Canadian Petroleum Producers Institute (CPPI) and Canadian Vehicle Manufacturers Association (CVMA) – who differ as to whether it is preferable to change vehicle technology or fuel formulation; and as seen between scientists and scientists, as in their disagreements between predictive theorists of climate change and climate modellers based on limited observation to verify the models and theories.

Many conflicting sets of opinions and supporting data sets have emerged – especially in the popular media. To the layperson this can be very confusing. To the informed professional it can be very annoying. Vested interests among activists, industrialists, and scientists often encourage selective reporting of data in support of a prior position. The basic science is rarely in debate - often it is only the lay interpretation or simplification that is in dispute.

Here it is suggested that it is unnecessary to “sweat the science”. Municipalities do not have the resources to monitor, model or create clean air in the same manner as they might feel it necessary to address issues of clean water. Nor do municipalities have, or need to have, the scientific resources required to adjudicate the issues of air quality.

That global warming occurs as a result of fossil fuels reuniting carbon with oxygen to form and release extra carbon dioxide (for example) into the atmosphere is unquestioned. That such carbon dioxide acts to trap heat is a fundamental tenet of the gas and radiation laws and is not in any dispute. The rate and severity of the changes are, however, still to be resolved. From a public policy perspective – it can be taken as a given that there will be a warming associated with

burning fossil fuels. The change, notwithstanding confounding natural changes to the contrary, will happen. It is only a question of when.

To put it as a rhetorical question - if senior levels of government, with more scientific resources, determine it appropriate to address climate change and air quality issues as seen in the Federal acceptance of the Kyoto targets, the Federation of Canadian Municipalities (FCM) 20% target, and the Ontario 55% & 45% Anti-Smog Action Plan (ASAP) reduction targets as shown below – could it be considered reasonable for Halton to take another direction without firm analytical evidence to support such a position?

Here the Region is simply advised to follow suit and do its utmost to establish appropriate policies and to monitor the rate of response required and the Region's successes in meeting the challenge.

## **Government Initiatives & Targets**

Halton has an opportunity to match the commitments of the Canadian and Ontario levels of governments and that of the Federation of Canadian Municipalities (FCM). Financial incentives are available for those that do. Clearly, Halton could choose to do less but here it is assumed Halton will want to continue being A World Class Place To Be and will match or better those declared commitments.

## **Ottawa and the Kyoto Target**

Canada signed the Kyoto Protocol on Climate Change at the United Nations in New York (April 29, 1998). Canada and 160 other countries, agreed to a Protocol that called for further reductions in greenhouse gas emissions over the next 15 years. Canada's reduction target is 6 percent below 1990 levels for the period spanning 2008 to 2012.

The Canadian Federal government has essentially adopted the "Kyoto target" respecting greenhouse gas reductions in Canada on behalf of all sectors – including municipalities. If achieved, the improvement will benefit not only the climate change issue but smog, air toxics, general air quality, and acid deposition (in fact everything else save stratospheric ozone reduction).

## **FCM and the Kyoto Target**

The Federation of Canadian Municipalities (FCM) has recently prepared the document - "A Plan to Achieve 20 percent of the Kyoto Target" (September 2001). FCM is proposing that the Federal Government partner with, and provide financial assistance to, municipalities for them to achieve at least 20% of the adopted Kyoto target (with a possibility of it being increased to 25% after confirmation of project success). The plan provides an initial assessment of options and costs and identifies initial opportunities for achieving 20 per cent of the target by 2010 or 40

million tonnes of greenhouse gas reductions. FCM is proposing a package of measures aimed at securing significant greenhouse gas reductions and improvements to air quality that also contribute to multiple community goals and quality of life.

The measures are based on the work of the “Municipal Table” and the “Transportation Table”, these “tables” were established along with 14 other sector tables to assess options for reaching the Kyoto Protocol target as established by Ottawa. Sector experts worked for more than a year to identify and analyze greenhouse gas reduction opportunities in communities. Hence, these proposals have already undergone significant peer review. The Municipalities Table recommendations have also been endorsed by FCM’s National Board of Directors and its members through approval of the Environmental Issues Policy Statement.

The Regional Municipality of Halton, like other municipal governments, has an asset portfolio that includes roads, highways, traffic systems, water supply, solid waste management and sewage treatment facilities, street lighting (on Regional Roads), public housing and a wide variety of vehicles, buildings, machinery and equipment. These assets consume large amounts of energy in providing services to citizens. Municipal governments consume energy in their own operations (direct control) and influence directly or indirectly energy consumption and emissions throughout communities through land use and transportation planning, codes, by-laws and procurement.

The FCM Plan suggests a selection of measures that municipalities may choose to address.

Halton should estimate its total emission tonnage and determine how to reduce them by 20% or 25% or better. But as a simplification, as FCM is suggesting it is readily possible to reduce emissions in the following categories by the identified tonnage, Halton can estimate its target as a proportionate percentage of the Canadian population (387,200 of 31,081,900) or as a proportional percentage of the national municipal workforce (2,200 of 247,000).

<b><u>REDUCTION ACTIVITY AREA</u></b>	<b>Reduction Target Tonnage (Mt)</b>	<b>Percentage of Total Reduction</b>
<b>Waste Diversion</b>	3.6 – 10.0	25.00
<b>Landfill Capture/Utilization</b>	6.5	16.25
<b>Municipal Procurement</b>	1.8	4.50
<b>Community Energy Systems &amp; CHP</b>	3.5 – 10.3	25.75
<b>Transportation Demand Management</b>	10.0	25.00
<b>Community Greening</b>	1.0	2.50
<b>For an Approx. Max. Total of</b>	<b>40.0</b>	

FCM is seeking up to \$1 billion per annum in federal investment over the next five years through Infrastructure Canada for water infrastructure and an additional \$700 million in federal contributions through Infrastructure Canada for non-water infrastructure investments (for a total of \$1.7 billion over the next five years).

The FCM proposal demonstrates how a portion of the additional \$700 million Infrastructure Canada funding and the additional \$125 million for the Green Municipal Enabling Fund could generate greenhouse gas reductions, air quality and health benefits. Investments would focus on: buildings/facilities; waste diversion; landfill gas capture and utilization; community energy systems (CES) and combined heat and power (CHP); renewable energy; and transportation demand management.

The Province of Ontario, in its own Anti-Smog Action Plan, has adopted the target of "... a 75% reduction in the number of times a year ozone readings exceed the ambient air quality criterion (AAQC) of 80 parts per billion" to be achieved by 2015. (The starting point for the reduction target is the average number of exceedences in the years 1990 to 1994.) A commitment from 50 major largely private sector signatories (but atypically also including the former Municipality of Hamilton-Wentworth) to Ontario's Smog Accord, to meet the 75% ozone exceedence reduction target, confirmed the acceptability of the broad non-sector specific target.

For the target to be met, staff of the Ministry of Environment estimated that an emissions reduction target of 45% from the 1990 baseline would be necessary by 2015. The action agenda focused on emission reductions for ozone precursors (NO<sub>x</sub> and VOCs) and reduction of emissions contributing to particulate matter (sulphur dioxide, NO<sub>x</sub>, VOCs and particulates)

The related issues of fine particulates was recently addressed by the Province when an improved interim ambient air quality criterion for inhalable particles of 50 micrograms per cubic metre of air, expressed as a 24-hour average was announced. That criterion served as the benchmark for the development of the Canadian Wide Standard (CWS) for particular matter.

Currently, Ontario's key air quality commitments are to reduce the total provincial NO<sub>x</sub> emissions by 45% by 2015 as set by Ontario's Anti-Smog Action Plan, and to reduce the province's SO<sub>2</sub> emissions by 50% as part of Ontario's response to the Canada-Wide Acid Rain Strategy for Post 2000.

The Science and Policy Assessment Working Group (formerly the Particulate Matter and Ozone Options Assessment Working Group) of ASAP has recommended a number of appropriate actions which could be taken at the community level to reduce the effects of PM and improve air quality:

- compliance with current Point of Impingement standards for total suspended particles, nitrogen oxides, sulphur dioxide, ammonia and specific VOCs;
- voluntary reductions beyond regulatory requirements;
- energy conservation efforts;
- use of cleaner technologies and processes as processes are upgraded;
- pollution prevention;
- transportation demand management;
- emissions testing programs;
- minimization of dust from paved and unpaved roads;
- greening of company fleets through cleaner-fuel vehicles and buses; and
- dust control programs for industrial, construction and institution sectors.



