

**Ontario's Clean Air Action Plan:
Protecting Environmental and
Human Health in Ontario**


June 21, 2004

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Ontario Ministry of the Environment

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Preface

In June 2000, alongside federal, provincial and territorial governments, Ontario committed to the *Canada-Wide Standards for Particulate Matter and Ozone*. This commitment will lead to improved air quality across the province. This document describes Ontario's Clean Air Action Plan and serves as Ontario's Implementation Plan for the *Canada-Wide Standards for Particulate Matter and Ozone*.

Minister's Message



Smog affects us all. It affects our personal health and our environment. Even though approximately half of our smog is due to pollution from the United States, Ontario has a clear responsibility to act.

This document describes Ontario's approach to reducing smog. Many Ontario companies and citizens have already taken action to reduce smog-causing emissions, but more needs to be done.

As a very important step, this government is committed to replacing Ontario's coal-fired power plants with cleaner sources of energy. While power stations are a sizeable source of smog emissions, they are certainly not the only one.

This government is consulting on developing emission caps for key industrial sectors and is working to improve Ontario's *Drive Clean* program to make it even more successful in reducing smog-causing emissions from vehicles.

To reach Ontario's ambitious smog reduction targets, we have to continue with an aggressive approach to reducing smog-causing emissions. I look forward to everybody's participation, and bright new ideas on how we can achieve and exceed our goals.

It is my sincere hope that this document not only informs, but also inspires. We all need to take care of the air we breathe.

Sincerely,

A handwritten signature in black ink that reads "Leona Dombrowsky". The signature is written in a cursive, flowing style.

Leona Dombrowsky
Minister of the Environment

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1.0 A Call to Action — Smog, Our Health and Our Environment

1.1 Human Health

Smog affects human and environmental health. Scientists have found that there is no “safe” level for exposure to smog. Smog-related air pollution is linked to such health effects as premature death, respiratory and heart problems and bronchitis. The Ontario Medical Association (OMA) released a report that examined two key pollutant components of smog: ozone and particulate matter. The report concluded that 1,900 premature deaths, 9,800 hospital admissions and 13,000 emergency room visits could be attributed to these air pollutants in 2000, with increased impacts in future years provided no new measures are introduced. The OMA further estimated that this costs Ontario’s health care system and economy more than \$1 billion annually in hospital admissions, emergency room visits and absenteeism. The OMA predicts that air pollution costs Ontario citizens, in total, an estimated \$10 billion per year when the costs of pain and suffering and premature mortality are all included.

The OMA also reports that children are more sensitive to smog than adults. In general, children spend more time outdoors during the smog season and they breathe more rapidly, meaning their lungs take in more air. The very young are vulnerable because their lungs are still developing. Older adults and people with heart and lung disease are also more sensitive to the fine particulate component of smog.

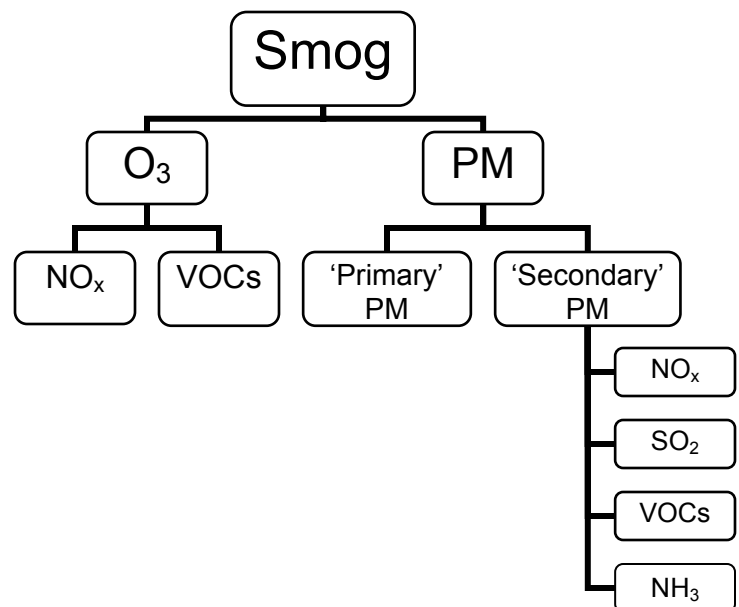
1.2 Environmental Health

Smog has been found to damage forests, agricultural crops and natural vegetation. Smog-causing pollutants also contribute to the corrosion of materials like rubber and stone. Ozone, a principal component of smog, is known to cause more vegetation damage across Ontario than any other pollutant. Ozone injury is commonly observed on sensitive field crops such as beans and other legumes in the major crop production areas across southern Ontario. Elevated ozone levels have been estimated to cost Ontario growers of agricultural and ornamental crops up to \$70 million a year in reduced yields and related effects.

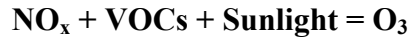
2.0 Smog and its Sources

Smog is a soupy mix of air pollutants that may or may not be visible in the air. The two main ingredients of smog are **ground-level ozone (O₃)** and **particulate matter (PM)**.

O₃, a gas, is formed through chemical reactions that take place when nitrogen oxides (NO_x) and volatile organic compounds (VOCs) combine in the presence of sunlight. For this reason, NO_x and VOCs are called O₃ precursor gases.



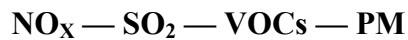
Ground-level O₃ differs from stratospheric O₃. While chemically identical, stratospheric O₃ is found at altitudes of 20 to 50 kilometres and protects the Earth from the sun's harmful ultraviolet rays. Throughout this document, O₃ refers to ground-level ozone.



PM consists of solid particles and liquid droplets of microscopic size. In the air quality context, PM is classified into two size fractions, PM_{2.5} and PM_{2.5-10} (see box). When it comes to PM sources, scientists distinguish between primary and secondary. *Primary PM* is emitted directly from a variety of combustion and non-combustion sources. *Secondary particles* such as sulphates, nitrates and organic carbon are formed in the atmosphere from precursor gases such as sulphur dioxide (SO₂), NO_x, VOCs, or ammonia (NH₃). In contrast to O₃, which occurs largely during the summer months, PM can occur in high concentrations at any time of the year.

2.1 Four Key Pollutants

Knowing how smog is formed is key to reducing it. In order to reduce the incidence of smog, it is essential to lower emissions of the four key smog-causing pollutants:



Reducing emissions of these four key pollutants is the primary goal of Ontario's smog reduction initiatives. Therefore, smog reduction strategies focus on the key emission sources for these pollutants.

