An Evaluation of the Pennsylvania Air Quality Program

2002-2007

Department of Environmental Protection

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A Message from the Secretary

I am pleased to provide you with the Pennsylvania Department of Environmental Protection's (PA DEP) report entitled "An Evaluation of the Pennsylvania Air Quality Program 2002-2007." This report, which is required under Section 4.3 of the Air Pollution Control Act (APCA or Act 95 of 1992), evaluates the effectiveness of programs adopted to implement Clean Air Act Amendments of 1990. In accordance with Section 4.3 of the APCA, the evaluation specifically addresses the following:

- *A determination of whether Section 4.2 of the Air Pollution Control Act has hindered the Commonwealth's efforts to comply with the Federal Clean Air Act.*
- *An evaluation of the steps taken toward reducing emissions along with recommendations.*
- *An evaluation of funding available to implement the Clean Air Act programs.*
- *An analysis of costs and benefits of the Clean Air Act programs.*
- *Evaluations of measures taken to assist small businesses comply with the Clean Air Act.*
- *A summary of the Citizens Advisory Council and the Air Quality Technical Advisory Committee's activities.*
- *An evaluation of the effectiveness of the Northeast Ozone Transport Commission and recommendations for improving the effectiveness of the commission.*
- *An assessment of the impact of missing Federal deadlines.*

Overall, PA DEP's air quality programs have had remarkable success in improving air quality to meet the health-based National Ambient Air Quality Standards (NAAQS). Recent data show significant progress in reducing the extent, magnitude and frequency of elevated ozone concentrations in Pennsylvania. All one-hour ozone nonattainment areas achieved and maintained the one-hour ozone NAAQS by the attainment dates prescribed in the Clean Air Act (CAA). Exposure to ground-level ozone is a serious human health threat, which causes respiratory illnesses, decreased lung function and damage to agricultural crops. In 2004, the U.S. Environmental Protection Agency (EPA) designated 37 counties in this Commonwealth as nonattainment for the tighter 1997 health-based eight-hour ozone NAAQS. To date, EPA has redesignated 21 of those counties as attainment for the 1997 eight-hour ozone NAAQS. The PM_{10} nonattainment area in Allegheny County was redesignated as attainment in 2003 by EPA; this redesignation resulted in the entire Commonwealth being designated as attainment of the PM_{10} NAAQS.

The significant improvement is due, in part, to a variety of regulatory and non-regulatory emission reduction measures and strategies developed in collaboration with the EPA, Ozone Transport Commission, technical advisory committees, the regulated community and citizens of the Commonwealth. These measures include the adoption and implementation of the Nitrogen Oxide (NO_x) Budget Trading Program that significantly reduced ozone precursor nitrogen oxide (NO_x) emissions from electric generating units and measures to reduce volatile organic compound emission limits from consumer products, architectural and industrial maintenance coatings, solvents and portable fuel containers. The Commonwealth is currently implementing a low-emissions vehicle program that is expected to decrease ozone precursor emissions of NO_x

and VOCs and certain hazardous air pollutants. The state-specific mercury regulation, if upheld by the Pennsylvania Supreme Court, will reduce hazardous mercury emissions from electric generating units by 90 percent in 2015.

In spite of these efforts, however, there still remains much that must be accomplished to achieve and maintain the health-based NAAQS in all areas of the Commonwealth. The seven-county Pittsburgh-Beaver Valley Area and five-county Philadelphia Area continue to violate the 1997 8-hour ozone standard. In March 2008, EPA promulgated a more protective eight-hour ozone NAAQS that will result in many areas of the Commonwealth to be designated as nonattainment. By March 2010, we're anticipating that EPA will designate at least 27 counties including Adams, Allegheny, Armstrong, Beaver, Berks, Butler, Carbon, Chester, Cumberland, Dauphin, Delaware, Erie, Fayette, Greene, Indiana, Lancaster, Lebanon, Lehigh, Mercer, Monroe, Montgomery, Northampton, Perry, Philadelphia, Washington, Westmoreland and York as 8-hour ozone nonattainment areas. Consequently, the Commonwealth will need to adopt and implement additional measures to reduce ozone precursor emissions and demonstrate attainment. EPA has reported that changes to the federal ozone standard were estimated to yield national health benefits valued between $2 billion and $17 billion. Those benefits include preventing cases of bronchitis, aggravated asthma, hospital and emergency room visits, nonfatal heart attacks and premature death, among others.

In December 2004, EPA designated 21 counties (including partial counties) as nonattainment areas for the annual fine particulate ($PM_{2.5}$) NAAQS. The revised 24-hour $PM_{2.5}$ NAAQS, promulgated by EPA in 2006, should provide greater protection of public health and the environment. According to EPA, the revised 24-hour federal $PM_{2.5}$ standard will result in significant health benefits. Scientific studies have found an association between exposure to particulate matter and significant health problems, including: aggravated asthma; chronic bronchitis; reduced lung function; irregular heartbeat; heart attack; and premature death in people with heart or lung disease. When fully met, the revised 24-hour $PM_{2.5}$ standards are estimated to yield between $9 billion and $75 billion a year in health and visibility benefits in 2020. Final nonattainment designations for the more protective 24-hour $PM_{2.5}$ NAAQS were announced by EPA on December 22, 2008. Completion of the $PM_{2.5}$ attainment demonstrations for the 1997 standard has been delayed due to the U.S. Court of Appeals for the District of Columbia's July 11, 2008 decision, vacating EPA's Clean Air Interstate Rule (CAIR), which mitigates the transport of fine particulate precursor emissions, sulfur dioxide (SO_2) and NO_x emissions. With the remand of CAIR to EPA in December 2008, the Commonwealth can rely on the anticipated NO_x and SO_2 emission reductions to demonstrate attainment of the health-based ozone and $PM_{2.5}$ NAAQS.

On October 15, 2008, EPA adopted a new lead NAAQS of 0.15 $\mu g/m^3$. Once in the body, lead is rapidly absorbed into the bloodstream and results in a broad range of health effects. Children are most vulnerable to the damaging effects of lead because they are more likely to ingest lead due to hand-to-mouth activity and their bodies are developing rapidly. The Department anticipates Berks and Beaver Counties will be designated a nonattainment. In addition, the Department will expand its network of lead monitors to monitor the air around major sources of lead emissions.

The Department has also recorded a significant reduction in emissions from sources of air pollution in Pennsylvania in the 2002 through 2007 time period. Major industrial sources of air pollution have reduced emissions of nitrogen oxides by 35,331 tons; volatile organic matter by 7,735 tons; particulate matter by 4,212 tons; and carbon monoxide by 16,102 tons. These emission reductions and those of sources in upwind areas have helped to achieve the improvements in the air quality in Pennsylvania. However, additional emission reductions will be needed to achieve the more stringent health-based ozone and fine particulate NAAQS. Annual reductions from full implementation of the Clean Air Interstate Rule in Pennsylvania are estimated to be 757,000 tons of sulfur dioxide and 96,000 tons of nitrogen oxides. Implementation of the recently adopted idling law, Act 124 of 2008, is estimated to achieve 3,325 tons of nitrogen oxides (NO_x), 90 tons of volatile organic compounds (VOC) and 60 tons of particulate matter emission reductions annually.

The Department has also worked closely with the narrow tube manufacturing sector to reduce emissions of toxic air pollutants. With the installation of controls as well as reformulation and degreaser removal projects, the voluntary reduction of trichloroethylene in the Collegeville area, Montgomery County, ranged from 50 to 60 percent on an annual basis. This voluntary initiative is an example of the progress that can be made when companies, communities and government work together.

The Title V Operating Permit Program administered by the Department is fully approved by EPA. The Department is now processing Title V permit renewals and is taking action to streamline the permitting process. Data discussed in this report demonstrates that the Title V emission fee no longer covers the program costs as required by the Clean Air Act and APCA. A revised fee schedule will be required.

The Department's ambient air quality monitoring program has been expanded to monitor additional pollutants, including hazardous air pollutants. In addition, new monitoring sites have been established to provide better information about the quality of the air that Pennsylvanians breathe.

The Department has partnered with the Pennsylvania Small Business Development Centers to expand the outreach and service capabilities of the Environmental Management Assistance Program (EMAP). EMAP has provided free, confidential assistance and information to small businesses in the Commonwealth. In 2006, EMAP provided assistance to more than 1,000 small businesses.

We look forward to continuing our successes and building upon the recommendations of this report to provide more effective air quality protection programs for the present and the future.

Sincerely,

John Hanger

John Hanger
Secretary

Introduction

The Federal Clean Air Act Amendments of 1990 (Clean Air Act, or CAA)[1] establish a complex regulatory program for the control of air pollution by both Federal and state governments. The Administrator of the U. S. Environmental Protection Agency (EPA) is responsible for promulgating National Ambient Air Quality Standards (NAAQS) for criteria pollutants such as carbon monoxide, lead, sulfur dioxide, particulate matter and ozone (including its precursors, nitrogen oxides and volatile organic compounds).

In order to implement the 1990 mandated federal programs, Pennsylvania's General Assembly made significant changes in the Air Pollution Control Act (APCA) in 1992.[2] These amendments provide the Pennsylvania Department of Environmental Protection (Department or PA DEP) with authority to implement a significant number of new emission reduction strategies and regulatory programs to solve widespread ozone nonattainment and other challenges. As a result of the CAA amendments, most of the major population centers in Pennsylvania were designated as being in violation of the national health-based one-hour NAAQS for ozone in 1992.

Since the enactment of the 1992 APCA Amendments, the air quality programs implemented by the Department for mobile and stationary sources have had remarkable success in improving air quality to attain and maintain the health-based NAAQS. Recent data show that significant progress has been made in reducing the extent, magnitude, and frequency of high ozone days in the Commonwealth. In fact, all areas of the Commonwealth attained the one-hour ozone NAAQS by the CAA-prescribed attainment dates.

This report documents program activities and progress since the previous report was issued in November 2002. The Department continues to adopt and implement measures needed to achieve and maintain the ozone NAAQS. EPA adopted a new eight-hour ozone NAAQS in 1997. However, implementation of the standard was delayed until 2002 because of legal challenges. In 2003, the Commonwealth submitted designation recommendations to EPA identifying those areas of the Commonwealth that did not attain the new eight-hour ozone NAAQS. In 2004, EPA designated 37 counties in Pennsylvania as eight-hour ozone nonattainment areas.

During 2006 and 2007, the Department submitted recommendations to EPA to redesignate 32 counties to attainment of the eight-hour ozone standard. To date, EPA has taken action to approve most of the requests. On August 29, 2007, the Department submitted an attainment demonstration for the five-county Pennsylvania portion of the Philadelphia nonattainment area. EPA is currently reviewing this attainment demonstration and is expected to propose a rulemaking in January 2009. In 1997, EPA adopted a NAAQS for fine particulate matter with an aerodynamic mean diameter of less than 2.5 microns ($PM_{2.5}$). The Commonwealth submitted designation recommendations to EPA identifying those areas of the Commonwealth that did not attain the annual and 24-hour $PM_{2.5}$ NAAQS. In 2004, EPA designated 17 counties and four partial counties as nonattainment with the annual $PM_{2.5}$ NAAQS. All areas of the

[1] 42 U.S.C. § 7401 et. Seq.
[2] Act 95 of 1992

Commonwealth were designated as attainment with the 1997 24-hour $PM_{2.5}$ NAAQS. The Department is currently developing revisions to the State Implementation Plan that demonstrate attainment of the annual $PM_{2.5}$ NAAQS in each nonattainment area. As a result of the vacatur of the Clean Air Interstate Rule (CAIR) by the U.S. Court of Appeals for the District of Columbia, completion of the attainment demonstrations has been delayed, pending efforts to restore the CAIR reductions.

Another highly successful activity in the Department's efforts to improve ozone air quality in Pennsylvania was the formation of Ozone Action Partnerships. The Ozone Action Partnerships in the Southeast (Philadelphia), Southwest (Pittsburgh), Susquehanna Valley (Lancaster-York-Harrisburg), and Berks-Lehigh Valley (Reading, Allentown, Bethlehem and Easton) expanded their focus to include fine particulates and were renamed Air Quality Partnerships. The Southeast partnership is a cooperative effort with New Jersey and Delaware. An Air Quality Action Partnership forecasts "Air Quality Action Days," called "Code Red Days," when the air is expected to be unhealthy to breathe. Because the air quality problem is the result of human activity, Air Quality Action Days are called only in the more populated areas. On these days the Partnership informs people about the predicted ozone and/or fine particulate levels and urges them to take voluntary actions to air pollution. Among the voluntary actions urged are carpooling and taking public transportation and not mowing the lawn. These partnerships are a coalition of businesses, governments, community groups and individuals that educate the public about the dangers of ground-level ozone and encourage people to take voluntary actions to reduce their contributions to air pollution.

In September 2006, EPA adopted new 24-hour $PM_{2.5}$ NAAQS. The 2006 standards lower the 24-hour fine particle standard from 65 micrograms per cubic meter ($\mu g/m^3$) to 35 $\mu g/m^3$, and retain the current annual fine particle standard at 15 $\mu g/m^3$. The Department has reviewed the available ambient monitoring data and other information and made designation recommendations to EPA. EPA announced nonattainment and attainment designations for the revised 24-hour $PM_{2.5}$ NAAQS on December 22, 2008. Within three years after the effective date of the designations, which is 90 days after publication of the designations in the Federal Register, the Commonwealth must develop and submit attainment demonstrations for each nonattainment area, as a revision to the State Implementation Plan. Attainment of the 24-hour $PM_{2.5}$ NAAQS must be achieved within five years after the effective date of the designations.

The Department has increased its focus on other pollutants including air toxics. The first air toxics monitoring site was established in Lancaster as an indicator of average or typical toxics levels in urban areas. A second air toxics monitor was established in Reading in 2007. Special purpose monitoring has continued in a number of sites in Pennsylvania. Monitoring continues under a special grant from EPA in the Collegeville area to determine levels of trichloroethylene (TCE) in the ambient air. Initial monitoring showed elevated levels, resulting in voluntary agreements with facility operators in the region to install controls or reduce/eliminate the use of TCE.

In 2005, the Environmental Quality Board (EQB or Board) received a petition requesting that the Board adopt PA-specific standards for mercury emissions from coal-fired electric generating units (EGUs). In 2005, the EPA adopted the Clean Air Mercury Rule, a cap-and-trade regulation

to reduce mercury emission from coal-fired EGUs under Section 111 of the CAA. The Department formed a stakeholder group to discuss key information relevant to a "state-specific" mercury regulation and to obtain recommendations on the technical aspects of the proposed rulemaking, including control levels, testing, monitoring, recordkeeping and reporting, and compliance schedules. The final mercury rulemaking was published in the Pennsylvania Bulletin on February 17, 2007.[3]

The 1992 APCA Amendments substantially revised Pennsylvania's existing operating permit program for the control of air pollution. Revisions to the program included new provisions for developing and implementing a state operating permit program consistent with the requirements of Title V of the Clean Air Act. The Pennsylvania Title V operating permit program has also been implemented successfully. Under the CAA, states were required to develop permitting programs that incorporate all applicable state and federal air quality requirements for each large air pollution facility into a single document. This program is designed to ensure that facility operators, the regulators, and the public have ready access to information concerning the requirements and obligations related to each large facility. Pennsylvania's Title V permit program was the first to receive full approval in EPA Region 3. Pennsylvania has issued approximately 667 Title V operating permits and is currently issuing renewals of those permits.

[3] On January 30, 2009, Pennsylvania's Commonwealth Court ruled that the Pennsylvania-specific mercury regulation was invalid. The Commonwealth appealed this decision to the Pennsylvania Supreme Court on February 6, 2009.

Background

The 1992 APCA Amendments authorize the Department to implement the provisions of the Clean Air Act in the Commonwealth.[4]

Section 4.3 of the APCA requires the Department to conduct an evaluation and submit a report to the General Assembly that evaluates the effectiveness of the programs adopted to implement the federal Clean Air Act requirements. This evaluation should be conducted five years after the effective date of the provision and every five years thereafter.[5] These evaluations must consider a number of specific issues related to the implementation of federal air quality program requirements in Pennsylvania.

Specifically, the evaluation addresses the following:

- A determination of whether the limitation imposed by Section 4.2 of the APCA has hindered the Commonwealth's efforts to comply with the federal Clean Air Act. This determination must also include recommendations on whether the provision should be changed.

- An evaluation of the steps taken to implement the Clean Air Act and progress made toward meeting the emission reductions required and recommendations on any additional steps that must be taken.

- An evaluation of funding available to implement the Clean Air Act programs, including:
  - Adequacy of funding to implement CAA programs.
  - Adequacy of funding to implement non-CAA programs.
  - Recommendations on where adjustments should be made.

- An analysis of costs and benefits of Clean Air Act programs, including:
  - Costs imposed on mobile and stationary sources to implement Clean Air Act requirements, including costs on individuals and businesses.
  - Economic costs to the Commonwealth for failing to meet requirements, including the impacts of sanctions.
  - Benefits of compliance with Clean Air Act requirements on public health and the environment.

- An evaluation, in consultation with the Department of Community and Economic Development (formerly the Department of Commerce) and the Office of Small Business Ombudsman, of the adequacy of the measures taken to assist small businesses in complying with the Clean Air Act.

[4] 35 P.S. § 4004 (1)
[5] 35 P.S. § 4004.3

- A summary of the activities of the Citizens Advisory Council and the Air Quality Technical Advisory Committee under Section 7.6 of the APCA.

- An evaluation of the effectiveness of the Northeast Ozone Transport Commission in meeting the CAA mandates and recommendations for improving the effectiveness of the Commission.

- An assessment of the impact of missing Federal deadlines identified under Section 7.12 of the APCA has had or will have on the State implementation of the Clean Air Act programs.

Program History

Air Pollution Control Act

The Pennsylvania Air Pollution Control Act (APCA), enacted originally on January 8, 1960, established the framework for air pollution control activities in Pennsylvania. Under the original APCA, as amended, PA DEP implemented air pollution control programs that successfully addressed the major public health and welfare air quality concerns of the time. Early air pollution control efforts focused primarily on particulate matter and oxides of sulfur from industrial and utility sources. These programs were successful in bringing air quality into attainment with the health-based air quality standards for particulate matter and oxides of sulfur throughout virtually all of Pennsylvania and assuring protection of "quality of life" concerns related to malodors, open burning and dust fall. In addition, significant strides were made to reduce ground level ozone, but in a few of the major pollution centers of Pennsylvania the measures have not been successful in reducing ozone to levels necessary to protect public health.