Clearly, Halton can match the targets of the Federal and Provincial governments, but it also has an opportunity to do better. Halton has an opportunity to move ahead, to meet the challenge, to surpass and improve upon those targets in ways that best meet the needs and opportunities in Halton.

## **Policy Opportunities to Meet Challenges**

### Data and Its Analysis:

Estimating and quantifying the sources of air contamination from outside the Region; the sources of air contamination from within the Region; the distribution of all those contaminants within the Region; the impact of such contaminants on the public health, the environmental health, the social health and the economic health of the Region - is obviously a major challenge.

Just how good or bad is the air quality in Halton? Just how degraded can it safely become? Just how much obligation to its citizens and to others elsewhere can Halton afford to pay for? Just how soon should the Region act in the absence of firm knowledge? Just how prudent should the Region be in avoiding future problems?

Data on emission sources has direct policy implications because it improves the Region's ability to focus on specific issues and also improves the likelihood that Regional initiatives will be effective in improving air quality. At the early stage of policy and implementation plan development, it appears that every advance in detailing the situation offers exponential returns on improving air quality understanding and the effectiveness of directed improvement actions.

The challenge can be met with reasonable and demonstrable cost benefits. The Region should consider undertaking the requisite feasibility analysis to collect and analyze the appropriate data for the Region.

### Public Education and Consultation:

Another challenge is to change societal behaviours affecting air quality deterioration in keeping with real problem recognition and advanced program benefits. While Halton's air is perceived as being impacted by many external large pollution sources, it is also significantly impacted by the cumulative effects of many daily activities of Haltonians and commuters into, or through Halton. This is to suggest that future air quality in Halton will depend on how each of us changes our behaviour, not simply how others change their behaviour. This need to change societal behaviour presents complex policy issues of public education, public consultation and support.

The Region is the best placed agency with the capability to address this challenge.

## Costs:

A further challenge is determining who should pay for any Halton effort to improve air quality. In earlier times, the options open to the Region would have been limited to traditional “command and control” regulation with the taxpayer paying the greatest share towards any program of pollution control. Today, however, there is broad recognition that municipalities need greater policy jurisdiction and flexibility to consider not just regulations, but also various means of economic charges and even subsidies. The use of economic incentives to reduce pollution is implicit in the traditional legal strategies of imposing fines for harmful behaviour and compensating victims of pollution from negligent behaviour or trespass. However, the past thirty years have seen extensive consideration of other economic incentives, particularly in the United States, but increasingly in international policies, actions and agreements governing the environment. The Climate Change Convention has identified economic incentives as a central tool to reduce greenhouse gas emissions. The Region could promote an enhanced regulatory system that includes consideration of economic incentives. The Region could link this with submissions through the FCM funding proposals to the Federal Government.

There are important issues associated with any economic incentive scheme, particularly non-economic issues like fairness of the distribution of costs and benefits, but it is important to evaluate these issues in specific contexts, and not simply ignore or summarily dismiss them.

## **Governance**

Presently in Ontario there is a contradictory model of governance over air quality. On the one hand, the Province of Ontario has asserted broad and generally exclusive jurisdiction to approve air emissions across the Province. On the other hand, municipalities have a broad jurisdiction and responsibility over land use and transportation – two very significant determinants of air quality.

Different governance structures are not only possible but long standing in other provinces - most notably in the major metropolitan areas in and around Vancouver and Montreal - where the lead responsibility for air quality rests with municipal/metropolitan governments.

In recent years, the Province of Ontario has initiated public discussion about revising the municipal governance structure to allocate more responsibility to municipalities. This has resulted in municipalities assuming greater responsibility over some air issues such as noise and odour emissions, however, to date that discussion has not included different governance over the core regulatory approach to air quality. The Region should be prepared to formulate and express its opinion in these matters when the opportunities arise.

## **Legal Constraints**

The principal legal constraint is territorial. Municipal powers are generally confined within the boundaries of the municipality. However, Halton’s air quality is a function of not only local emissions but also of regional and international emissions. According to the Province of Ontario

approximately 50% of southern Ontario's air contaminants come from the United States, this is a reasonable simplification as it may easily vary between 30% and 70% as a function of wind strength and turbulent mixing. The far ranging distribution of emission sources means that Halton's air quality can never be the exclusive purview of Ottawa, Queens Park or the Region. Indeed it has to be addressed collectively together with Federal, Provincial and other adjacent and nearby municipal governments.

Clearly, if a matter is international or inter-provincial, jurisdiction is exclusively federal. If a matter is intra-provincial, jurisdiction is exclusively provincial unless there is a concurrent federal interest. If there is a concurrent federal and provincial interest, both levels of government may pass laws, and both types of law are operative unless there is a direct conflict, in which case the higher authority has precedence. If the matter is inter-municipal, there is generally an exclusive provincial authority. Where there is concurrent provincial and municipal authority, again both governments may pass laws, and both types of law are operative unless there is a conflict. Where there is a concurrent provincial authority involving a provincial authority and not simply a provincial prohibition (e.g. authority to grant certificates of approval), then any municipal law on the same matter is in conflict with that law and inoperative. Where there is a concurrent provincial law involving only a provincial prohibition, then any valid municipal law may be more stringent than the provincial law.

Just as the federal government has the jurisdiction to sign an air quality agreement with the United States regarding the Ozone Annex (as in 2000 – as an annex to the original Acid Rain agreement of 1990), so too the provincial government has the authority to address intra-provincial pollution and uses the Environmental Protection Act to regulate stationary sources (eg smokestacks) in the province.

The simple and cautious approach to such legal matters is to suggest that the Province sets the air quality standards to be met, approves industrial activities (through Certificates of Approval) and the Federal government controls applicable vehicle engine technologies and fuel content (such as how much sulphur is permissible) – leaving little within the exclusive purview of municipalities. However, a leading municipality such as Halton, may select to investigate its doing more. In which case, consideration could be given to by-laws to enhance emission standards for non-vehicular equipment such as lawnmowers and leaf blowers; enhanced fuel standards for all off-road diesel fuels used in the Region; or enhanced vehicle emission standards for all vehicles in use within the Region's boundaries (obviously a measure to be considered in co-operation with other municipalities.)

However, a municipality may more clearly use its authority under the Planning Act to develop municipal policies in matters such as the natural environment, resource use, transportation, energy efficiency, and municipal infrastructure. The Region can control land uses which may affect air quality and new urban densities and their related infrastructure, and the densities required to serve them (e.g. high density residential supports transit, low densities do not).

The other principal municipal authority in respect to air quality matters stems from the Municipal Act which authorizes by-laws over matters generally affecting human health and safety, with specific regard to such matters as public nuisance. It is recognized that this authority has been narrowly construed by the courts. However, a recent Supreme Court of Canada decision

[114957 Canada Ltée (Spraytech, Société d'arrosage) v. Hudson (Town), [2001] S.C.J. No. 42], upheld a municipal by-law in Quebec to ban pesticides under such a provision (under Quebec's equivalent to the Ontario *Municipal Act*), thereby suggesting that there may be opportunity to enact by-laws for air quality which affect human health and safety in Ontario.

However, it should be remembered that a municipality may not pass by-laws even where clearly authorized to do so, that do not conform with its Official Plan. A vision of the Region's needs in respect to air quality should, therefore, first be reflected in the Region's Official Plan.

### **Conclusion: Or “Why Put Air Quality Policies in the Region’s Official Plan?”**

There are air quality and climate change issues and solutions which fall within the Region's specific domain and should and can be addressed in the Region's Official Plan. In essence, there is a significant challenge to be faced, but the Region does have responsibilities and powers (as provided by the *Planning Act* and *Municipal Acts*) to act proactively. The Region also has some obligation to establish and meet similar targets as adopted by the Federal and Provincial governments. The Region also has an opportunity to act with the help of finance from external sources to positively influence public health by addressing air quality, and safeguarding natural heritage (environmentally sensitive areas) and the social and economic well being of the Region.

That there is an air quality problem that the Region should address is clear. It is also clear that the Region has powers and responsibilities to address the problems through

- Regional land use planning,
- the Region's own corporate policy directions,
- by-laws under the *Municipal Act* to address health and safety,
- encouraging actions in the community of Halton, and
- advocating change among neighbours and other levels of government.

The means to implement such ideals requires expression in the Official Plan including a determination and expression of the Region's intended actions and policy directions for the health and safety of its citizens and the environment they share - and for the health and well being of our children's children.

