2.0 INTRODUCTION AND OVERVIEW

This document presents the regional air quality plan for attainment of the federal eight-hour standard for ground-level ozone being considered by the Metropolitan Washington Air Quality Committee (MWAQC) for the Washington, D.C. multi-jurisdictional nonattainment area. MWAQC was established, by the governors of Maryland and Virginia and the mayor of the District of Columbia to prepare a regionally coordinated air quality plan to comply with the requirements of the 1990 Clean Air Act Amendments (CAAA or Act). MWAQC was established in accordance with Section 174 of the Clean Air Act.

2.1 Clean Air Act Background

The Clean Air Act was passed in 1970 to protect public health and welfare. Congress amended the Act in 1990 to establish requirements for areas not meeting the National Ambient Air Quality Standards (NAAQS). The Clean Air Act Amendments of 1990 (CAAA) established a process for evaluating air quality in each region and identifying and classifying nonattainment areas according to the severity of its air pollution problem. The CAAA defines ground-level ozone as a criteria pollutant. In 1979 EPA promulgated the 0.12 ppm, 1-hour ozone standard. In 1997 EPA issued a revised ozone standard of 0.080 parts per million (or 85 parts per billion) measured over an 8-hour period. The 1-hour ozone standard was revoked on June 15, 2005. The Clean Air Act also sets National Ambient Air Quality Standards for five other criteria pollutants, carbon monoxide, particulate matter, lead, sulfur dioxide and nitrogen dioxide.

In April 2004 EPA designated the Washington area as a "moderate" nonattainment area for the eight-hour ozone standard under Subpart 2 of part D, Title I . The boundaries of the Washington nonattainment areas are defined in the *Federal Register, Vol;69, no.84, 4/30/04).* The Washington nonattainment area includes the District of Columbia, Arlington, Fairfax, Loudoun, Prince William counties, and the cities of Alexandria, Falls Church, Fairfax, Manassas, and Manassas Park in Virginia; as well as Calvert, Charles, Frederick, Montgomery, and Prince George's counties and the Cities of Bowie, College Park, Gaithersburg, Greenbelt, Frederick, Rockville, and Takoma Park in Maryland. A map of the nonattainment area is shown in Figure 1.

To meet the federal 8-hour standard for ozone, nonattainment areas are required to develop regional plans, state implementation plans or "SIP," to reduce ozone-causing emissions of volatile organic compounds (VOCs) by at least 15 percent between 2002-2008, and to reduce all ozone precursor emissions to a level sufficient to attain the federal eight-hour standard by June 15, 2010. However, the region is required to demonstrate attainment of the standard by the end of the last ozone season before that date, which is September 2009. The actual attainment date for planning purposes is 2009; the photochemical modeling to demonstrate attainment and the inventories used to determine reduction benefits use 2009 as the attainment date.

2.2 Eight-hour Ozone Standard

In 1997 EPA issued a revised ozone health standard based on an 8-hour measurement to protect against longer exposure periods. Since the late 1980's more than 3,000 published health studies indicated that health effects occur at levels lower than the previous standard and that exposure times longer than one hour are of concern. EPA established an 8-hour standard at 0.08 parts per million (ppm) and defined the new standard as a "concentration-based" form, specifically the 3-year average of the 4th highest daily maximum 8-hour ozone concentrations.

EPA changed the form of the standard to a concentration-based form because it more directly relates to ozone concentrations associated with health effects. Based on recent studies, the 8-hour ozone standard was designed to reduce exposure to ambient ozone concentrations that have been linked to increased hospital admissions for respiratory ailments such as asthma. Long term exposures to ozone can cause repeated inflammation of the lung, impairment of lung defense mechanisms, and irreversible changes in lung structure, which could lead to premature aging of the lungs and/or chronic respiratory illnesses such as emphysema and chronic bronchitis.

2.3 SIP Requirements for Moderate Nonattainment Areas

The Clean Air Act Section 182 (b) and EPA's implementation rule, 40 CFR part 51, subpart X, requires moderate nonattainment areas to submit revisions to the state implementation plan that meet the following planning requirements:

- Reasonable Further Progress: 15% VOC reduction from baseline within 6 years of enactment
- Attainment demonstration: Due 3 years after CAA Amendments enactment (6/15/07)
- NSR and RACT major source applicability: 100 TPY for NOx and 50 TPY for VOC (per Clean Air Act Section 184)
- NSR offsets: 1.15 to 1
- NSR permits: required for new or modified major stationary sources
- NOx control for RACT: requirement for major stationary VOC sources also applies to major NOx sources
- RACM/RACT: RACT required for all CTG sources and all other major sources
- I/M: Basic I&M
- Stage II vapor recovery: required for all gas stations
- Contingency measures: required for failure to meet RFP milestones or attain

Before designation as a moderate nonattainment area for the 8-hour standard, the Washington, DC-MD-VA region was classified as a "severe" nonattainment area for the one-hour ozone standard. The Clean Air Act Section 182 (d) requirements for severe nonattainment areas include a number of planning requirements that are more stringent than those required for a moderate non-attainment area.. The more stringent lower permitting thresholds remain in force in Maryland and the District. Virginia law limits the state to meeting the federal requirements and does not allow regulations that are more stringent than the federal requirement.

