AGREEMENT BETWEEN THE GOVERNMENT OF CANADA AND THE GOVERNMENT OF THE UNITED STATES OF AMERICA ON AIR QUALITY

with amendment (2000)

The Government of Canada and the Government of the United States of America, hereinafter referred to as "the Parties",

Convinced that transboundary air pollution can cause significant harm to natural resources of vital environmental, cultural and economic importance, and to human health in both countries;

Desiring that emissions of air pollutants from sources within their countries not result in significant transboundary air pollution;

Convinced that transboundary air pollution can effectively be reduced through cooperative or coordinated action providing for controlling emissions of air pollutants in both countries;

Recalling the efforts they have made to control air pollution and the improved air quality that has resulted from such efforts in both countries;

Intending to address air-related issues of a global nature, such as climate change and stratospheric ozone depletion, in other fora;

Reaffirming Principle 21 of the Stockholm Declaration, which provides that "States have, in accordance with the Charter of the United Nations and the principles of international law, the sovereign right to exploit their own resources pursuant to their own environmental policies, and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction";

Noting their tradition of environmental cooperation as reflected in the Boundary Waters Treaty of 1909, the Trail Smelter Arbitration of 1941, the Great Lakes Water Quality Agreement of 1978, as amended, the Memorandum of Intent Concerning Transboundary Air Pollution of 1980, the 1986 Joint Report of the Special Envoys on Acid Rain, as well as the ECE Convention on Long-Range Transboundary Air Pollution of 1979;

Convinced that a healthy environment is essential to assure the well-being of present and future generations in Canada and the United States, as well as of the global community;

Have agreed as follows:

Article I

Definitions

For the purposes of this Agreement:

1. *"Air pollution"* means the introduction by man, directly or indirectly, of substances into the air resulting in deleterious effects of such a nature as to endanger human health, harm living resources and ecosystems and material property and impair or interfere with amenities and other legitimate uses of the environment, and "air pollutants" shall be construed accordingly;

2. *"Transboundary air pollution"* means air pollution whose physical origin is situated wholly or in part within the area under the jurisdiction of one Party and which has adverse effects, other than effects of a global nature, in the area under the jurisdiction of the other Party;

3. *"Boundary Waters Treaty"* means the Treaty Relating to Boundary Waters and Questions Arising along the Boundary between Canada and the United States, signed at Washington on January 11, 1909;

4. *"International Joint Commission"* means the International Joint Commission established by the Boundary Waters Treaty.

Article II

Purpose

The purpose of the Parties is to establish, by this Agreement, a practical and effective instrument to address shared concerns regarding transboundary air pollution.

Article III

General Air Quality Objective

1. The general objective of the Parties is to control transboundary air pollution between the two countries.

2. To this end, the Parties shall:

   (a) in accordance with Article IV, establish specific objectives for emissions limitations or reductions of air pollutants and adopt the necessary programs and other measures to implement such specific objectives;
   (b) in accordance with Article V, undertake environmental impact assessment, prior notification, and, as appropriate, mitigation measures;
   (c) carry out coordinated or cooperative scientific and technical activities, and economic research, in accordance with Article VI, and exchange information, in accordance with Article VII;
   (d) establish institutional arrangements, in accordance with Articles VIII and IX; and
   (e) review and assess progress, consult, address issues of concern, and settle disputes, in accordance with Articles X, XI, XII and XIII.

Article IV

Specific Air Quality Objectives

1. Each Party shall establish specific objectives, which it undertakes to achieve, for emissions limitations or reductions of such air pollutants as the Parties agree to address. Such specific objectives will be set forth in annexes to this Agreement.
2. Each Party's specific objectives for emissions limitations or reductions are set forth in annexes to this Agreement as follows:

   (a) Specific objectives for sulphur dioxide and nitrogen oxides, which will reduce transboundary flows of these acidic deposition precursors, are set forth in Annex 1.

(b) Specific objectives for volatile organic compounds and nitrogen oxides, which will reduce transboundary flows of tropospheric ozone and these precursors, thereby helping both countries attain their respective air quality goals over time, are set forth in Annex 3.

Specific objectives for such other air pollutants as the Parties agree to address should take into account, as appropriate, the activities undertaken pursuant to Article VI."

3. Each Party shall adopt the programs and other measures necessary to implement its specific objectives set forth in any annexes.

4. If either Party has concerns about the programs or other measures of the other Party referred to in paragraph 3, it may request consultations in accordance with Article XI.

Article V

Assessment, Notification, and Mitigation

1. Each Party shall, as appropriate and as required by its laws, regulations and policies, assess those proposed actions, activities and projects within the area under its jurisdiction that, if carried out, would be likely to cause significant transboundary air pollution, including consideration of appropriate mitigation measures.

2. Each Party shall notify the other Party concerning a proposed action, activity or project subject to assessment under paragraph 1 as early as practicable in advance of a decision concerning such action, activity or project and shall consult with the other Party at its request in accordance with Article XI.

3. In addition, each Party shall, at the request of the other Party, consult in accordance with Article XI concerning any continuing actions, activities or projects that may be causing significant transboundary air pollution, as well as concerning changes to its laws, regulations or policies that, if carried out, would be likely to affect significantly transboundary air pollution.

4. Consultations pursuant to paragraphs 2 and 3 concerning actions, activities or projects that would be likely to cause or may be causing significant transboundary air pollution shall include consideration of appropriate mitigation measures.

5. Each Party shall, as appropriate, take measures to avoid or mitigate the potential risk posed by actions, activities or projects that would be likely to cause or may be causing significant transboundary air pollution.

6. If either Party becomes aware of an air pollution problem that is of joint concern and requires an immediate response, it shall notify and consult the other Party forthwith.

Article VI

Scientific and Technical Activities and Economic Research

1. The Parties shall carry out scientific and technical activities, and economic research, as set forth in Annex 2, in order to improve their understanding of transboundary air pollution concerns and to increase their capability to control such pollution.
2. In implementing this Article, the Parties may seek the advice of the International Joint Commission regarding the conduct of monitoring activities.