## **PART II: POLICY DIRECTIONS**

### **Specific Wording That EEAC Recommends the Region Consider as Possible Official Plan Policy Regarding Air Quality and Climate Change**

#### **Introduction**

Commonly, the process of advocating for a new planning policy direction is done by providing all the available science and technical evidence as background to the professionals who will then be responsible for writing the actual policy wording to be recommended and carried forward. Here an alternate expedient is adopted. This is done in recognition of the newness of the subject area, in recognition of the prevailing confusion stemming from science and technology (at least as reported by lay media) as to what is wrong and what can and should be done to rectify such wrongs, and a recognition that the devil or the angel rests in the details. So rather than present text to explain, justify and recommend – it is preferred to offer a set of suggested policy direction clauses. No attempt has been made to write the clauses in the Region’s preferred and previously adopted clause format as found in the Region’s Official Plan, but rather to use a style that includes more background justification and explanation coupled as specific recommended policy directions. The provided clauses are meant to guide subsequent policy wordings and not necessarily to be adopted word for word. By this means, it is hoped that a clear direction of purpose is provided such that though the words may change, the spirit of the intent will be more easily carried forward and finally adopted as amendments to the Region’s Official Plan.

The scope of the suggested policy directions is evident in the title clauses as addressed below. To facilitate the reader’s ability to traverse the details a listing of the subsequent clauses is itemized.

#### **Suggested Policy Clauses**

- 1. Air Quality and Health**
- 2. Air Quality, Contaminants and Pollution**
- 3. Air Quality Improvement**
- 4. Air Quality Related and Integrated Policy**
- 5. Ambient Air Quality**

## **6. Smog**

- 6a. Smog Sources
- 6b. Smog Alerts
- 6c. Corporate Action During Smog Alerts
- 6d. Community Action During Smog Alerts

## **7. Global Challenges**

- 7a. “Greenhouse Effect” and “Global Warming”
- 7b. Major Sources - Vehicles and Power Production
- 7c. Think Globally Act Locally Now
- 7d. Other Sources of Greenhouse Gases (GHG)
- 7e. Prudent Avoidance and Adaption
- 7f. Stratospheric Ozone

## **8. Air Toxics**

### **9. Air Pollution Reduction Objectives & Measures**

- 9a. Corporate Objectives and Measures
- 9b. Community Objectives and Measures

### **10. Air Pollution Reduction Targets**

- 10a. Corporate Air Pollution Reduction Targets
- 10b. Community Air Pollution Reduction Targets

## **11. Emission Reduction Credit Trading**

## **12. Cross Boundary Sources**

- 12a. Advocacy with Federal and Provincial Governments
- 12b. Cross Boundary “Upwind” Sources
- 12c. Cross Boundary “Downwind” Contributions

## **13. Energy**

- 13a. Balanced Air Quality and Energy Consideration
- 13b. Sequence of Preferred Solutions
- 13c. Energy Objectives
- 13d. Green Power
- 13e. Corporate Green Target
- 13f. Demand Management
- 13g. Corporate Efficiency Target
- 13h. District Energy (Heating and Cooling) Systems
- 13i. Deep Lake Water Cooling
- 13j. High Efficiency Generation
- 13k. Cogeneration
- 13l. Energy From Waste
- 13m. Prudent Avoidance of Electric and Magnetic Fields from Power Lines

## **14. Transportation**

- 14a. Transportation, Economics and Air Quality
- 14b. Air Quality and Alternate Transportation
- 14c. Congestion and Air Quality
- 14d. Development to be Encouraged at Transit-Served Locations
- 14e. Reducing Overall Automobile Use
- 14f. Residential Housing Intensification
- 14g. GO-Transit
- 14h. Local Transit
- 14i. High Occupancy Vehicle (HOV) Lanes
- 14j. Idling Control
- 14k. Improvements for Bicyclists
- 14l. Improvements for Pedestrians
- 14m. Traffic Calming

## **15. Land Use Planning**

- 15a. Important Elements
- 15b. Intensification of Existing Urban Areas
- 15c. Urban Sprawl and Smart Growth Alternatives
- 15d. Protection of Countryside
- 15e. Development Guidelines

## **16. Land Use Compatibility**

- 16a. Indoor & Outdoor Air
- 16b. Land Use and Air Quality Compatibility

## **17. Trees and Forests**

## **18. Estimating, Monitoring & Reporting**

- 18a. Estimating
- 18b. Monitoring
- 18c. Reporting

## **1. Air Quality and Health**

Regional Council recognizes the fundamental linkage between air quality and the public health of those who live, work and play within the Region, and recognizing that some are more at risk than others, adopts the following policies, directions and measures as a primary response to better protect and safeguard the public health of all within the Region of Halton.

Regional Council also recognizes the potential adverse impacts of air pollution, including the impact of global climate change, on the present and future health of the natural environment, and on the economic health and social health of the Region, and in addressing air quality integrates all aspects in keeping with the primary need to protect health.

## **2. Air Quality, Contaminants and Pollution**

Regional Council recognizes that almost all human activities introduce contaminants into the atmosphere, that natural processes also introduce other substances than those we recognize as the constituents of “pure air”; that beside nitrogen, oxygen, argon, carbon dioxide, water in its various phases, and the trace gases that form a permanent part of the atmosphere; the atmosphere always contains other emanations including those from growing or decaying vegetation, salt from sea spray, dust from blowing soil and sand storms, smoke from lightning induced fires, and gases and fumes from volcanic eruptions.

Regional Council recognizes air pollution as the presence in the atmosphere of substances that are toxic, irritating, otherwise harmful to humans, or damaging to vegetation, animals or property.

Regional Council recognizes air quality as a function of adverse air pollution (e.g. air toxics) or unnatural exceedances of the constituents of pure air (e.g. carbon dioxide) or artificially induced exceedances of recognized natural contaminations (e.g. dust from soil).

## **3. Air Quality Improvement**

It is the policy of Regional Council to seek to improve air quality in the Region of Halton by:

- a) taking appropriate action to reduce the quantity and severity of local air pollution emissions;



- b) encouraging the reduction in the quantity and severity of out-of-town trans-boundary emissions that impact Halton Region; and by
- c) acting to limit the adverse impacts of all such emissions on the condition and functions, including the ecology and health, of the Region's natural environment and of the people who live, work and play within it.

#### **4. Air Quality Related and Integrated Policy**

Regional Council shall ensure that the official policies and related implementation policies, that are closely allied to air quality and deal with such matters as: energy, transportation, trees and natural areas, noise, vibration, odour release and land use compatibility, integrate and balance harmoniously with the policies and plans made in respect to air quality.

#### **5. Ambient Air Quality**

Regional Council recognizes the importance of understanding and appropriately addressing chronic background ambient air quality issues involving air pollutants (including: inhalable/respirable particulates, sulphates, ground level ozone, sulphur dioxide, and nitrogen dioxide) and persistent air toxics (including: volatile organic carbons, heavy metals, polycyclic aromatic hydrocarbons, dioxins, and furans,) and doing so within the general air shed of the Region as a whole and within particular local sub-area's as, and where, required.

#### **6. Smog**

Regional Council recognizes the importance of acute episodic smog events which occur in the summer season and other Ambient Air Quality Criteria (AAQC) exceeding episodes throughout the year and which expose those who live, work and play within the Region to unhealthy high concentrations of ozone and fine grained particulate matter in the lowest levels of the atmosphere (i.e. the troposphere).

##### **6a. Smog Sources**

Regional Council recognizes the contribution of trans-boundary sources; local point sources (industry and power generation contributions - as from smokestacks); line sources (vehicular contributions - as along highways); and area sources (domestic contributions - as in neighbourhood areas, and biogenic contributions from rural areas) to the occurrence of episodic air quality problem events (smog).

#### 6b. Smog Alerts

Regional Council shall enact appropriate measures to alert the Corporation and the Region-wide community to the inherent dangers and occurrences of smog as may happen from time to time in the airshed of the Region of Halton.

#### 6c. Corporate Action During Smog Alerts

During “smog alerts”, Regional Council shall ensure that its own activities do not exacerbate air quality problems in the Region or beyond. Further, Regional Council shall advocate that smog-inappropriate actions of others be suitably curtailed during smog alerts.

#### 6d. Community Action During Smog Alerts

Regional Council shall, in order to reduce the severity of smog occurrence impacts, alert and inform others as to why and how they: (a) should prevent making the smog event worse, and, (b) can best avoid their own exposure to the impacts of smog and/or adverse air quality contaminants.

### **7. Global Challenges**

Regional Council, in keeping with its motto of “A World Class Place To Be”, will appropriately address global challenges, including global warming and global air quality, by thinking globally when acting locally, and by continuing to behave as world class citizens of the globe.