The more stringent regulations remaining in force in Maryland and the District are the following:

- Lower permit threshold for point sources to 25 tons per year
- Lower NSR threshold for definition of "Major" source requiring controls to 25 tons per year
- Require new or expanding sources to offset increased emissions by 1.3:1

2.4 Rate of Progress Demonstrated in Previous SIPs

For the previous one-hour ozone health standard, MWAQC approved several State Implementation Plans to meet rate of progress requirements for serious nonattainment areas. The Clean Air Act required that serious nonattainment areas ensure progress toward the attainment goal by achieving a 15% reduction in volatile organic chemicals (VOCs) by 1996, and an additional 9% by 1999. MWAQC approved the "15% Plan" in January 1994.[1] MWAQC approved the Phase I Attainment Plan, which includes the 9% rate of progress requirements, in October 1997 and revised it in April 1999.[2] The plan outlined how the region would reduce pollutants by the additional 9% requirement from 1996–1999 and discussed efforts to identify attainment requirements.

MWAQC approved the Attainment Plan (Phase II) in April 1998 and revised it in January 2000.[3] The Phase II plan summarized the results of photochemical air quality modeling and provided information on trends in actual measured ozone levels. The plan showed that the Washington metropolitan region is likely to attain the federal one-hour standard for ozone in 2005 when the emission control measures currently proposed are fully implemented and after 'ozone transport' is reduced.

In 2003 EPA reclassified the metropolitan Washington region as severe non-attainment for ozone when the region did not meet the attainment deadline for serious non-attainment areas by November 1999. In March 2004 MWAQC approved a State Implementation Plan to meet the requirements for a severe nonattainment area. The "Severe Area SIP" demonstrated rate of progress of 15% from 1999-2002, and 15% from 2002-2005. The states submitted the plan to EPA and EPA approved the states' SIPs and Rate of Progress plans in 2005.[4]

2.5 Comparability of 8-hour Inventories to Previous State Implementation Plans

The area source and point source inventories in the 8-hour ozone SIP are comparable to the previous SIP and consistent with the methodologies used for those inventories. The 8-hour SIP's mobile source inventory was estimated using MOBILE6.2.03 and Travel Demand Model version 2.1d#50. Both models are newer, revised versions of the models used for the Severe Area SIP.

Additionally, the Reasonable Further Progress and attainment demonstration for 8-hour ozone standard uses a new model, EPA's Nonroad Model, to calculate emissions from the nonroad sector. In previous SIPs the nonroad emissions were calculated using a spreadsheet-based projection of an inventory developed by EPA. The difference between the nonroad inventories in this plan and previous nonroad inventories includes changes in the modeling and estimation techniques for nonroad emissions, so the nonroad emissions in this plan are not comparable to previous nonroad emissions.