Article VII

Exchange of Information

1. The Parties agree to exchange, on a regular basis and through the Air Quality Committee established under Article VIII, information on:

   (a) monitoring;
   (b) emissions;
   (c) technologies, measures and mechanisms for controlling emissions;
   (d) atmospheric processes; and
   (e) effects of air pollutants,

   as provided in Annex 2.

2. The Parties agree to provide, subject to their respective laws and regulations, public access to the databases containing the emissions and monitoring data reported or shared under this Agreement

3. Notwithstanding any other provisions of this Agreement, the Air Quality Committee and the International Joint Commission shall not release, without the consent of the owner, any information identified to them as proprietary information under the laws of the place where such information has been acquired.

Article VIII

The Air Quality Committee

1. The Parties agree to establish and maintain a bilateral Air Quality Committee to assist in the implementation of this Agreement. The Committee shall be composed of an equal number of members representing each Party. It may be supported by subcommittees, as appropriate.

2. The Committee's responsibilities shall include:

   (a) reviewing progress made in the implementation of this Agreement, including its general and specific objectives;
   (b) preparing and submitting to the Parties a progress report within a year after entry into force of this Agreement and at least every two years thereafter;
   (c) referring each progress report to the International Joint Commission for action in accordance with Article IX of this Agreement; and
   (d) releasing each progress report to the public after its submission to the Parties.

3. The Committee shall meet at least once a year and additionally at the request of either Party.

Article IX

Responsibilities of the International Joint Commission

1. The International Joint Commission is hereby given, by a Reference pursuant to Article IX of the Boundary Waters Treaty, the following responsibilities for the sole purpose of assisting the Parties in

(a) to invite comments, including through public hearings as appropriate, on each progress report prepared by the Air Quality Committee pursuant to Article VIII;

(b) to submit to the Parties a synthesis of the views presented pursuant to sub-paragraph (a), as well as the record of such views if either Party so requests; and

(c) to release the synthesis of views to the public after its submission to the Parties.

2. In addition, the Parties shall consider such other joint references to the International Joint Commission as may be appropriate for the effective implementation of this Agreement.

Article X

Review and Assessment

1. Following the receipt of each progress report submitted to them by the Air Quality Committee in accordance with Article VIII and the views presented to the International Joint Commission on that report in accordance with Article IX, the Parties shall consult on the contents of the progress report, including any recommendations therein.

2. The Parties shall conduct a comprehensive review and assessment of this Agreement, and its implementation, during the fifth year after its entry into force and every five years thereafter, unless otherwise agreed.

3. Following the consultations referred to in paragraph 1, as well as the review and assessment referred to in paragraph 2, the Parties shall consider such action as may be appropriate, including:

(a) the modification of this Agreement;

(b) the modification of existing policies, programs or measures.

Article XI

Consultations

The Parties shall consult, at the request of either Party, on any matter within the scope of this Agreement. Such consultations shall commence as soon as practicable, but in any event not later than thirty days from the date of receipt of the request for consultations, unless otherwise agreed by the Parties.

Article XII

Referrals

With respect to cases other than those subject to Article XIII, if, after consultations in accordance with Article XI, an issue remains concerning a proposed or continuing action, activity, or project that is causing or would be likely to cause significant transboundary air pollution, the Parties shall refer the matter to an appropriate third party in accordance with agreed terms of reference.

Article XIII

Settlement of Disputes

1. If, after consultations in accordance with Article XI, a dispute remains between the Parties over the interpretation or the implementation of this Agreement, they shall seek to resolve such dispute by negotiations between them. Such negotiations shall commence as soon as practicable, but in any event not later than ninety days from the date of receipt of the request for negotiation, unless otherwise agreed by the Parties.

2. If a dispute is not resolved through negotiation, the Parties shall consider whether to submit that dispute to the International Joint Commission in accordance with either Article IX or Article X of the Boundary Waters Treaty. If, after such consideration, the Parties do not elect either of those options, they shall, at the request of either Party, submit the dispute to another agreed form of dispute resolution.

Article XIV

Implementation

1. The obligations undertaken under this Agreement shall be subject to the availability of appropriated funds in accordance with the respective constitutional procedures of the Parties.

2. The Parties shall seek:

   (a) the appropriation of funds required to implement this Agreement;
   (b) the enactment of any additional legislation that may be necessary to implement this Agreement; (c) the cooperation of Provincial and State Governments as necessary to implement this Agreement

3. In implementing this Agreement, the Parties shall, as appropriate, consult with Provincial or State Governments, interested, organizations, and the public.

Article XV

Existing Rights and Obligations

Nothing in this Agreement shall be deemed to diminish the rights and obligations of the Parties in other international agreements between them, including those contained in the Boundary Waters Treaty and the Great Lakes Water Quality Agreement of 1978, as amended.

Article XVI

Entry into Force, Amendment, Termination

1. This Agreement, including Annexes 1 and 2, shall enter into force upon signature by the Parties.

2. This Agreement may be amended at any time by agreement of the Parties in writing.

3. Either Party may terminate this Agreement upon one year's written notice to the other Party, in which case any annexes will also terminate.

4. Annexes constitute an integral part of this Agreement, except that, if an annex so provides, either Party may terminate such annex in accordance with the terms of that annex.

ANNEX 1

SPECIFIC OBJECTIVES CONCERNING SULPHUR DIOXIDE AND NITROGEN OXIDES

1. Sulphur Dioxide

A. *For the United States:*[1]

1. Reduction of annual sulphur dioxide emissions by approximately 10 million tons[2] from 1980 levels in accordance with Title IV of the Clean Air Act[3] i.e., reduction of annual sulphur dioxide emissions to approximately 10 million tons below 1980 levels by 2000 (with the exception of sources repowering.with qualifying clean coal technology in accordance with section 409 of the Clean Air Act, and sources receiving bonus allowances in accord<mce with section 405(a)(2) and (3) of the Clean Air Act).

2. Achievement of a permanent national emission cap of 8.95 million tons of sulphur dioxide per year for electric utilities by 2010, to the extent required by Title IV of the Clean Air Act.

3. Promulgation of new or revised standards or such other action under the Clean Air Act as the Administrator of the U.S. Environmental Protection Agency (EPA) deems appropriate, to the extent required by section 406 of the Clean Air Act Amendments of 1990 (P. L. 101-549), aimed at limiting sulphur dioxide emissions from industrial sources in the event that the Administrator of EPA determines that annual sulphur dioxide emissions from industrial sources may reasonably be expected to exceed 5.6 million tons.