#### 7a. “Greenhouse Effect” and “Global Warming”

Regional Council recognizes the ultimate significance of climate change and the causal factor of the atmospheric/greenhouse effect as a global challenge.

#### 7b. Major Sources - Vehicles and Power Production

Regional Council recognizes the escalating contribution to global climate change made by burning fossil fuels (gasoline, diesel and coal) which release carbon dioxide to create an added atmospheric blanketing effect (a.k.a. the “greenhouse effect”) trapping outgoing radiation, and contributing toward climate changes (a.k.a. “global warming”) and new local patterns of temperature, precipitation and evapotranspiration.

#### 7c. Think Globally Act Locally, Now!

Regional Council adopts as a prime directive its need to think globally but to act locally, and further, to think long term but to act immediately, with respect to the artificial causes that exacerbate climate change, including global warming and all its consequences.

#### 7d. Other Sources of Greenhouse Gases (GHG)

Regional Council recognizes the contribution, beyond fuel combustion for heat and energy production, of other artificial sources, including: forest clearing, intensive livestock rearing and other pollutants including: methane, oxides of nitrogen, chloro-fluorocarbons (CFCs), halons or bromofluorocarbons, halomethanes, and halogenated-chloro-fluorocarbons (HCFCs) that also contribute to the “greenhouse effect” and “global warming”.

#### 7e. Prudent Avoidance and Adaption

Regional Council favours responsive actions to prevent the problems of artificial global warming rather than employing uncertain technical measures to counteract or adapt to artificial changes of climate, and will seek to prudently avoid all actions that exacerbate the magnitude of the challenge.

Regional Council will, within the limits of its jurisdiction and responsibility, prioritize its actions by acting sequentially:

- first to prevent artificial climate change,
- second to mitigate natural or artificial climate change, and
- third to adapt to natural or artificial climate change;

and shall address challenges of feasible and technical adaptability in agriculture, building forms, and other matters.

#### 7f. Stratospheric Ozone

Regional Council recognizes ozone protection as a global challenge. Council recognizes the deleterious effect of artificially released chlorofluorocarbons and halons, which catalytically destroy the Earth’s protective stratospheric ozone layer, recognizes that stratospheric ozone absorbs harmful shortwave (ultraviolet, UV-B) radiation, and that high doses of UV radiation can cause skin cancer (melanomas), eye diseases, suppression of some immune responses, and decreases in natural and agricultural plant and marine plant productivity.

## 8. Air Toxics

Regional Council recognizes air toxics as a largely regional and local challenge. Council recognizes the immediate and long term adverse effects on human and environmental health as influenced by air toxics such as gases, particulates and aerosols, and persistent chemicals such as dioxins (PCDD's) and furans (PCDF's) as may emanate from waste incinerators, metal smelters, fossil-fuelled power plants, pesticide applications, dry-cleaning facilities, and motor vehicles.

## 9. Air Pollution Reduction Objectives and Measures

### 9a. Corporate Objectives and Measures

Regional Council shall act to reduce air pollution emitted as part of any Corporate function or related activity, including the operation of its own vehicles and buildings, and/or, any other activity that supports the Corporation's functions but which may occur outside the Region of Halton.

Regional Council shall seek:

- (a) to increase its use of renewable "green" power (e.g. windturbines) and reduce its reliance on non-renewable "non-green" power (e.g. coal fired electricity generation) through its own energy purchase contracts and other measures;
- (b) to improve its corporate energy consumption patterns by reducing the quantity of its overall demand (e.g. as by reducing work related trips and teleconferencing more) and by increasing its consumption efficiency (e.g. by purchasing and using vehicles with lower litre per kilometre ratings as by using hybrid or gas powered vehicles);
- (c) to improve the quality of the fuels used (e.g. as by purchasing lower sulphur content fuels) and to improve the quality of its unavoidable emissions (e.g. as by employing high quality vehicle maintenance practices), that result from the burning of carbon based fuels in its vehicles, buildings or as may be released from any other activity in the Corporation; and
- (d) to improve the fuel use pattern of employee trip to work needs by encouraging employee trip reduction measures

through corporate promotion of, and corporate participation in, appropriate regional and inter-regional Transport Management Associations.

#### 9b. Community Objectives and Measures

Regional Council shall encourage the community to voluntarily adopt similar measures to those the Corporation itself adopts to improve air quality by addressing issues of energy source selection, energy efficiency, and by improving the quality of polluting emissions into the atmosphere.

To this end, Regional Council shall undertake, support and participate in efforts to promote the community's adoption of measures it deems appropriate and adopts for itself and recommends in respect to vehicles use and building operation.

### **10. Air Pollution Reduction Targets**

#### 10a. Corporate Air Pollution Reduction Targets

Regional Council adopts as its target objectives the reduction, in keeping with the targets of the Province of Ontario and the Government of Canada, and within the jurisdiction, realm and activities of the Corporation of the Region of Halton, of:

- (a) carbon dioxide (CO<sub>2</sub>) emissions from all sources by 20 percent of the 2000 levels by the year 2010, and by 20% of the 2010 levels by 2020. (re: global warming);
- (b) the number of times ground level ozone (O<sub>3</sub>) readings exceed the ambient air quality criterion (80 ppb) by 75% by 2015 (re: smog episodes);
- (c) nitrogen oxides (NO<sub>x</sub>) emissions by 45% from the 1990 baseline by 2015;
- (d) sulphur dioxide (SO<sub>2</sub>) emissions by 50% from the 1990 baseline by 2015;
- (e) carbon monoxide (CO), hydrocarbon (HC), and volatile organic carbon (VOC) emissions from vehicle exhausts, furnace flues and smokestacks by 20 percent of the 1990 levels by the year 2010, and by 20% of 2010 levels by 2020, without an increase in other noxious emissions (re: ambient air quality); and
- (f) sulphur dioxide (SO<sub>2</sub>) and nitrogen dioxide (NO<sub>2</sub>) emissions by 45 percent of 1990 levels by the year 2015; and by 25% of 2015 levels by 2020. (re: "acid precipitation").

Further, Regional Council shall monitor its progress toward meeting and exceeding these targets.

#### 10b. Community Air Pollution Reduction Targets

Regional Council shall encourage and facilitate the community's voluntary attainment of the same targets as above.

Regional Council shall monitor to the extent feasible, the community's progress toward attaining and exceeding these targets.

### **11. Emission Reduction Credit Trading**

Regional Council shall only trade as its own emission reduction credits (as in respect to NO<sub>x</sub>, SO<sub>x</sub> or CO<sub>2</sub> or other demonstrable credits) those credits which are achieved in exceeding the Region's identified targets, and shall only trade with institutions or agencies that have firmly adopted emission caps and cap reduction polices that act to meet similar or better targets to those of the Region as outlined above.

### **12. Cross Boundary Sources**

#### 12a. Advocacy with Federal and Provincial Governments

Regional Council will encourage and partner with local, federal and provincial levels of Canadian government to pursue real improvements and reduced impacts in air quality, as a continued area of focus for intergovernmental and international agreements.

Regional Council will seek future opportunities to balance economic and environmental objectives and mechanisms to advocate for the acceptance of common standards throughout Ontario, Canada, and North America regarding the Region's policies and objectives in respect to air quality interests and obligations.

#### 12b. Cross Boundary "Upwind" Sources

Regional Council will advocate for, participate in and support advocacy as by other levels of government or organizations, in respect to diminishing "upwind" cross boundary sources that impact Halton.

#### 12c. Cross Boundary "Downwind" Contributions

Regional Council will endeavour to diminish contributions to "downwind" cross boundary air pollution that originate in Halton by seeking to reduce its own

Corporation's contributions and by encouraging reductions in the Community's contributions to cross boundary problems for other "downwind" municipalities.

## 13. Energy

### 13a. Balanced Air Quality and Energy Consideration

Regional Council shall endeavour to integrate and balance all aspects of its air quality and other environmental policies and initiatives with its energy and economic policies and initiatives, including costs associated with energy production, generation, transmission and energy conservation.

In pursuing its balanced energy policy, Council shall place the health and welfare of the natural environment as it relates to the well-being and prosperity of those who live, work and play in the Region, above narrow economic cost considerations, but within affordable cost considerations, such that, for example, Council seeks to minimize:

- (a) the effect on the global environment of purchasing energy derived from fuel sources, such as unscrubbed sulphur rich coal, that adversely contributes to the greenhouse effect, acid precipitation, urban smog and human health; and
- (b) the use of cooling equipment which adversely contributes to ozone depletion or the "greenhouse effect" and is not in accord with the substance phase-out of the Montreal Protocol (e.g. CFC and HCFC); and
- (c) the continued use of inefficient and polluting, out-dated energy equipment that is no longer either environmentally or economically justifiable.