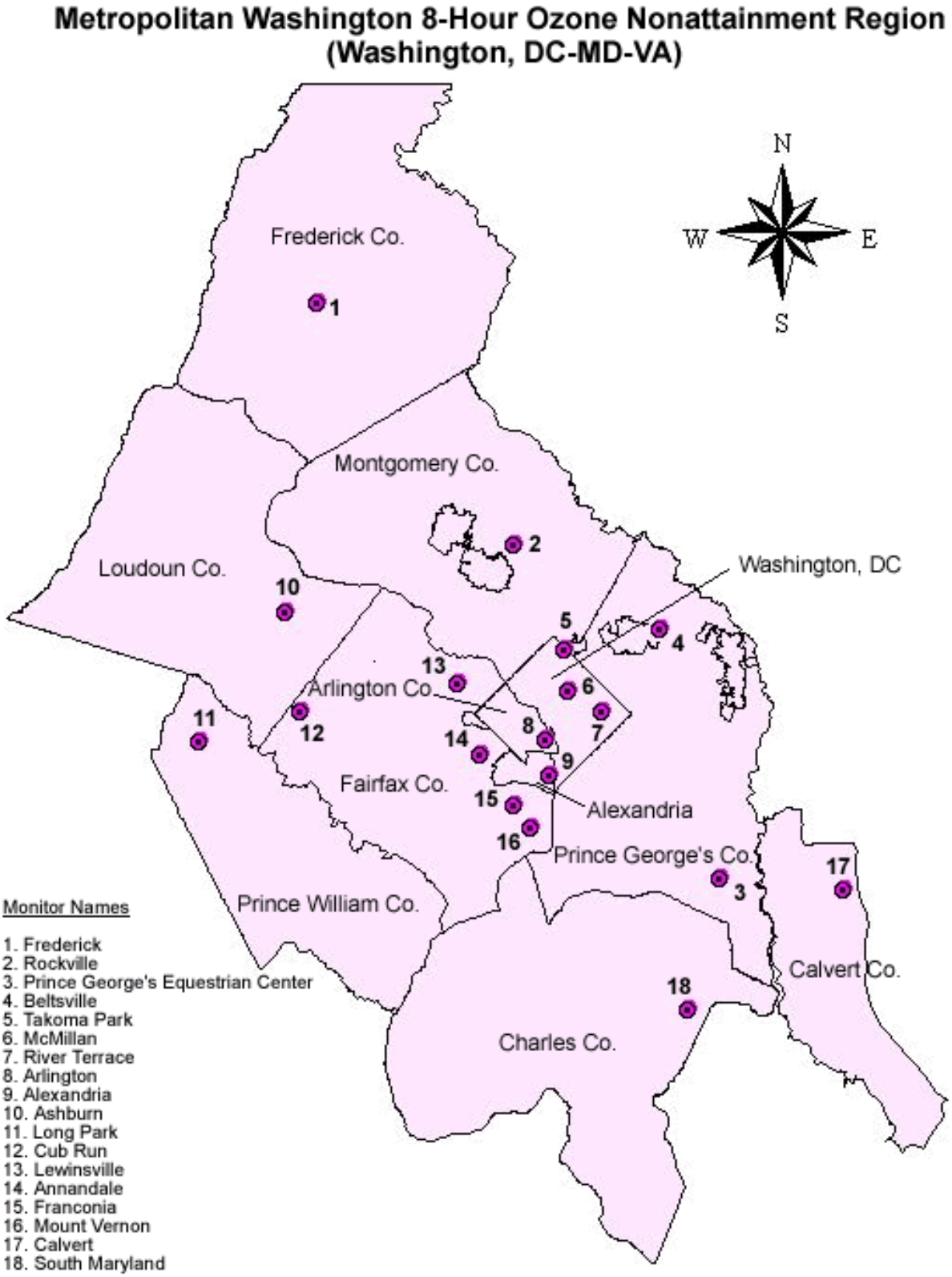


Figure 1: Washington, DC-MD-VA 8-Hour Ozone Non-Attainment Region

2.6 Sources of Ozone in the Metropolitan Washington Region

Ozone (O_3) is formed through a complex series of chemical reactions when oxygen molecules and atoms (O_2 + O) are combined. The process occurs when volatile organic compounds interact with nitrogen oxides in the presence of sunlight during hot, stagnant, summer days. VOCs are chemical compounds contained in gasoline, furniture polish, cleaning fluids, paint, inks, and other household and industrial products. VOCs also are a residue of combustion. Principal sources of NOx, which is produced by combustion, include motor vehicles, fossil fuel-fired power plants, and open burning. Ozone formation is favored under certain weather conditions, including high temperature, bright sunshine, and light winds. See Figure 2.