B. *For Canada:*

1. Reduction of sulphur dioxide emissions in the seven easternmost Provinces to 2.3 million tonnes per year by 1994 and the achievement of a cap on sulphur dioxide emissions in the seven easternmost Provinces at 2.3 million tonnes per year from 1995 through December 31, 1999.

2. Achievement of a permanent national emissions cap of 3.2 million tonnes per year by 2000.

2. Nitrogen Oxides

A. *For the United States*[4]

With a view to a reduction of total annual emissions of nitrogen oxides by approximately 2 million tons from 1980 emission levels by 2000:

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1. Applies only to reductions in emissions in the forty-eight contiguous States and the District of Columbia.

2. 1 ton = 0.91 tonnes (metric tons).

3. All references to the Clean Air Act refer to the Act as amended November 15, 1990.

4. Applies only to reduction in emissions in the forty-eight contiguous States and the District of Columbia.

1. *Stationary Sources*

Implementation of the following nitrogen oxides control program for electric utility boilers to the extent required by Title IV of the Clean Air Act:

(a) By January 1, 1995, tangentially fired boilers must meet an allowable emission rate of 0.45 lb/mmBtu and dry bottom wall-fired boilers must meet an allowable emission rate of 0.50 lb/mmBtu (unless the Administrator of EPA determines that these rates cannot be achieved using low NOx burner technology).

(b) By January 1, 1997, EPA must set allowable emission limitations for:

-wet bottom wall-fired boilers;
-cyclones;
-units applying cell burner technology; and
-all other types of utility boilers.

2. *Mobile Sources*

Implementation of the following mobile source nitrogen oxides control program to the extent required by Title II of the Clean Air Act:

(a) Light Duty Trucks (LOT) (up to 6000 lbs gross vehicle weight rating (GVWR)) and Light Duty Vehicles (LDV)-standards for model years after 1993:

	5 yrs/50,000 miles (useful life)	**10 yrs/100,000 miles**
LDTs (0 to 3750 lbs Loaded Vehicle Weight LVW) and LDVs	0.4 grams per mile (gpm)	0.6 gpm
Diesel LDTs (0 to 3750 lbs LVW) and LDVs (before 2004)	1.0 gpm	1.25 gpm
LDTs (3751 to 5750 lbs LVW)	0.7 gpm[5]	0.97 gpm

In model year 1994, 40% of each manufacturer's sales volume must meet the above standards. In 1995, the percentage shall increase to 80% and, after 1995, to 100%.

(b) Light Duty Trucks more than 6000 lbs GVWR (after model year 1995):

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[5] This standard does not apply to diesel-fueled LDTs (3751 to 5750 lbs LVW)

	Gasoline 5 yrs/50,000 miles	Gasoline and Diesel 11 yrs/120,000 miles
LDTs (3751 to 5750 lbs Test Weight (TW))	0.7 gpm	0.98 gpm
LDTs (over 5750 lbs TW)	1.1 gpm	1.53 gpm

In model year 1996, 50% of each manufacturer's sales volume must meet the above standards. Thereafter, 100% of each manufacturer's sales volume must meet the standard.

(c) Heavy Duty Trucks (HDT) of more than 8500 lbs GVWR (after model year 1990):

	Gasoline and Diesel Engines
HDT (effective model year 1991[6])	5.0 grams per brake horsepower-hour[6] (gbhp-hr)
HDT (model year 1998 and later)	4.0 gbhp-hr

Useful life[6]:

Gasoline engines	8 years/110,000 miles
Diesel engines	
light heavy-duty:	8 yrs/110,000 miles
medium heavy-duty:	8 yrs/185,000 miles
heavy heavy-duty:	8 yrs/290,000 miles

B. *For Canada:*

1. *Stationary Sources*

(a) As an interim requirement, reduction, by 2000, of annual national emissions of nitrogen oxides from stationary sources by 100,000 tonnes below the year 2000 forecast level of 970,000 tonnes.

(b) By January 1, 1995, development of further annual national emission reduction requirements from stationary sources to be achieved by 2000 and/or 2005.

2. *Mobile Sources*

(a) Implementation of a more stringent mobile source nitrogen oxides control program for gasoline powered vehicles with standards no less stringent than the following:

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[6] As set forth in EPA regulations in effect as of the entry into force of this Agreement.

Light Duty Vehicles (up to 6000 lbs GVWR)
(By Model year 1996 for passenger cars)
(By model year 1996 for light duty trucks

	5 yrs/80,000 kilometres (useful life)
Cars and Light Duty (0 to 3750 lbs LVW)	0.4 gpm
Light Duty Trucks (3751 to 5750 lbs LVW)	0.7 gpm

Medium Duty Vehicles (6001 to 8500 lbs GVWR)
(By model year 1997):

	5 yrs/80,000 kilometers (useful life)
0 to 3750 lbs LVW	0.4 gpm
3751 to 5750 lbs LVW	0.7 gpm
Over 5750 lbs LVW	1.1 gpm

Heavy Duty Vehicles (over 8500 lbs GVWR)
(By model year 1998[7]):

	8 yrs/110,000 miles (useful life)
Over 8500 lbs GVWR	4.0 gbhp-hr

(b) Implementation of a more stringent mobile source nitrogen oxides control program for diesel powered vehicles and engines with standards, to the extent possible, no less stringent than the standards for the respective duty classes of gasoline powered vehicles and engines.

3. Compliance Monitoring

A. *Utility Units*

1. *For the United States:*

Requirement that, by January 1, 1995, each new electric utility unit and each electric utility unit greater than 25 MWe existing on the date of enactment of the Clean Air Act Amendments of 1990 (November 15, 1990) emitting sulphur dioxide or nitrogen oxides install and operate continuous emission monitoring systems or alternative systems approved by the Administrator of EPA, to the extent required by section 412 of the Clean Air Act.

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[7] The Government of Canada will propose this effective date; the final effective date is subject to the procedures and outcome of the regulation development process.