### 13b. Sequence of Preferred Solutions

Regional Council shall apply a clear sequence of preferred and sustainable solutions to guide its future energy supply and demand choices among competing options. To this end, the following sequence of preferred solutions will be used, when considering air quality and energy matters:

- (a) first seek to improve the levels of efficient use of current energy infrastructure and conservation measures, where environmentally and economically acceptable;
- (b) second seek to deploy demand management measures such as fuel switching but not peak demand load shifting, as an alternative technology to new supply; and

- (c) third seek the addition of new efficient and environmentally sound energy supply by means of its distribution, transmission and/or generation, as appropriate, and with "renewable" and high efficiency generation technologies (e.g. combined cycle, cogeneration or trigeneration) giving preference where new generation is to be added.

### 13c. Energy Objectives

Regional Council shall encourage energy related enterprises within the Region that achieve Council's following energy objectives:

- (a) to create conditions for low cost energy supply, measured as a cost to society as a whole, and efficient consumption for all residents and businesses, as for example by optimizing the use of energy related assets in Halton;
- (b) to create and retain environmentally appropriate energy related production and transmission activity which promotes local employment opportunities, and to encourage energy provision and an energy providing environment that promotes other employment sector growth;
- (c) to protect the natural environment and human health by addressing energy issues of greenhouse gas emissions, ozone depleting emissions, emissions of oxides of nitrogen (NO<sub>x</sub>), acid rain and precipitation emissions, and the emission of other pollutants into the atmosphere and the environment; and
- (d) to retain long term reliability of the Region's energy supply and delivery.

### 13d. Green Power

Regional Council will promote the use of green power alternatives (e.g. photo-voltaics, windmills), over non-renewable (coal, oil, gas) fuels, and will facilitate the employment of such alternatives for its own energy needs and within the community in order to demonstrate the availability, viability and suitability of such green power choices.

### 13e. Corporate Green Target

Regional Council will adopt as its target the use (by production or purchase) of 10% green power by 2012 compared with a base year of 2002. Council will consider expanding its target by a further 10% each decade into the future.

### 13f. Demand Management



Council shall support and encourage demand management techniques of peak demand shifting, fuel switching, and/or energy conservation and efficiency measures which reduce the demand for energy, and to the extent that they are environmentally and economically appropriate, to help offset new generation or transmission requirements.

#### 13g. Corporate Efficiency Target

Regional Council adopts as its target the use of sufficient energy conservation and efficiency measures to achieve a 10% reduction in the use of energy by 2012 compared with a base year of 2002.

#### 13h. District Energy (Heating and Cooling) Systems

Regional Council shall promote the development of a district energy system that includes district heating and district cooling functions distributed to a community or cluster group of customers, where it is technically feasible and economically viable. Regional Council shall also encourage all new developments that are adjacent or close to district energy distribution lines to evaluate district energy systems for their needs.

#### 13i. Deep Lake Water Cooling

Regional Council shall encourage the examination of supplying central air conditioning to buildings along the Region's waterfront by circulating cold water (4°C) from 80 metres below the surface of Lake Ontario and using heat exchangers to chill water and air that circulates within buildings where it is environmentally and economically acceptable.

#### 13j. High Efficiency Generation

Regional Council supports the location and use of high efficiency energy generation (e.g. combined cycle, cogeneration or trigeneration) in the Region of Halton to the extent that such activities are appropriately located and employ economically and environmentally acceptable or preferable energy sources and production technologies. Regional Council will, however, discourage any public or private, nuclear fission or coal using generation facility from locating in the Region.

#### 13k. Cogeneration

Regional Council shall encourage cogeneration (the provision of combined direct local heat and remote electric power production), where the process substantially improves the efficiency of energy utilization, is economically acceptable and

meets Regional Council's environmental objectives and other policies, including land use compatibility.

#### 13l. Energy From Waste

Regional Council shall continue to evaluate the potential advantages and disadvantages of permitting, employing or encouraging “energy from waste” facilities to locate in the Region.

#### 13m. Prudent Avoidance of Electric and Magnetic Fields from Power Lines

It is the policy of Council to encourage the prudent avoidance of electric and magnetic fields from electric power lines where practical and feasible at little or no cost. Council shall encourage prudent avoidance in locating schools, playgrounds, and daycare centres in the vicinity of transmission lines and in commenting on the location of transmission lines in proximity to such sensitive facilities.

### **14. Transportation**

#### 14a. Transportation, Economics and Air Quality

Regional Council recognizes the inevitability of continued population growth in the Region, the economic significance of that growth and of the automobile manufacturing sector in the region and the economic dependency on car and truck traffic in the Region, however, the Region also recognizes the importance of the fuel choice, fuel efficiency and ensuing air quality challenges posed by unbridled expansion of car and truck use.

#### 14b. Air Quality and Alternate Transportation

Regional Council will adopt and promote, only those combined transportation policies and implementation measures that reduce the rate and distance of private automobile use per capita (measured as trips per capita and vehicle kilometres travelled, “Vkt”) within the Region; and encourage alternate means of transportation such as public transit, including surface transit, cycling, and walking.

#### 14c. Congestion and Air Quality

Council will seek to reduce the air quality impacts of road traffic congestion throughout the Region by encouraging greater provision and use of public transit,

as well as by improving road operations and by diminishing such inefficiencies, and the deleterious air quality impacts of such occurrences, that have the potential to create gridlock, especially when region-wide carrying capacity is reached.

Council shall not seek to reduce congestion by expanding road capacities on the grounds that it improves air quality either in the short term or the long term.

Council recognizes that resolving congestion in a manner that permits for greater sprawl (greater outward residential development) and the expansion of residential-work commuter traffic trip numbers (origin and destinations), ultimately leads to greater congestion levels and an ultimate gridlock that is even harder to resolve.

#### 14d. Development to be Encouraged at Transit-Served Locations

Regional Council shall encourage the integration of transportation and development in the region to provide for development to be focused at locations served by a full range of transportation services, predominantly as at public transit nodes, so as to avoid undue reliance on transportation by the private automobile.

#### 14e. Reducing Overall Automobile Use

Regional Council shall support, in principle, the objective of reducing the overall use of the private automobile from present-day levels and to take appropriate, measures towards this end as acceptable automobile strategies are introduced and developed.

#### 14f. Residential Housing Intensification

Regional Council shall encourage housing development in Halton and the GTA that utilises and intensifies the use of existing transportation system components and reduces the need to build costly additions to the transportation system until intensification opportunities have been clearly maximized.

#### 14g. GO-Transit

Regional Council shall support the intensification of existing GO-Transit Services within the presently identified built urban envelope of the GTA and beyond, but shall discourage the extension of any service into areas of new development.

#### 14h. Local Transit

Regional Council shall encourage the provision of sufficient local transit services to adequately serve the local transportation needs of residents who do not, or cannot, rely on the use private automobiles.

Regional Council shall also encourage the replacement of old local transit vehicles with those that exhibit cleaner fuel technologies.

14i. High Occupancy Vehicle (HOV) Lanes

Regional Council shall encourage the provision of High Occupancy Vehicle (HOV) Lanes for Public Transit Vehicles only where such lane dedications are based on “lane take-away” and not on “lane add-on” provisions.

14j. Idling Control

Regional Council shall encourage actions to discourage vehicle idling when not in motion or “in-traffic” and subject to provisions of the provincial *Highway Traffic Act*.

14k. Improvements for Bicyclists

Regional Council shall support measures to improve the cycling environment by encouraging such measures as:

- a) providing an on-street and off-street bicycle lane network especially to encourage school children in the safe use of their bicycles and especially where public transit services are significantly spatially lacking or temporally inadequate, as for example, to specifically permit:
  - i) school children to be able to commute in safety from residential areas to their schools outside of school bus hours (e.g. provision of safe bicycle lanes over QEW to permit students in North Oakville to bicycle to and from their schools in south Oakville in safety); and
  - ii) provision of “bike posts” at all public buildings and facilities and at “school children attractions” (e.g. Malls, Cinemas, Fast Food Outlets, Transit Nodes) to encourage bicycle use and discourage bicycle loss/theft;
- b) providing a bicycle lane network to encourage in-Region Commuters, that connects residential areas with transit nodes and major residential areas;
- c) providing bicycle lanes along regional arterial roads that are physically separated from traffic lanes;
- d) encouraging bicycle lanes along urban-downtown streets that are clearly delineated as non-car use areas of the pavement;
- e) providing a bicycle trail network that connects to natural heritage areas in order to encourage greater active leisure; and

- f) providing information to raise public awareness of the convenience, health and economic benefits of commuter and recreational cycling and by encouraging education programmes on safe and responsible cycling.