The 1990 Amendments to the Clean Air Act required a significant a number of changes to the APCA to authorize PA DEP to develop and implement the highly prescriptive programs and achieve the goals mandated by Congress. Among these were amendments to:

- Establish the legal basis for the Title V permitting program and emission fees.
- Revise the operating permit program.
- Revise the pre-construction review requirements for new or modified major stationary sources.
- Establish authority for PA DEP, in consultation with the Pennsylvania Department of Transportation, to develop mobile emission control programs.
- Establish the Small Business Compliance Assistance Program.

Local Agencies

Section 12 of the APCA reserved powers to political subdivisions to enact air pollution control ordinances that are not less stringent than the requirements of the Clean Air Act, the APCA, and regulations adopted under the acts.[6] The only local air pollution control agencies authorized under the APCA are the Philadelphia Department of Health Air Management Services and the Allegheny County Health Department. Both agencies existed prior to the enactment of the original APCA. The Department and the county agencies have executed agreements that define the working relationships between the state and local air pollution control programs.

[6] 35 P.S. § 4012

Evaluation Process

To accomplish the evaluations required under Section 4.3 of the APCA, pertinent documents and databases were reviewed and examined.

The documents include:

- Reports prepared by and for PA DEP including annual ambient air quality reports, state implementation plans, reports from stakeholder groups, reports on Pennsylvania's Emission Reduction Credit Registry, and reports on the program's resource needs.

- Regulatory development documents on proposed and final state air quality regulations, including written comments and oral testimony submitted to the Environmental Quality Board by interested parties.

- Financial and budgetary documents, including records of grants received from the EPA and budgets submitted to the Pennsylvania General Assembly.

- Agendas and minutes from meetings of the Citizens Advisory Council, the Air Quality Technical Advisory Committee, the Small Business Compliance Advisory Committee, and the regional compliance roundtables.

The databases include:

- PA DEP's Air Information Management System (AIMS) and environmental Facility Application Compliance Tracking System (eFACTS).

- EPA's Aerometric Information Retrieval System.

Consequences of the Limitation Imposed by Section 4.2 of the Pennsylvania Air Pollution Control Act

Objective

Determine whether the limitation imposed by Section 4.2 of the Pennsylvania Air Pollution Control Act[7] has hindered the Commonwealth's efforts to comply with the federal Clean Air Act, and include recommendations on whether the provisions should be changed.

Conclusion

Section 4.2 has not hindered the Commonwealth's ability to comply with the federal Clean Air Act requirements and should be retained.

Background

Subsection 4.2 (a) of the APCA states that "In implementing the requirements of Section 109 of the Clean Air Act, the [Environmental Quality] board may adopt by regulation only those measures which are reasonably required, in accordance with the Clean Air Act deadlines, to achieve and maintain the ambient air quality standards or to satisfy other Clean Air Act requirements, unless otherwise specifically authorized or required by this act or specifically required by the Clean Air Act." Subsection 4.2 (b) of the APCA further specifies that control measures or other requirements that are adopted in implementing the requirements of Section 109 of the CAA "…shall be no more stringent than those required by the Clean Air Act," unless they are authorized or required by the APCA or are specifically required by the CAA. This prohibition does not apply if the Board determines that it is reasonably necessary for a control measure or other requirement to exceed ***minimum*** Clean Air Act requirements in order for the Commonwealth to achieve or maintain ambient air quality standards.[8]

Control measures adopted by the Environmental Quality Board were designed to reduce precursor emissions in order to attain and maintain the ambient air quality standards by the prescribed attainment dates. The findings of the Board expressly state that the regulations are necessary for the Commonwealth to attain and maintain the ambient air quality standards. The regulations adopted include the measures to reduce volatile organic compound emission limits from consumer products, architectural and industrial maintenance coatings, solvents and portable fuel containers.

Section 109 of the Clean Air Act relates to the promulgation of national primary and secondary ambient air quality standards by the EPA. The EPA has promulgated national ambient air quality standards (NAAQS) for particulate matter, sulfur dioxide, carbon monoxide, ozone, nitrogen dioxide, and lead.[9]

[7] 35 P.S. 4004.2
[8] 35 P.S. § 4004.2 (b)(1).
[9] 42 U.S.C. § 7409

Section 4.2 of the APCA also provides that the "no more stringent than" provision does not apply to rules or regulations approved prior to the enactment of Section 4.2, or to air pollutants for which no NAAQS has been established by the EPA.

Differences in the Timing of Compliance

The Department is sensitive to the timing differences among the various regulatory requirements and has worked with the EPA, Ozone Transport Commission, and other states to coordinate the development and implementation of emission control strategies.

The Department is currently engaged in multi-state efforts related to attainment and maintenance of the ozone NAAQS throughout the Northeastern United States. Ozone is produced in the atmosphere by a complex photochemical reaction between two sets of precursors: oxides of nitrogen (NO_x) and volatile organic compounds (VOC). There is a multi-state effort focusing on reducing emissions of NO_x and an effort focusing on reducing VOC emissions.

The Department implemented the NO_x Memorandum of Understanding (MOU) that was negotiated among the 11 states and the District of Columbia that comprise the Ozone Transport Commission (OTC or Commission).[10] The NO_x MOU established an ozone season cap-and-trade program to reduce emissions of NO_x from electric generating units (EGU) and large fossil fuel fired boilers (greater than 250 mm Btu/hr).[11] In 2003, the Department adopted regulations[12] to meet the requirements of the NO_x State Implementation Plan (SIP) Call[13] as required by EPA. The NO_x SIP Call regulations establish a program to limit the emission of NO_x from fossil-fired combustion units with rated heat input capacity of greater than 250 MMBtu per hour and EGUs of greater than 25 megawatts. The NO_x SIP Call program is applicable to sources located in 22 states that significantly contribute to ozone nonattainment in downwind states, including Pennsylvania. The NO_x SIP Call established a lower NO_x emission cap that was contained in the NO_x MOU.

In December 2007, the Department adopted regulations[14] to implement the Clean Air Interstate Rule (CAIR)[15]. This rulemaking established annual and ozone season NO_x caps for EGUs rated greater than 25 megawatts. The first year of compliance for the CAIR facilities will be 2009. This rulemaking replaces the NO_x SIP Call regulations.

The federal Clean Air Interstate Rule (CAIR) regulations were promulgated in 2005 (70 FR 25162, May 12, 2005). CAIR is an interstate trading program designed to mitigate the interstate transport of NOx and SO2 from electric generating units (EGUs). CAIR was challenged in court, and on December 23, 2008, the U.S. Court of Appeals for the District of Columbia Circuit remanded CAIR to EPA to promulgate a new rule consistent with the Court's July 11, 2008 opinion. The Court ordered the EPA to fix the flaws in CAIR, but did not set a deadline. The

[10] The NOx MOU was signed on September 27, 1994.
[11] 25 Pa. Code Sections 123.101-123.120.
[12] 25 Pa. Code Sections 145.1-145.100.
[13] October 27, 1998. 63 FR 57365.
[14] EQB meeting of December 18, 2007.
[15] May 12, 2005. 70 FR 25162.

Court did not vacate CAIR, so it is being implemented pending its revision. A federal implementation Plan (FIP) governs the EGUs in the Commonwealth that are required to reduce emissions under CAIR until the EPA approves the Commonwealth's CAIR SIP revision.

The Department has actively participated in multi-state activity that is designed to achieve reductions in volatile organic compounds (VOC) throughout the Ozone Transport Region. Model rules have been developed by the OTC states to reduce VOC emissions from mobile equipment repair and refinishing operations, solvent cleaning operations, consumer products, architectural and industrial maintenance coatings, and portable fuel containers. Again, the Department has been a leader in establishing consistent compliance dates and stringency of regulations throughout the Ozone Transport Region.

The emission reduction strategies are necessary to enable the Commonwealth to meet the eight-hour ozone standard.

The Department has been working with the states of the Mid-Atlantic Northeast Visibility Union (MANE-VU) to cooperatively address regional haze and fine particulate air quality problems. The Department has been coordinating discussions with states in the Midwest (member states of the Lake Michigan Air Directors Consortium – LADCO) and Southeast (member states of the Visibility Improvement State and Tribal Association of the Southeast – VISTAS) to reduce emissions of sulfur dioxide.

Differences in Monitoring and Reporting Requirements

The Department adopted rules for reporting certain emissions: sulfur oxides (SO_2), nitrogen oxides (NO_x), particulates, visibility, hydrogen chloride (HCl), carbon monoxide (CO), hydrogen sulfide (H_2S), total reduced sulfur (TRS), and vinyl chloride) using continuous monitors in 1979. These rules were designed to establish a monitoring and reporting program to assure compliance with *emission rate limits*. In the 1980s, EPA adopted continuous monitoring rules for new large sources. These rules were similar to the Department's rules and address *emission rate limits*. In the 1990s, EPA adopted continuous monitoring rules for the acid rain program. These rules are designed to measure *mass emissions* on an annual basis and address NO_x and SO_2 emissions. Some facilities may be subject to two or more of these monitoring program requirements. The differences in the monitoring requirements may cause the costs that facilities must incur to comply with the rules to be somewhat higher in Pennsylvania than they are in other states.

The different monitoring and reporting problems mainly affect electric generators that are subject to the federal acid rain program. It should be noted that the hardware used to monitor the emissions is the same for all of the continuous monitoring programs. However, the EPA monitoring rules in 40 CFR Part 75 require differing quality assurance tests and reporting parameters from the EPA 40 CFR Part 60 or Department procedures. These differences in quality assurance and reporting result in affected facilities maintaining two separate reports documenting the same pollutant: one set in the format specified by EPA and another in a format specified by the Department.

Representatives from the industries that incur additional costs because they must comply with the different state and federal reporting requirements state that bearing the incremental costs places them at a competitive disadvantage relative to competitors in other states. They explain that this competitive disadvantage is a direct consequence of retaining regulations in Pennsylvania that are, in effect, more stringent than the regulations applied in other states to comply with the same CAA requirements. They recommend that the reporting requirements in Pennsylvania should be revised to correspond to the federal rules. To address these concerns, the Department has worked with the regulated community, the Air Quality Technical Advisory Committee and interested parties to harmonize our reporting requirements. These new combined reporting requirements are incorporated into Revision 8 of the Source Testing Manual and are being implemented over a two year period beginning in 2009.

Discussion and Recommendations

The procedures used in developing the state's regulations for attaining and maintaining the NAAQS are reasonably necessary to attain and maintain ambient air quality standards including the ozone and $PM_{2.5}$ NAAQS. Therefore, the "no more stringent than" provisions under Section 4.2 of the APCA do not hinder the adoption of regulations to attain and maintain the standards.

The benefits of adopting and implementing emission reduction strategies to attain the health-based standards outweigh the costs of complying with measures to attain and maintain the ozone and $PM_{2.5}$ NAAQS. Cost-effective measures are designed to sustain the economic competitiveness of regulated facilities in Pennsylvania. It is therefore recommended that the "no more stringent than" provision be retained as set forth in the 1992 APCA amendments.

Steps Taken and Progress Made Toward Required Emission Reductions

Objective

Evaluate the steps taken to implement the Clean Air Act and progress made toward meeting the emission reductions required, and include recommendations on any additional steps that must be taken.[16]

Conclusion

During this reporting period, the principal pollutants of concern have been $PM_{2.5}$ and ozone. The Department has made substantial progress in achieving the health-based ozone standard. Cooperative work with the member states of the OTC have resulted in the development of regional emission reduction strategies. Maintenance of Pennsylvania's progress is contingent upon successfully reducing interstate transport of ozone and ozone precursors.

Background

EPA has established six National Ambient Air Quality Standards (NAAQS). Table 1 of this report identifies the NAAQS pollutants and their ambient air quality standards. At the beginning of this reporting period, a number of counties monitored attainment of the one-hour ozone NAAQS but continued to be designated as non-attainment areas under Section 107 of the Clean Air Act.[17] The Department developed and submitted 10-year maintenance plans for the areas to EPA. EPA reviewed the plans and took action on many of the plans in 2007 and 2008.

The Department also regulates emissions of certain federally designated hazardous air pollutants or air toxics. In 2006 (latest year of available data), air toxics emissions from sources in Pennsylvania, as reported in EPA's Toxics Release Inventory, declined from 27,776 tons in 1992 to 10,126 tons. This represents a 63.5 percent decrease in total reported emissions during that period. It should be noted that this total does not include emissions from EGUs which did not report data to TRI in 1992. Total EGU emissions reported to TRI in 2006 were 29,684 tons.

The CAA also requires implementation of an acid deposition program to reduce sulfur oxide and nitrogen oxide emissions. Pennsylvania has also administered regulatory programs related to control of malodors, open burning, and fugitive dust for decades. Data regarding trends in citizens' complaints for these programs, however, have not been compiled in this evaluation.

Table 1 provides several important insights about air quality in Pennsylvania. For all pollutants except ozone and fine particulates ($PM_{2.5}$), the NAAQS have been attained throughout all or almost the entire Commonwealth. As shown in the last column of Table 1, many areas where individual NAAQS were not attained prior to the 1992 APCA amendments have now met these health standards.

[16] 35 P.S. § 4004.3 (2)
[17] 42. U.S.C. § 7407

The Department publishes an annual listing of the ambient monitoring network and proposed revisions to that network. The network plan is available on the Department's web site at: http://www.depweb.state.pa.us/dep/deputate/airwaste/aq/default.htm. The plan shows the locations of monitoring sites operated by the Department. Monitoring equipment has been installed in a number of the existing sites to measure fine particulate ($PM_{2.5}$). In addition, a number of totally new monitoring sites have been established to monitor air quality in areas where there is no historical air quality data.

Table 1. Federal Clean Air Act Pollutants Regulated in Pennsylvania

Air Pollutant	Maximum Allowable Concentration	Averaging Time	Current Monitored Non-attainment Counties[1]
Carbon Monoxide (CO)	35 ppm 9 ppm	1 hour 8 hours	None
Lead (Pb)	1.5 $\mu g/m^3$	3 months	None
Nitrogen Dioxide (NO_2)	100 $\mu g/m^3$	1 year	None
Ozone (O_3)	0.12 ppm (Standard rescinded)	1 hour	Not Applicable (All areas measuring values below this standard)
Ozone (O_3)	0.08 ppm 0.075 ppm	8-hour 8-hour (2008)	15 Counties Attainment designations expected in 2010
Particulate Matter measured as PM_{10} [2]	150 $\mu g/m^3$ 50 $\mu g/m^3$	24 hours 1 year	None None
Fine Particulate Matter measured as $PM_{2.5}$[3]	15 $\mu g/m^3$ 65 $\mu g/m^3$ 35 $\mu g/m^3$	Annual 24-hour 24-hour (2006)	17 Counties None Designations not finalized
Sulfur Dioxide (SO_2)	365 $\mu g/m^3$ (0.14 ppm) 80 $\mu g/m^3$ (0.03 ppm) 1,300 $\mu g/m^3$ (0.5 ppm)[4]	24 hours 1 year 3 hours	None None None

[1] Maps showing attainment/nonattainment areas are contained in Appendix B. Also included are the proposed nonattainment designations for the revised 8-hour ozone standard.
[2] Particulate matter with aerodynamic diameters equal to or less than 10 microns.
[3] Particulate matter with aerodynamic diameters equal to or less than 2.5 microns. This standard was adopted by EPA in 1997 and implemented in 2004. In 2006, EPA adopted a more stringent $PM_{2.5}$ standard. The Department submitted attainment designation recommendations in December 2007. EPA is expected to make final attainment designations no later than December 18, 2008.
[4] Secondary SO_2 standard intended to protect public welfare.

Ground level ozone continues to be a troublesome air quality problem facing Pennsylvanians. Measured levels of ozone in the Philadelphia area have exceeded the eight-hour health-based NAAQS for ozone. The continued non-attainment of the ozone standard in this area is due, in part, to local influences and to a more significant extent, to transported ozone and ozone precursors from outside Pennsylvania, from states to our south and west. Nevertheless, the Commonwealth continues to make progress toward attainment of the NAAQS for ozone. Measures have been implemented to bring other areas of Pennsylvania into attainment for the ozone standard.

In 1992, forty-five counties in Pennsylvania had experienced ambient ozone concentrations above the previous one-hour NAAQS so often that they had been designated by EPA as non-attainment areas in relation to the ozone standard on the basis of their local air quality. Now all counties measure compliance with the former one-hour ozone NAAQS.

In 1997, EPA promulgated a more protective health-based, eight-hour standard for ozone. In 2004, EPA designated forty-five counties as nonattainment with this new eight-hour NAAQS. The Department has reviewed the monitoring data for the ozone standard. In 2007, the Department submitted requests to redesignate 21 counties as attainment of the eight-hour ozone NAAQS. The EPA has approved redesignation requests for the following counties and is reviewing requests for the remaining counties.

Allentown-Bethlehem-Easton	March 4, 2008	73 FR 11557
Berks County	August 24, 2007	72 FR 48559
Blair County	August 1, 2007	72 FR 41906
Cambria County	August 1, 2007	72 FR 41903
Centre County	November 14, 2007	72 FR 63990
Clearfield/Indiana County	July 23, 2008	73 FR 42731
Erie County	October 9, 2007	72 FR 57207
Franklin County	July 25, 2007	72 FR 40746
Harrisburg-Lebanon-Carlisle	July 25, 2007	72 FR 40749
Lancaster County	July 6, 2007	72 FR 36889
Mercer County	October 19, 2007	72 FR 59213
Scranton/Wilkes-Barre	November 19, 2007	72 FR 64948
Tioga County	July 6, 2007	72 FR 36892
York-Adams Counties	January 14, 2008	73 FR 2163

EPA adopted a new eight-hour ozone NAAQS of 0.075 ppm on March 12, 2008. The Clean Air Act requires the Department to analyze ambient air quality monitoring data and make attainment area designation recommendations to the EPA by March 2009. EPA is expected to finalize the attainment designations by March 2010. Therefore, the implementation of revised ozone NAAQS will be addressed in a subsequent report addressing implementation of the program from January 2008 to December 2013.