2.2 Smog Sources in Ontario

On average, approximately half of Ontario's smog challenge is associated with emissions from sources within the province. NO_x are created mainly by the transportation sector (i.e., vehicles, off-road engines and other transportation sources). SO₂ is a major pollutant from metal smelting and electricity generation. VOCs are vented into the atmosphere every time we gas up our cars, and are released by a variety of products from paints to cleaning fluids.

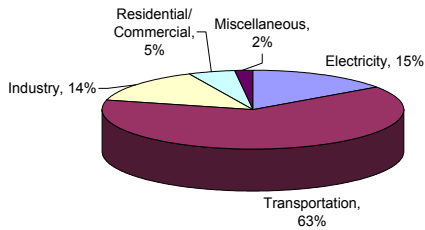
PM_{2.5} and PM_{2.5-10}

- Particulate matter is classified into two categories, fine fraction and coarse fraction. Fine fraction PM, or PM_{2.5}, refers to particles no greater than 2.5 micrometers in diameter. Coarse fraction PM, or PM_{2.5-10}, is matter between 2.5 and 10 micrometers in diameter.
- The Canada Wide Standard (CWS) for PM was established for PM_{2.5}, which is addressed in this document. It is recognized as having a more significant effect on human health than PM_{2.5-10}.
- When setting the standard it was acknowledged that there are health impacts associated with coarse fraction particulate (PM_{2.5-10}) and that actions are needed to reduce its atmospheric concentrations.
- Actions to reduce PM_{2.5} emissions will also lead to reductions in the ambient PM_{2.5-10} levels.

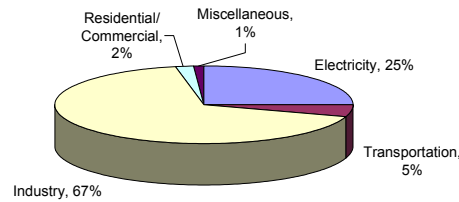
2.2.1 Ontario's Emissions Inventory, 2001 Estimates

The following charts illustrate the sources of the four key smog pollutants in Ontario:

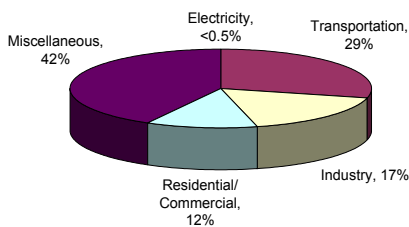
NO_x Emissions



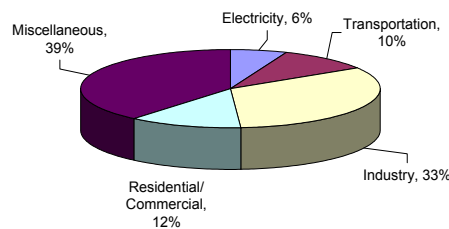
SO₂ Emissions



VOC Emissions



PM Emissions

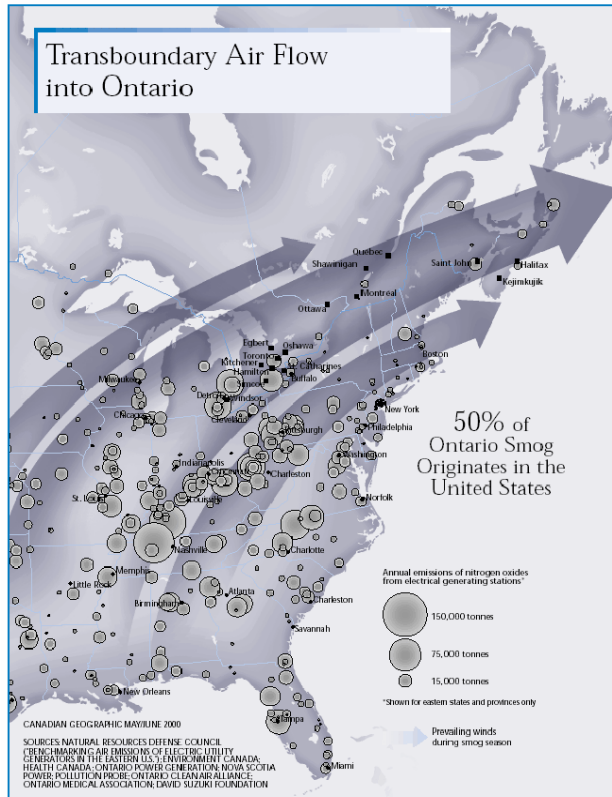


There are sectors in Ontario where a few **point sources** (large industrial facilities) are responsible for a sizeable percentage of smog pollution. The electricity sector, for example, accounts for 15 per cent of Ontario's NO_x emissions and 25 per cent of SO₂. Similarly, in Ontario's metal smelting sector, two industrial facilities account for approximately half of the province's SO₂ emissions. Point sources present an opportunity to substantially reduce emissions by encouraging, or requiring, reductions from a small number of emitters. Therefore, Ontario's smog reduction approach is addressing large point sources first.

Contrasting with point sources are **area sources or mobile sources**, where a large number of small emission sources are dispersed over a wide area. Transportation accounts for over 60 per cent of NO_x, 29 per cent of VOCs and 10 per cent of PM_{2.5} emissions in Ontario.

2.3 Transboundary Air Pollution

Not all smog-causing pollution in Ontario is created in the province. Approximately half of all smog is blown in by prevailing winds from sources in the midwestern United States. Even if every vehicle and every factory in Ontario were shut down, there could still be enough imported pollution in our air to prompt a Smog Advisory in some parts of the province. Ontario shares its airshed with approximately 200 coal-fired power stations and assorted industries (see map) in the midwestern U.S., an area that includes such states as Michigan, Indiana, Illinois, Ohio and Missouri.



3.0 Ontario’s Smog Reduction Targets

NO_x, VOCs and PM

Ontario is committed to reducing provincial emissions of NO_x and VOCs by 45 per cent of 1990 levels by 2015. This target was adopted in order to achieve a 75 per cent reduction of average O₃ exceedances (assuming comparable U.S. reductions) of Ontario’s one-hour, O₃ ambient air quality criterion of 80 ppb (parts per billion). Ontario also set an interim reduction target of 25 per cent NO_x and VOC reduction from 1990 levels, to be achieved by 2005. A reduction target for emissions contributing to PM was set at 10 per cent by 2015 (over a 1990 base line).

Under the umbrella of Ontario’s Anti-Smog Action Plan (ASAP), more than 130 organizations participated in developing these targets.