#### 14l. Improvements for Pedestrians

Regional Council shall support measures to improve the pedestrian environment by encouraging such measures as:

- a) providing a pedestrian on-street and off-street trail network system throughout the Region;
- b) providing every new street with at least one sidewalk, and not encouraging two sidewalks be installed unless high density residential housing requirements dictate;
- c) providing more street trees in urban areas and street furniture in downtown urban areas;
- d) enhancing pedestrian access to, and along the Lake Ontario shore, the Escarpment and other appropriate (i.e. non-sensitive) natural heritage areas of the Region;
- e) improving pedestrian conditions for people with disabilities and pedestrians with mobility problems; and
- f) encouraging changes to local traffic signals that facilitate pedestrian movements.

#### 14m. Traffic Calming

Council shall seek to ensure that the Regional road network system satisfies through flow traffic needs, so as to discourage such traffic in residential areas, and so as to negate the need for traffic calming measures in residential areas.

### **15. Land Use Planning**

#### 15a. Important Elements

Regional Council recognizes the following elements of land use planning considerations as critical influences upon air quality and public health:

- a) adequate residential and employment area density to promote all-day public transit provision and use;
- b) adequate provision of permissions for community function components in residential areas (e.g. parks and trails, basic goods and convenience retail, health care professionals, schools and youth centres, financial services, post offices, pubs and restaurants) so as to be pedestrian and bike trip attractive, within reasonable reach of, and accessible from within, rather than beyond, community neighbourhoods;
- c) adequate provision of mixed use, integrated work and residential clusters and live-work uses to encourage shorter work trip needs;
- d) intensification of use of existing infrastructure (e.g. water and sewage facilities, schools and hospitals); and
- e) intensification of residential, institutional, commercial and industrial land uses.

#### 15b. Intensification of Existing Urban Areas

Regional Council shall promote the intensification of existing urban areas throughout the Region, and shall especially promote the further intensification of existing urban transit nodes and along arterial roads with existing transit service.

#### 15c. Urban Sprawl and Smart Growth Alternatives

Regional Council shall promote an environmentally sensitive and sustainable approach to new development throughout the Region in order to reduce the rate of urban development on agricultural, rural countryside and natural heritage lands, to reduce sprawl, and reduce dependency on the automobile through the provision of transit supporting residential and employment area density in approved urban development areas.

Regional Council shall discourage the provision of employment areas that are not served by public transit and that are based exclusively on automobile access.

#### 15d. Protection of Countryside

Regional Council shall promote the protection of rural countryside and heritage characteristics through the use of urban separators and/or green belts that appropriately define and delineate social communities.

#### 15e. Development Guidelines

Regional Council shall develop and encourage the use and application of Regional Guidelines for Smart Growth in Halton to facilitate new development that is approved but not designed and yet to be approved development to best meet these objectives.

## **16. Land Use Compatibility**

Regional Council shall, when considering land use matters, continue to have regard for present and future potential conflict between adjacent and neighbouring land uses and shall have regard for air quality considerations as part of their deliberations.

### 16a. Indoor and Outdoor Air

Regional Council recognizes that indoor air must be refreshed by exchange with outside air, and that indoor air quality is, therefore, in part at least, a function of outdoor air quality. As such, Council recognizes the continuing significance of adjacent land uses for indoor as well as outdoor air quality, noise and vibration impacts and aesthetic or stress implications, such as odour.

### 16b. Land Use and Air Quality Compatibility

Regional Council shall, when making or commenting on land use decisions have regard for air quality concerns in respect to adjacent or mixed uses involving such designations as residential, agriculture and institutional and shall have special consideration for air quality impacts associated with, for example but not limited to, waste sites, crematoria, heavy industry, regional utilities, transportation corridors, and factory farms.

## **17. Trees and Forests**

Regional Council shall promote the planting of trees on urban streets for shade and sequestering of carbon dioxide. Further, Council shall when considering matters pertaining to its tree cutting by-law, its regional forest tracts and to the preservation of significant woodlands, recognize the contribution to carbon dioxide sequestering made by the continued existence of such treed areas as a mitigation of climate change in the Region.

## **18. Estimating, Monitoring & Reporting**

### 18a. Estimating

Regional Council shall obtain and utilize Provincial data of ambient air quality, and estimated transportation and energy related emissions, as well as residential community emission estimates and Provincially available industrial sector emissions to estimate air quality contributions over time in Halton

18b. Monitoring

Regional Council shall obtain and maintain additional air quality and related data and information as may be necessary to satisfy its decision making needs, including decisions concerning its own policy and implementation actions and the policy decisions and advocacy roles, regard for the costs and benefits of its actions to address air quality policy and measures to implement them, and shall be cognizant of the cost benefits associated with policy implementation.

18c. Reporting

Regional Council shall assess and report to the community on the state of the Region's air quality and the success of the Region's and the Community's measures to improve or reverse adverse trends (including global climate changes) in Halton, as part of the Region's State of The Environment Reporting.

November 2001



## **PART III: IMPLEMENTATION DIRECTIONS**

### **That EEAC Recommends the Region Consider to Implement the Proposed Policy Directions Regarding Air Quality and Climate Change, and to Provide Specific Support to Concepts Raised in Part II**

#### **Introduction**

Generating air quality policies on behalf of others is a dubious task and it should never be done in isolation. The iterative and integrative process envisaged here - to present the Region with a Discussion Paper, followed by a Backgrounder, and a subsequent Joint-Staff-EEAC report, that collectively and fully explores the themes and allows for a further substantiation of that which the Region sees to be in need of elaboration – is our attempt to ensure that the policies both meet the public health and environmental needs and, at the same time, are pragmatically helpful to the Region’s endeavours to prepare a Directions Report regarding the new Regional Official Plan. It is intended and even more important that the envisaged process be continued and extended into the area of Implementation Directions.

In Parts II, polices have been generated on the basis of environmental principles, knowledge of science, and a strong sense of making recommendations on behalf of “our selves” – as we are all a part of Halton and a part of the administrative functions of the Region. However, the next step, to recommend Implementation Directions, is likely to be even more fraught with sensitivities and uncertainties as to the resources available at the Region of Halton, to undertake improvement actions.

Just as preparing policies in the absence of knowledge of the means by which they can be implemented is meaningless, so, too, is preparing policies in the absence of an intention and ability to implement the implementation directions, equally meaningless. In this regard, the help and shared belief of Regional staff in the value and need to select and implement the actions is of paramount importance.

To this end, the Implementation Directions provided below are the first steps intended to focus a discussion as between staff and EEAC and the community, that hopefully, culminates in a stronger and more complete set of appropriate recommendations to address air quality and climate change issues in the Region.

#### **Selection Process**

Recognizing that the Region has not previously addressed air quality or climate change in its policies or implementation measures to a great extent, it is necessary to recognize that as the concept is new and untested in the Region, there is a need to tread carefully. It is here suggested

that the Region start slowly with a small set of suggested actions, monitor the results achieved by those actions (and the state of air quality in Halton), quickly build confidence and then subsequently introduce the implementation of more measures. The Region should skim off the valuable and easily reached cream before addressing the milk beneath.

The adoption of policies and implementation measures by other municipalities in southern Ontario and elsewhere, is discussed in the Background. But essentially that discussion reveals the dichotomy between “sexy photo-opportunity” type measures and those measures that may have little or no sex appeal - but more often get the job done in a more meaningful manner. Here it is recommended that both the “sexy” and the “non-sexy” measures are necessary. The former to gain awareness and the latter to achieve the goals. The following set contains a deliberately crafted balance of both.

The proposed implementation actions build strongly on the Environmental Principles, as provided in Appendix A, and assume that the Region, in keeping with their environmental responsibility, will choose to lead by example, will encourage actions in the Halton community and beyond, and will bestow a sustainable legacy on the future citizens of Halton.

It is here intended to suggest a limited selection (six or fewer) of worthwhile measures that best reflect the following criteria:

- beneficially address air quality (including climate change);
- do not impair other environmental, economic or social objectives;
- are acceptable to the community and politically saleable;
- are realistically achievable and do-able;
- are economically low cost and (preferably) high return; and
- address source problems and solutions in a balanced manner.