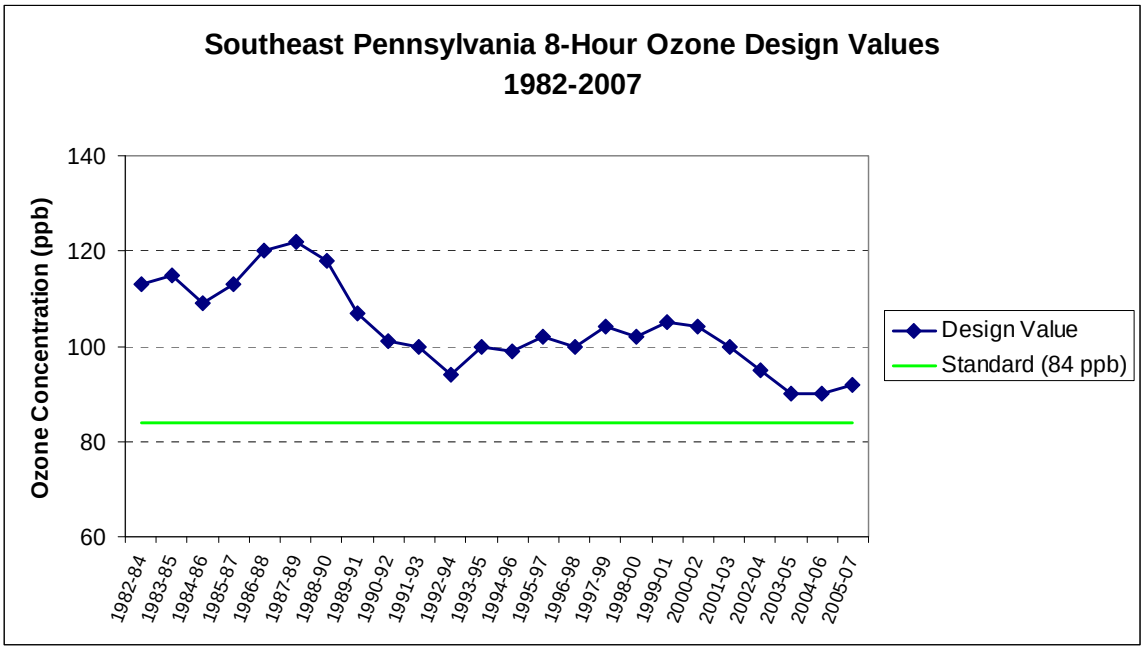
Southeast Pennsylvania Ozone Air Quality

Southeast Pennsylvania, including Bucks, Chester, Delaware, Montgomery, and Philadelphia counties, is classified as a "moderate" eight-hour ozone non-attainment area. This "moderate" classification is based on air quality data available prior to 2002. Ambient ozone air quality for this area is based on air quality monitoring at sites operated by PA DEP and by the Philadelphia County's Air Management Services (AMS). Additional monitoring is also conducted by the neighboring states of Maryland, Delaware, and New Jersey. The monitoring data from those states is not reviewed in this report.

Since the 1990 CAA, important strides have been made to reduce the number of days when the ozone standard is exceeded and the severity of the exceedances. Peak ozone levels are, however, highly dependent on meteorological parameters, particularly temperature. In addition, air entering Pennsylvania from the west and south is already at or near the level of the eight-hour ozone standard. Because of year-to-year temperature variations and high background concentrations it is very difficult to assess local progress in reducing ozone levels.

Ozone air quality exceedance trend information for the Southeast Pennsylvania ozone non-attainment area is shown in Figure 1. Figure 1 shows measured ozone design values for monitoring sites in the area. The ozone design values are based on the fourth highest eight-hour concentration over a three-year period at each sampling site. This data show continuing reductions in the measured ozone levels.

Figure 1



In summary, ozone air quality data for Southeast Pennsylvania indicate that progress is being made and air quality is improving. The number of days during the summer ozone season when the standard has been exceeded is declining over time, and the area is approaching attainment.

People residing in and around Philadelphia are experiencing fewer exceedance days, and are being exposed to lower levels of ozone during exceedance days. Nevertheless, large populations are still being exposed to ambient ozone concentrations that exceed the NAAQS and the area continues to fall short of attaining the eight-hour ozone standard in the southeast region. The Department submitted a demonstration to EPA that the area will attain the eight-hour ozone NAAQS by 2010.[18] EPA is currently reviewing this demonstration and is expected to propose a rulemaking on the SIP revision in Spring 2009.

During the past few years economic growth in Southeast Pennsylvania has been strong. In the absence of effective ozone control programs, the increased emissions of ozone precursors associated with that economic growth would, undoubtedly, have caused ambient ozone concentrations to increase in the region. The improvements in ozone concentrations that have occurred, instead, indicate that the steps that have been taken to reduce emissions of ozone precursors have offset the increase in emissions of those pollutants that has accompanied the economic growth.

Moreover, the Department has been working with states in the OTC to develop additional regional emission control programs intended to reduce emissions of ozone precursors both within the area and in areas upwind from the region. These programs include the Clean Air Interstate Rule and VOC emission reduction strategies developed by the OTC states. The reductions in NO_x and VOC emissions that are projected within and outside the region as a result of these programs provide a high likelihood of attaining the 1997 NAAQS for ozone (0.08 ppm) in Southeast Pennsylvania by 2010.

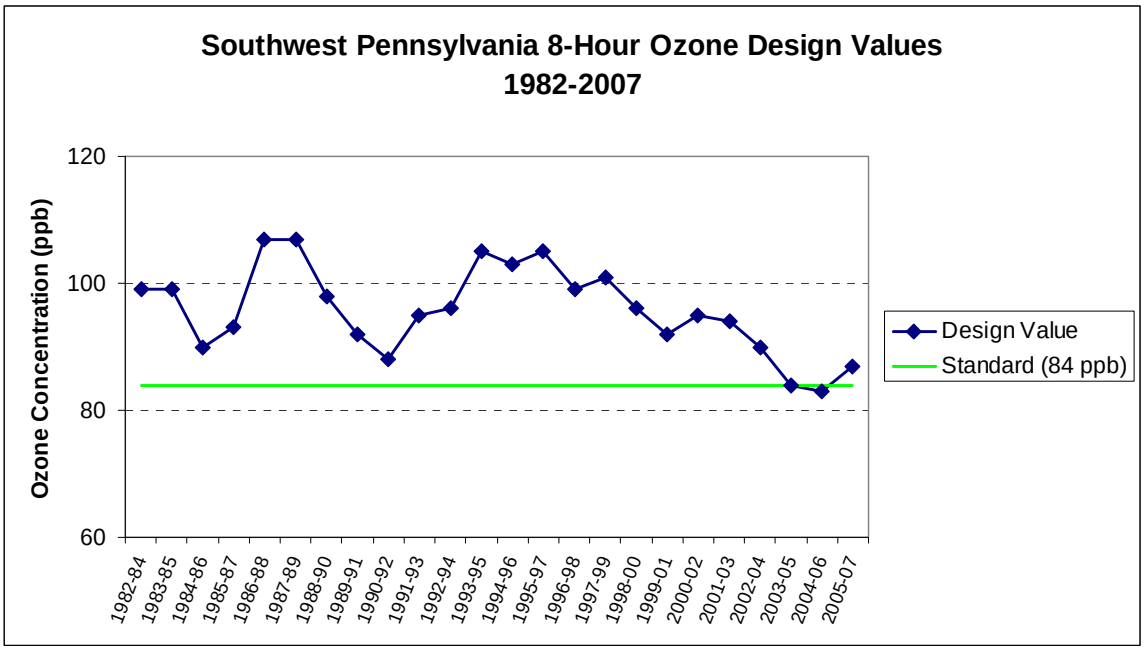
Southwest Pennsylvania Ozone Air Quality

Southwest Pennsylvania, including Allegheny, Armstrong, Beaver, Butler, Fayette, Washington, and Westmoreland Counties, was classified as a "basic" ozone non-attainment area based on air quality data available.

Ambient ozone air quality data for the area is based on air quality monitoring at sites operated by PA DEP and the Allegheny County Health Department (ACHD). The design values for the eight-hour average ambient ozone concentration for the period from 1982 through 2007, compared to the NAAQS, is presented in Figure 2. The data presented show that ambient ozone concentrations have improved from the levels experienced between 1993 and 2007.

[18] August 29, 2007

Figure 2



In 2007, the Department submitted a request to EPA to redesignate the region to attainment for the eight-hour ozone standard.[19] EPA is currently reviewing this request. However, exceedances of the ozone standard during the summer of 2007 demonstrate that the area has not achieved the ozone standard. The Department must now develop an attainment demonstration for the Pittsburgh-Beaver Valley Area, which includes Allegheny, Armstrong, Beaver, Butler, Fayette, Washington and Westmoreland counties.

Susquehanna Valley Ozone Air Quality

In 1999, an Ozone Stakeholder Working Group was established for Southcentral Pennsylvania. Many of the Stakeholder recommendations for additional control measures, including the implementation of a motor vehicle emissions testing program and the NO_x SIP call, were adopted and implemented. As a result of these reduction programs and programs implemented upwind of the region, the Department has monitored attainment of the 1997 eight-hour ozone standard. Figures 3, 4 and 5 show the monitored ozone values in the region.

[19] April 21, 2007

Figure 3

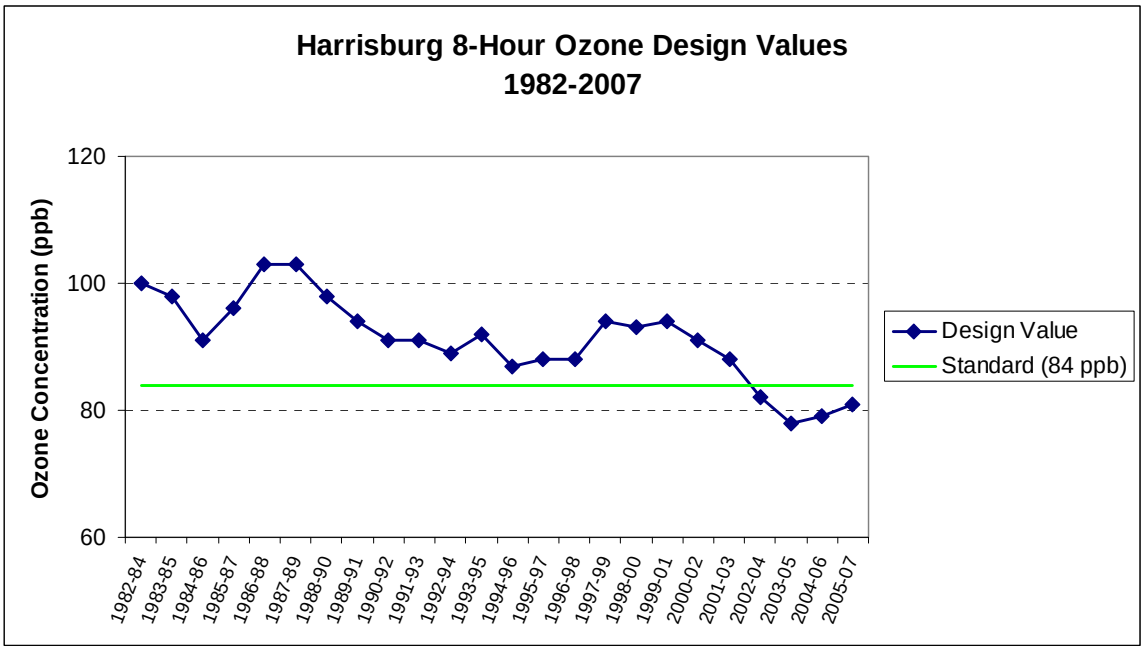


Figure 4

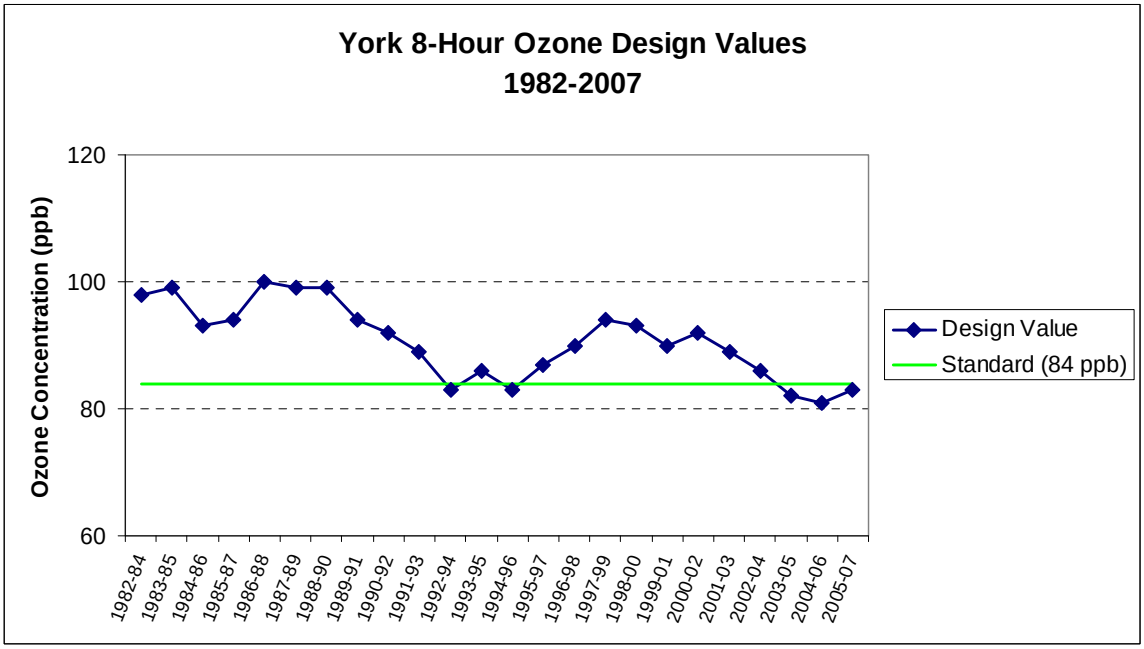
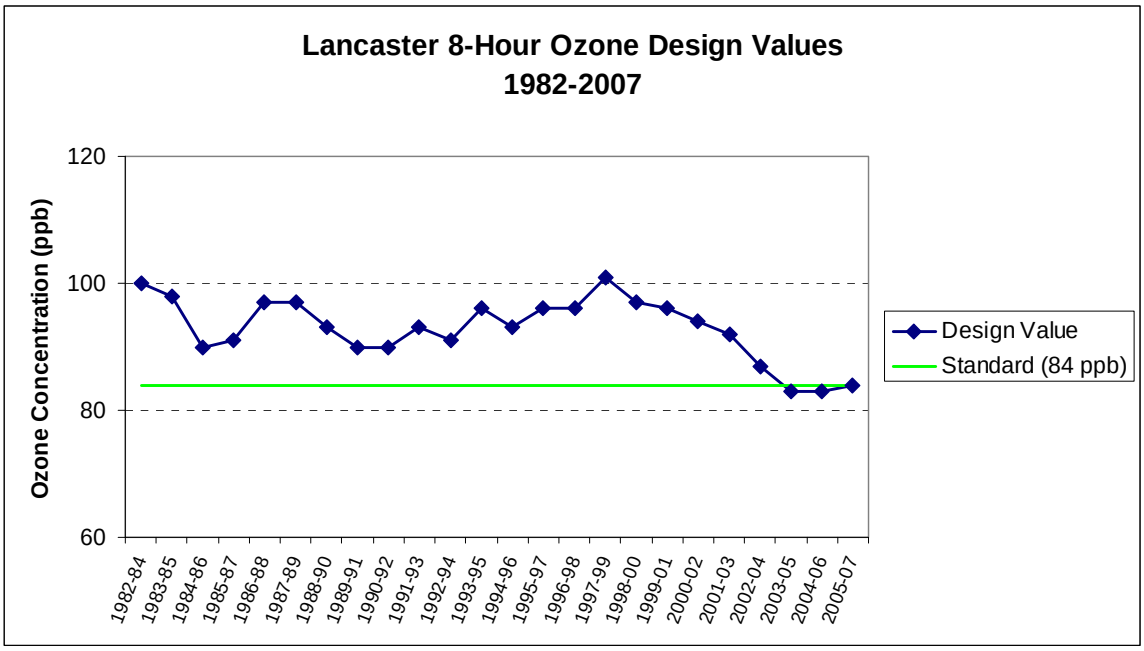


Figure 5



Redesignation requests for the Lancaster, York, Dauphin, Cumberland and Lebanon County areas were developed and submitted to EPA. EPA has approved the redesignation of these areas to attainment for the ozone standard. Nevertheless, the Department continues to review the monitoring data and anticipates that additional emission reductions will be needed to maintain the 1997 eight-hour ozone NAAQS and make progress in attaining the 2008 ozone NAAQS.

Lehigh Valley/Reading Ozone Air Quality

In 1999, an Ozone Stakeholder Working Group was established for Lehigh, Northampton and Berks Counties. Many of the Stakeholder recommendations for additional control measures, including the implementation of a motor vehicle emissions testing program and the NO_x SIP call, were adopted and implemented. As a result of these reduction programs and programs implemented upwind of the region, the Department has monitored attainment of the 1997 eight-hour ozone standard. Figure 6 shows the monitored ozone values for Berks County and Figure 7 shows the monitored ozone values for Lehigh and Northampton Counties.