SO₂

In 1998, Ontario signed the Canada-Wide Acid Rain Strategy for Post-2000, which committed the province to the long-term goal of meeting the environmental threshold of critical loads for acid deposition across Canada. Reducing SO₂ emissions to reduce acid rain also has a positive influence on smog levels in Ontario.

As part of this strategy, in 2000, Ontario committed to reducing SO₂ emissions province wide by 50 per cent beyond the 1985 Countdown Acid Rain program cap by 2015. Ontario’s target for 2015 reflects an 80 per cent reduction from 1980 base case levels.

Canada-Wide Standards for PM and O₃

On June 7, 2000, Canada-Wide Standards (CWSs) for PM and O₃ were endorsed by the Canadian Council of Ministers of the Environment (CCME). The endorsed CWSs contain numerical targets for PM_{2.5} and O₃, together with a time frame within which these targets must be achieved.

PM_{2.5}: The ambient target that must be achieved by the year 2010 is a 24-hour average concentration of 30 µg/m³ (microgram/cubic metre). This target is specified in terms of the 3-year average of the annual 98th percentiles of the 24-hour average levels.

O₃: The ambient target that must be achieved by the year 2010 is an 8-hour average of 65 ppb. This target is specified in terms of the 3-year average of the annual 4th highest 8-hour average level. The transboundary provisions of the CWSs (2000) state that:

“for the province of Ontario, a 45 per cent reduction in NO_x and VOC emissions from 1990 levels by 2010 or earlier (subject to successful negotiations with the U.S.) will be considered the province’s appropriate level of effort towards achieving the O₃ CWS. Any remaining ambient O₃ levels above the CWS in Ontario will be considered attributable to the transboundary flow from the U.S. of O₃ and its precursor pollutants.”

Canada is responsible for addressing the transboundary flow.

CWS Implementation Plans: CWSs signatories are required to release implementation plans to achieve the standards for PM_{2.5} and O₃ by the 2010 target date. This document is the Ontario government’s implementation plan, outlining achievements to date and the path the province is taking to achieve the CWSs for PM_{2.5} and O₃.

Table 1

Ontario’s Smog Reduction Targets at a Glance				
	<i>NO_x</i>	<i>SO₂</i>	<i>VOCs</i>	<i>PM</i>
Reduction Target	45 % by 2015 (from 1990 levels)	50 % by 2015 (from Countdown Acid Rain Limit)	45 % by 2015 (from 1990 levels)	10% by 2015 (from 1990 levels)
Interim Target	25 % by 2005 (from 1990 levels)		25 % by 2005 (from 1990 levels)	

4.0 Ontario’s Smog Reduction Approach

Ontario’s approach to reducing smog must address the diversity of emissions sources that lead to smog in Ontario (e.g., local and transboundary smog). The government is following a multi-faceted, comprehensive smog reduction approach that addresses multiple pollutants, provides encouragement to all sectors of the economy, and targets key emission sectors including electricity generation, transportation, industry and residential.

Fighting Smog has its Co-benefits

The pollutants that cause smog are often responsible for other air quality concerns. NO_x, for example, also contribute to acid rain.

Since it is often the same combustion processes that emit the pollutants that cause smog, acid rain and climate change, reducing air pollution from a single process or action can produce a number of improvements to the air we all share.

Programs like *Drive Clean*, Ontario’s vehicle emissions inspection and maintenance program, are designed to take advantage of these so-called co-benefits. The program is reducing NO_x, SO₂, VOCs, PM_{2.5} and CO₂, which individually and/or in combination, contribute to smog, acid rain and global warming.

4.1 The Key Players

Ontario's goal to substantially reduce smog levels can only be achieved with a great deal of cooperation amongst various parties.

The Ontario government remains committed to replacing coal-fired generation and will do so in a way that protects our electricity supply. Replacing coal by 2007 continues to be the government's goal. The government is developing new programs to encourage conservation and will identify the cleanest, most affordable potential power sources in Ontario, and develop them under public leadership as a replacement for coal.

The government is also moving forward to improve emission standards for a wide variety of smog-related pollutants and to develop annual NO_x and SO₂ emission limits for seven industrial sub-sectors.

The Ontario government has ongoing action on a number of fronts:

- monitoring smog conditions to alert Ontarians about poor air quality;
- collecting and analyzing data on emissions to seek out opportunities for emission reductions in all sectors of the economy;
- consulting with emitters on pollution reduction measures and developing programs to encourage reductions;
- developing emission reduction plans for various pollutants, including NO_x, SO₂, VOCs, and PM_{2.5} in order to achieve Ontario's air quality goals;
- developing, implementing and enforcing regulations and standards to ensure Ontario is moving towards cleaner air; and
- providing public education and outreach to support Ontarians in doing their part to reduce smog emissions and improve Ontario's air quality.

Municipalities play a key role in efforts to reduce smog in the province through their planning practices and leadership in their purchasing policies and bylaw implementation. Municipalities can also play a major role in public education and outreach efforts.

Industry needs to play a prominent role in smog reduction efforts. Implementing best practices can go a long way toward reducing smog and its precursor pollutants.

Individuals can help reduce smog in the province by ensuring their vehicles are inspected and properly maintained, through energy efficiency/conservation and other emission reduction efforts. By considering the environmental impacts of different products, everyday purchasing decisions can lead to better protection of the environment.

The federal government can assist Ontario by negotiating transboundary emission reductions with the U.S. and establishing national standards and requirements.

Emissions from the U.S. make up a considerable part of Ontario's smog challenge. Programs that reduce emissions in the U.S. will help Ontario meet its air quality commitments. Similarly, smog reductions in Ontario will benefit Quebec, Atlantic provinces and northeastern U.S. states.

4.2 Ontario's Approach

The following paragraphs outline the government's key smog-causing emission reduction initiatives. Government action can be grouped into the following categories:

1. Regulatory
2. Government leadership
3. Incentives
4. Public education and outreach
5. Encouraging non-regulatory commitments
6. Building capacity

The province is also encouraging the federal government to take action where federal emission reduction tools would be most efficient, and to initiate discussions with the U.S. on transboundary anti-smog actions when necessary and appropriate.

The following initiatives reduce smog-causing emissions, while also serving as building blocks for Ontario's implementation plan for meeting the Canada-Wide Standards for PM_{2.5} and O₃.

For a comprehensive, detailed list of actions, see Table 2 and the Appendix (Ontario's "Inventory of Clean Air Actions").