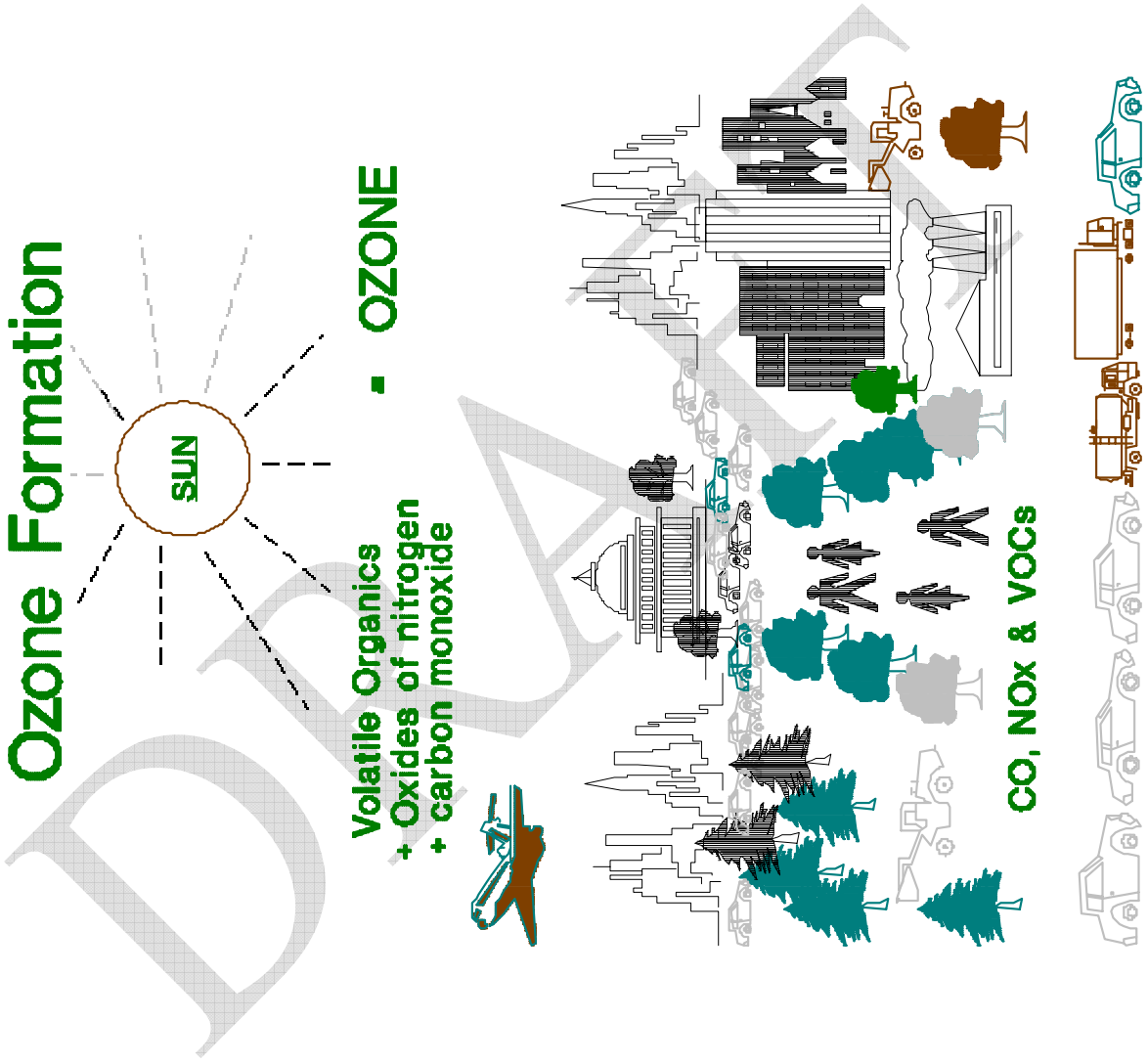


Figure 1: Conditions for Ozone Formation

Typically, ozone levels escalate rapidly before noontime, peak in the afternoon, and taper off when the sun goes down. Figure 3 shows hourly ozone concentrations for a typical 24-hour period in our region.

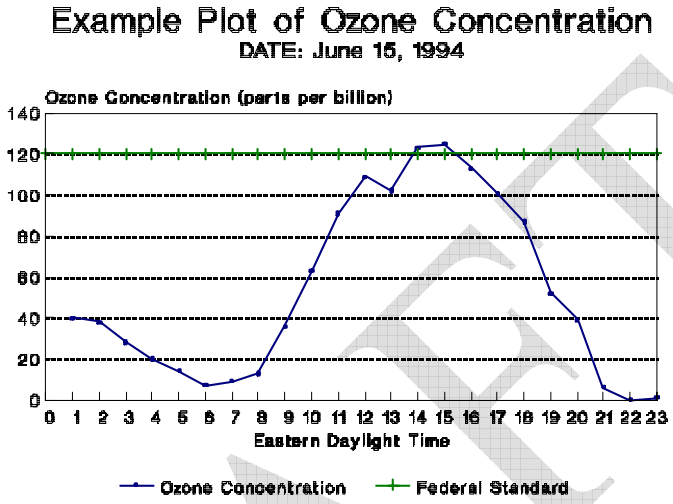


Figure 2: Gradual build-up of ozone levels on a typical summer day. Ozone peaks in the afternoon, then tapers off to lower levels in the evening.

Outer suburban and rural areas share this regional problem. Winds can move a cloud of ozone-containing smog for long distances. Regional data indicate that violations of the ozone standard can occur in either rural, inner suburban, outer suburban, or urban areas or combinations thereof.

While ozone within the region is caused mostly by emissions generated within the region, it also is carried into the metropolitan area by winds from elsewhere. Research conducted through the Ozone Transport Commission (OTC), and the Ozone Transport Assessment Group (OTAG) provides evidence that ozone formed in other parts of the country may drift into and affect air quality in the Washington region.

A number of diverse sources emit the ozone precursors VOC and NOx. Major sources of VOC emissions include, but are not limited to, gasoline storage facilities, bakeries, gasoline refueling stations, printing facilities, motor vehicles, lawnmowers, consumer products, and boats. Principal sources of NOx, which is produced by combustion, include motor vehicles (cars, trucks and buses), fossil fuel-fired power plants, and construction equipment.

In general the anthropogenic (man-made) sources of ozone precursors are grouped into four source categories: point (stationary), area, non-road, and mobile sources.

Point sources are stationary sources that emit more than 10 tons per year (tpy) of emissions. These sources are individually inventoried. Actual emissions measurements are available for some sources from the states and the District of Columbia. Emissions from other sources are estimated using emission factors.

Area source emissions include small industries, such as bakeries and printers; off-highway mobile equipment; and commercial/consumer products and activities. Emissions are not measured directly but are estimated from engineering calculations and estimates of activity levels.

Non-road sources include construction and farming equipment, commercial and residential lawn and garden activities, and recreational boating.

On-road or "mobile source" emissions from transportation sources are estimated from regional transportation models, which provide estimates of the number of vehicle trips, and the distance, location and speed of the trips, combined with a detailed EPA-approved model of per-vehicle emission factors.

A fifth category, "biogenic" emissions, includes all naturally occurring sources of VOC emissions from trees, crops and other forms of vegetation.

The following tables list the top ten sources of VOCs and NOx in the Washington nonattainment area in 2002 and in 2009.