Figure 6

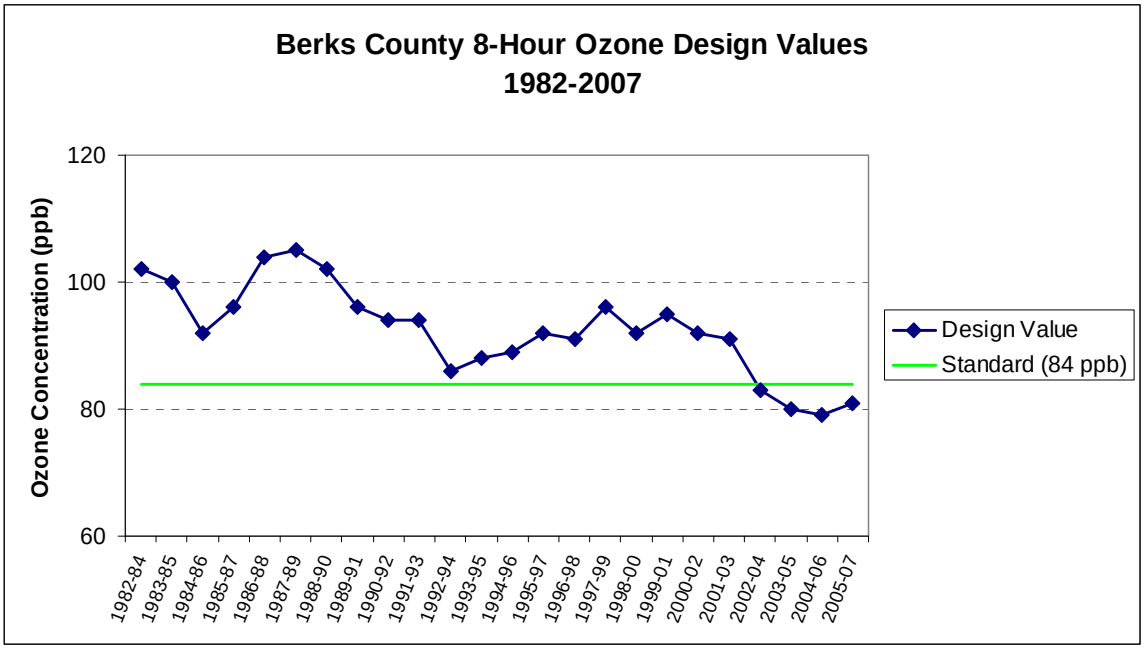
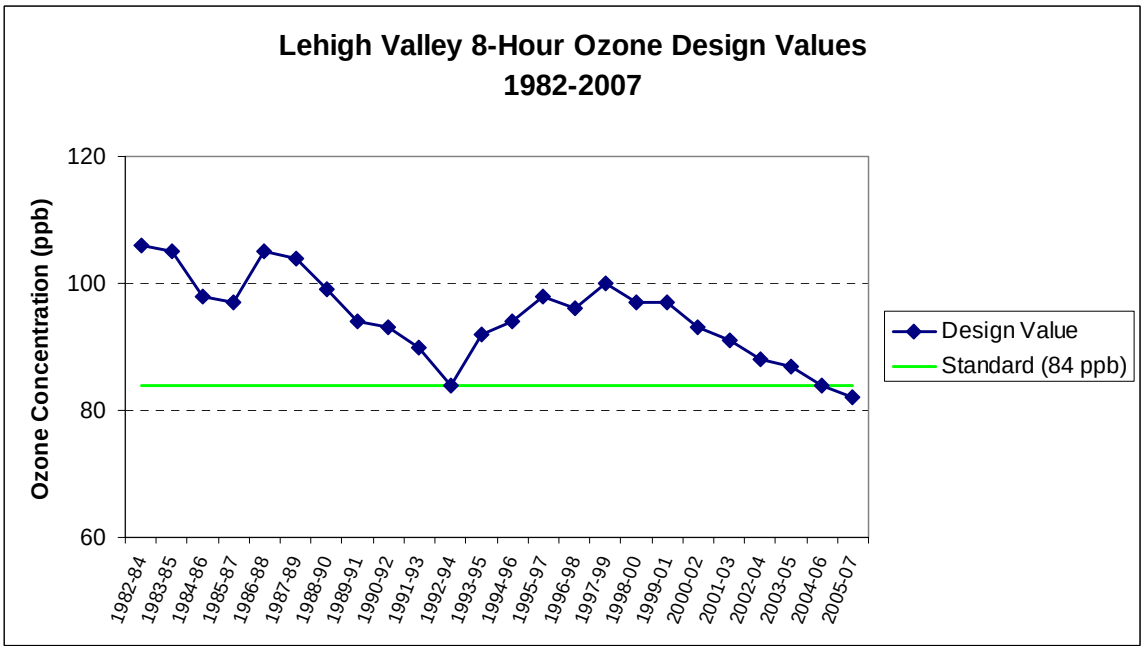


Figure 7



Redesignation requests for the Lehigh, Northampton and Berks Counties were developed and submitted to EPA. EPA has approved the redesignation of these areas to attainment for the

ozone standard.[20] Nevertheless, the Department continues to review the monitoring data and anticipates additional emission reductions will be needed to maintain the 1997 eight-hour ozone NAAQS and make progress in attaining the 2008 ozone NAAQS.

Other Areas of the Commonwealth

The Department operates a network of ozone monitors in the remaining portions of the Commonwealth. Based on a review of the monitoring data from 2002 through 2007, the Department developed a series of requests to redesignate the nonattainment areas as attainment for the eight-hour ozone NAAQS. These areas include: Adams, Clearfield, Indiana, Centre, Carbon, Lackawanna, Luzerne, Monroe, Wyoming, Erie, Mercer, Cambria, Blair, Greene, Tioga, and Franklin Counties. EPA has approved the redesignation requests for all these areas except Greene County. For this county, the Department determined that forecasted emissions from the electric generating units located in Greene County were incorrect. Revised emission forecasts have been developed. The Department has submitted revised redesignation requests for EPA consideration.

PA DEP has submitted eight-hour ozone maintenance plans and base year inventories for twelve counties that were designated "attainment" for the eight-hour standard. However, one-hour ozone redesignation requests and maintenance plans for these counties were never approved by EPA prior to revocation of the one-hour standard, obligating Pennsylvania to submit State Implementation Plan revisions demonstrating attainment of the eight-hour ozone standard for at least ten years. These include: Columbia, Crawford, Juniata, Lawrence, Northumberland, Pike, Schuylkill, Snyder, Somerset, Susquehanna, Warren and Wayne Counties. EPA approved these plans in 2008 as follows:

Wayne County	June 6, 2008	73 FR 32238
Schuylkill County	August 8, 2008	73 FR 46200
Pike County	July 21, 2008	73 FR 42263
Somerset County	July 2, 2008	73 FR 37844
Crawford County	July 2, 2008	73 FR 37843
Columbia County	July 2, 2008	73 FR 37840
Susquehanna County	July 2, 2008	73 FR 37841
Warren County	June 30, 2008	73 FR 36802
Juniata County	July 18, 2008	73 FR 41272
Lawrence County	July 18, 2008	73 FR 41274
Northumberland County	July 18, 2008	73 FR 41274
Snyder County	July 18, 2008	73 FR 41271

Steps to Achieve Reductions

The Clean Air Act required the Department to submit official plans to the EPA for a number of areas of Pennsylvania. These plans were required for the areas with the highest ozone

[20] Allentown-Bethlehem Easton, March 4, 2008.
Berks County, August 24, 2007.

concentration at the time of the 1990 Clean Air Act Amendments. The following summarizes the development of these plans.

Voluntary Programs

In addition to the regulatory emission reduction programs that have been established for various stationary and mobile sources of air pollution, PA DEP has initiated several voluntary emission reduction programs for ozone. The most prominent voluntary programs are the Air Quality Action Partnerships in which agreements have been negotiated among businesses, government agencies, and environmental groups to assist in attaining the NAAQS for ozone. The partnerships educate the general public about the causes and risks of excessive ambient ozone and fine particulate concentrations and encourage people to make appropriate voluntary changes in their lifestyles.

Another very successful program has been the diesel reduction programs sponsored by the Department. The Department supported a diesel school bus retrofit project in the Wissahickon School District. Several Pennsylvania school districts were chosen for funding under the Clean Buses for Kids Program to install diesel particulate filters and purchase ultra-low sulfur diesel. The program's funding came from an enforcement agreement with Toyota. This program was only open to school districts that owned and operated their own buses. The districts are: Bentworth School District and Charleroi Area School District in Washington County; Garnet Valley School District in Delaware County; Plum Borough School District in Allegheny County; School District of Upper Moreland Township in Montgomery County; Unionville-Chadds Ford School District in Chester County; and the West Shore School District in Cumberland/York County.

Other school districts are installing control equipment. Public mass transit agencies are converting some vehicles to natural gas (Centre Area Transportation Authority, Port Authority of Allegheny County, Berks Area Transportation Authority, Erie Metropolitan Transportation Authority, Area Transportation Authority of North Central Pennsylvania, Indiana County Transit Authority, and York County). Many school districts and public transit authorities switched to ultra-low sulfur diesel fuel or to biodiesel fuel to reduce particulate emissions.

The Department has encouraged programs to reduce idling of diesel engines. This includes supporting reducing school bus idling and truckstop electrification installation projects. Truck stops, communities and drivers across Pennsylvania will benefit from advanced parking place electrification systems installed by IdleAire Technologies. The Commonwealth invested almost $1 million to help the company provide facilities allowing truck drivers to "plug in" and turn off their engines, reducing diesel emissions and saving fuel. Drivers using these spaces will not have to make any modification to their vehicles other than an inexpensive window adapter. Locations are Carlisle, Greencastle, Harborcreek, Breezewood, Frystown, Brookville, and Milton.

In 2005, the Department began monitoring for trichloroethylene (TCE) in the Collegeville area, Montgomery County. This program is further discussed on page 41.

Plans Developed

For Southeast Pennsylvania, a moderate ozone nonattainment area, the Department developed and submitted to EPA a demonstration that the area will achieve the ozone standard by 2010. This plan includes baseline and projected emission inventories, ambient air quality modeling and adopted control measures. As indicated earlier, EPA is reviewing the attainment demonstration. Additional emission reductions have been identified to further support the plan.

For Southwest Pennsylvania, the Department developed and submitted to EPA a redesignation request based on the monitored ambient data. However, monitored violations of the 1990 ozone standard will require the Department to develop a demonstration that the region will attain the ozone standard by June 2010.

For the remaining areas of the Commonwealth, the Department developed and submitted redesignation requests based on ambient ozone monitoring data.

Actions Implemented

The plans discussed in the previous section identify specific actions that must be taken to achieve the projected emission reductions. The actions initiated since 2002 are summarized in Table 2 of this evaluation.

Table 2
Emission Reduction Actions Initiated Since 2002

Program Area	**Actions Taken to Reduce Emissions of Ozone Precursors**
Federal	Federal Motor Vehicle Control Program – Tier 2 Standards Maximum Achievable Control Technology Standards
State	NO_x Budget Trading Program (NO_x SIP Call) Portable Fuel Containers Consumer Products Heavy Duty Diesel Emission Control Architectural and Industrial Maintenance Coatings Small Sources of NO_x Cement Kilns Large Internal Combustion Engines Pennsylvania Clean Vehicles Program Nonattainment New Source Review Pennsylvania Mercury Rulemaking Clean Air Interstate Rule Vehicle emission inspection program in 16 additional counties. Visual inspection of pollution control devices in 42 counties.

In addition to the specific actions listed in Table 2, the Air Quality Partnerships have been active in Southeast, Southwest, Southcentral Pennsylvania, and the Lehigh Valley/Reading area. Because these are voluntary programs, it is difficult to assess the extent of reductions in emissions of ozone precursors that are being achieved as a result of the Partnerships. Nevertheless, these programs have been extremely effective in alerting the public to the adverse consequences of high ozone levels and have resulted in voluntary actions that help reduce ozone concentrations.

The NO_x Allowance program under the NO_x SIP Call was adopted in 2000 but became effective with the 2003 ozone season. The program applies to electric generating units (EGU) rated greater than 25 megawatts and to fossil-fuel fired boilers rated at greater than 250 million Btu/hour. The program reduced EGU NO_x emissions by approximately 68,700 tons per ozone season.

The portable fuel container regulation was adopted in 2002.[21] The regulation adopts permeation standards for new portable fuel containers and establishes requirements for no-spill fill spouts on new portable fuel containers. The final regulation will result in additional reductions from the covered products of approximately 15%, equivalent to approximately 5,700 tons per year statewide. In addition to reducing VOC emissions, the regulation will result in reduced emissions of hazardous air pollutants such as benzene. Reduction in gasoline spillage will also result in reduced ground and water pollution.

The consumer products rule[22] was adopted in 2002 and establishes volatile organic compound (VOC) content limits for 45 categories of consumer products representing approximately 80 types of products and contains definitions related to the products and the program implementation. The regulation is estimated to reduce VOC emissions by 6,000 tons per year.

The architectural and industrial maintenance (AIM) rulemaking[23] was adopted in 2003 and established volatile organic compound (VOC) content limits for 48 categories of AIM coatings. The final rulemaking is estimated to reduce VOC emissions by 10,200 tons per year.

The small sources of NO_x rulemaking[24] was adopted in 2004. It established NO_x emission reduction requirements for small boilers, turbines, and stationary internal combustion units located in Bucks, Chester, Delaware, Montgomery, and Philadelphia Counties.

The cement kiln[25] and large internal combustion unit[26] rulemaking was adopted in 2004 in response to the EPA NO_x SIP Call requirements. The rulemaking requires the reduction of ozone season NO_x emissions of approximately 8,000 tons per year. It applies to the cement kilns and 14 large stationary internal combustion engines.

[21] 25 Pa. Code Sections 130.101-108.
[22] 25 Pa. Code Sections 130.201-471.
[23] 25 Pa. Code Sections 130.601-611.
[24] 25 Pa. Code Sections 129.201-205.
[25] 25 Pa. Code Sections 145.141-144.
[26] 25 Pa. Code Sections 145.111-113.

The PA Clean Vehicles program was amended in 2006.[27] The purpose of this rulemaking was to: postpone the compliance date from model year 2006 to model year 2008; include a three-year early credit-earning period to provide flexibility for the vehicle manufacturers during the implementation period and to help ensure that the regulation meets "identicality" requirements of the Federal Clean Air Act; and update incorporation by reference to the California Low Emissions Vehicle Program contained in the California Code of Regulations. The Commonwealth estimates additional VOC and NO_x emission reductions of about 370 to 6170 tons per year of volatile organic compounds, 3540 tons per year of nitrogen oxides, and 5% to 11% total reduction of six toxic air pollutants (including benzene with 7 to 15 percent more benefit) by 2025, when full fleet turnover is expected.

The PA Mercury Rulemaking,[28] which establishes state-specific requirements to reduce mercury emissions from coal-fired electric generating utilities with a nameplate rated capacity of greater than 25 megawatts that produce electricity for sale, was adopted in February 2007. It is estimated that mercury emissions will be reduced by approximately 6,500 pounds per year when the regulation is fully implemented in 2015.

The Clean Air Interstate Rule (CAIR) was adopted in 2007 and replaces the NO_x Budget program. The CAIR rulemaking establishes an annual and ozone season NO_x budget program and adopted EPA's budget for SO_2 emissions. The EPA established statewide budgets for the Commonwealth's CAIR trading programs that include only EGUs as follows: (1) an annual EGU NO_x budget of 99,049 tons per year for 2009-2014 and 82,541 tons per year for 2015 and thereafter; (2) a compliance supplement pool of 16,009 tons of CAIR NO_x annual allowances; (3) an Ozone Season EGU NO_x budget of 42,171 tons per year for 2009-2014 and 35,143 tons per year for 2015 and thereafter; and (4) an annual EGU SO_2 budget of 275,990 tons per year for 2010-2014 and 193,193 tons per year for 2015 and thereafter. On July 11, 2008, the Court of Appeals for the District of Columbia Circuit ruled that CAIR was "fundamentally flawed," and issued a decision vacating the regulation. On September 16, 2008, the Environmental Quality Board approved a final-omitted rulemaking to repeal the Pennsylvania CAIR provisions and reinstate the previous NO_x SIP Call provisions. The D.C. Circuit Court considered petitions for rehearing of the federal CAIR, and on September 24, 2008, issued an order inviting briefs by the petitioners on whether they are seeking the vacatur of CAIR and whether the Court should stay its mandate until EPA promulgates a revised rule. Subsequently, on December 23, 2008, the Court issued an Order granting EPA's petition for rehearing and remanded the case without vacatur for "the agency to conduct further proceedings consistent with the Court's prior opinion."

The nonattainment new source review (NSR) program is a preconstruction air quality permitting program mandated under the federal Clean Air Act (CAA). The owners and operators of new or modified major facilities must comply with the lowest achievable emissions rate (LAER) technology and the emission offset requirements which are based on the nonattainment classification of the area in which the new or modified air contamination source is located. LAER is defined as the most stringent emission limitation which is contained in the implementation plan of any state for the class or category of source, unless the owner or operator

[27] 25 Pa. Code Sections 126.401-451.
[28] 25 Pa. Code Sections 123.201-215.

of the proposed source demonstrates that such limitations are unachievable, or the most stringent limitation which is achieved in practice by the class or category of source, whichever is more stringent.[29] LAER may not be less stringent that an applicable federal New Source Performance Standard. The program was amended in 2007 to incorporate revisions made by EPA in the federal requirements. Under the program, some emission limitations may be established during the permit review. The NSR program does require the owners/operators of affected facilities to install certain emission controls and to offset their emissions.[30]

Progress on Other Pollutants

Since the 1992 APCA Amendments, significant progress has been made in reducing emissions of other pollutants of concern as described below. Additional information concerning ambient air quality monitoring is contained in the "Pennsylvania Air Quality Monitoring 2004 Annual Report." The report may be accessed at:
http://www.dep.state.pa.us/dep/deputate/airwaste/aq/aqm/aqreport.htm.

Sulfur Dioxide (SO_2)

In 1991, most of Pennsylvania was in attainment with the NAAQS for SO_2. Portions of Allegheny, Armstrong, and Warren counties were, however, designated as non-attainment areas. In December 2001, DEP submitted to EPA a redesignation request for Warren County. This was approved by EPA[31]. A redesignation request for Allegheny County was developed by the Allegheny County Health Department. This redesignation request was approved by EPA. Monitoring data show that these areas measure attainment of the sulfur dioxide standard. Portions of Armstrong County remain designated as nonattainment but monitored values show attainment in the area.

Particulate Matter (PM_{10})

In 1992, a portion of Allegheny County was classified as a non-attainment area for $PM_{10.}$ The area monitoring non-attainment is extremely localized and is the result of emissions from a single facility in the area. A redesignation request was submitted to EPA and approved in 2003. The remainder of the state is designated as attainment of the NAAQS for PM_{10}. Ambient PM_{10} concentrations have continued to improve in most areas of the Commonwealth. Ambient concentrations have improved by 39 % in Lehigh/Northampton County area, 35 % in Southeast Pennsylvania, 20 % in the Harrisburg area, 4 % in Lancaster, 25 % in York, and 26 % in Southwestern Pennsylvania. In the Lower Beaver Valley the monitored readings have increased and are now at about one half the NAAQS. The Department will continue to monitor PM_{10} ambient levels.

[29] 25 Pa. Code Section 121.1
[30] May 19, 2007. 37 Pa.B. 2365.
[31] January 17, 2003. 68 FR 2454.

Particulate Matter ($PM_{2.5}$)

In 2004, EPA designated 17 counties as nonattainment with the annual fine particulate NAAQS. (See Appendix B for a map of the annual nonattainment areas.) The Commonwealth is required to develop and submit to EPA attainment plans for these areas by 2008. Attainment of the annual $PM_{2.5}$ standard must be achieved by 2011. The monitoring data shows that progress is being made to achieve the annual standard. The Southeast Pennsylvania area is now monitoring attainment of the annual standard as shown in Figure 8. The Lehigh and Northampton County area has measured attainment with the annual standard (Figure 9). In addition, the Harrisburg area (Cumberland, Dauphin and Lebanon Counties) is monitoring attainment as shown in Figure 10. The Department will be reviewing the 2004 through 2007 data to determine if redesignation requests may be submitted for this area.