I. Key Regulatory Initiatives

- The province has in place a regulation that establishes caps with respect to NO_x and SO₂ emissions from Ontario Power Generation's (OPG) fossil plants and the electricity sector (*O. Reg. 397/01*).
- The coal-fired Lakeview Generating Station in Mississauga will have to cease burning coal by April 30, 2005 (*O. Reg. 396/01*).
- Ontario's Guideline A-9 imposes a NO_x emission limit on new or modified large boilers and heaters in industrial installations. This guideline is expected to reduce NO_x emissions by 29 kilotonnes by 2015.
- Through provincial orders, Inco and Falconbridge are required to reduce their allowable SO₂ emissions by 34 per cent, effective in 2007.
- Ontario's *Drive Clean* Program (*O. Reg. 361/98*), from 1999 to 2001, reduced smog-causing vehicle emissions by 14,800 tonnes or 15.2 per cent in Phase One (Greater Toronto Area and Hamilton). In the program's Phase Two (urban areas from Sarnia to Peterborough), smog-causing emissions were reduced by 3,500 tonnes or 6.1 per cent in 2001. New stricter limits for trucks and buses were put in place in April 2004.

- Ontario's Smog Patrol supports Ontario's *Drive Clean* Program by inspecting trucks, buses and light-duty vehicles suspected of emitting excessive exhaust smoke or of having emissions control equipment that has been tampered with or removed. Since 1998, the Smog Patrol has conducted over 29,000 vehicle inspections and issued more than 5,200 tickets.

II. Examples of Government Leadership

- The Government of Ontario, along with the Government of Canada and the City of Toronto, announced a \$1 billion funding package in March 2004 representing the largest ever joint federal-provincial investment in municipal transit. This agreement will average \$70 million per year from each government over five years to improve, modernize and expand the Toronto Transit Commission (TTC) system and help provide better transit service to the TTC's 1.3 million daily riders.
- The Ontario government encourages the use of ethanol-blended gasoline in its vehicle fleets. It has contracted for the purchase of 780,000 litres of ethanol-blended gasoline to power fleet vehicles. Ontario also continues to purchase new hybrid vehicles, which reduce air pollution through improved efficiency.
- GO Transit has moved to the use of low-sulphur diesel fuels year-round in the bus fleet. During the traditional smog season from May to September, the rail fleet also uses low-sulphur diesel fuels.
- Ontario's Smog Alert Response Program (SARP) develops and promotes strategies for municipalities and the Ontario Public Service (OPS) to protect the environment and human health during smog alerts.

III. Key Clean Air Incentives

- Ontario offers a sales tax rebate for solar energy systems incorporated into residential premises after November 25, 2002, and before November 26, 2007.
- There is a sales tax rebate program for vehicles powered by alternative fuel (up to \$1,000).
- Producers of clean power enjoy tax advantages if they contribute to the province's supply of green power before January 1, 2008.

IV. Key Initiatives in Public Education and Outreach

- The *OnAIR* program found at www.ene.gov.on.ca gives the public broad access to more information on air pollution in a timely manner. The associated regulation (O.Reg. 127/01) requires selected electricity, industrial, commercial, institutional and municipal

facilities in Ontario to report on over 350 air contaminants including emissions of primary particulate and smog precursors (e.g., NO_x, SO₂, and VOCs).

- The Web site www.airqualityontario.com provides near-real time posting of air quality monitoring information for 28 smog forecast regions across Ontario.

Table 2. Ontario's Smog Reduction Efforts

Current Programs and Initiatives

INITIATIVE	NO _x	SO ₂	PM _{2.5}	VOCs
Regulatory				
Emission Limits for Utilities (<i>O.Reg. 397/01</i> and <i>O.Reg. 396/01</i>)	<input type="checkbox"/>	<input type="checkbox"/>		
NO _x Guidelines for Industrial Installations (Guideline A-9)	<input type="checkbox"/>			
Lakeview Regulation (<i>O. Reg. 396/01</i>)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
SO ₂ Emission Reduction from Smelters (Control Orders)		<input type="checkbox"/>		
<i>Drive Clean</i> (<i>O. Reg. 361/98</i>)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ontario's Smog Patrol (<i>O. Reg. 361/98</i>)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reducing VOCs - Regulation limiting and reducing emissions from gasoline (<i>O.Reg. 271/91</i>)				<input type="checkbox"/>
Stage 1 Recovery of Gasoline Vapours in Bulk Transfers (<i>O.Reg. 455/94</i>)				<input type="checkbox"/>
Air Standards (<i>O.Reg. 346</i>)	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
Emissions Reduction Trading (<i>O. Reg. 397/01</i>)	<input type="checkbox"/>	<input type="checkbox"/>		
Government Leadership				
Transit Investment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Alternative Fuels in Government Fleet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ontario's Smog Alert Response Program	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Clean Air Incentives				
Retail Sales Tax Rebate for Solar Energy Systems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Tax Rebate Program for Vehicles Powered by Alternative Fuels	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tax Incentives for Producers of Clean Power	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Tax Credit for Fuel Conservation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Exemption of Bio-diesel From the Fuel Tax	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Gasoline Tax Exemption for Ethanol	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

INITIATIVE	NO_x	SO₂	PM_{2.5}	VOCs
Natural Gas Exempt from Fuel Taxes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lower Fuel Tax for Propane	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Focus on New Renewable Energy Projects	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Wind and Water Power Development on Crown Land	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Wind Energy Development	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Encouraging Self-generation and Small-scale Projects	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Reducing Barriers to Clean Generation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Demand-Side Management Mandate for the Ontario Energy Board	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Emission Reduction Credits	<input type="checkbox"/>	<input type="checkbox"/>		
Public Education and Outreach				
Sulphur-in-Gas Reporting Regulation (<i>O. Reg. 212/02</i>)		<input type="checkbox"/>		
OnAIR Web site (Mandatory Monitoring and Reporting, <i>O. Reg. 127/01</i>)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ontario's Air Quality Index	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pollution Probe Primers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The Smog Alert Response Program	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Web Site Information: www.airqualityontario.com	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Toll-free 24-hour Public Pollution Hotline [1-866-MOE-TIPS (1-866-663-8477)]	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Partners in Air	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Funding for the Ontario Centre for Environmental Technology Advancement (OCETA)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

See appendix for a detailed description of these initiatives.

V. Encouraging Non-Regulatory Commitments

- Ontario's industries need to play a prominent role if emission reduction efforts are to be successful. One way industry can do this is through non-regulatory commitments.
- For example, through the Anti Smog Action Plan (ASAP) program, many of Ontario's industries have developed non-regulatory commitments and/or are implementing measures to reduce smog precursors. Sub-sectors such as non ferrous smelters, electricity, iron and steel, cement, chemical, automobile manufacturing and petroleum refineries are taking action to reduce NO_x, SO₂, and VOCs.