2. *For Canada:*

Requirement that, by January 1, 1995, Canada estimate sulphur dioxide and nitrogen oxides emissions from each new electric utility unit and each existing electric utility unit greater than 25 MWe using a method of comparable effectiveness to continuous emission monitoring, as well as investigate the feasibility of using and implement, where appropriate, continuous emission monitoring systems.

3. *For Both Parties:*

The Parties shall consult, as appropriate, concerning the implementation of the above.

B. *Other Major Stationary Sources*

Requirement that the Parties work towards utilizing comparably effective methods of emission estimation for sulphur dioxide and nitrogen oxides emissions from all major industrial boilers and process sources, including smelters.

4. Prevention of Air Quality Deterioration and Visibility Protection

Recognizing the importance of preventing significant air quality deterioration and protecting visibility, particularly for international parks, national, state, and provincial parks, and designated wilderness areas:

A. *For the United States:*

Requirement that the · United States maintain means for preventing significant air quality deterioration and protecting visibility, to the extent required by Part C of Title I of the Clean Air Act, with respect to sources that could cause significant transboundary air pollution.

B. *For Canada:*

Requirement that Canada, by January 1, 1995, develop and implement means affording levels of prevention of significant air quality deterioration and protection of visibility comparable to those in paragraph A above, with respect to sources that could cause significant transboundary air pollution.

C. *For Both Parties:*

The Parties shall consult, as appropriate, concerning the implementation of the above.

ANNEX 2

SCIENTIFIC AND TECHNICAL ACTIVITIES AND
ECONOMIC RESEARCH

1. For the purpose of determining and reporting on air pollutant concentrations and deposition, the Parties agree to coordinate their air pollutant monitoring activities through:

   (a) coordination of existing networks;
   (b) additions to monitoring tasks of existing networks of those air pollutants that the Parties agree should be monitored for the purposes of this Agreement;
   (c) addition of stations or networks where no existing monitoring facility can perform a necessary function for purposes of this Agreement;
   (d) the use of compatible data management procedures, formats, and methods; and
   (e) the exchange of monitoring data.

2. For the purpose of determining and reporting air emissions levels, historical trends, and projections with respect to the achievement of the general and specific objectives set forth in this Agreement, the Parties agree to coordinate their activities through:

   (a) identification of such air emissions information that the Parties agree should be exchanged for the purposes of this Agreement;
   (b) the use of measurement and estimation procedures of comparable effectiveness;
   (c) the use of compatible data management procedures, formats, and methods; and
   (d) the exchange of air emission information.

3. The Parties agree to cooperate and exchange information with respect to:

   (a) their monitoring of the effects of changes in air pollutant concentrations and deposition with respect to changes in various effects categories, e.g, aquatic ecosystems, visibility, and forests;
   (b) their determination of any effects of atmospheric pollution on human health and ecosystems, e.g. research on health effects of acid aerosols, research on the long-term effects of low concentrations of air pollutants on ecosystems, possibly in a critical loads framework;
   (c) their development and refinement of atmospheric models for purposes of determining source receptor relationships and transboundary transport and deposition of air pollutants;
   (d) their development and demonstration of technologies and measures for controlling emissions of air pollutants, in particular acidic deposition precursors, subject to their respective laws, regulations and policies;
   (e) their analysis of and experience with market-based mechanisms, including emissions trading. Specifically, through the Air Quality Committee established under Article VII of the Agreement, the Parties shall exchange information, within 12 months of entry into force of the Protocol amending this Agreement and as may be agreed upon thereafter, about the structure, components, public information and disclosure requirements (including verification), environmental impacts, and administration of their respective NO_X and SO_2 emissions trading programs including emissions monitoring, reporting and tracking of transfers of authority to emit;
   (f) any other scientific and technical activities or economic research that the Parties may agree upon for purposes of supporting the general and specific objectives of this Agreement; and

(g) public engagement and outreach activites.

4. The Parties further agree to consult on approaches to, and share information and results of research on, methods to mitigate the impacts of acidic deposition, including the environmental effects and economic aspects of such methods.

5. The Parties further agree, subject to their respective laws and regulations, to consult and share respective information on data, tools and methodologies and develop joint analyses on ground-level ozone and its precursors, including:

(a) research and applications that contribute to tracking of human health and environmental responses to controls.
(b) facility-specific emissions data, quantification methods, and related information required for modeling and regulatory policy development, assumptions and models used to estimate emissions from other sources, and air quality data for all relevant monitors;
(c) evaluation of transboundary transport, using methods such as, inter alia, monitoring and meteorological data analyses, and modeling;
(d) evaluation of adequacy of monitoring networks;
(e) review of new technologies; and
(f) analysis of options for reductions from significant emitting source categories such as transportation, manufacturing and electricity where there may be opportunities to achieve further cost-effective emission reductions through various means, for example, energy efficiency, renewable energy, cleaner fuels, and alternative technologies and approaches.

APPENDIX TO THE PROTOCOL

ANNEX 3

SPECIFIC OBJECTIVES CONCERNING GROUND-LEVEL OZONE PRECURSORS

PART I -- PURPOSE

The objective of the annex is to control and reduce, in accordance with the provisions herein, the anthropogenic emissions of nitrogen oxides (NOx) and volatile organic compounds (VOC) that are precursors to the formation of ground-level ozone and that contribute to transboundary air pollution, thereby helping both countries attain their respective air quality goals over time to protect human health and the environment. The Parties' goal is that in the long term and in a stepwise approach, taking into account advances in scientific knowledge, atmospheric concentrations not exceed:

1. For Canada, the Canada Wide Standard (CWS) for Ozone; and
2. For the United States, the National Ambient Air Quality Standards for Ozone.

PART II -- POLLUTANT EMISSION MANAGEMENT AREA

Each Party hereby designates a Pollution Emission Management Area (PEMA), to which obligations in this Annex shall apply in accordance with the provisions herein.

1. For Canada, the area of 301,330km^2 that covers all of the Canadian territory south of about the 48th parallel beginning east of Lake Superior to the Ottawa River, and south of the corridor that extends from the Outaouais Region east to Quebec City, as definitively designated on the map at Appendix 1 to this Annex.
2. For the United States, the area comprising the states of Connecticut, Delaware, Illinois, Indiana, Kentucky, Maine, Maryland, Massachusetts, Michigan, New Hampshire, New York, New Jersey, Ohio, Pennsylvania, Rhode Island, Vermont, West Virginia, and Wisconsin, and the District of Columbia, as indicated on the illustrative map at Appendix 2 to this Annex.