Figure 8

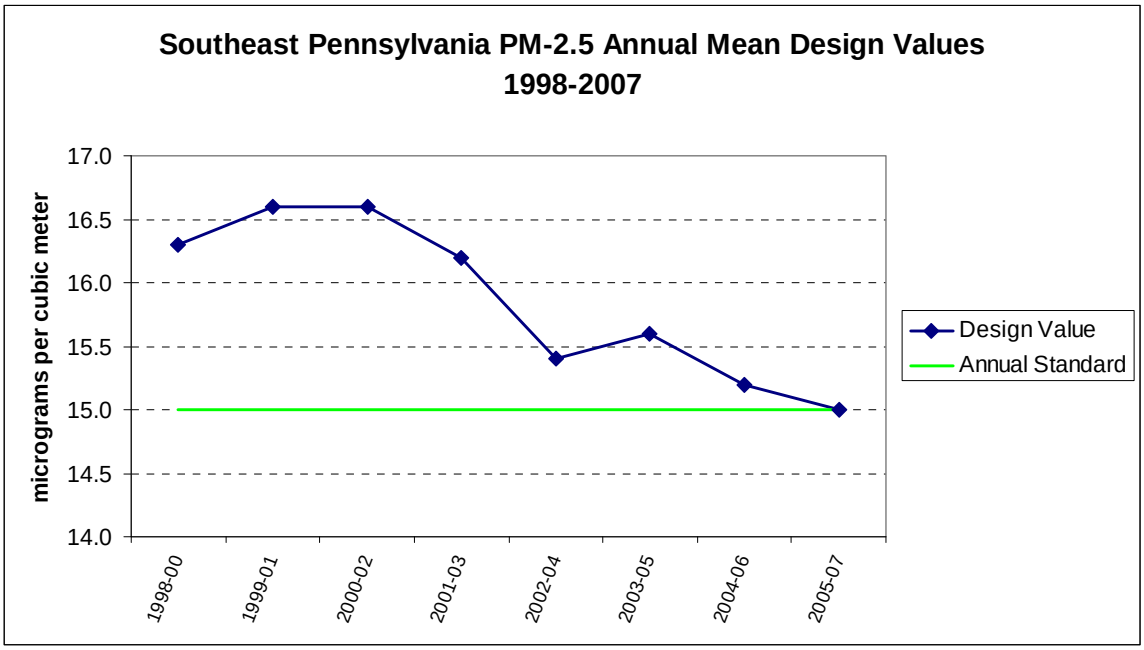


Figure 9

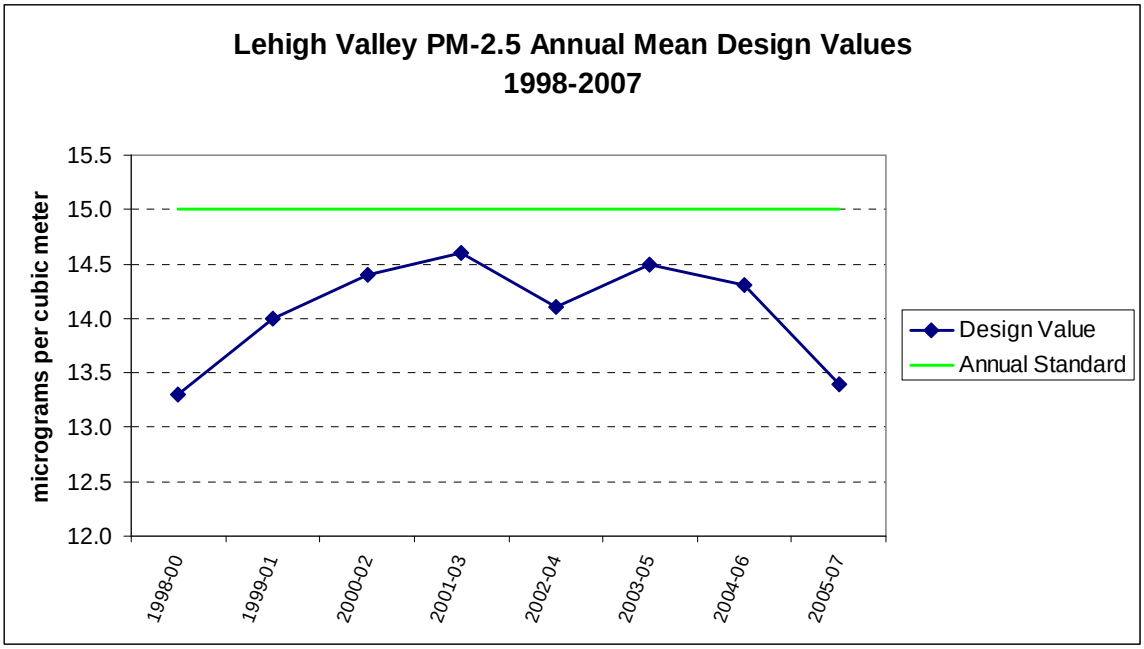


Figure 10

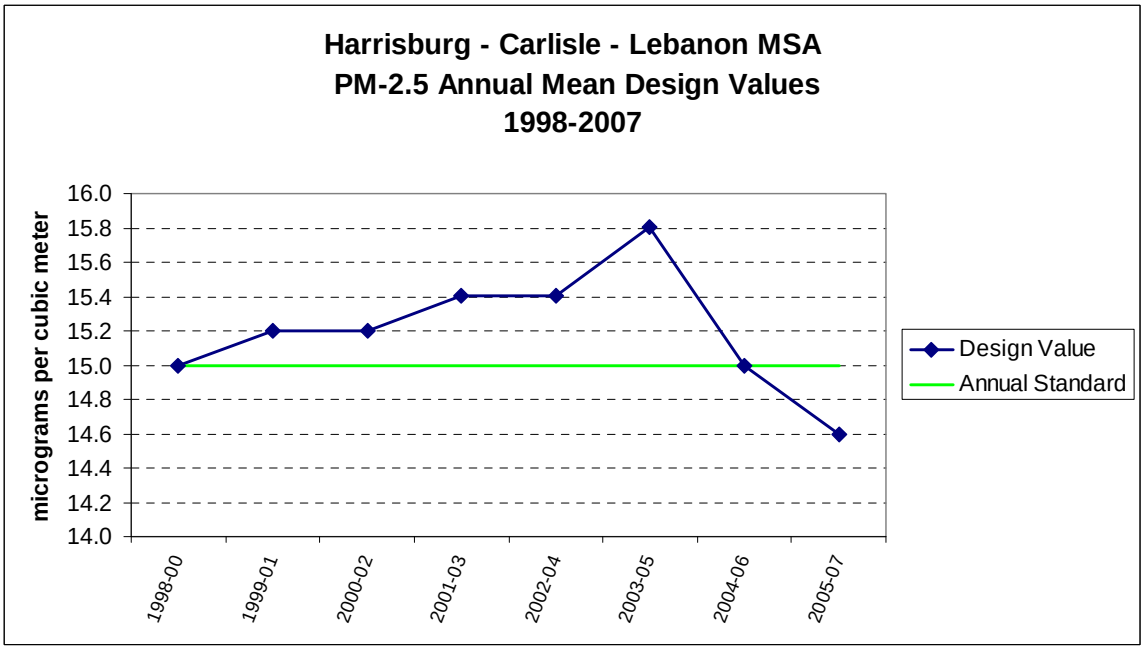
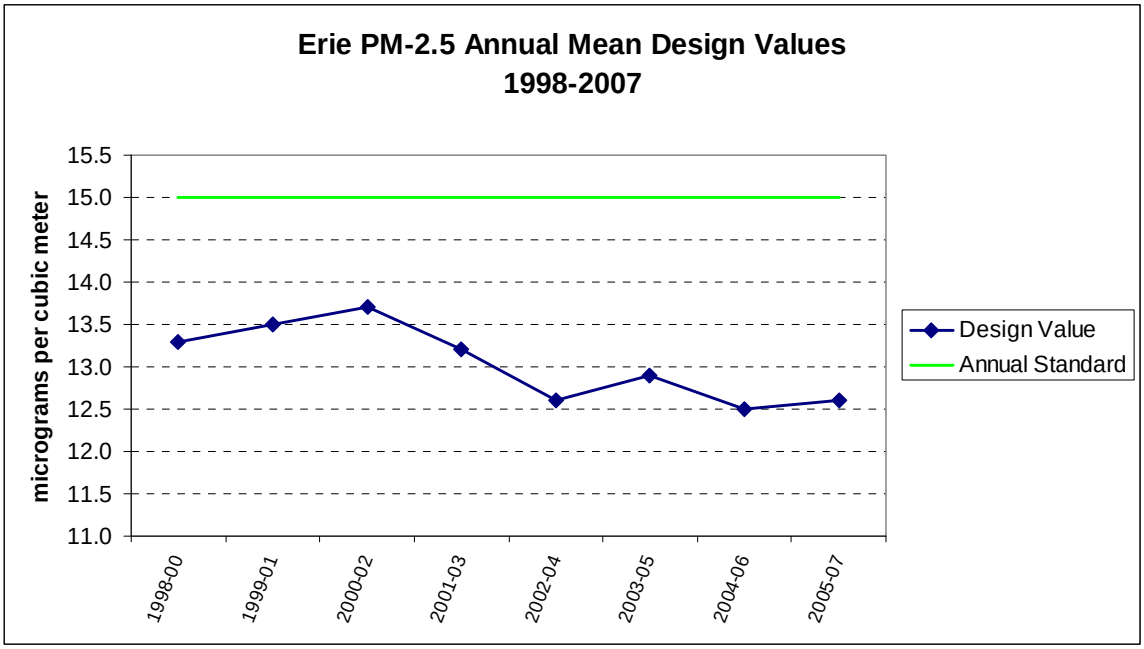


Figure 11



Carbon Monoxide (CO)

Two areas of Pennsylvania were designated as non-attainment areas for CO. Those areas are Philadelphia and a portion of Allegheny County. Subsequently, Philadelphia attained the NAAQS for carbon monoxide and was redesignated as attainment by EPA in 1996. In addition, ambient concentrations of CO have been uniformly reduced throughout the state. Monitoring data show that the Allegheny County area has measured attainment of the carbon monoxide standard. EPA redesignated Allegheny County as attainment in 2002.[32]

Since 1992, several regulatory programs to reduce CO emissions have been implemented. These programs include the use of oxygenated gasoline in the Philadelphia area, the Pennsylvania Clean Vehicles program for reducing emissions from motor vehicles, and Pennsylvania's enhanced emissions I/M programs for motor vehicles. These programs have been a significant factor in the reduced CO emissions in the Philadelphia and Allegheny County areas.

Nitrogen Dioxide (NO_2)

In 1992, the entire Commonwealth was in attainment with the NAAQS for NO_2 and remains in attainment. No major areas within Pennsylvania have experienced increased ambient concentrations of NO_2 and many areas have achieved slight improvements.

[32] November 12, 2002. 67 FR 68521.

Lead (Pb)

In 1992, the Commonwealth achieved the NAAQS for lead and still remains in attainment today. For all regions except Philadelphia, ambient concentrations of lead have diminished substantially during the past ten years. In the second quarter of 1998, however, an exceedance of the NAAQS for lead was detected at the monitoring site adjacent to Franklin Smelting in Philadelphia. The lead smelting operation at that site has since been discontinued. The area is now monitoring attainment with the lead standard. On November 12, 2008, EPA revised the lead NAAQS to 0.15 $\mu g/m^3$. The revised standard becomes effective January 12, 2009.[33] Monitoring network design now requires source-oriented monitors (within 500 meters of the fence-line) at sources emitting at least one ton per year and in population areas of 500,000 or more. With these requirements, PA DEP may be adding up to twenty (20) new monitoring sites to its lead network which currently consists of eight (8) sites. Monitoring is required to be started by January 1, 2010, with the complete network in place by January 1, 2011.

Acid Rain

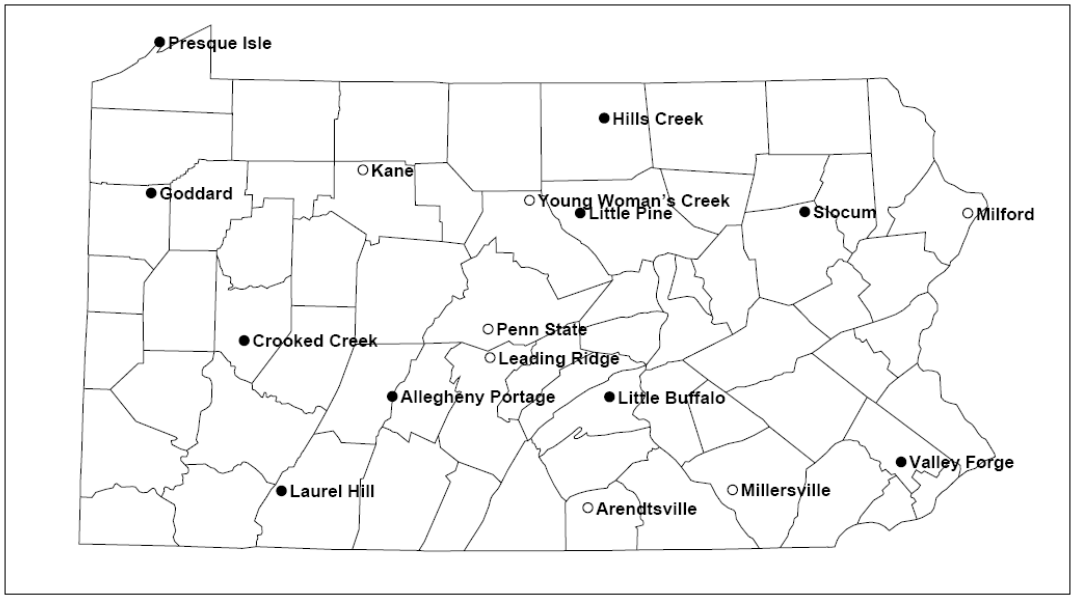
The EPA implements the Acid Rain program as authorized under Title IV of the Clean Air Act. The overall goal of the program is to achieve significant environmental and public health benefits through reductions in emissions of sulfur dioxide (SO_2) and nitrogen oxides (NO_x), the primary causes of acid rain. To achieve this goal at the lowest cost to the public, the program employs both traditional and innovative, market-based approaches for controlling air pollution. Specifically, the program seeks to limit, or "cap," SO_2 emissions from power plants, authorizes those plants to trade SO_2 allowances, and reduces NO_x emission rates. In addition, the program encourages energy efficiency and pollution prevention.

The Department is responsible for issuing permits to the owners/operators of affected facilities. The permits include the provisions of the acid rain program and authorize the trading of SO_2 allowances. An atmospheric deposition monitoring network was established in Pennsylvania in 1981 under a Cooperative Agreement between The Pennsylvania State University and The Pennsylvania Department of Environmental Resources, currently the Pennsylvania Department of Environmental Protection. Annual reports are prepared by the Pennsylvania State University on the monitoring with the most recent report was submitted in December 2007.[34] There are seventeen deposition monitoring sites as shown in Figure 12.

[33] November 12, 2008. 73 FR 66964.

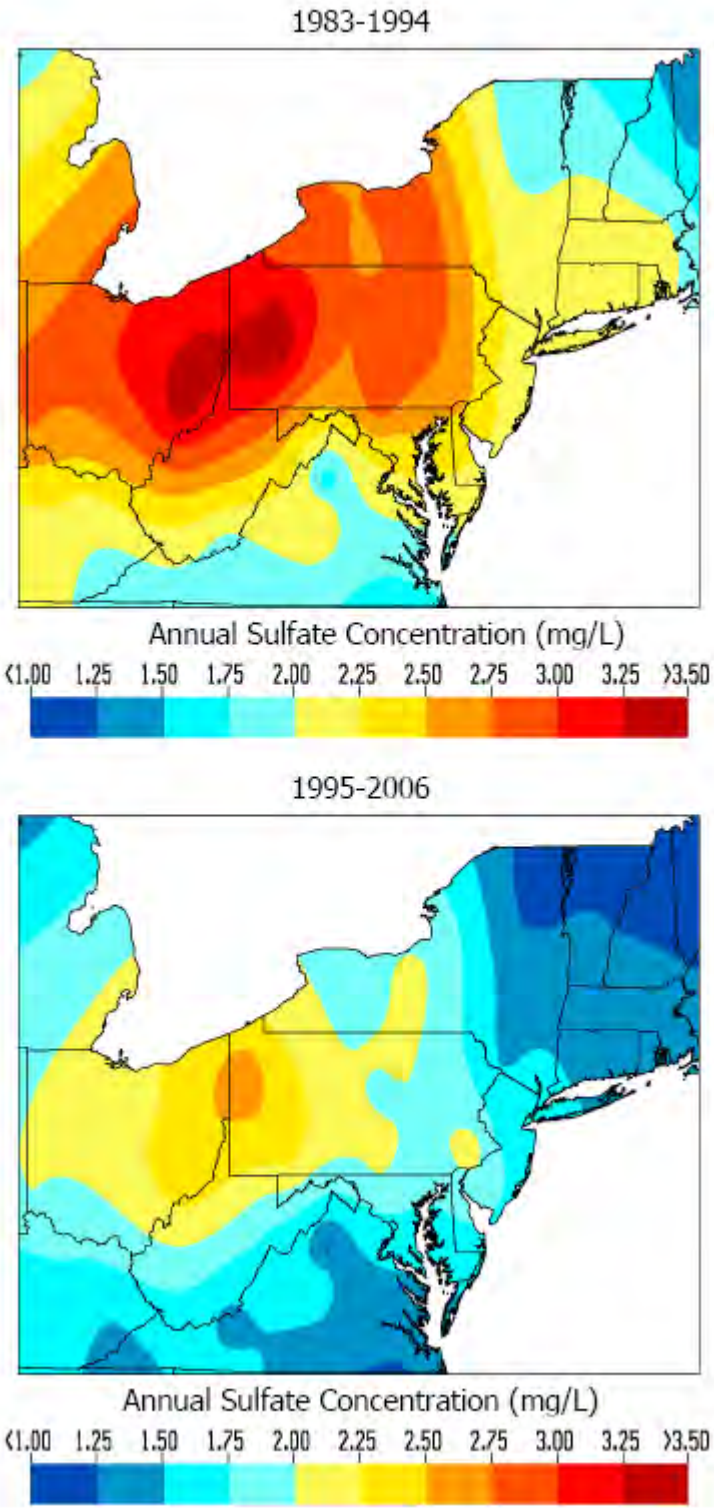
[34] Reductions in Acidic Wet Deposition in Pennsylvania Following Implementation of the Clean Air Act Amendments of 1990: 1995-2006. Penn State Institutes of Energy and the Environment. The Pennsylvania State University, December 2007.