- A detailed summary of non-regulatory commitments made through the ASAP program can be found in *Ontario's Anti-Smog Action Plan: Progress Through Partnership*, available at <http://www.ene.govon.ca/envision/air/smog/asap2002.htm>.

VI. Building Capacity

Capacity building continues to be a key component of Ontario's smog reduction approach. Ontario recognizes that more needs to be done, and specific knowledge gaps need to be filled: For example, we need to improve our emissions inventories and our scientific understanding of health impacts. For example. Since 1995, Ontario has invested more than \$5 million to establish one of the most modern and best-equipped air monitoring networks in North America. Currently, there are 37 state-of-the-art Air Quality Index (AQI) monitoring stations located across Ontario. Real-time data gathered from the network are used to publish Ontario's Air Quality Index and issue *Smog Watches* and *Smog Advisories*.

Work continues implementing and refining mathematical air pollution dispersion models, which provide valuable insights into the relationships between precursor emissions and ambient pollutant concentrations (i.e., the state-of-the-art PM and O₃ modelling system developed by the U.S. EPA). Mathematical emission dispersion models are the best tools currently available for determining necessary emission reductions, and where these reductions should take place. They also play an important role in achieving the CWSs.

Capacity building is also partnerships building. Ontario is engaging the research community to help identify and bridge science knowledge gaps. The Centre for Research in Earth and Space Technology (CRESTech) is one example of this kind of partnership.

4.3 Federal Actions and Ontario's Smog Reduction Approach:

Ontario works closely with the federal government to encourage the use of appropriate federal tools in reducing emissions affecting Ontario's air quality.

The federal government plays a key role by taking the lead in mandating cleaner vehicles and fuels and developing an action plan to address VOC emissions from consumer and commercial products.

The following sections give examples of how federal initiatives fit into Ontario's smog reduction plan and contribute significantly to emission reductions in the province.

Cleaner Vehicle Engines and Fuels

It is expected that national measures to lower emissions from vehicles, engines and fuels — both on-road and off-road — will produce significant reductions in mobile source emissions. Current federal initiatives include:

- ▶ The *Sulphur in Gasoline Regulations*, which will limit the amount of sulphur in gasoline throughout Canada to an average level of 30 ppm (parts per million), starting in 2005. As an interim step, gasoline with an average sulphur level of not more than 150 ppm is required from July 2002 to December 2004.

- ▶ The *Sulphur in Diesel Fuel Regulations* will limit sulphur levels in diesel fuel used in on-road vehicles to a maximum of 15 mg/kg starting in mid-2006.
- ▶ The *On-Road Vehicle and Engine Emission Regulations* will phase in more stringent emission standards for on-road vehicles and engines beginning with the 2004 model year. The regulations apply to light-duty vehicles (i.e., passenger cars), light-duty trucks (i.e., minivans, pick-up trucks, sport utility vehicles), heavy-duty vehicles (i.e., trucks, buses), heavy-duty engines and motorcycles.
- ▶ Regulations are being developed to deal with small and large spark-ignition engines, off-road diesel engines, recreational marine engines and off-road recreational vehicles. The standards will align with those of the U.S. EPA.

These reduced vehicle and engine emission standards and the reduced sulphur levels in both gasoline and diesel fuels are expected to provide substantial benefits to Ontario's air quality.

For a comprehensive account of the federal government's clean air initiatives, see "The Government of Canada's Interim Plan 2001 on Particulate Matter and Ozone," available at http://www.ec.gc.ca/air/pdfs/200104_e.pdf or "Clean Air in Canada: 2003 Progress Report on Particulate Matter and Ozone" available at http://www.ec.gc.ca/air/PM_resp_03/toc_e.html.

Federal VOC Agenda for Commercial and Consumer Products

On March 27, 2004, the *Federal Agenda on the Reduction of Emissions of Volatile Organic compounds from Consumer and Commercial Products* was published as a Notice of Intent in Part 1 of the Canada Gazette. Environment Canada and Health Canada are working together to develop and implement a series of measures between 2004 and 2010 to reduce emissions of VOCs.

Federal Greenhouse Gases Agenda

Fuel combustion and other industrial processes generate both greenhouse gases (GHGs) and smog pollutants. Therefore, actions to reduce GHGs often have the co-benefit of reducing smog-related pollutants.

The 2003 federal budget contained \$2 billion for the implementation of the Kyoto Protocol, of which \$1.7 billion will be allocated over the next three years. In addition, innovative climate-change-related projects will be eligible for additional funding under the federal strategic infrastructure fund (\$300 million per year over 10 years). Many of these actions will likely lead to reductions in smog pollutants. Recent federal funding for ethanol production plans will help reduce particulate formation from vehicles.

4.4 U.S. Actions and Ontario's Smog Reduction Approach

Reducing the flow of smog precursor pollutants from the U.S. into Ontario is also integral to reducing PM_{2.5} and O₃ levels in the province. Smog precursor pollutants from the U.S. account for approximately half of Ontario's smog challenge. Therefore, efforts to reduce these emissions in the U.S. are taken into account in Ontario's smog reduction plan. In 2001, Ontario successfully opposed petitions made by U.S. states and industries that challenged federal emissions rules.

The following sections give examples of how U.S. initiatives fit into Ontario's smog reduction plan and contribute significantly to emission reduction in the province.

Canada-U.S. Air Quality Agreement

In 1991, Canada and the U.S. signed the Air Quality Agreement to address transboundary air pollution. Under this agreement, both parties have taken action to reduce transboundary air pollution including:

U.S. Acid Rain Program

The current U.S. Acid Rain Program under the Clean Air Act Amendments (CAAA) commits the U.S. to reducing emissions on a nation-wide basis by 10 million tons (a 40 per cent reduction) from 1980 levels by 2010. The U.S. SO₂ commitments are defined by national caps for electric utilities and industrial sources. Further reductions are expected from mobile sources such as cleaner on and off-road vehicles and low sulphur gasoline and diesel fuels.

The Ozone Annex to the Canada-U.S. Air Quality Agreement

In December 2000, as a result of federal/U.S. negotiations, the Ozone Annex to the Canada-U.S. Air Quality Agreement was signed. The Annex commits both countries to NO_x and VOC emission control measures. In the U.S., State Implementation Plans on NO_x are expected to deliver lowered emissions. Further reductions in NO_x and VOCs will come from national vehicle and fuel quality rules.

Other Action in the U.S.