PART III -- SPECIFIC OBLIGATIONS

A. For Canada:

1. With respect to mobile sources of NOx and VOC emissions, Canada shall control and reduce its emissions of NOx and VOC in accordance with the following obligations:
    1. Continue the application of the following emission control measures:
        1. Emission standards for new light-duty vehicles, light-duty trucks, heavyduty vehicles, heavy-duty engines and motorcycles: Motor Vehicle Safety Act (and successor legislation), Schedule V of the Motor Vehicle Safety Regulations: Vehicle Emissions (Standard 1100), SOR/97-376, (28 July, 1997).
        2. The Recreational Marine Engine Memorandum of Understanding between Environment Canada and manufacturers of spark-ignited marine engines to supply the Canadian market with engines designed to comply with U.S. federal spark-ignited marine engine emissions standards starting with the 2001 model year. This is an interim measure that will be overtaken and replaced by the regulation referred to in subparagraph (b)(iv) below.
        3. The Handheld Spark-Ignition Engine Memorandum of Understanding between Environment Canada and manufacturers of handheld sparkignited utility engines to supply engines to the Canadian market that are designed to comply with U.S. federal emissions standards for

sparkignited handheld utility engines starting January 1, 2000. This is an interim measure that will be overtaken and replaced by the regulation referred to in subparagraph (b)(iv) below.

4. The Nonhandheld Nonroad Engine Memorandum of Understanding between Environment Canada and manufacturers of Class I and II nonhandheld spark-ignited utility engines to supply engines to the Canadian market that are designed to comply with U.S. federal emissions standards for new class I and class II nonhandheld nonroad sparkignition engines starting January 1, 2001. This is an interim measure that will be overtaken and replaced by the regulation referred to in subparagraph (b)(iv) below.
5. The Non-Road Diesel Memorandum of Understanding between Environment Canada and manufacturers of compression ignition (C.I.) non-road engines to supply engines designed to comply with U.S. federal emissions standards to the Canadian market starting with the 2000 model year. This is an interim measure that will be overtaken and replaced by the regulation referred to in subparagraph (b)(iv) below.
6. Canadian Environmental Protection Act, Diesel Fuel Regulations, SOR/97-110 (4 February, 1997).
7. Canadian Environmental Protection Act, Benzene in Gasoline Regulations, SOR/97-493 (6 November, 1997).
8. Canadian Environmental Protection Act, Sulphur in Gasoline Regulations, SOR/99-236 (4 June, 1999).
9. Canadian Environmental Protection Act, Gasoline and Gasoline Blend Dispensing Flow Rate Regulations, SOR/2000-43 (1 February, 2000).

2. Develop and implement the following new emission control measures:
    1. Proceed with consultations with the objective of developing and implementing a Memorandum of Understanding between Environment Canada and manufacturers and importers of on-road vehicles to ensure that low-emission vehicles will be marketed and sold in Canada in the 2001-2003 model years, in alignment with the voluntary U.S. National Low Emission Vehicle (NLEV) program.
    2. Emission regulations under the Canadian Environmental Protection Act 1999 for new on-road vehicles and engines to align with future U.S. national standards beginning with the 2004 model year, including the U.S. Tier 2 program for new light-duty vehicles, light-duty trucks and medium-duty passenger vehicles and Phase 1 and Phase 2 programs for new heavy-duty vehicles and engines. The final standards and effective dates are subject to the procedures and outcome of the regulatory development process.
    3. A regulation under the Canadian Environmental Protection Act 1999 to reduce the allowable level of sulphur in on-road diesel fuel to align with future U.S. standards. The final standards and effective dates are subject to the procedures and outcome of the regulatory development process.
    4. Emission regulations under the Canadian Environmental Protection Act 1999 for new non-road engines aligned with the U.S. federal emissions program. The final scope of the standards and effective dates are subject to the procedures and outcome of the regulatory development process.

2. With respect to stationary sources of NOx emissions, Canada shall control and reduce its emissions in accordance with the following obligations:
    1. By 2007, cap the annual total emissions of NOx (as NO2) from fossil fuel-fired power plants with a capacity greater than 25 megawatts within the PEMA at 39 kilotonnes for the Ontario portion of the PEMA and 5 kilotonnes for the Quebec portion of the PEMA.
    2. Proposed national Guideline under s.54 of the Canadian Environmental Protection Act, 1999, respecting Renewable Low-Impact Electricity.

3. With respect to sources of emissions of VOC, Canada shall control and reduce its emissions in accordance with the following obligations:

1.
    1. Canadian Environmental Protection Act 1999, Proposed national Regulation on Tetrachloroethylene and other toxic substances used in dry cleaning.
    2. Canadian Environmental Protection Act 1999, Proposed national Regulation on degreasing from commercial and industrial degreasing facilities.
2. Limit values for controlling emissions of VOC from new stationary sources in the following stationary source categories will be determined on the basis of available information on control technology and levels, including limit values applied in other countries, and the following documents:
    1. Canadian Council of Ministers of Environment (CCME). Environmental Guideline for the Control of Volatile Organic Compounds Process Emissions from New Organic Chemical Operations. September 1993. PN1108;
    2. CCME. Environmental Code of Practice for the Measurement and Control of Fugitive VOC Emissions from Equipment Leaks. October 1993. PN1106;
    3. CCME. A Program to Reduce Volatile Organic Compound Emissions by 40 Percent from Adhesives and Sealants. March 1994. PN1116;
    4. CCME. A Plan to Reduce Volatile Organic Compound Emissions by 20 Percent from Consumer Surface Coatings. March 1994. PN1114;
    5. CCME. Environmental Guidelines for Controlling Emissions of Volatile Organic Compounds from Aboveground Storage Tanks. June 1995. PN1180;
    6. CCME. New Source Performance Standards and Guidelines for the Reduction of Volatile Organic Compound Emissions from Canadian Automotive Original Equipment Manufacturer (OEM) Coating Facilities. August 1995. PN1234;
    7. CCME. Environmental Guideline for the Reduction of Volatile Organic Compound Emissions from the Plastics Processing Industry. July 1997. PN1276; and
    8. CCME. National Standards for the Volatile Organic Compound Content of Canadian Commercial/Industrial Surface Coating Products - Automotive Refinishing. August 1997. PN1288.