Table 2-1
TOP TEN SOURCES OF MAN-MADE VOLATILE ORGANIC COMPOUNDS (VOCs)
IN THE WASHINGTON AREA IN 2002 and 2009 EMISSIONS LEVELS

#	SOURCE CATEGORY	SOURCE	VOCs* TONS/ DAY	
			2002	2009
1	On-Road Mobile	CARS, BUSES, TRUCKS	116.9	66.7
2	Non-Road	LAWN & GARDEN EQUIPMENT	81.6	52.2
3	Area	COMMERCIAL CONSUMER SOLVENT USE	41.6	39.6
4	Area	SURFACE COATING	29.2	23.9
5	Area	PORTABLE FUEL CONTAINERS (COMMERCIAL & RESIDENTIAL)	25.6	17.9
6	Area	ARCHITECTURAL COATINGS	21.6	24.2
7	Nonroad	PLEASURE CRAFT	20.7	15.0
8	Stationary	UTILITIES AND OTHER SOURCES	12.9	14.3
9	Area	PESTICIDES	11.8	9.7
10	Area	SURFACE CLEANING	11.5	10.0

**The emissions estimates above are rounded to the nearest whole number, listed in order for 2002 emissions. They are MWAQC's best estimates. Total VOC emissions in the Washington area were 382 tons per day in 2002 and 285.7 tons per day in 2009. Biogenic emissions account for 314.7 tons/day of VOC emissions in the Washington region. The 2009 inventories include the final attainment control strategy.*

Table 2-2
TOP TEN SOURCES OF NITROGEN OXIDES (NOx) IN THE WASHINGTON AREA
IN 2002 and 2009 EMISSIONS LEVELS

#	SOURCE CATEGORY	SOURCE	NOx* TONS/ DAY	
			2002	2009
1.	On-Road Mobile	ALL VEHICLES	266.7	146.5
2.	Stationary	UTILITIES AND OTHER SOURCES	220.6	112.6
3.	Non-Road	CONSTRUCTION	45.8	38.3
4.	Non-Road	LAWN AND GARDEN EQUIPMENT (RES)	12.6	10.6
5.	Area	INDUSTRIAL FUEL COMBUSTION	9.4	11.1
6.	Area	RAILROAD LOCOMOTIVES	7.2	5.7
7.	Non-Road	INDUSTRIAL EQUIPMENT	6.7	4.6
8.	Area	COMMERCIAL/INSTITUTIONAL FUEL COMBUSTION	6.4	7.1
9.	Area	RESIDENTIAL FUEL COMBUSTION	4.8	5.3
10.	Area	AIRCRAFT EMISSIONS	3.8	5.9

**The emissions estimates above are rounded to the nearest whole number. They are MWAQC's best estimates. The total emission of NOx in the Washington area was 541 tons per day in 2002 and 322 tons per day in 2009. The 2009 inventories include the final attainment control strategy.*

2.7 The Effects of Ozone

All of the 4.6 million residents of the Washington metropolitan region are likely to feel some of the adverse effects of ozone at one time or another, especially when they are working outdoors or exercising on a day when ozone levels are high.

But some people will feel symptoms at lower levels of exposure (even levels below the federal health standard), or experience more adverse effects at high levels. According to the American Lung Association, 2004, populations at increased risk in the Washington metropolitan region include

- 1,143,573 children 18 years of age and younger;
- 369,633 asthmatics, including 94,721 children with asthma and 277,912 adults;
- 191,510 residents with other chronic or persistent respiratory diseases, such as chronic bronchitis and emphysema;
- 423,373 residents over the age of 65

Figure 4 shows a breakdown of some of the categories of sensitive populations by sub-region.

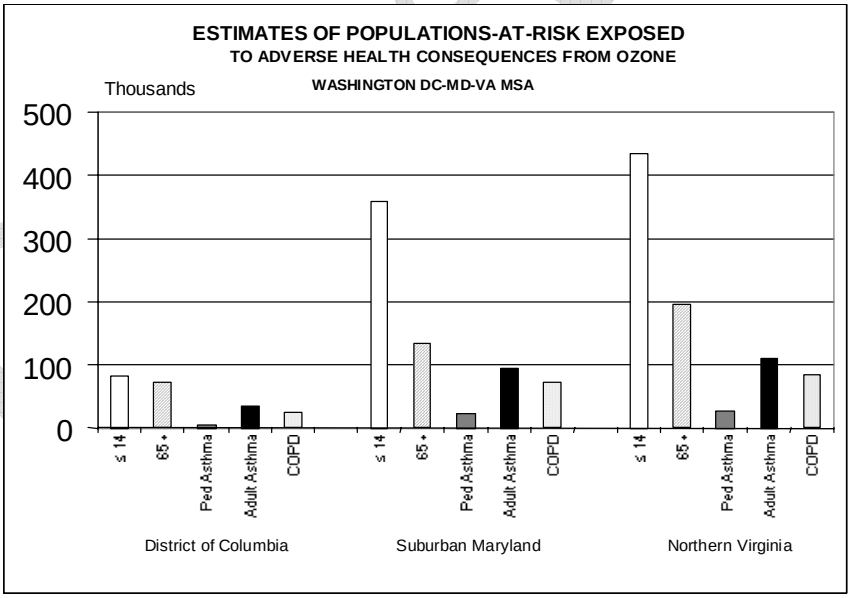


Figure 3: Approximately one-third of the residents of Metropolitan Washington area children, asthmatics over 65, have chronic respiratory diseases, and/or are especially sensitive to ozone. These individuals are more vulnerable to ill effects from air pollution. Source: American Lung Association [5]

As mentioned earlier, ozone poses a threat not only to human health, but also to the health of natural ecosystems. Scientific evidence suggests that air pollution weakens the immune systems of many types of vegetation and can cause significant crop damage. In addition, rain and snow wash air pollution deposited on vegetation and architectural surfaces into the streams and rivers of the region and finally into the Chesapeake Bay.