The U.S. has taken additional actions to reduce air pollution including:

Clear Skies Initiative

In February 2003, the Clear Skies Act was introduced to Congress. If passed, the act would establish federally enforceable emission limits for the electricity sector and cut 2000 emissions of NO_x and SO₂ by 67 per cent and 73 percent respectively, and 1999 emission of mercury by 69 per cent by 2018. The act proposes to use a "cap and trade" system to meet these targets.

Interstate Air Quality Rule

In December 2003, the EPA announced the Interstate Air Quality Rule, which proposes cuts to NO_x and SO₂ emissions in 29 eastern states and the District of Columbia.

Affected states would be required to revise their implementation plans to include control measures to meet reduction requirements. The proposal also suggests using a cap and trade program in order to achieve reductions in a cost-effective way.

If passed, the rule would reduce emissions of NO_x by 65 per cent below current levels by 2015. SO₂ emissions would be reduced by 70 per cent below current levels when the rules are fully implemented.

5.0 Taking stock and closing gaps: Ontario on track to meet emission reduction targets

Ontario's smog reduction efforts have been successful. Over the last decade, emissions of the four key pollutants have been declining, even while Ontario was going through a period of strong economic growth. Current efforts — regulatory and non-regulatory — put us on track to reaching Ontario's ambitious smog reduction targets; however, more needs to be done to lower levels of NO_x, SO₂, VOCs and PM_{2.5} in the province. The following tables, from *Ontario's Anti-Smog Action Plan: Progress Through Partnership*, available at <http://www.ene.gov.on.ca/envision/air/smog/asap2002.htm>, explore in detail how much of a gap Ontario still has to bridge.

Table 3: NO_x Emissions - Current and Estimated Future (kilotonnes)

Source	1990	2000	2005	2010	2015
Point Sources	227	173	143	132	133
Area Sources	156	209	172-187	165-196	157-207
Mobile Sources	270	186	130-171	99-106	55-80
TOTAL EMISSIONS	653	568	445-502	396-434	345-420
GAP ANALYSIS					
ASSUMED TARGET			494	363	363
GAP			-49 to 8	33 to 71	-18 to 57

Table 4: VOC Emissions - Current and Estimated Future (kilotonnes)

Source	1990	2000	2005	2010	2015
Point Sources	149	114	82-89	77-92	74-96
Area Sources	484	440	433	433	433
Mobile Sources	230	127	81-102	55-86	47-78
TOTAL EMISSIONS	862	681	596-624	565-611	554-607
GAP ANALYSIS					
ASSUMED TARGET			651	477	477
GAP			-55 to -27	88 to 134	77 to 130

Table 5: SO₂ Emissions - Current and Estimated Future (kilotonnes)

Source	1990	2000	2005	2010	2015
Point Sources	1103	544	576	516	517
Area Sources	43	32	25-30	24-32	23-33
Mobile Sources	21	11	4	4	4
TOTAL EMISSIONS	1168	587	605-609	544-551	544-554
GAP ANALYSIS					
ASSUMED TARGET				442	442
GAP				102 to 109	102 to 112

Note: A negative number indicates the target will be met under the growth scenarios.

PM Emissions

Ontario is currently developing detailed data sets and emission inventories for PM_{2.5}. The current data indicate Ontario's PM emissions have been reduced since 1995.

Forecasts of future emissions must constantly be updated if they are to be useful tools for planning and policy development. A major federal/provincial/industrial effort has been underway for over two years to project emissions from the on-road vehicle and off-road portion of the transportation sector. It is clear that even with increases in the average mileage driven per vehicle, there will be major reductions in NO_x and VOC emissions because of clean fuels and tougher emissions standards for new vehicles. The exact extent of the projected reduction is still being debated while better data are analysed to predict turn-over in the fleet. Equally, new proposals for action must be included in projects as the certainty of the proposals increase and their potential impacts become more certain.

6.0 Toward meeting Ontario's smog reduction commitments

Several initiatives to improve air quality are being explored and additional work will continue.

Proposed Industry Emission Reduction Plan (Industry ERP): Proposal for NO_x and SO₂ Regulations

The proposed Industry ERP presents the elements of a proposed regulation which would establish NO_x and SO₂ industry sector emission caps for the years 2006, 2007-2009, 2010-2014 and 2015 and onward as well as budgets for each sub-sector and allowance allocations for each facility within each sub-sector. The plan outlines the distribution of NO_x and SO₂ allowances to facilities including the provisions for existing facilities that expand or rebuild, new facilities and facilities that close down or experience partial or temporary shut-down. The proposal also integrates the emission caps with the emission trading system and the electricity sector regulation (O. Reg. 397/01).

As a result of the proposed regulated caps, emissions of NO_x from five industrial sub-sectors, which account for 10 per cent of total provincial NO_x emissions, would be capped at 21 per cent below their 1990 levels. Emission of SO₂ from six sub-sectors, which account for 61 per cent of total provincial SO₂ emissions, would be capped at 46 per cent below 1994 levels.

Ontario's VOC and primary PM_{2.5} Emission Reduction Plans

To meet the CWSs for PM and O₃, Ontario will use a flexible set of regulatory and non-regulatory policy tools in developing both VOC and primary PM_{2.5} emission reduction plans. Development of these plans will include stakeholder consultations to ensure fair-share contributions toward meeting Ontario's emission commitments. The plans will likely be multi-phased, multi-year projects, given that there are numerous sub-sectors that have to be addressed.

Ontario's Standards Plan

Ontario is developing more stringent air standards for VOCs and proposing new air dispersion models. Both initiatives will contribute to reducing VOC emissions.

Cleaner Energy Generation

On April 28, 2004, the Ontario Ministry of Energy released a Request for Qualifications for Renewable Energy to provide interested parties with advance information about the general framework, technical and financial requirements, evaluation criteria and key contract provisions that are expected to be part of the Renewables Request for Proposals (RFP). The Renewables RFP will be seeking 300 megawatts (MW) of new renewable energy capacity as a first step in having five per cent (1,350 MW) of electricity supply from new renewable resources by 2007 and 10 per cent (2,700 MW) by 2010.

The Ministry of Energy is also developing an RFP for 2,500 MW of new clean electricity capacity through either generation or demand-side management initiatives, to be in place as soon as possible. Together, the two RFPs represent one-third of the government's commitment to replace coal-fired generation.

Other initiatives are under way to remove barriers to greater use of cogeneration and to expand power generation on the Niagara River.