Figure 12
Pennsylvania Atmospheric Deposition Monitoring Network



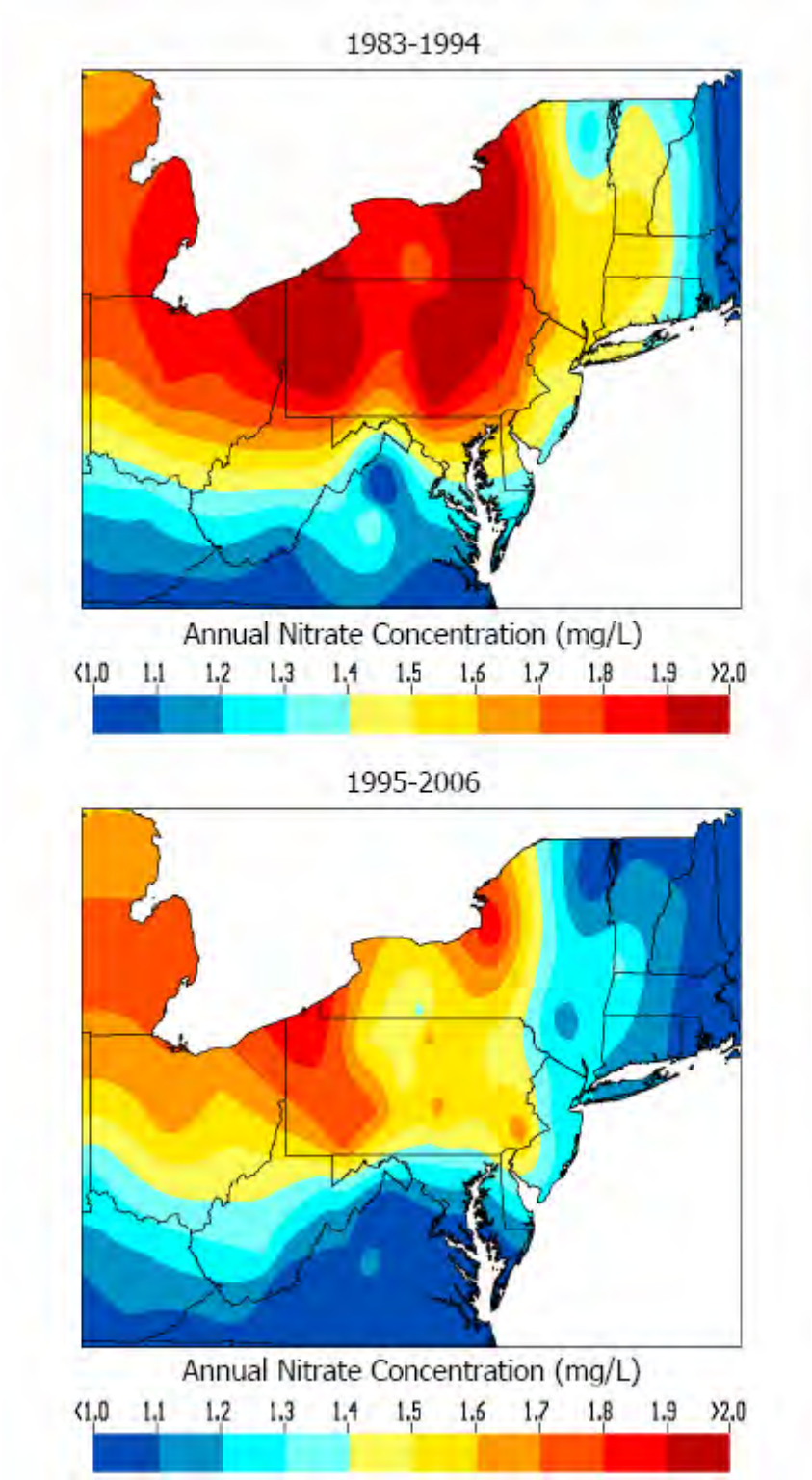
Locations of long-term sites in the Pennsylvania Atmospheric Deposition Monitoring Network. Sites marked with an empty circle are part of the National Atmospheric Deposition Program/National Trends Network (NADP/NTN).

Figure 13



Mean annual sulfate concentrations across Pennsylvania and neighboring states before (1983-1994) and after (1995-2006) implementation of Title IV of the Clean Air Act Amendments of 1990.

Figure 14



Mean annual nitrate concentrations across Pennsylvania and neighboring states before (1983-1994) and after (1995-2006) implementation of Title IV of the Clean Air Act Amendments of 1990.

As these figures demonstrate, improvements have been measured in acid deposition in Pennsylvania due to the implementation of the Acid Rain Program.

Mercury

Mercury is a dangerous reproductive and neurological toxicant. It can affect the brain, spinal cord, kidneys and liver. High exposure levels to mercury can affect the ability to feel, see and taste and has the potential to limit mobility. A study by the National Academy of Sciences ("NAS") concluded that human exposure to methylmercury from eating contaminated fish and seafood is associated with adverse neurological and developmental health effects. Women of childbearing age and pregnant women are of special concern in terms of methylmercury exposure. Methylmercury exposure prior to pregnancy can actually place the developing fetus at risk because methylmercury persists in body tissue and is only slowly excreted from the body. Furthermore, according to the NAS, chronic low-dose prenatal methylmercury exposure has been associated with poor performance on neurobehavioral tests in children, including those tests that measure attention, visual spatial ability, verbal memory, language ability, fine motor skills, and intelligence. Adults can be affected by high mercury exposures as well, with effects on the nervous system and impaired vision and hearing.

On August 9, 2004, Citizens for Pennsylvania's Future ("PennFuture") filed a petition with Pennsylvania's Environmental Quality Board ("EQB") on behalf of various organizations "requesting action to reduce the high emissions of mercury to the air from Pennsylvania's electric utilities." Subsequently, EPA promulgated the federal Clean Air Mercury Rule ("CAMR") on May 18, 2005. On August 16, 2005, the Department recommended to the EQB that a Pennsylvania-specific mercury regulation be developed with significant public involvement. The rulemaking process would (1) examine mercury emission reduction strategies for electric generating units ("EGUs"); (2) encourage the burning of cleaner Pennsylvania coal and discourage fuel switching; and (3) consider capacity and reliability concerns for delivery of power over the grid.

The Department established a Mercury Rule Workgroup (Workgroup) as part of the expanded public involvement process for a Pennsylvania-specific mercury rule. The intent of the Workgroup was not to reach consensus regarding the regulation of mercury emissions in this Commonwealth, but to develop information to assist the Department in the development of a mercury rule and enhance the public participation regarding the drafting of the final-form rulemaking. The first Workgroup meeting was held on October 14, 2005. During the first meeting, presentations included Workgroup objectives, an overview of mercury, its fate and transport and other State regulations. The second meeting of the Workgroup was held on October 28, 2005. The second meeting focused on the health impacts of mercury. The third meeting of the Workgroup was held on November 18, 2005. Speakers at this meeting discussed the health impacts of mercury and methods of controlling mercury emissions from coal-fired power plants. The last Workgroup meeting was held on November 30, 2005. The last meeting focused on additional health impacts regarding mercury, and Workgroup members and others discussed their organizations' proposals for the control of mercury.

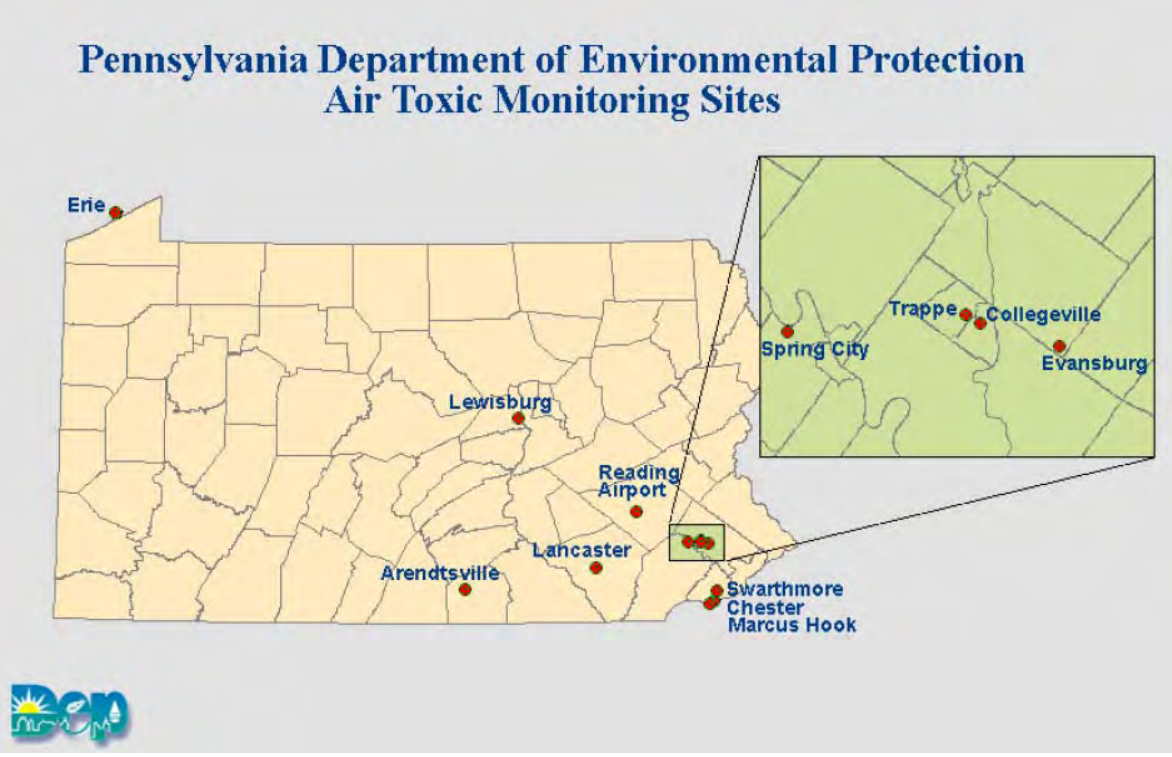
The EQB received comments from nearly 11,000 commentators on this rulemaking proposal with the vast majority in favor of the rulemaking. The final rulemaking was published in the *Pennsylvania Bulletin* on February 12, 2007.

The Pennsylvania mercury final-form rulemaking would require an 80% reduction of mercury present in the coal fired in EGUs on a 12-month rolling average by 2010, and 90% reduction of mercury present in the coal fired in EGUs on a 12-month rolling average by 2015. On January 30, 2009, Pennsylvania's Commonwealth Court declared the PA Mercury Rule as "unlawful, invalid and unenforceable." The Court held that the PA Mercury Rule violates Section 6.6 of the Air Pollution Control Act, which authorizes the Environmental Quality Board to establish performance or emission standards for sources or categories which are not included on the list of source categories established under section 112(c) of the Clean Air Act. The Court indicated that although EPA issued a rule delisting electric generating units, the units "remain listed" because the U.S. Court of Appeals for the D.C Circuit found in New Jersey v. EPA that the sources always remained listed. On February 6, 2009, the Commonwealth appealed the Commonwealth Court decision to the Pennsylvania Supreme Court.

Trichloroethylene

In 2004, the PA DEP conducted ambient air monitoring in Collegeville (Montgomery County). The Department was interested in the ambient air concentrations of trichloroethylene (TCE) for two reasons: historic groundwater contamination in the area due to TCE, and nearby sources that emit TCE into the air. The monitoring showed high levels of TCE in the air. However, the monitoring did not identify specific sources of TCE.

Figure 15



As a result, in 2005 the Department established two air monitoring sites in the Collegeville area located in Evansburg State Park and in the Borough of Trappe. The purpose of the monitoring was to determine the concentration of TCE and other air toxics in the outdoor air, and to evaluate the risk to residents associated with exposure to those pollutants at the concentrations found.

The Collegeville sites in 2005 had a higher percentage of samples detecting TCE and had higher annual average concentrations (that significantly increased the total excess lifetime cancer risk) compared to other sites in Pennsylvania. The Department held a public meeting on February 20, 2007, to discuss the report and present the plans for reducing TCE emissions from two local facilities that emit TCE.

PA DEP staff in the Southeast Regional Office met with two large industrial emitters of TCE in the Collegeville area – Superior Tube and Accellent (formerly, Uniform Tube) in late 2004 to advise them of the results of our mobile unit monitoring, and of our intention to establish two monitoring sites in the area. The Department strongly encouraged the facility owners and operators to reduce TCE emissions. Superior Tube and Accellent both use TCE to degrease metal tubing. Both are Title V facilities and are in compliance with existing air quality regulations. In the past, however, both facilities had contributed to extensive groundwater contamination due to TCE that began to be addressed in the 1970s.

Data collected from the air monitor in Evansburg State Park in 2007 show levels of airborne TCE are diminishing, with many days registering no measurable levels of TCE in the air. That trend is expected to continue given the companies' voluntary efforts to reduce emissions.

Superior Tube completed reformulation and degreaser removal projects that are expected to reduce TCE emissions by approximately 60 percent, on an annual basis. The company announced it is taking steps to eliminate the use of TCE from its manufacturing process completely. The company is seeking approval from PA DEP to replace TCE with an alternative approved by the U.S. Environmental Protection Agency – n-propyl bromide, or nPB. Unlike TCE, nPB is not considered an air toxic pollutant. If the switch to n-propyl bromide proves to be successful, Superior Tube will completely eliminate the use of TCE at its facility.

Accellent began operating the first of two carbon absorber units to control TCE emissions from the company's large degreasers in 2007. The second carbon adsorber became operational in 2008. While the manufacturer for the carbon absorber equipment guarantees an overall emission reduction of 35 percent, PA DEP believes this is a very conservative estimate. Accellent has optimized g the performance of both adsorbers and is currently reducing TCE emissions from its facility by approximately 50%. Emission reductions of 90 percent or greater usually result from this type of installation.

It should be noted that both companies entered into voluntary compliance agreements with the Department to control the TCE emissions. This approach achieved significant emission reductions in a very short time period and the voluntary measures were incorporated into federally enforceable permits.

In 2007, the Department was awarded a $269,000 grant by EPA to expand its air monitoring efforts for TCE and other compounds in the Collegeville area. This community-wide monitoring project will develop baseline references of airborne TCE concentrations to support exposure estimates. The project will track long-term measurements of air toxics following the already implemented emission reduction strategy in the area.

Greenhouse Gases

Greenhouse gases are the gases present in the atmosphere which reduce the loss of heat into space and therefore contribute to a rise in global temperatures through the greenhouse effect. The main greenhouse gases are carbon dioxide (CO_2), methane, nitrous oxide, sulfur hexafluoride, hydrofluorocarbons, perfluorocarbons and chlorofluorocarbons. While global warming has been an increasingly important issue, EPA has thus far taken the position that CO_2 is not an air pollutant.

However, in *Massachusetts v. EPA*, 127 S. Ct. 1438 (2007), the Supreme Court of the United States decided on April 2, 2007, that GHGs are "pollutants" under the CAA and the EPA Administrator may not ignore his obligation to determine whether GHGs cause or contribute to air pollution which may reasonably be anticipated to endanger public health or welfare, at which point (if he determines affirmatively) EPA must regulate GHG emissions from vehicles under section 202 of the CAA.

The existing Pennsylvania Clean Vehicles Program set forth in 25 Pa. Code Chapter 126, Subchapter D (relating to new motor vehicle emissions control program), limits the sale, importation, delivery, purchase, lease, rental, acquisition, receipt or registry of new light-duty vehicles in Pennsylvania to those that have been certified by the California Air Resources Board (CARB) for compliance with the California low emission vehicle program. Pennsylvania's original incorporation of the California low emission vehicle program in 1998 automatically incorporates the current California low emission vehicle program, CA LEV II, and will continue automatically to include California's future amendments and supplements to its low emission vehicle program.

California vehicle emission standards are more stringent than the federal Tier II program currently being implemented and enforced by the U.S. Environmental Protection Agency. California has recently promulgated amendments to its regulations establishing its California LEV II standards in Chapter 1 of Division 3, Title 13 of the California Code of Regulations (CCR) to include greenhouse gas (GHG) requirements. These GHG regulations are incorporated by reference by the Department's regulations and are part of the Pennsylvania Clean Vehicles Program. Under these regulations, California has added a GHG fleet average requirement to its California LEV II program for vehicles offered for sale in California. The EQB did not establish a GHG fleet average requirement for vehicles offered for sale in Pennsylvania because the GHG emission reductions in Pennsylvania would occur with the implementation of the California LEV II program.

The implementation and enforcement of the California GHG standards must be authorized by an EPA waiver under the Clean Air Act. California adopted the standards in 2005 and submitted

them to EPA for authorization to implement. In 2007, California and 14 states, including Pennsylvania, filed suit in the D.C. Circuit Court of Appeals concerning the unreasonable delay in acting on the application. California and the states believed that a decision in 2007 was important in order for the industry to comply with the standards by the first model year of applicability, 2009. On December 19, 2007, EPA Administrator Johnson announced the denial of the waiver request. EPA stated, "Unlike other air pollutants covered by previous waivers, greenhouse gases are fundamentally global in nature. Greenhouse gases contribute to the problem of global climate change, a problem that poses challenges for the entire nation and indeed the world. Unlike pollutants covered by the other waivers, greenhouse gas emissions harm the environment in California and elsewhere regardless of where the emissions occur. In other words, this challenge is not exclusive or unique to California and differs in a basic way from the previous local and regional air pollution problems addressed in prior waivers." California and the 14 states filed an appeal of the waiver denial on January 2, 2008.

The Department has been supporting energy efficiency projects over the past five years through various grant programs including Growing Greener and Energy Harvest. In addition, the Department has provided grants under the Alternative Fuels Incentive Grant (AFIG) program. These grants support the use of renewable fuels and installation and use of energy efficiency projects.

The Energy Harvest Grant Program has from 2003 to 2007 funded energy projects that, when fully implemented, will prevent estimated annual emissions of 51.5 million lbs or 25,750 tons of CO2. The AFIG program provides approximately 5 to 6 million dollars per year to support development and productions of ethanol and biofuels and to provide rebates for hybrid vehicles and grants for other alternatively fueled vehicles.

In 2004, Pennsylvania adopted the Alternative Energy Portfolio Standards Act which requires that 18 percent of all retail energy generated by 2020 come from clean, efficient and advanced resources. When fully implemented, the Commonwealth anticipates that 6.5 million tons of CO_2 will be avoided on an annual basis.

Discussion and Recommendations

The Department has taken numerous steps to plan, implement, and administer programs and actions designed to reduce emissions and ambient concentrations of air pollutants, especially ozone. Generally the available data indicate that those steps have been effective, particularly when evaluated in relation to the significant increases in economic activity and vehicle miles traveled that have occurred in many areas throughout the state. The increases in manufacturing and vehicle miles traveled would otherwise have resulted in greater concentrations of ambient air pollutants. Designation of a region as a non-attainment area has an adverse effect on economic and employment growth. It has been recommended that PA DEP should petition EPA for timely redesignation of any region in which ambient air quality has improved sufficiently to qualify it for designation as an attainment area.