## **Proposed Implementation Measures**

### **1. Green Measures Evaluation and Promotion Advisory Committee**

Given the above recommended proposal to implement improvement measures by starting slowly, building support carefully and expanding the breadth of actions over time - it appears necessary to call upon a body to be formed, that can judge and support those measures that are appropriate after the enabling and promoting policies are established in the Regional Plan. Further, given the need to build community understanding and support by assimilating and disseminating information – it appears necessary to have a body that will act as an information conduit for understanding and promoting environmental problems and solutions in Halton. To these ends it is here recommended that a public body or committee be created to help implement air quality improvement measures. The body should not be limited solely to air improvement matters, but should have a wide sustainable environment mandate.

The measure is relatively low cost and certainly do-able. It will not gain directly measurable benefits, but the potential for indirect benefits are considerable. Therefore, ...

Regional Council shall facilitate and provide funds to support the establishment and operation of a public committee with voluntary membership, and expertise and interest in evaluating “green measures” as brought forward by public individuals, public groups, committee members, regional staff, or private interests for Committee assessment, recommendation to Council and promotion to the community regarding such matters as:

- a) purchase of low sulphur fuel;
- b) purchase of green power supply;
- c) siting of green power operations in Halton;
- d) establishment of Transportation Management Associations (TMA);
- e) take-away High Occupancy Vehicle (HOV) lanes;
- f) bicycle networks (including bridge crossings for school children);
- g) smart growth development guidelines;
- h) land use intensification targets; and
- i) urban separators or urban edge green belts (e.g. Trafalgar Moraine).

The Committee should not be limited to matters of air quality and climate change, but have a mandate that also includes the greening of land, air, water and sustainable development.

The Committee should have political representation, staff liaison and liaison members of EEAC and HAAC, as well as interested community member involvement.

## **2. Development Guidelines**

The second recommendation is for the preparation of Development Guidelines for Smart Growth in Halton by Regional staff. These should reflect an understanding of the needs and limitations of urban design, environmental principles in general and air quality in particular, as well as the *Planning Act*, the Building Code and the development approval process. This implementation measure is clearly within the purview of planning authority and municipal responsibility and would address the detailed form of future residential, commercial and industrial land use within the Region.

The significance of the measure will be achieved and recognized in the long term. But without it, in sixty or eighty years from now, when the Region accommodates twice the population it presently has – it will be too late not to have had such guidelines in place and enforced or encouraged to the maximum extent permissible. Given the fundamental linkage between transportation and land use planning, this measure, over the long term, has the opportunity to be a very significant air pollution reducing measure.

Therefore, .....

Regional Council shall develop and encourage the use and application of “Regional Guidelines for Smart Growth in Halton” to facilitate new development. The Guidelines will integrate smart growth principles with environmentally appropriate urban design principles and address, but not be limited to:

- a) land use mix,
- b) land use density,
- c) street widths and layouts,
- d) sidewalks and street furniture,
- e) parks and trails,
- f) bicycle networks, and
- g) desired community functionality.

The Guidelines should be applicable to development that is approved but not designed (in-the-pipe), and yet to be approved development to best meet these objectives.

### **3. Employee Work Trip Reduction Plans**

The second recommendation is for the preparation and promotion of Employee Trip Reduction Plans. These should be promoted both at Regional workplaces, and at workplaces throughout the Region. The Region should lead by example and encourage its own employees to act in an environmentally appropriate manner wherever possible. The Region should also take its example on the road and promote the development of Traffic Management Associations (TMAs) throughout Halton, and eventually, and in partnerships with other municipalities throughout the Greater Toronto Area or as within the recently implied Golden Horseshoe Smart Growth Council Area.

The measure is not likely to attain significant improvement in air quality but it is likely that it will do much to spread the word, to create awareness, understanding and support of the need to address air quality and climate change through related measures. It will undoubtedly, however, provide many “sexy photo opportunities” to help get the message out.

Therefore, ....

#### **Employee Trip Reduction**

Regional Council shall introduce a Regional Council Employee Work Trip Reduction Plan that encompasses users at all of its major facilities.

Council shall establish a Steering Committee and a Working Committee administered by a staff co-ordinator. The co-ordinator shall be responsible for the establishment and operation of the programme.

The Steering Committee and Working Committee shall be responsible for analyzing and recommending the specific actions to be employed as part of the Plan.

Specific Actions to be considered should include, but not be limited to the Region:

- a) providing Transit Ticket Tokens or Monthly Transit Passes or Transit Cheques;
- b) organizing Car Pool, Van Pool, and/or Ride Matching Services;
- c) providing preferred parking locations (close to entrances, or under shade trees) to Car Pool and Van Pool users;
- d) introducing Car Parking Fees for all employees at all Region facilities (with funds used to offset Transit Cheques etc.);
- e) providing credits to non-car users to offset their occasional car use;
- f) providing covered area bike posts, showers and change rooms for use of cyclists and walkers (and winter skiers etc.) at Regional Facilities;
- g) providing shuttle bus services between Regional facilities to accommodate trip to work needs as well as at-work requirements;
- h) introducing Car Park Fee Exempt Areas for Trip to Work Shuttle Bus Users;
- i) providing Emergency Ride Home Services; and
- j) providing appropriate Transit information to all employees.

#### Traffic Management Associations

Regional Council shall further support the establishment and participate in the operation of Traffic Management Association(s) in Halton and beyond to encourage employee trip reduction measures through corporate promotion of, and corporate participation in, appropriate regional and inter-regional Transport Management Associations.

The Regional Council Employee Work Trip Reduction Plan should be integrated with Traffic Management Association(s) in Halton and beyond.

## **4. Energy and Power**

While recognizing that the source of much air pollution in Halton stems from energy production, albeit largely from outside of the Region's borders, it is appropriate that the Region address the issue leading by example and by encouraging reduced power use (as well as advocating for improvement measures elsewhere). Measures to achieve energy conservation and efficiency not only provide economic benefit but improve air quality and climate change as well (excluding load shifting). The economic benefits usually display a payback on capital expenditures within only a very few years from reduced operating costs. These savings could be used to further the purchase of "green power" and hence achieve even more air quality benefits. Currently, "green power" costs more than "black power" but the Region should lead by example and dedicate a portion of its budget to avoid black coal based problems and promote the development of green power in similar manner to the Federal government.

Purchasing low sulphur fuel is probably the most significant that can be contemplated for improving poor air and smog. The sulphur content of fuel is largely recognized as the source of fine sulphite particles (inhaleable and respirable particles) that cause respiratory problems, especially during smog events.

A further cost saving and clean energy source potential measure stems from the use of district energy. It is, however, impossible to suggest it should be implemented until such time as it has been proven locally viable in a specific Halton-based study. To this end, a study of community district energy stems in Halton is recommended.

All of these measures are largely hidden (i.e. non-sexy) but will provide large quantifiable benefits that can be monitored and duplicated over time. They are highly recommended.

Therefore, ...

### **Energy Efficiency Audit**

- a) Regional Council shall undertake an energy use and efficiency audit of all its buildings, facilities and operations in order to recognize the potential for combined economic and environmental savings and improvements, and make subsequent recommendations to Council respecting such savings, with a view to employ the use of sufficient energy conservation and efficiency measures to achieve a 10% reduction in the use of energy by 2012 compared with a base year of 2002, and a further 10% reduction in every subsequent decade following.

### **Green Power Purchase**

- b) Regional Council shall purchase, through its own energy purchase contracts, 10% or more of its power needs from green power sources (e.g. windturbines) by 2012 compared with a base year of 2002.

### **Green Power Sites In Halton**

- c) Regional Council shall identify, with the help of green power producers and the Green Committee, a suitable site or sites in the Region at which a private and or public green power producing utility can be installed. The installation will facilitate the Region obtaining green power for its own needs and will promote the acceptance of such alternatives within the community in order to demonstrate the availability, viability and suitability of such green power choices.

#### **Fuel Purchase**

- d) Regional Council shall provide additional funds to purchase 10% low sulphur fuels for its use per year.

#### **District Energy Study**

- e) Regional Council shall undertake a study to assess the potential of District Energy (Heating and Cooling) Systems, including Deep Lake Water Cooling, to play an economically and environmentally beneficial role in Halton.

## **5. Smog Events**

It is impossible to stop smog at the border. However, smog event severity can be theoretically reduced by taking appropriate actions within Halton's borders. The benefits of most municipal smog action plans to reduce the smog are miniscule. Encouraging others, especially sensitive groups to avoid its impact are more valuable. However, promoting all actions does lead to greater public awareness and support for Halton and others to advocate for upwind improvements.