Energy Conservation

On April 19, 2004 the Premier set a target of reducing Ontario's energy consumption by five per cent by 2007, as part of his government's plan to create an energy conservation culture throughout the province. The conservation plan includes:

- creating an Ontario Power Authority that will include a Conservation Secretariat led by a Chief Conservation Officer;
- launching a public education and outreach campaign to encourage conservation;
- setting aggressive targets to put smart meters into households by the end of 2007;
- developing regulations to provide provincewide access to net metering, which enables homeowners and businesses generating renewable electricity to receive credit for the excess energy they produce.

Other Actions

Other actions to reduce emissions are being considered such as marine-engine scrappage and residential fuel wood programs. Also, Ontario is working with the federal government, the U.S. EPA and Michigan in a pilot project in southwestern Ontario and southeastern Michigan to address transboundary pollution.

Table 8:
Initiatives in the Planning Stage

Initiative	NO_x	SO₂	PM_{2.5}	VOCs
NO _x and SO ₂ Emission Limits for Industry	<input type="checkbox"/>	<input type="checkbox"/>		
Ontario's VOC Emission Reduction Plan				<input type="checkbox"/>
Ontario's Primary PM _{2.5} Emission Reduction Plan			<input type="checkbox"/>	
Ontario's Standards Plan				<input type="checkbox"/>
Cleaner Energy Generation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Energy Conservation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Residential Fuel Wood	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
Marine Engine Changeout	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

7.0 Looking Ahead

Addressing smog is an important issue and Ontario has made significant progress, however, more needs to be done. The Ontario government is committed to protecting the environment and the health of all Ontarians, and will continue to take steps to improve the air we all breathe.

Regulations and programs are coming into effect to ensure transportation sources and large point sources such as industries and power generation are doing their share to combat smog. Future smog reduction successes will increasingly depend on other sectors of the economy such as commercial, residential and the individual, everyday action by the people of Ontario.

How we choose to get to work, the products we purchase, how we heat and cool our homes — all these actions have a cumulative effect on smog-causing emissions generated in Ontario.

This document outlines the comprehensive approach Ontario is implementing to meet the smog challenge. Without the active support of the people of Ontario, however, any government approach to tackle smog will always be less than complete.

Appendix

Ontario's Inventory of Clean Air Actions

Matching the complexity and diversity of the smog issue (e.g., local and transboundary smog), Ontario has adopted a multi-faceted, comprehensive smog reduction approach that addresses multi-pollutants and targets key emission sectors including electricity generation, transportation, industry, and residential.

This comprehensive approach has led to the development of Ontario's strategy, which includes provincial, federal and transboundary components.

The document provided information on many of the government's regulations, government leadership, clean air incentives and public education and outreach initiatives. The following pages provide detailed information on the initiatives that make up the provincial component of Ontario's strategy.

Regulatory

Reducing NO_x and SO₂ — Regulation capping-and reducing-emissions from utilities: The province has in place a regulation limiting emissions from fossil plants in the electricity sector (*O. Reg. 397/01*). This regulation includes NO_x and SO₂ caps. For large fossil plants, emission caps are reduced by 53 per cent (from 2000 voluntary cap of 38kt/yr) for NO_x and 25 per cent (from the Countdown Acid Rain limit of 175kt/yr) for SO₂, by 2007.

Lakeview Regulation: The Lakeview Generation (*O. Reg. 396/01*) requires that the Lakeview generating station cease burning coal by April 2005 and that any generation at the site after that meet or exceed the emission performance of natural gas-fired generation.

Emissions Reduction Trading and Incentives for Conservation and Renewables: The government has introduced a system of emissions reduction trading (*O. Reg. 397/01*), which provides incentives for greater use of renewable energy and conservation. Emissions trading encourages all sectors of the economy to find innovative ways to reduce emissions which cause smog and acid rain.

NO_x guidelines for industrial installations: A ministry guideline (A-9) in effect since March 2001 imposes NO_x emission limits on new or modified large boilers and heaters. Implementation of this guideline is expected to reduce NO_x emissions by 29 kilotonnes by 2015 (expected reduction is from projected emissions without guideline).

SO₂ emission reduction from smelters: The largest emissions of SO₂ in Ontario are from non-ferrous smelters in the Sudbury region. In February 2002, the Ministry of the Environment (MOE) issued orders requiring INCO and Falconbridge to reduce their allowable SO₂ emissions by 34 per cent from their Countdown Acid Rain limits of 265kt and 100kt, respectively, effective in 2007.

Drive Clean: Ontario's *Drive Clean* Program (O.Reg. 361/98) is an emissions inspection and maintenance program for vehicles with the goal of reducing vehicle emissions by 22 per cent in the program area. The program is achieving this goal by ensuring the inspection and proper maintenance of over 5.5 million vehicles in Ontario. From 1999 to 2001, the program reduced smog-causing vehicle emissions by 14,800 tonnes or 15.2 per cent in the Phase One area, encompassing the Greater Toronto Area and Hamilton. In the Phase Two (urban centres and their commuting zones from Sarnia to Peterborough), smog-causing emissions were reduced by 3,500 tonnes or 6.1 per cent in 2001. Between 2000 and 2002, emissions of PM from diesel-powered trucks and buses have been reduced by nearly 1,100 tonnes.

In December 2003, Ontario announced new *Drive Clean* regulations, which require large diesel-powered trucks and buses in Ontario to meet the strictest emissions standards in North America. These new standards, which take effect April 1, 2004 and on April 1, 2005, include strict emissions standards for school buses, as well as an incentive for the owners and operators of heavy-duty diesel trucks and buses to improve vehicle maintenance. Emission standards for automobiles were also tightened in 2003 and will be tightened again on January 1, 2005. These program improvements will reduce harmful vehicle emissions to help protect people's health and the environment. The government is also committed to developing a strategy to encourage heavy-duty truck and bus operators to reduce vehicle idling.

Reducing VOCs - Regulations limiting and reducing emissions from gasoline: Early on in the process to reduce VOCs, Ontario passed the Gasoline Volatility regulation (O.Reg. 271/91) that limits gasoline vapour pressure during the summer and the Stage 1 Recovery of Gasoline Vapours in Bulk Transfers (O.Reg. 455/94).

Clean Air Incentives

Retail Sales Tax Rebate for Solar Energy Systems: Ontario introduced a retail sales tax rebate for solar energy systems incorporated into residential premises after November 25, 2002 and before November 26, 2007. The government is also proposing to enable homeowners to install clean, renewable self-generation by expanding the PST rebate for solar energy to include wind energy, micro-hydroelectric systems and geothermal heating/cooling systems for residential premises.