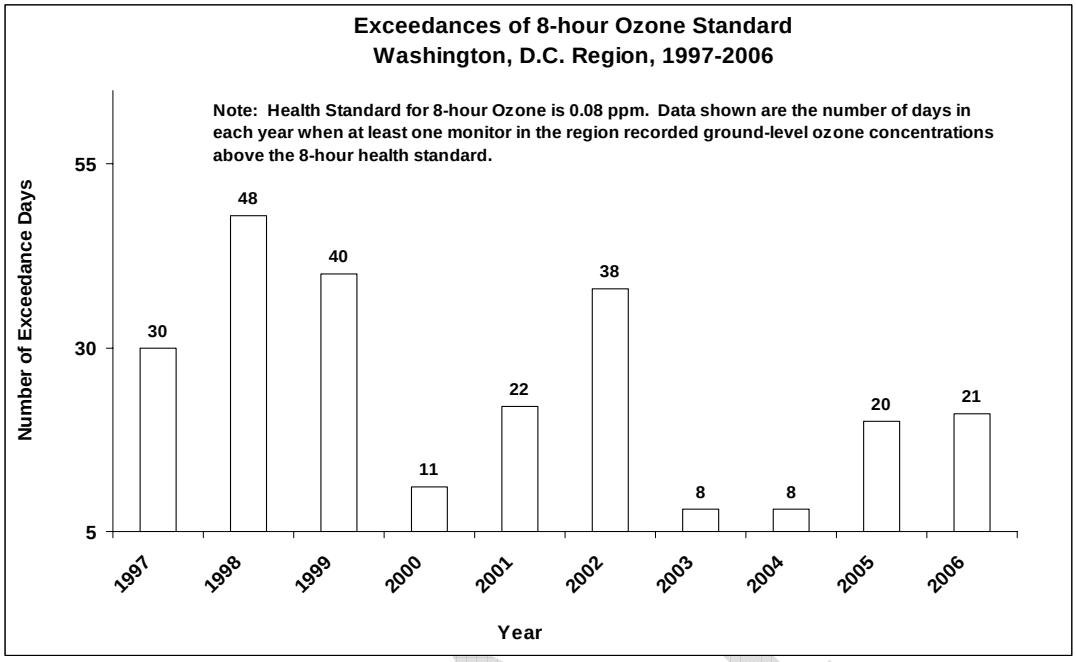
2.8 Frequency of Violation of Federal Health Standard for Ozone

The Washington area has exceeded the federal 8-hour health standard for ozone in all of the last 25 years. The number of ozone exceedance days in a season ranged from a low of 8 to a high of 48. In an average summer from 1997 - 2006, there were 25 days when Washington's air exceeds the ozone standard.

The federal standard is 0.08 parts per million (84 parts per billion) of ozone averaged over eight hours. Figure 5 shows the number of days that the Washington region has violated the ozone standard since 1997. Violations are related to the weather (hot stagnant summers are favorable for ozone formation) and the levels of ozone precursors present in the ambient air.

The Metropolitan Washington Council of Governments (COG) issues an air quality forecast prepared by a regional team of meteorologists each day during the summer. The daily forecast and air quality index (AQI) advise the public of the air quality conditions for the next 24 hours, so that those at risk can take adequate precautions and everyone can take action to reduce ozone causing emissions.

Figure 4: Ozone Exceedance Days in the Metropolitan Washington area



2.9 The Metropolitan Washington Air Quality Committee (MWAQC)

Under Section 174 of the Clean Air Act Amendments, the governors of Maryland and Virginia and the mayor of the District of Columbia certified the Metropolitan Washington Air Quality Committee (MWAQC) to develop specific recommendations for a regional air quality plan in the Washington, DC-MD-VA nonattainment area. The agreement was renewed in 2004.

Members of MWAQC include elected officials from the Cities of Bowie, College Park, Frederick, Gaithersburg, Greenbelt, Rockville, and Takoma Park in Maryland, and Alexandria, Fairfax and Falls Church, Manassas and Manassas Park in Virginia; the Montgomery and Prince George's county councils; the Montgomery and Prince George's county executives; the mayor of the District of Columbia and representatives of the Council of the District of Columbia; and representatives of Calvert, Charles, and Frederick counties in Maryland, and Arlington, Fairfax, Loudoun, and Prince William counties in Virginia.

Representatives of the general assemblies of Maryland and Virginia, the state air management directors, and the state transportation directors, and the chairman of the National Capital Region Transportation Planning Board also are members of MWAQC. The membership roster is contained in Appendix A.