Adequacy of Funding for the Air Quality Program

Objective

Evaluate the funding available to implement the Clean Air Act programs, determine whether that funding is sufficient or inadequate, and recommend where adjustments should be made.[35]

Conclusion

The fiscal information examined for this report indicates that the overall level of funding for the Air Quality Program has been sufficient for the past needs. However, Title V fees and federal grants do not adequately fund program expenditures. Regulatory amendments of the fee structure are needed to maintain the continuity and to also ensure that fees are sufficient to cover the costs of administering the program.

Discussion and Recommendations

The Air Quality Program obtains its funding from a number of revenue sources. The first four sources of revenues listed in Table 3 are deposited in the Clean Air Fund. These are permit/inspection fees, fines and penalties, interim emission fees, and Title V emission fees.

Section 6.3(a) of the APCA provides for the establishment of fees sufficient to cover the indirect and direct costs of administering air quality programs including the plan approval process, Title V permit program required under the Clean Air Act and other CAA requirements. In addition, these fees cover the costs of administering the Small Business Stationary Source Technical and Environmental Compliance Assistance Program, Compliance Advisory Committee and Office of Small Business Ombudsman.[36]

In accordance with Section 6.3(c) of the APCA and its implementing regulations in 25 Pa. Code § 127.705, the Environmental Quality Board established permanent annual emission fees for the owners or operators of Title V facilities. An annual emission fee of $37 was initially paid for each ton of a regulated pollutant actually emitted from the facility for the 1994 calendar year. The permanent fee does not apply to emissions greater than 4,000 tons for any regulated pollutant. Adjustments to the emission fees are based on changes in the Consumer Price Index (CPI). Due to this CPI adjustment, the emission fee for 2006 emissions (paid in 2007) was $51 per ton.

Section 6.3 (c) of the APCA provides that emission fees paid by the owners/operators of Title V facilities must be used solely to cover all reasonable direct and indirect costs required to support the Title V permits program. The fees may also be used to cover other related requirements of the CAA and the reasonable indirect and direct costs of administering the Small Business Stationary Source Technical and Environmental Compliance Assistance Program, Compliance Advisory Committee and the Office of Small Business Ombudsman.

[35] 35 P.S. § 4004.3 (3)
[36] 35.P.S. § 4004.6 (3)(a)

The EPA approved Pennsylvania's permanent emission fee program on July 30, 1996. If the Administrator of EPA determines that the fee provisions of the operating permit program do not meet the requirements of this paragraph, or if the Administrator were to make a determination that the Department is not adequately administering or enforcing an approved fee program, the Administrator may, in addition to taking other actions, collect reasonable fees from the affected sources. The fees are to be designed solely to cover the Administrator's costs of administering the provisions of the permit program promulgated by the Administrator.

Mandatory sanctions including loss of highway funding and 2:1 emission offsets for the construction of new or modified stationary facilities may also be imposed under Section 179 of the CAA if EPA determines that the Commonwealth is not adequately administering or enforcing the approved fee program.[37]

The Commonwealth's General Fund and Federal grant funds also provide funding for air quality programs. The Air Quality Program receives federal funds from EPA to satisfy grant commitments for certain air quality program measures. The Section 105 federal funds, authorized by the Clean Air Act, require the state to provide matching funds. PA DEP uses the General Fund to provide the matching funds. A combination of these sources provides the funding for planning, coordination, and operation of statewide air pollution control activities to fulfill the grant requirements. PA DEP cannot use Title V fees to match the EPA Section 105 grant monies, nor can grant funds be used to support the Title V activities.

[37] 42 U. S. C. § 7509

Table 3. Revenue History

FISCAL YEARS:	FY 01/02	FY 02/03	FY 03/04	FY 04/05	FY 05/06	FY 06/07
REVENUE:						
Permit/Inspection Fees	1,661,286	1,525,353	1,330,053	1,309,710	2,145,164	1,578,095
Fines and Penalties	1,481,457	1,746,568	3,878,320	6,133,142	5,442,207	1,850,425
Interim Emission Fees	230	230	0	0	0	0
Title V Emission Fees	18,785,089	17,443,682	17,260,731	17,700,998	18,007,684	18,335,445
State Funding	7,484,916	7,545,440	7,324,875	5,678,047	6,738,329	6,274,921
Federal Funding	4,305,120	5,024,985	4,367,581	5,123,402	4,054,144	5,235,576
Interest on Securities	1,871,717	1,175,192	2,507,686	2,190,672	3,551,103	3,789,899
Miscellaneous	109,896	185,278	316,864	141,604	170,008	172,296
TOTAL REVENUE	35,699,711	34,646,728	36,986,110	38,277,575	40,108,639	37,236,657
TOTAL EXPENDITURES:	30,497,851	34,578,209	35,068,752	33,917,786	32,266,114	35,162,966
BALANCE:	5,201,859	368,519	1,917,358	4,359,789	7,842,525	2,073,691

The program's accounting system is structured for major functional responsibilities, permitting, enforcement, planning, etc. In addition, the accounting system provides an adequate management tool.

It is important to note that the overall balance of the fund is decreasing. EPA grants/funding is relatively stable, but has not increased to meet inflation. On May 24, 2007, the Commonwealth signed a new contract for state employees that will result in increased personnel costs. These costs are expected to deplete the Department's air funds. As a result, the Department is investigating the adjustment of the Title V fee and the initiation of other fees to meet the increased program costs. Similar fee schedule revisions have already been made in New Jersey, Maryland, Delaware, New York, and North Carolina. The Department began fee schedule discussions with the advisory committees during 2008 and is expected to propose a rulemaking in during the spring of 2009. Details of the fee structure and projected funding shortfalls will be included in that rulemaking package.

Costs and Benefits of Clean Air Act Programs

Objective

Analyze costs and benefits of Clean Air Act programs including: (1) costs imposed on mobile and stationary sources to implement CAA requirements, including costs on individuals and businesses; (2) economic costs to the Commonwealth for failing to meet requirements, including the impacts of sanctions; and (3) benefits of compliance with CAA requirements on public health and the environment.[38]

Conclusion

There are no specific cost and benefit data for Pennsylvania. However, the EPA publishes national cost and benefit data, which show that the costs associated with attaining the national health-based standards are far less than the economic and environmental benefits achieved. This cost and benefit data has been peer reviewed and is published when the NAAQS are promulgated.

In addition, most new regulatory programs provide flexibility and alternative compliance options, including emissions trading, to allow regulated entities to select the lowest cost compliance option. For instance, the small sources of NO_x regulation found at 25 *Pa. Code* Section 129.201-204 provides the option for owners/operators to obtain and surrender NO_x allowances from the NO_x Budget Trading Program as a compliance option. The cement manufacturing regulation found at 25 *Pa. Code* Sections 145.141-144 provide the option for owners/operators to obtain and surrender NO_x allowances from the NO_x Budget Trading Program as a compliance option. The state-specific mercury regulation found at 25 *Pa. Code* Sections 123.201-215 the option for owners/operators to average emissions within a facility or within an operating system. The Sources of VOC regulations found in 25 *Pa. Code* Sections 129.51-52 and 129.54-73 provide the owners/operators with the ability to demonstrate equivalency through an alternate compliance method. The NO_x Budget Trading Program found at 25 *Pa. Code* Sections 145.1-100 provides for trading of NO_x allowances as a compliance option.

EPA has estimated that by the year 2015, the Clean Air Interstate Rule will result in $85 to $100 billion in annual health benefits, annually preventing 17,000 premature deaths, millions of lost work and school days, and tens of thousands of non-fatal heart attacks and hospital admissions; nearly $2 billion in annual visibility benefits in southeastern national parks, such as Great Smoky and Shenandoah; and significant regional reductions in sulfur and nitrogen deposition, reducing the number of acidic lakes and streams in the eastern United States. The estimated annual private costs to implement the emission reduction requirements of the final rule for the CAIR region are $2.36 billion in 2010 and $3.57 billion in 2015 (1999$).

[38] 35 P.S. § 4004.3 (4)

Background

The Department, Allegheny County Health Department, and Philadelphia Air Management Services do not compile data on the actual costs incurred in complying with CAA standards and regulations. Similarly, interviews conducted with industry representatives did not yield sufficient information to allow reliable evaluation of compliance costs for any category of emission sources, any industrial sector, or any regulatory initiative.

One company that has attempted to develop an accounting system to isolate costs of complying with each regulation explained the primary reason for this lack of information. The company's efforts revealed that the costs of complying with any single regulation are so entwined with the costs of production and complying with other regulations that it is impossible to determine the costs of any individual regulation.

Without this data, this evaluation focused on the cost-effectiveness of potential emission reduction strategies that would reliably meet the PA DEP's emission reduction goals. Specifically, the evaluation examined whether total compliance costs might be reduced by shifting requirements among classes of emission sources, including point sources (i.e., major stationary sources), area sources (i.e., small, dispersed stationary sources), mobile sources, and emission sources located in different geographic areas.

Cost-Effectiveness for Individual Emission Sources

As part of the rulemaking process, the Department provides estimates of the cost of each proposed regulation to the general public, business community, local government, and the Commonwealth. Examples of the costs and benefits of the control programs are as follows:

> It is estimated that the reduction of VOC content for the affected consumer products will cost approximately $4000 per ton of emissions reduced. The VOC emission reduction benefit for the additional regulated consumer products is estimated to be 2.1 tons per day and 767 tons annually. It is estimated that the reductions will be approximately 0.13 pound per resident per year. Total cost to the users is estimated to be approximately $3.1 million. These reductions are needed to achieve the NAAQS.
>
> The final-form regulation for cement kilns will include emissions averaging and use of NO_x allowances, as authorized by the Department under the NO_x Budget Trading Program, as near term compliance options. This will allow an owner or operator of an affected cement kiln to elect the least-cost compliance alternative, including emissions averaging or the use of NO_x allowances, to demonstrate compliance with the NO_x emission limits. Based on 2005 ozone season emissions, implementation of the final-form rule is estimated to result in a reduction of 1,300 tons of NO_x. Based on a long-term average NO_x Budget Trading Program allowance price of $1000, the cost of 1,300 NO_x allowances would be $1,300,000. Currently, however, NO_x allowance prices are in a downward trend, trading recently around $800. The lower range of cost to the regulated industry of purchasing 1,300 NO_x allowances would be approximately $1,040,000. These reductions will help make progress toward the ozone and $PM_{2.5}$ NAAQS.

The new Heavy Duty Diesel (HDD) engine and vehicle emissions control program, adopted in 2002, contributes to the attainment and maintenance of the ozone health-based standard due to emission reductions from the operation of lower-emitting HDD vehicles. Modeling data for the Philadelphia area indicates that daily emissions of NO_x will be reduced by 2 tons per average summer day and 12.5 tons per average summer day Statewide from trucks that are subject to the requirements of this program. In addition, the health of the citizens of this Commonwealth will benefit from these reductions through reduced exposure of air toxics, NO_x and other air pollutants, which place people's health at risk. The primary cost to the trucking industry will be incurred when purchasing a new truck or engine. In 2005, this regulation could increase the average cost of an engine, which has a useful life of 15 to 20 years, by as much as $800 and increase operating costs by up to $9 per year. Because it is difficult to separate the incremental cost of the supplemental tests from other aspects of complying with Federal and California standards, the actual cost is anticipated to be much lower.

The architectural and industrial maintenance coating (AIM) regulation was adopted to achieve VOC reductions, a precursor to ozone. Under this final-form rulemaking, the reduction of VOC content of the affected AIM coatings was estimated to cost approximately $6,400 per ton of VOC emissions reduced. In some instances there was an estimated savings of approximately $1.76 per gallon compared with higher VOC coatings.

In implementing most strategies, the PA DEP also provides flexibility to select any control option that meets the emission goals specified in the strategy.

Costs of Failing to Attain Clean Air Act Requirements

In addition to the direct impact on public health determined by EPA when promulgating the NAAQS, there are other costs associated with failing to meet the CAA requirements. EPA is authorized to impose certain discretionary and mandatory sanctions if the state does not implement regulations and control programs to attain the NAAQS on a timely basis in the nonattainment area. These sanctions would be imposed until EPA determined that a state has met its obligations. The mandatory sanctions specified in Section 179 (b) of the CAA include: requiring companies to reduce emissions or purchase emission reductions (offsets) equal to twice the amount of the expected emissions from major new and modified sources; and withholding highway funds. The prohibition on highway funding does not apply to projects or grants for safety purposes.[39] The CAA specifies mandatory deadlines for the imposition of the mandatory sanctions if the states do not fulfill their obligations. In addition, EPA has the authority to impose any of the mandatory sanctions at any time as discretionary sanctions including withholding of Section 105 grant funds.

EPA has imposed mandatory sanctions on Pennsylvania or a portion of the Commonwealth on only two occasions. In 1983, sanctions were imposed when the state failed to implement an emissions inspection and maintenance program for motor vehicles in certain areas. At the time,

[39] 42 U.S.C. § 7509

Pennsylvania did not receive the allotment of federal highway funds for the I/M areas that it otherwise would have obtained during the 1983 construction season.

In 1997, mandatory sanctions were imposed for a single day when the state was late in obtaining EPA approval for its enhanced decentralized emissions inspection and maintenance program for motor vehicles. In that instance, the sanction required the state to offset emissions from major new or modified sources in the Pittsburgh area at a ratio of 2-to-1 instead of the usual ratio of 1.15 to 1. Because the offset sanction was in effect for only one day, there were no economic costs for the Commonwealth or the regulated community.

Pennsylvania has incurred more substantial economic consequences as a result of specific localities being designated non-attainment areas for specific NAAQS. Economic studies published in 1996 and 1997 analyzed the statistical relationship between a county's economic activity and its attainment status in relation to the NAAQS.

Henderson conducted a statistical analysis of data on the number of establishments in five specific industries located in 742 urban counties nationwide from 1980 through 1987. He examined the correlation between these data and whether the individual counties attained the NAAQS for ozone, while statistically controlling the general scale of economic activity in the counties. Henderson found that, in four of the five industries, counties that attained the standards for at least three consecutive years experienced seven to ten percent more growth than counties that did not attain the standards in any of the three preceding years. Moreover, assuming that non-attainment influenced a firm's decision to locate only during the years when counties were in non-attainment, Henderson also discovered a significant correlation between a county's attainment status and its industrial growth in two of the five industries. Based on this empirical evidence, Henderson concluded "...a firm may be looking for a county to show a sustained record of attainment before relocating or staying there." The study thus indicates that non-attainment status has a persistent inhibiting effect on economic activity.[40]

Kahn obtained similar results in his study. He analyzed the correlation between the rate of growth in a county's manufacturing jobs from 1982 through 1988 and its attainment status for particulate matter in 1977, while statistically controlling the growth rate in non-manufacturing employment. He found that, for manufacturing industries in the aggregate, the rate of growth in counties that did not attain the NAAQS was eight percent to nine percent lower than the rate in other counties.[41]

These studies provide strong evidence that areas designated as non-attainment in Pennsylvania likely have experienced lower rates of economic growth than otherwise would have occurred had they met the NAAQS. Even without sanctions, those localities – and the state – have paid a price in lost economic development by not achieving and maintaining federal NAAQS.

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[40] Henderson, J. Vernon (1996), "Effects of Air Quality Regulation," American Economic Review, Vol. 86, No. 4 (September), pp. 789-813.

41 Kahn, Matthew E. (1997), "Particulate Pollution Trends in the United States," Journal of Regional Science and Urban Economics, Vol. 27, No. 1 (February), pp. 87-107.

Benefits from Complying with Clean Air Act Requirements

The Air Quality Program regulates the emissions and ambient concentrations of six pollutants for which EPA has established NAAQS, and three pollutants for which the state has established Pennsylvania Ambient Air Quality Standards. The NAAQS pollutants are carbon monoxide, nitrogen dioxide, ozone, sulfur dioxide, lead, and particulate matter, measured as either PM_{10} (particulate matter with aerodynamic diameters of at most 10 microns) or $PM_{2.5}$ (particulate matter with aerodynamic diameters of at most 2.5 microns). The pollutants for which the state has retained ambient standards are beryllium, fluorides, and hydrogen sulfide.

Controlling emissions of these pollutants reduces the risks to public health and welfare. The two health standards violated in Pennsylvania are $PM_{2.5}$ and ozone. EPA estimates nationally the benefit of achieving the $PM_{2.5}$ standard at between $19 billion and $104 billion. The estimated benefit for achieving the ozone standard is between $400 million and $2.1 billion. EPA estimates that the revised standards will yield health benefits valued between $3.7 billion and $6.9 billion. The benefits reflect an expected increase in lifetime earnings as a result of avoiding intelligence quotient (IQ) loss. The agency estimates costs of implementing the lead standards at approximately $150 million to $2.8 billion. The specific health impacts of not achieving these and the other standards are summarized briefly below.

Carbon monoxide is a poisonous gas that is invisible and odorless. When inhaled, it enters the bloodstream, replaces oxygen in the blood, and inhibits the delivery of oxygen to body tissue. It can impair vision, alertness, and other mental and physical functions. At high concentrations indoors, it is fatal. It poses particularly severe risk to people with cardiovascular disease.

Nitrogen dioxide is a highly toxic gas that irritates the eyes and the sinuses, and can aggravate respiratory illnesses. It creates an odorous haze that blocks natural sunlight and reduces visibility. It is a precursor in the formation of ozone and a precursor to acid rain deposition, which can damage materials, forests, and aquatic and other ecosystems. Oxides of nitrogen react in the atmosphere to form nitrates, which are particulate compounds that represent a substantial portion of fine particulate matter, PM_{10} and $PM_{2.5}$. Nitrate fine particles can also contribute to asthma cases.

Ozone at ground level is a strong irritant to the eyes and the upper respiratory system. When inhaled, it reacts with tissue in the lungs, impairs the ability of the lungs to function, and sensitizes lung tissue to other irritants. Asthmatics, people with impaired respiratory systems, and people who work or exercise outdoors are particularly susceptible. Ozone also causes damage to crops.

Sulfur dioxide is a gas that, at high levels of exposure, restricts air passages, impairs breathing, and aggravates respiratory illnesses. Asthmatics, the elderly, and young children are especially susceptible. Sulfur dioxide is a precursor in acid rain deposition and damages vegetation, including trees and crops, fabrics, and building materials. It reacts in the atmosphere to produce sulfates, which are particulate compounds that represent an appreciable portion of

fine particulate matter, PM_{10} and $PM_{2.5}$. Sulfates can reduce visibility and are components of acid rain deposition. High concentrations of sulfates have also been correlated with respiratory illnesses.

Lead is a highly toxic metal. When inhaled or ingested in large doses, it impairs mental abilities, damages nerves and the liver, and raises blood pressure. It is a suspected carcinogen of the lungs and the kidneys.

Particulate matter is a complex mixture of solid or liquid matter. The smaller particles (PM_{10} and $PM_{2.5}$) can penetrate deep into the lungs and become trapped. They can aggravate or cause respiratory illnesses. They can also transport toxic or carcinogenic chemicals into the lungs, causing greater health risks. Particulate matter also soils and damages materials. A substantial portion of fine particulate matter consists of nitrates and sulfates.