4. In order to attain the CWS for Ozone in the PEMA by 2010, Canada shall undertake by 2005, and implement between 2005 and 2010, measures based on a comprehensive, national multi-pollutant emission reduction approach as agreed by Canadian Ministers of Environment, consistent with the overall program for achieving the CWS for Ozone, for the following sectors: pulp and paper, lumber and allied wood products, electric power, iron and steel, base metal smelting and concrete batch mix and asphalt mix plants. These measures shall address, inter alia, NOx emissions from new, modified and existing industrial and commercial boilers. In addition, measures shall be developed to reduce VOC emissions from solvents, paints and consumer products using a mix of instruments such as eco-labelling criteria and public education programs pertaining to VOC in consumer products, environmental performance standards for key products (e.g. surface coating of wood products, automotive parts, metal products) and for other significant solvent sources.
5. In addition, in the Quebec portion of the PEMA, the following shall be implemented:
    1. Proposed amendments to Le Réglement sur la qualité de l'atmosphère du Québec ("Québec's Regulation respecting the Quality of the Atmosphere") to reduce NOx emissions from new and modified industrial and commercial boilers.
    2. Proposed amendments to Le Réglement sur la qualité de l'atmosphère du Québec ("Québec's Regulation respecting the Quality of the Atmosphere") to reduce VOC emissions from surface coatings, commercial printing, dry cleaning and aboveground storage tanks.
    3. Implementation of the Agreement on Environmental Management between the Government of Québec and petroleum refineries and major petrochemical plants to control and reduce VOC emission from their operations.
    4. Implementation of the existing Réglement sur les produits pétroliers du Québec ("Québec's Regulation on Petroleum Products") concerning gasoline volatility.
    5. Proposed amendments to Le Réglement sur les produits pétroliers du Québec ("Québec's Regulation on Petroleum Products") to reduce VOC emissions from gasoline distribution networks.

6. In addition, in the Ontario portion of the PEMA, the following shall be implemented:
    1. The Ontario Drive Clean program (Ontario Environmental Protection Act Regulation 361/98) as amended by Ontario Regulation 401/98, as amended by Ontario Regulation 86/99 and as amended by Ontario Regulation 438/99.
    2. Regulation (Ontario Environmental Protection Act Regulation 455/94) of Stage I vapour recovery.
    3. Regulation (Ontario Environmental Protection Act Regulation 271/91 as amended by Ontario Environmental Protection Act Regulation 45/97) of volatility of gasoline at 9 psi during the summer months in southern Ontario and 10.5 psi in northern Ontario.
    4. Regulation (Ontario Environmental Protection Act Regulation 323/94) requiring environmental training for dry cleaners.
    5. Implementation of the CCME guideline for new and modified combustion turbines.
    6. Implementation of the CCME guideline for new commercial/industrial boilers and heaters.
    7. Regulation (Ontario Environmental Protection Act Regulation 227/00) to be applied to the electricity sector requiring annual monitoring and reporting of 28 pollutants of concern with a commitment to extend the monitoring and reporting requirement to other industry sectors.

B. For the United States:

1. Specific NOx Reduction Commitments
    1. The United States shall require States that are located in the PEMA and that are subject to EPA's NOx regulation (referred to as the "NOx SIP Call") to implement that regulation in accordance with 40 Code of Federal Regulations (CFR) sections 51.121 and 51.122 including any modifications as a result of any court decision. The NOx SIP Call requires States to ensure that seasonal NOx emissions do not exceed specified levels ("budgets").
    2. The United States shall implement a motor vehicle control program in the PEMA that meets the requirements of 40 CFR Part 80, Subpart D (reformulated gasoline), 40 CFR Part 86 (control of emissions from new and in-use highway vehicles and engines); and 40 CFR Part 80, section 80.29 (controls and prohibitions on diesel fuel quality).
    3. The United States shall implement standards for non-road engines in the PEMA as provided for in 40 CFR Part 87 (aircraft), Part 89 (compression-ignition engines), Part 90 (spark-ignition engines), Part 92 (locomotives), and Part 94 (marine engines).
2. Specific VOC Reduction Commitments
    1. The United States shall implement controls in the PEMA that reduce VOC emissions as required by 40 CFR Part 59, Subpart B (automobile repair coatings), Subpart C (consumer and commercial products), and Subpart D (architectural coatings).
    2. The United States shall implement controls on hazardous air pollutants in the PEMA that also reduce VOC emissions as required by 40 CFR Part 63. This includes the following Subparts:
    Subpart M (dry cleaning);
    Subparts F, G, H, and I (Hazardous Organic NESHAP);
    Subpart GG (aerospace industry);
    Subpart N (chromium electroplating);
    Subpart L (coke ovens: charging, top side & door leads);
    Subpart O (commercial sterilizers);
    Subpart T (degreasing organic cleaners);
    Subpart R (gasoline distribution (Stage 1));
    Subpart Q (industrial cooling towers);
    Subpart EE (magnetic tape);
    Subpart Y (marine vessel loading operations);
    Subpart DD (off-site waste and recovery operations);
    Subpart CC (petroleum refineries);

Subpart U (polymers and resins I);
Subpart W (polymers and resins II);
Subpart JJJ (polymers and resins III);
Subpart KK (printing/publishing);
Subpart X (secondary lead smelters);
Subpart II (shipbuilding and ship repair);
Subpart JJ (wood furniture);
Subpart XXX (ferralloys production);
Subpart III (flexible polyurethane foam production);
Subpart YY (generic MACT);
Subpart DDD (mineral wool production);
Subpart HH (oil and natural gas transmission and production);
Subpart MMM (pesticide active ingredient production);
Subpart GGG (pharmaceuticals production);
Subpart AA/BB (phosphoric acid/phosphate fertilizers);
Subpart PPP (polyether polyols productions);
Subpart OOO (polymers and resins III: amino/phenol resins);
Subpart LLL (portland cement manufacturing);
Subpart LL (primary aluminum production);
Subpart TTT (primary lead smelting);
Subpart VVV (publicly owned treatment works);
Subpart S (pulp and paper (Non-combust) MACT I);
Subpart S (pulp and paper cluster rule MACT III);
Subpart RRR (secondary aluminum);
Subpart CCC (steel pickling);
Subpart F (tetrahydrobenzaldehyde manufacture); and
Subpart NNN (wool fiberglass manufacturing).