The Metropolitan Washington Council of Governments, in close cooperation with state air quality and transportation agencies provides technical support to the Metropolitan Washington Air Quality Committee. Additional technical staff support is provided by county and city technical staffs.

MWAQC also has established a public advisory committee to provide recommendations regarding public participation in the development of the air quality plans. The Air Quality Public Advisory Committee (AQPAC) works closely with staff and submits formal recommendations to MWAQC. AQPAC members represent academic, business, civic, and environmental groups. AQPAC members are listed in Appendix A.

Representatives of the following state air management agencies are members of MWAQC: District of Columbia Department of Environment, Air Quality Division; Air and Radiation Management Administration of the State of Maryland's Department of the Environment; and the Commonwealth of Virginia's Department of Environmental Quality. Representatives of the following state transportation agencies are members of MWAQC: District Department of Transportation, Maryland Department of Transportation, and the Virginia Department of Transportation.

Since the Washington metropolitan nonattainment area crosses state boundaries, the states and the District of Columbia established MWAQC to prepare a regional control plan. MWAQC's recommendations are forwarded to the Interstate Air Quality Council (IAQC) (see 2.10) and to the three state air agencies. In turn, each state will submit a SIP revision to EPA. In Maryland, the submittal is made by the governor or a designee; in the District of Columbia, by the mayor or

a designee; and in Virginia by the Director of the Department of Environmental Quality on behalf of the governor.

2.10 Interstate Air Quality Council

The Interstate Air Quality Council (IAQC) is a cabinet-level collaboration between the District of Columbia, the State of Maryland and the Commonwealth of Virginia, comprised of the secretaries of the environment and transportation. The purpose of the IAQC is to address issues of interstate transport of air pollutants and to provide a sound process for improving regional air quality. IAQC transmits air quality planning proposals and materials to MWAQC for review and consideration. MWAQC transmits proposed plans and reports to the IAQC for submittal by the Governors and the Mayor to EPA.

2.11 State Commitment/Implementation Assurances

The measures in the SIP must be supported by any necessary legislative authority adopted by the states and the District of Columbia and adopted by the applicable governmental body responsible for their implementation.

Section 110 of the 1990 CAAA specifies the conditions under which EPA approves SIP submissions. These requirements are being followed by MWAQC and the states in developing this air quality plan or SIP. In order to develop effective control strategies, EPA has identified four fundamental principles that SIP control strategies must adhere to in order to achieve the desired emissions reductions. These four fundamental principles are outlined in the General Preamble to Title I of the Clean Air Act Amendments of 1990 at *Federal Register* 13567 (EPA, 1992a). The four fundamental principles are:

a. emissions reductions ascribed to the control measure must be quantifiable and measurable;
b. the control measures must be enforceable, in that the state must show that they have adopted legal means for ensuring that sources are in compliance with the control measure;
c. measures are replicable; and
d. the control strategy be accountable in that the SIP must contain provisions to track emissions changes at sources and to provide for corrective actions if the emissions reductions are not achieved according to the plan.

2.12 Submittal of the Plans

The governors and the mayor (or their designees) are required to submit to the EPA air quality State Implementation Plans to meet the requirements of the CAAA. After MWAQC approves the air quality attainment plan (SIP) and the Interstate Air Quality Council approves, each of the states and the District of Columbia will submit the document, along with specific commitments, schedules for adoption or adopted state regulations as appropriate, to EPA's Region III Office in Philadelphia.

2.13 Sanctions

EPA must impose various sanctions if the states or the District of Columbia do not submit a plan; or submit a plan that the EPA does not approve; or fail to implement the plan. These include: withholding federal highway funding; withholding air quality planning grants; and imposing a federal plan ("federal implementation plan."). Failure to submit or implement a plan will have significant consequences for compliance with conformity requirements.

2.14 Reasonable Further Progress Requirements

The Washington region is required to demonstrate continued reductions of 15% in VOC or VOC with NOx substitution from 2002 and 2008. The 8-hour Ozone SIP is designed to meet these new requirements of 15% VOC and will demonstrate more than Reasonable Further Progress with a 15% reduction in VOC and additionally a 3% reduction in NOx to be used for contingency for 2008 (see chapters 5 and 11 for detail). MWAQC has taken the following steps in development of the regional air quality plan:

- Recalculation of 2002 base-year emissions inventory

The recalculated 2002 base year inventory of man-made pollution sources is 450.75 tons per day (VOC) and 597.17 tons per day of nitrogen oxides (NOx). Chapter 3 provides complete documentation of the revised 2002 base year inventory.

- Recalculation of adjusted base-year inventories for 2002, and , 2008 with MOBILE6.2

The 1990 CAAA does not allow states to take credit for emissions reduction measures implemented before the Act's passage on November 15, 1990. Consequently, it is necessary to adjust the 2002 base-year inventory to eliminate reductions that would occur in 2008 due to pre-1990 rules and regulations. The 2002 base year inventory adjusted to 2002 is 500.38 tons per day VOC and 638.75 tons per day NOx. The 2008 base year inventory adjusted to 2002 is 487.93 tons per day VOC and 607.14 tons per day NOx.