Tax Rebate Program for Vehicles Powered by Alternative Fuels: Ontario's tax rebate program for vehicles powered by alternative fuel provides purchasers or long-term lessors of qualifying vehicles with a retail sales tax rebate of up to \$1,000.

Tax Incentives for Producers of Clean Power:

- An immediate, 100 per cent corporate income tax write-off and a capital tax exemption for assets acquired after November 25, 2002, and before January 1, 2008 that are used to generate electricity from clean, alternative or renewable energy sources;

- A sales tax rebate on building materials purchased after November 25, 2002, and before January 1, 2008 that are incorporated into facilities that generate electricity from clean, alternative energy sources.

Tax Credit for Fuel Conservation: Ontario provides a maximum \$100 tax credit for fuel conservation, available to people who buy, rent, lease or import new passenger cars that use less than six litres of gasoline or diesel fuel per 100 kilometres of highway driving. The credit does not apply to sport utility vehicles.

Exemption of Bio-diesel From the Fuel Tax: Ontario introduced an exemption from the 14.3 cents per litre fuel tax for bio-diesel fuel, regardless of whether it is mixed with diesel fuel. This will create a tax incentive for consumers to buy products that use this renewable fuel.

Gasoline Tax Exemption for Ethanol: Ontario continues to exempt ethanol and the ethanol portion of ethanol-blended gasoline from the 14.7-cents-a-litre gasoline tax.

Natural Gas Exempt from Fuel Taxes: Natural gas is exempt from Ontario fuel taxes even when used to power licensed motor vehicles.

Lower Fuel Tax for Propane: In Ontario, propane is subject to a lower fuel tax rate than gasoline or diesel.

Focus on New Renewable Energy Projects: The Ministry of Energy is proceeding with an independent study on the feasibility of moving forward with the Beck 3 generating project in Niagara Falls.

Ontario Power Generation has been directed to accelerate its assessment of a 500 megawatt project on the site of the old Hearn Generating Station in Toronto.

The province reformed the property tax and water rental treatment of hydro-electric generating stations for 2001 and subsequent years to stimulate the development of new environmentally friendly generating stations.

Ontario is working with Manitoba and the federal government on new hydroelectric capacity in Manitoba and the necessary transmissions lines to deliver power to the Ontario market.

Wind and Water Power Development on Crown Land: The Ministry of Natural Resources recently announced the opening of Crown land to wind power development and will explore water power development opportunities on Crown land.

Wind Energy Development: The Ministry of Municipal Affairs and the Ministry of Energy are working together to develop information to help municipalities incorporate wind energy development into their official planning activities.

Reducing Barriers to Clean Generation: The Ministry of the Environment has modified the environmental assessment (EA) requirements for new electricity projects. The requirements now apply equally to public and private sector projects. The changes to the act have helped encourage cleaner energy sources. Two thousand four hundred megawatts of natural-gas-fired energy capacity have been approved in Ontario in the last two years.

Demand-Side Management Mandate for the Ontario Energy Board: The *Electricity Pricing, Conservation and Supply Act, 2002* strengthens the objectives of the Ontario Energy Board in relation to electricity to promote energy conservation, energy efficiency, load management and the use of cleaner energy sources, including alternative and renewable energy sources.

Emission Reduction Credits: Emissions trading, through emission reduction credits, provides power producers with an economic incentive to reduce emission and/or produce electricity from renewable sources, which will reduce emissions.

Public Education and Outreach

Sulphur-in-Gas Reporting Regulation: The regulation (O.Reg. 212/02) requires the sulphur levels of gasoline sold and/or used in Ontario — measured at the refinery — to be reported to the Ontario government. The government makes this information available to the public (www.ene.gov.on.ca) to hold gasoline refiners and importers publicly accountable for the environmental impacts of their products.

OnAIR, Ontario's On-line Emissions Reporting Registry: The *OnAIR* program gives the public broad access to more information on air pollution in a timely manner (www.ene.gov.on.ca/envirnet/onair/splash.htm). This allows consumers to make informed choices based companies' emissions performance. The regulation (O.Reg. 127/01) requires selected electricity, industrial, commercial, institutional and municipal facilities in Ontario to report on over 350 air contaminants including emissions of primary particulate and smog precursors (e.g., NO_x, SO₂, VOCs and particulate).

Ontario's Air Quality Index: The Web site www.airqualityontario.com or 1-800-387-7768 provides near real-time posting of air quality monitoring information for 28 smog forecast regions across Ontario. In addition, the site offers a subscription-based e-mail notification service for all *Smog Watches* (issued when there is at least a 50 per cent probability that smog conditions will occur within the next three days) and *Smog Advisories* (issued when there is a high probability of a smog day occurring within the next 24 hours). The Web site also provides basic air quality information.

Smog, VOCs and Acid Rain Primers: Ontario provided funding to Pollution Probe for the production of several Primers on various topical environmental issues including smog, VOCs (in production) and acid rain. These educational booklets provide the public with an overview of the issue including what they can do to improve the environment.

The Smog Alert Response Program: The Smog Alert Response Program includes a response guide and a resource kit developed by the Ministry of the Environment. This kit is used to assist government ministries, municipalities and private sector organizations in playing an effective role in disseminating smog information and alerts, promote actions to reduce air pollutants that cause smog, and encourage sensitive populations to limit exposure.

Web Site Information:

- www.driveclean.com provides information about Ontario's *Drive Clean* Program, answers frequently asked questions, and offers basic information about smog.
- The Ontario Public Service internal carpool Web site is an environmental initiative to improve air quality by providing an electronic bulletin board for employees who wish to arrange their own car pools.
- The Web site of the Ministry of the Environment (www.ene.gov.on.ca) holds a large variety of air quality information.

Toll-free, 24-hour Public Pollution Hotline: The Ministry of the Environment's public hotline gathers information on new and emerging environmental issues and enables the ministry to get even tougher on polluters. The number is 1-866-MOE-TIPS (1-866-663-8477).

Partners in Air: This air quality and environmental education initiative — sponsored by the ministry, industry and schools — currently involves students and teachers in selected Ontario secondary schools. Students learn how to sample, test and analyze atmospheric contaminants with the help of on-site weather stations. Teachers can access and download up-to-date environmental curriculum units on the Web site www.partnersinair.org.

Funding for the Ontario Centre for Environmental Technology Advancement (OCETA): Ontario is providing funding for an OCETA project that is educating small and medium size enterprises on the benefits of reducing pollution. During 2001/02, OCETA provided pollution prevention assessments for 16 facilities and identified potential reductions of 380 tonnes of VOC and 11 tonnes of greenhouse gases.