3. The United States shall implement controls in the PEMA on motor vehicles and nonroad engines as described above in Part III.B (1) above.

3. New Source Standards The United States shall require major new VOC and NOx sources in the PEMA to meet New Source Performance Standards as required by 40 CFR Part 60. This includes the following Subparts:
Subpart D (fossil fuel fired steam generators);
Subpart Da (electric utility steam generating units);
Subpart Db (industrial/commercial/institutional steam generating units);
Subpart Dc (small industrial-commercial-institutional steam generating units);
Subpart E (incinerators);
Subpart Ea (municipal waste combustors);
Subpart Eb (large municipal waste combustors);
Subpart Ec (hospital/medical/infectious waste incinerators);
Subpart G (nitric acid);
Subpart K (storage vessels for petroleum liquids);
Subpart Ka (storage vessels for petroleum liquids);
Subpart Kb (volatile organic liquid storage vessels);
Subpart EE (surface coating of metal furniture);
Subpart GG (stationary gas turbines);
Subpart MM (automobile or light-duty truck assembly plants);
Subpart QQ (graphic arts industry: publication rotogravure printing);
Subpart RR (pressure sensitive tape and label surface coating operations);
Subpart SS (industrial surface coating of large appliances);
Subpart TT (metal coil surface coatings);
Subpart VV (synthetic organic chemical manufacturing industry (SOCMI));

Subpart WW (municipal solid waste landfill);
Subpart XX (bulk gasoline terminals);
Subpart BBB (passenger and light duty truck tire manufacturing);
Subpart DDD (polymer manufacturing industry);
Subpart FFF (rotogravure printing of flexible vinyl or urethane products);
Subpart GGG (petroleum refinery leaking equipment);
Subpart HHH (synthetic fiber production facilities);
Subpart JJJ (petroleum dry cleaners);
Subpart KKK (onshore natural gas processing plant leaking equipment);
Subpart NNN (SOCMI distillation operations);
Subpart QQQ (individual drain systems;
Subpart RRR (SOCMI reactor processes);
Subpart SSS (magnetic tape manufacturing);
Subpart TTT (surface coating of plastic parts for business machines);
Subpart VVV (polymeric coating of supporting substrates); and
Subpart WWW (municipal solid waste landfills).

C. For both Parties:

Taking into account the purpose of this Annex, the Parties agree that the regulations, guidelines and caps referenced in all of the commitments in Part III above are subject to modification from time to time as a result of domestic legal processes that may take place.

PART IV -- ANTICIPATED ADDITIONAL CONTROL MEASURES AND INDICATIVE REDUCTIONS

In addition to the obligations set forth in Part III above, each Party currently implements or anticipates implementing additional measures that are expected to contribute to overall reductions of NOx and VOC emissions. For illustrative purposes only, additional control measures currently in place and anticipated additional control measures are set forth below, as are predicted overall emission reduction rates.

A. For Canada:

1. National Reductions
   In order to achieve, by 2010, the CWS for Ozone (65 ppb 8-hour average 4th highest averaged over 3 years), Canada intends to develop and implement further reductions of emissions of NOx and VOC.
2. Area-Specific Reductions
   In Ontario, a 45% reduction of NOx and VOC emissions from 1990 levels is expected to be required to meet the CWS for Ozone, assuming comparable reductions in the U.S. PEMA. In the Ontario portion of the PEMA, measures to reduce VOC emissions from small to medium sized solvent users will be developed. In the Québec portion of the PEMA, measures to reduce NOx and VOC emissions from existing light and heavyduty vehicles will be considered.
3. Quantitative Estimates
   The emission reduction obligations identified in Part III.A above are estimated to reduce annual NOx emissions in the PEMA from 1990 levels by 39% by 2007 and 44% by 2010 and annual VOC emissions in the PEMA from 1990 levels by 18% in 2007 and 20% in 2010. Once all the measures identified in Part III.A are implemented, in conjunction with the anticipated national and area-specific reductions identified above, it is expected that emissions reductions will be greater than currently estimated.

B. For the United States:

1. National Reductions
   The United States has developed or intends to develop and implement standards to further reduce emissions of NOx and VOC, including:
   1. Tier 2 vehicle and fuel sulphur standards
   2. Tier 3 standards for nonroad compression ignition engines
   3. Heavy-duty engine standards
   4. Recreational vehicle standards
2. Area-Specific Reductions
   The United States has implemented and intends to continue to implement NOx and VOC control measures in specific areas as required by applicable provisions of the Clean Air Act. The area specific measures include: NOx and VOC reasonably available control technology, marine vessel loading, treatment storage and disposal facilities, municipal solid waste landfills, onboard refuelling, residential wood combustion, vehicle inspection/maintenance, and reformulated gasoline. In addition to these measures, under Clean Air Act mandates, U.S. states have already adopted or will be required to adopt additional measures for particular areas in the PEMA in order to meet the applicable National Ambient Air Quality Standards for Ozone.
3. Quantitative Estimates
   The emission reduction obligations identified in Part III.B above, in conjunction with the anticipated national and area-specific reductions identified above, are estimated to reduce annual NOx emissions in the PEMA from 1990 levels by 27% by 2007 and 36% by 2010 and annual VOC emissions in the PEMA from 1990 levels by 35% in 2007 and 38% in 2010.[1] Further, the emission reduction obligations identified in Part III.B above in conjunction with the anticipated national and area-specific reductions identified above, are estimated to reduce ozone season NOx emissions in the PEMA from 1990 levels by 35% by 2007 and 43% by 2010 and ozone season VOC emissions in the PEMA from 1990 levels by 39% in 2007 and 36% in 2010.