- Calculation of 2008 emissions reduction requirements

Many of the control measures included in previous air quality plans, will yield emission reduction benefits during 2002-2008 that are creditable toward the 15% reduction requirement.

Growth in VOC that might otherwise occur from 2002-2008 was more than offset by reductions attributable to adopted control measures. Total reductions achieved from 2002-2008 will total at least 1.3 tons per day of VOC and 15.3 tons per day of NOx.

2.15 2009 Attainment Demonstration

The objective of the photochemical modeling study is to enable the air agencies to analyze the efficacy of various control strategies, and to demonstrate that the measures adopted as part of the State Implementation Plan will result in attainment of the ozone standard by 2009. The modeling exercise predicts future 2009 air quality conditions based on the entire ozone season in the base year 2002, and applies control measures to demonstrate the effectiveness of new measures in reducing air pollution.

The attainment modeling project was directed by the MWAQC's Technical Advisory Committee (TAC) and the Metropolitan Washington Air Quality Committee, a policy committee. EPA's Models-3/Community Multiscale Air Quality (CMAQ) is the model used for the attainment demonstration. VADEQ, in consultation with the MDE, DCDOE, and MWCOG, was responsible for conducting CMAQ runs for the Washington, D.C. domain. VADEQ's modeling runs were done in coordination with the Ozone Transport Commission's modeling for the 12-state Ozone Transport Region, and with VISTA's ASIP modeling, done for the southeastern states. Modeling centers included New York State Dept. of Environmental Conservation (NYS DEC), University of Maryland, NESCAUM and VADEQ. Modeling inventories were developed, updated and shared among the regional modeling centers and provided by MARAMA and MANE-VU.

In addition to CMAQ model runs, there is a substantial Weight of Evidence that supports the conclusion that the Washington region will attain the 8-hour ozone standard in 2009. The Weight of Evidence consists of statistical analyses and additional modeling exercises that give further evidence of the region's progress towards attainment.

2.16 Analysis of Reasonably Available Control Measures (RACM)

An extensive list of potential control measures was analyzed and evaluated against criteria used for potential RACM measures. Individual measures must meet the following criteria: will reduce emissions by the beginning of the Washington region's 2008 ozone season (May 1, 2008); are enforceable; are technically feasible; are economically feasible, defined as a cost of $3,500 to $5,000 per ton or less; would not create substantial or widespread adverse impacts within the region; and do the emissions from the source being controlled exceed a *de minimus* threshold, defined as 0.1 tons per day. A final short list of RACM measures that met most of the criteria was evaluated against two remaining criteria, the ability to reduce the region's ozone levels to 84 parts per billion by 2008 and the potential for intensive and costly implementation.

2.17 Contingency Measures

In the event that the reductions anticipated in the 2008 Reasonable Further Progress demonstrations or the 2009 attainment demonstration are not realized within the timeframes specified, there must be contingency measures ready for implementation. EPA issued guidance says that contingency measures must provide for a 3% reduction in adjusted 2002 base year inventory for both Reasonable Further Progress and attainment. A minimum of 0.3 percent VOC

must be included. The total reductions for the 2008 RFP contingency are 1.3 tons/day VOC and 15.3 tons/day NOx. The total reductions for the 2009 attainment contingency are 8.46 tons/day VOC and 6.05 tons/day NOx. The measures proposed as contingency measures are listed in Chapter 11. Chapter 11 contains detail on these measures, how they would be implemented, enforced, and the amount of reduction benefit expected.

Sources:

[1] *Plan to Achieve a Fifteen Percent Reduction in Volatile Organic Compound Emissions for the Washington, DC-MD-VA Nonattainment Area, MWAQC, January 14, 1994.*

[2] *Revised State Implementation Plan (SIP) Revision, Phase I Attainment Plan, for the Washington DC-MD-VA Nonattainment Area*, MWAQC, April 16, 1999.

[3] *State Implementation Plan (SIP) Revision Phase II Attainment Plan, for the Washington, DC-MD-VA Nonattainment Area*, MWAQC, February 3, 2000 and *Revision to State Implementation Plan (SIP) Revision, Phase II Attainment Plan, for the Washington DC-MD-VA Nonattainment Area, Establishing Out-Year Mobile Emissions Budgets for Transportation Conformity*, MWAQC, January 19, 2000.

[4] *Approval and Promulgation of Air Quality Implementation Plans, District of Columbia, Maryland, Virginia, 1-Hour Attainment Plans, Rate-of-Progress Plans, Contingency Measures, Transportation Control Measures, VMT Offset, and 1990 Base Year Inventory,", Federal Register, vol 70, No. 92, May 13, 2005, pp. 25688-25716 and Approval and Promulgation of Air Quality Implementation Plans; Maryland; Metropolitan Washington, DC 1-Hour Ozone Attainment Plan, Lifting of Earlier Rules Resulting in Removal of Sanctions and Federal Implementation Clocks,Federal Register, vol.70, No.220, November 16, 2005, pp.69440-69443.*

[5] *American Lung Association, State of the Air Report, 2006, www.lungusa.org*