Therefore, ...

#### **Smog Alerts**

Regional Council shall enact appropriate measures to alert the Corporation and the Region-wide community to the inherent dangers and occurrences of smog as may happen from time to time in the air-shed of the Region of Halton.

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

Regional Council shall develop a smog response plan to ensure that its own activities do not exacerbate air quality problems in the Region or beyond during smog alerts.

#### **Community Action During Smog Alerts**

Regional Council shall, in order to reduce the severity of smog occurrence impacts, prepare materials for distribution to alert and inform others as to why and how they should:

- (a) prevent making the smog event worse, and
- (b) can best avoid their own exposure to the impacts of smog and/or adverse air quality contaminants.

## **6. Estimating, Monitoring and Reporting**

Aquiring data in order to develop information specific to Halton is considered the critical implementation requirement. It is necessary to monitor the air quality air in Halton in order to monitor the benefits to be derived from the various improvement measures employed. Data can be obtained from other sources, notably from the Ontario Ministry of Environment or from environment Canada (including the National Pollution Reporting Inventory - NPRI). But their mandates are to assess wider areas, national and Provincial, and while helping to comprehend the situation in Halton, such data may not adequately typify it. There are pragmatic modelling methods available to estimate Halton's general air quality (and even conditions across the Region during a typical smog event) without requiring expensive monitoring station installation. However, some monitoring may be required to verify anomalies if they occur.

The policies to estimate and model air quality in Halton, if and where necessary, are considered so important that they are included as policies in Part II for consideration as policies to be included in the Official Plan itself. These policy suggestions are repeated here.

Therefore, ...

### **Estimating**

Regional Council shall obtain and utilize Provincial data of ambient air quality, and estimated transportation and energy related emissions, as well as residential community emission estimates and Provincially available industrial sector emissions to estimate air quality contributions over time in Halton

### **Monitoring**

Regional Council shall obtain and maintain additional air quality and related data and information as may be necessary to satisfy its decision making needs, including decisions concerning its own policy and implementation actions and the policy decisions and advocacy roles, regard for the costs and benefits of its actions to address air quality policy and measures to implement them, and shall be cognizant of the cost benefits associated with policy implementation.

### **Reporting**



Regional Council shall assess and report to the community on the state of the Region's air quality and the success of the Region's and the Community's measures to improve or reverse adverse trends (including global climate changes) in Halton, as part of the Region's State of The Environment Reporting.

These polices, if included in the Region's Official Plan, will automatically trigger the necessary implementation measures.

EEAC  
November, 2001

## **APPENDIX A:**

# **FUNDAMENTAL ENVIRONMENTAL PRINCIPLES to support POLICY DIRECTIONS**

**Recommended Wording Respecting Fundamental Environmental L.A.W.S.  
to Provide Foundation and Context for Air Quality Policy Directions and Actions  
Raised in Parts II and III, and Consideration as Possible Official Plan Policy**

### **Introduction**

EEAC members found it difficult to concoct advice regarding air quality policy matters without a clear statement of fundamental environmental principles both to guide the process and to provide a means to avoid repetition of statements regarding such things as responsibility, legacy, leading by example, pollution reduction, environmental protection and so forth. Many of these elements are contained in the present Region's Official Plan (ROP) but are not grouped in a way to facilitate a policy guidance. Here the background principles that EEAC members recognised are provided to facilitate the readers understanding of the basic beliefs the EEAC members adhered to in preparing the present document. It is also provided here as a gentle reminder to the Region that it may be appropriate for them to consider coalescing the various environmental principles espoused in the current ROP into a cohesive and comprehensive statement of principles and responsibilities for the Region to adopt and promote in the new ROP.

### **FUNDAMENTAL ENVIRONMENTAL PRINCIPLES**

[Re: L.A.W.S. concerning Land, Air, Water and Sustainability]

#### **Environmental Responsibility**

Regional Council recognizes that Halton's residents, workers, and visitors require an environment that is protective of their health and well-being, and that Halton's residents, workers, and visitors also have the responsibility to protect the environment for future generations.

#### **Sustainable Legacy**

Regional Council recognizes the limitations of the bio-physical environment to absorb the effects of human activities and as such will act in a manner to best meet the Region's

needs of today without compromising the ability of future citizens to satisfy their environmental needs, requirements and responsibilities.

### **Region to Lead by Example**

Regional Council shall establish the most environmentally appropriate official policies and improvement plans (a.k.a. policy implementation plans) it deems best to further its environmental goals and objectives in balance with its other municipal responsibilities.

Regional Council will seek to lead by example and be the strongest possible follower and proponent of its own environmental policies.

Accordingly, Regional Council shall endeavour to implement environmentally appropriate measures with respect to its own activities, buildings, vehicles and related functions.

### **Region of Halton to Encourage Actions in Halton Community and Beyond**

Regional Council shall encourage and facilitate appropriate ecological, environmental and health protection and improvement actions within its own corporate domain, within the Halton-wide community and beyond its own borders.

### **Protect and Improve Environmental L.A.W.S.**

Regional Council shall establish policies and implement plans as are within its powers, to protect and improve the quality of the Region's:

- (a) air,
- (b) natural water bodies,
- (c) soil and groundwater,
- (d) sustainable viability, and
- (e) its natural resources,

in order to further the health and well-being of the people who live, work, and play within its boundaries, and of the places and spaces they occupy and enjoy, by preventing and reducing contaminating emissions and by restoring the deleterious effects of such pollution of the past, present or future.

### **Pollution Prevention and Reduction**

Regional Council recognizes that certain artificial and natural activities of the past, present, and future may have adverse ecological, environmental and public health impacts both within and beyond the Region's boundaries.

Accordingly, it is the policy of Regional Council that the Corporation of the Region of Halton and the citizens of Halton seek:

- (a) to prevent or reduce pollution emissions (defined as: unacceptable contamination with adverse impacts) from occurring; and
- (b) to reduce the impacts of any such individual or cumulative emissions (as may be deemed inappropriate by their magnitude, frequency and/or summation) and of any related adverse impacts on the ecology, environment and health of the Region, and its regional and global environment.

Further, Regional Council will promote pollution prevention and may, where so empowered, from time to time enact by-laws to regulate the production, distribution, use or disposal of substances which, in the opinion of Regional Council, can have a detrimental effect on the Region's environment, ecology or public health.

### **Protection of the Environment**

It is the policy of Council to:

- (a) protect and enhance wildlife, natural habitats, features and processes of ecological and or environmental significance (a green ethic approach) ;
- (b) limit the consumption of non-renewable natural resources (land, air, and water and the resources supported by them) so as to attain a viably sustainable environment for present and future generations (an environmentally sustainable approach); and
- (c) evaluate and promote such protection and conservation measures which recognize the complex inter-relationships among the human, and natural communities and the physical environment (an ecosystem approach).

### **Environmental Assessments and Standards**

It is the policy of Regional Council to promote and facilitate, and to encourage other governments to promote and facilitate, up-to-date, integrated environmental assessment and planning approval processes and standards which are, in its opinion, of the highest possible merit, and are reasonable, comprehensive and enforceable, in respect of new and existing development, but are not solely limited to such issues and concerns as:

- (a) indoor and outdoor air quality for new and existing development;
- (b) uniformly high standards for drinking water;
- (c) water conservation measures for new and existing development;

- (d) immediate and long-term waste reduction, re-use, recycling, and waste disposal;
- (e) soil and groundwater quality and soil and groundwater clean-up;
- (f) energy conservation for new and existing development;
- (g) transit improvement, increased use, and traffic management measures;
- (h) storage and transport of dangerous goods; and
- (i) best management practices to treat stormwater for new and existing development.

## **Environmental Legislation**

Regional Council recognizes that many of the acknowledged environmental issues and concerns of the present day should (preferably) be addressed by other levels of government.

Accordingly Regional Council shall:

- (a) encourage the higher levels of government to put suitable policies, legislation, standards, and programs in place which will address and attempt to rectify the issues and concerns to the fullest extent possible;
- (b) seek clarification and further mandated powers and authority from senior levels of government to define and reinforce the ability of the Region of Halton to directly address environmental issues and concerns where this may be appropriate; and
- (c) recognize that the responsibility to implement many of the policies and legislation of higher levels of government rests with local municipalities and, therefore, Regional Council shall endeavour to implement such policies, legislation, programs, standards and guidelines which appropriately address environmental issues within the Region of Halton.

EEAC  
November, 2001