   [1]The assumptions used in calculating the indicative reductions are detailed in "Procedures for Developing Base Year and Future Year Mass Modeling Inventories for the Tier 2 Final Rulemaking" (EPA420-R-99-034, September 1999).

C. For Both Parties:

Each Party shall update its quantitative estimates referred to above, by 2004 and from time to time thereafter, and shall make such estimates available to the other Party and to the public.

PART V --REPORTING

A. Beginning in 2004, as part of the biennial progress reports under Article VIII.2 of the Agreement, the Parties agree to provide information on all anthropogenic NOx and all anthropogenic and biogenic VOC emissions within the PEMA specified in Part II above. This information shall be from a year not more than two years prior to the year of the report and shall include:

1. Annual and ozone season (May 1 to September 30) estimates for VOC emissions categorized into the following sectors:
   1. Industrial Sources
   2. Non-Industrial Fuel Combustion
   3. Electric Power Generation
   4. Onroad Transportation
   5. Nonroad Transportation
   6. Solvent Utilization
   7. Other Anthropogenic Sources
   8. Biogenic sources (VOC emissions from vegetation and NOx emissions from soil).
2. Annual and ozone season (May 1 to September 30) estimates for NOx emissions categorized into the following sectors:

1. Industrial Sources
2. Non-Industrial Fuel Combustion
3. Electric Power Generation
4. Onroad Transportation
5. Nonroad Transportation
6. Other Anthropogenic Sources.

3. NOx and VOC 5-year emissions trends for the sectors listed above as well as total emissions.

B. For the purpose of these reports, the Parties shall develop a common definition of what source categories are covered in each sector and a common format and level of aggregation and disaggregation of data for reporting emissions.

C. Beginning in 2002, as part of the biennial progress reports, the Parties agree to provide the following ambient air quality information:

1. Ambient ozone concentrations, reported in the form of the applicable standards
2. 10-year trends in ambient ozone concentrations
3. Ambient VOC concentrations
4. 10-year trends in ambient VOC concentrations
5. Ambient NOx concentrations
6. 10-year trends in ambient NOx.

D. The ambient air quality information listed above shall be reported for all relevant monitors located within 500 km of the border between Canada and the lower 48 states of the United States.

E. For the purpose of these reports, the Parties shall develop common protocols and reporting formats, including identification of relevant monitors, for reporting air quality and trends information.

F. Beginning in 2004, as part of the biennial progress reports, the Parties agree to provide information on implementation of the controls agreed to under this Annex.

PART VI -- REVISITING

A. The Parties agree to assess in 2004 progress in implementing the obligations in the Annex with a view to negotiating further reductions.

B. The Parties agree to discuss, at the request of either Party, the possibility of amending this Annex to designate additional emission management areas and/or to revise the emissions commitments currently specified.

C. As part of the comprehensive review under Article X of the Agreement, the Parties shall also review the adequacy of the obligations in this Annex for achieving the objectives of this Annex.

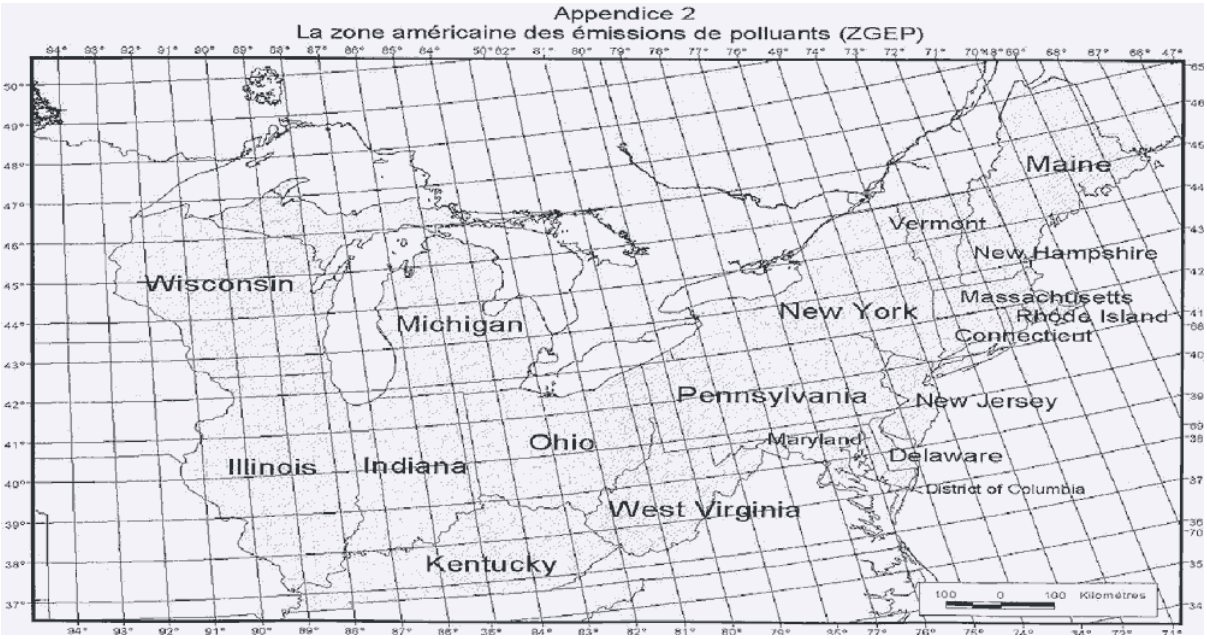
PART VII -- MORE STRINGENT MEASURES

Either Party may take more stringent measures to control and reduce NOx and VOC emissions than those specified in this Annex.

Appendix 1


Appendice 1
Les zones canadiennes de gestion des émissions de polluants (ZGEP)
Légende
Portion ontarienne
Portion québécoise
50 0 50 100 150 Kilomètres

Appendix 2


Appendice 2
La zone américaine des émissions de polluants (ZGEP)
Maine
Vermont
New Hampshire
Massachusetts
Rhode Island
Connecticut
New York
Wisconsin
Michigan
Pennsylvania
New Jersey
Maryland
Delaware
District of Columbia
Ohio
Illinois
Indiana
West Virginia
Kentucky
100 0 100 Kilomètres