Hazardous Air Pollutants are regulated under Section 112 of the CAA which authorizes EPA to establish national emission standards to protect public health. Prior to the 1990 amendments, Section 112 of the CAA required the Administrator to list as hazardous air pollutants, those pollutants which in his judgment cause, or contribute to, air pollution which may reasonably be anticipated to result in an increase in mortality or an increase in serious irreversible, or incapacitating reversible illness. Listing of a pollutant under Section 112 signified the Administrator's intent to develop emission standards for one or more stationary source categories emitting that pollutant. This approach proved difficult and was minimally effective at reducing emissions. Under this program EPA developed National Emission Standards for Hazardous Air Pollutants for seven specific hazardous substances: asbestos, benzene, beryllium, inorganic arsenic, mercury, radionuclides, radon-222, and vinyl chloride.

Pennsylvania has been delegated authority under the CAA to implement programs for major sources of these hazardous substances. Pennsylvania also implements a federally delegated program related to asbestos demolition and renovation projects. This program requires that contractors notify the Department of planned activities that will result in the disturbance of significant amounts of asbestos and requires that asbestos removal contractors implement control programs to minimize worker and public exposure to asbestos.

In addition, the CAA mandated that EPA develop technology-based standards for 189 hazardous substances and 174 source categories. For each affected source category, EPA is to determine the maximum achievable control technology (MACT). The MACT standards were to have been established within two, four, seven and ten years after the enactment of the CAA. Under Section 112(j) of the CAA, states with approved Title V permit programs are required to establish the standards on a case-by-case basis through a permitting action within 18 months after EPA fails to promulgate a MACT standard by the statutory deadline.

Pennsylvania's requirements for approval of new sources specify that new sources of HAP must meet best available technology (BAT) levels of emissions. The Department will continue to assure the combination of MACT requirements for existing sources and BAT for new sources to minimize public exposure to HAP compounds. In addition, Pennsylvania has been delegated authority for implementation of MACT programs for five "area source" categories: chromium

electroplating; halogenated solvent cleaning; dry cleaning; secondary aluminum smelting; and ethylene oxide sterilization.

Improvements in air quality have a direct impact on public health and the environment. Wherever the state's implementation plans and actions have fulfilled federal air quality standards and technological criteria, associated benefits have come with attainment.

Quantifying the benefits of improvements in air quality is difficult and beyond the resources of this report. EPA acknowledges there are no reliable ways to measure the benefits of reducing current levels of exposure to pollutants in the outdoor air, but has repeatedly estimated that the cost of achieving the standards clearly outweighs the cost of the controls. From a non-quantification perspective, EPA explains that reducing the current ambient concentrations of airborne chemicals in general will decrease:

- The probability of adverse effects on public health and welfare.
- The number of people who are susceptible to harm at the prevailing concentrations.
- The probability that susceptible people will be harmed.

Clearly, Pennsylvania's air quality improvements have decreased the public's exposure to adverse public health risk and have improved the environment.

Discussion and Recommendations

Based on data contained in the rulemakings, the Department has developed strategies that provide cost-effective emission reduction plans to attain and maintain ambient air quality standards. Pennsylvania has attained all applicable NAAQS except for ozone and fine particulates ($PM_{2.5}$). For ozone, Pennsylvania has reduced the geographic extent, magnitude, and frequency of exposure to high ozone concentrations. However, Pennsylvania has not yet met the eight-hour ozone standard in Southeastern and Southwestern Pennsylvania. The Department is currently developing attainment demonstrations for the $PM_{2.5}$ annual standard for a number of nonattainment areas. These attainment demonstrations will show that the nonattainment areas will achieve the annual $PM_{2.5}$ NAAQS by 2009.

Adequacy of Small Business Compliance Assistance Measures

Objective

Evaluate the Office of Small Business Ombudsman and the adequacy of measures taken by the Commonwealth to assist small businesses in complying with the Clean Air Act.[42]

Conclusion

The Pennsylvania Small Business Compliance Assistance Program provides adequate compliance assistance for both state and federal regulatory programs. The Chair of the Small Business Advisory Committee, also a small business owner, participates in EPA's Small Business Compliance Assistance Program and has reported that Pennsylvania's program is one of the best in the country in terms of types of programs and services offered. These programs should be continued and expanded if possible.

Background

Section 7661(f) of the 1990 CAA and Section 7.7 of Pennsylvania's APCA require the Department to develop and implement a Small Business Stationary Source Technical and Environmental Compliance Assistance Program (Small Business Program).[43] The primary components of the program include: a Small Business Ombudsman (SBO), a Small Business Assistance Program (SBAP) and a Small Business Compliance Advisory Committee (SBCAC). The Small Business Program for stationary sources must include adequate mechanisms for:

- Developing, collecting and coordinating information concerning compliance methods and technology.
- Assisting the small business stationary sources with pollution prevention and accidental release detection.
- Ensuring that the small business owners receive notice of rights under the APCA and the CAA in order to evaluate compliance methods and applicable regulatory programs.

The Small Business Program must also provide compliance assistance in determining applicable regulatory requirements and obtaining permits in a timely and efficient manner.[44]

Small Business Ombudsman

Section 7.9 of the APCA established an Office of Small Business Ombudsman (SBO) within the Pennsylvania Department of Commerce (renamed the Department of Community and Economic

[42] 35 P.S. § 4004.3 (5)
[43] 42 U.S.C. § 7661 (f)
[44] 35 P.S. § 4007.7

Development).[45] A 1996 Amendment to the APCA transferred the Office of the SBO to PA DEP for the purpose of serving as the primary point of contact for small business compliance related issues.[46] The SBO Office is now located in PA DEP's Office of Energy and Technology Deployment. The office staff includes a full-time SBO, a full-time administrative assistant and two full-time program analysts.

The SBO performs these principal activities:

- Provides free confidential environmental assistance for small businesses
- Mediates between PA DEP and individual small businesses
- Assists in the development of small business compliance assistance programs for PA DEP
- Assists in the development of financial programs to facilitate compliance by small businesses
- Educates small businesses about the assistance PA DEP provides for environmental management and compliance.

In addition, the SBO office staff works closely with the Pennsylvania Small Business Development Center's (PA SBDC) Environmental Management Assistance Program (EMAP). The PA DEP has entered a cooperative agreement to partner with EMAP to provide technical and environmental compliance assistance to small businesses across the Commonwealth. The SBO staff also assists small businesses in implementing pollution prevention strategies and energy efficient technologies which reduce pollution and energy consumption. On average, the SBO provides assistance to approximately 350 clients per year.

The SBO's low-interest loan program is the Small Business Pollution Prevention Assistance Account (PPAA) created in 1999. This loan program extends loans at an annual fixed interest rate of two percent to finance expenditures on pollution prevention or energy efficiency by small businesses. The SBO loan program replaced the Air Quality Improvement Fund, which provided low-interest loans for air pollution control facilities and equipment, and for changes in operations or production practices. Since its inception, the PPAA loan program has provided $3.3 million in funding to 59 small businesses.

The fund is administered by two state agencies, PA DEP and the Department of Community and Economic Development. The maximum loan amount is 75 percent of the total eligible cost of the project up to $100,000 and may not be used for pollution control equipment. The recipients of the Pollution Prevention Assistance Account must repay their investments within the term of the loans. The SBO has obtained suggestions for improvement to the loan program and the types

[45] 35 P.S. § 4007.9
[46] Amended 1996, Dec. 18, P.L. 1150, No. 174 §1

of projects funded from PA DEP regional offices as well as the PA SBDCs. The loan program has provided funding for various types of projects including the following:

- Dentists to purchase digital x-ray systems to eliminate the need for film-based x-rays
- Dry cleaners to purchase new equipment that results in reduced toxic air pollutant emissions
- Wood de-barkers and chippers for controlling particulate matter
- High volume-low pressure spray guns to assist auto body paint shops in their efforts to reduce toxic air emissions.

The Small Business Advantage Grant (SBA) is another program offered that provides 50% matching grants, up to a maximum of $7,500, to enable a Pennsylvania small business to adopt or acquire energy efficient or pollution prevention equipment or processes. Well-designed energy efficient or pollution prevention projects can help small businesses cut costs and reduce the risk of regulatory problems, while simultaneously protecting the environment. PA DEP began accepting applications for this program on July 1, 2004, and since then more than $2 million has been awarded to almost 450 businesses across the Commonwealth. The type of projects funded include: auxiliary power units (anti-idling) for trucks; process equipment modifications; alternate fuel systems; chiller and boiler upgrades; lighting upgrades; dry cleaning system upgrades and insulation, motor, and parts-cleaning changes.

The SBO had developed a Site Assessment Grant program that funded 80 percent of the cost of a pollution prevention and energy efficiency site assessment up to a maximum of $5,000 for a small business and $15,000 to permit holders regardless of size. Under this program businesses were able to have trained assessors study their operations and plant processes to identify energy waste and excess pollutants. This program closed in June 2005.

During the fall of 2004 and the spring of 2006, the SBO provided educational outreach on energy management for small businesses. The SBO partnered with the Electrotechnology Applications Center (ETAC) using a grant from the U.S. Department of Energy to provide interactive half-day workshops at 12 locations across the Commonwealth. The outreach was designed to help small business owners learn how to reduce energy costs and increase profits.

Small Business Assistance Programs

Outreach to Dry Cleaners

Beginning with the July 2001 – December 2003 18-month Drycleaners Compliance Calendar, a compliance calendar has been published annually for use by dry cleaner establishments in the Commonwealth. Dry cleaners are required by federal regulation to keep maintenance and perchloroethylene usage records for five years. The calendar is designed to assist the small business owner in maintaining these records. This is a compliance assistance effort overseen by the Bureau of Air Quality's Compliance Assistance and Pollution Prevention (BAQ-CAPP)

section. More than 1200 calendars are distributed annually to drycleaners with the help of the Pennsylvania and Delaware Drycleaners Association.

Outreach to Auto Body Shops

In November 2000, new air quality regulations became effective for the Mobile Equipment Repair and Refinishing shops in Pennsylvania. In 2001 the BAQ-CAPP section developed an intern outreach program to assist the shops in understanding the new and existing regulations. During the summer of 2001, 1,530 shops were visited. PA DEP continued its intern program during the summer of 2002 with interns visiting and providing compliance assistance to approximately 750 automobile body repair facilities.

Penn STAR Mobile Demonstration Trailer

The Department also continued to promote hands-on assistance to auto body painters through sponsorship of the Pennsylvania College of Technology's PennSTAR mobile demonstration trailer. The PennSTAR program, launched in May 2001, was funded by a $500,000 grant from PA DEP and instructed collision repair and refinishing technicians about ways to reduce their coating material consumption and comply with environmental regulations. The PennSTAR program taught the technicians how to optimize their paint spray techniques and manage material usage and disposal. By altering the spray techniques it is possible to reduce paint over-spray without sacrificing finish quality, thereby reducing consumption, cost, pollution, and waste. During the course of the funding period that concluded on March 31, 2006, a total of 352 persons participated in PennSTAR demonstrations.

Outreach for Solvent Cleaning

During 2002 the BAQ-CAPP section completed a mailing to 6,800 small businesses with solvent cleaning operations. This mailing was to alert operators to revised solvent cleaning operation requirements adopted by the Environmental Quality Board. These new regulations, applicable to small sources, are a significant component of the PA DEP's ongoing efforts to improve ozone air quality throughout the Commonwealth.

Outreach to Printers

In 2002, PA DEP staff visited approximately 400 lithographic printers. The site visits were carried out to educate printers on pollution prevention opportunities. The Department also completed revisions of the "Compliance Assistance and Pollution Prevention Workbook for Printers" and mailed the document to the printers who were visited by the interns.

Stage II Vapor Recovery Outreach Program (Greater Philadelphia Area)

During 2004, the BAQ-CAPP section collaborated with representatives from the United States Environmental Protection Agency (EPA), Philadelphia Air Management Services (AMS), Delaware Valley Regional Planning Commission and the Delaware Department of Natural Resources and Environmental Control (DNREC) to plan an outreach program for gasoline

stations owners and the public in the Greater Philadelphia area. The goal was to reduce benzene and other gasoline-related emissions.

The outreach program to the gas station owners consisted of printing and distributing a self-inspection handbook for gasoline facilities that explains Stage I and II requirements. The public outreach program consisted of several steps. During the week of June 28 – July 2, 2004, inspectors and interns from the Department's southeast regional office (SERO) were present at designated gas stations in each of the four SERO counties. AMS and DNREC personnel were also located at stations in their jurisdictions. Surveys were conducted to determine the public's knowledge of Stage II and the "Don't Top Off" message. Publicity was planned during the same week, such as press releases, newspaper advertisements and a press event. During the week of August 30 – September 3, 2004, personnel from the three agencies returned to the gas stations and conducted the same survey to determine the degree of success.

EMAP

The SBO and the Air Quality Program also work closely with the Pennsylvania SBDC's Environmental Management Assistance Program (EMAP). Established by the Pennsylvania SBDCs in 1997, EMAP has a long and established track record of assisting small businesses with environmental regulatory compliance and encouraging the adoption of smart environmental strategies to reduce pollution and energy consumption. In 2004, the PA DEP approached EMAP to develop a partnership under which funding would be provided to help EMAP expand its environmental assistance to offer services in fulfillment of the Department's requirements to offer a Small Business Stationary Source Technical and Environmental Compliance Assistance Program. Effectively, this partnership with EMAP replaced the ENVIROHELP program, which was operated under a contract with Tetra Tech.

In terms of compliance assistance, there are typically three categories of small businesses:

- those who want information directly from the PA DEP's permit writers and inspectors and feel comfortable working directly with the Department
- those who are unfamiliar with the PA DEP and feel more comfortable working with the non-regulatory staff of the SBO
- those who are unfamiliar with the PA DEP and feel more comfortable asking questions and receiving information from a neutral third party organization.

It is specifically this last category of small business the partnership with EMAP is designed to address. Therefore, it is critical that an arm's length relationship be maintained and EMAP remain viewed as a completely separate program of the Pennsylvania SBDCs. While assistance is offered in partnership with the Department, EMAP is not a PA DEP program and is carefully not advertised or marketed as such.

EMAP assists small businesses with understanding and complying with local, state and federal environmental regulations. In addition, EMAP assists small business in developing and adopting pollution prevention and energy efficiency strategies. EMAP provides services to small businesses, such as a confidential toll-free hotline; free and confidential site visits; educational

seminars; a confidential website; and provides free permit application reviews. While the identities of all business contacts with EMAP are held confidential and are not disclosed to the Department, EMAP does provides feedback to PA DEP regarding common regulatory problems and concerns for the small business community.

Table 4
Summary of Contract Costs for EMAP

Fiscal Year	Amount
04/05	109,377
05/06	177,055
06/07	293,279

EMAP has undertaken a number of measures to assist small businesses in complying with CAA requirements, as well as with solid and hazardous waste regulations and pollution prevention initiatives. Specifically:

- EMAP operates a toll-free telephone hotline 877.ask.emap. Services provided in response to calls include helping small businesses understand which regulations apply to them, identifying forms they must submit, assisting in completing forms, reviewing forms that have been completed, and assisting in estimating emission levels.

- In addition to the hotline, EMAP receives confidential calls directly to center personnel, emailed assistance requests and other contacts from a variety of sources. Some learn about EMAP from outreach materials and internal referrals from SBDC business consulting staff. Other contacts are made based on referrals from the PA DEP, from state legislators, and from other organizations including banks, the National Federation of Independent Businesses, the Chamber of Business and Industry, as well as state agencies such as the Department of Community and Economic Development, Team PA, and the Governor's Action Team.

- EMAP also operates a web site at www.askemap.org that is continuously updated. The website contains a hyperlink to the PA DEP website, the Allegheny and Philadelphia County websites, and the PA SBDC website. The website contains online request forms for on-site visits, regulatory and energy efficiency information, regularly updated news, and links to The First Stop, EMAP's quarterly newsletter.

- As noted in the above bullet, EMAP publishes a quarterly newsletter, The First Stop, which is directly mailed to approximately 10,000 recipients. The mailing list includes small businesses as well as chambers of commerce, trade associations, and other economic development and business organizations that provide information to small businesses. The newsletters are also posted on the EMAP website.

- EMAP develops and publishes compliance guides and flyers. The topics addressed have included wood furniture manufacturing, degreasing, automobile refinishing,

bakeries, printing, emission reduction credits, and methods for estimating emission levels. All guides and flyers discuss pollution prevention.

- EMAP offers on-site visits to small businesses and in-depth follow up assistance. Services provided during site visits include providing information on regulations that apply to the facilities, advising about pollution prevention and energy efficiency opportunities, and assisting businesses in estimating emission levels, and looking for opportunities to reduce emissions wherever possible.

- EMAP collaborates with the SBO's office and the Air Quality Bureau in developing and presenting workshops for small businesses.

Activities of the Small Business Assistance Program are summarized in Table 5.

Table 5
EMAP ACTIVITY
October 2004 thru 2006

Year	Businesses Assisted*	On-Site Visits
2004 4th Qtr	180	25
2005	923	121
2006	1018	127

*Businesses Assisted includes all environmental assistance provided including telephone consultation and longer-term extended consulting engagements

By partnering with an established and trusted economic development organization such as the Pennsylvania SBDC, and by tapping into the SBDC's existing Environmental Management Assistance Program, the number of Pennsylvania small businesses being reached, particularly through on-site assistance, has increased dramatically. EMAP assists approximately 1,000 businesses annually.

In the first few years of this partnership, significant attention has been given to developing strong working relationships between all levels of staff in the Department and the environmental consulting staff with EMAP. This effort has paid off in terms of increased referrals of small businesses in need of environmental compliance, permitting, or management assistance to EMAP by the Department.

Based on the program's extensive experience with the small business community, in 2003 and 2004, EMAP provided the initial suggestion and program design recommendations for establishing the Department's SBA grant program. As of July 1, 2007, EMAP had assisted with 61 successful grant award applications for small business energy efficiency projects receiving grant funding totaling over $381,000 to implement projects with a total cost over $837,000. It is estimated these 61 projects will ultimately save the small businesses more than $280,000 per

year on energy costs. For each individual business, the median savings from these 61 projects is a little over $2,000 annually.

The high quality services provided by EMAP have been recognized repeatedly at the state and national levels. In each of the past two years, an EMAP client has also been awarded the Pennsylvania Governor's Award for Environmental Excellence. In 2005, one client business received national recognition with a U.S. EPA ENERGY STAR Small Business Award. The following year, six of eight national ENERGY STAR Small Business Award winners were EMAP clients in Pennsylvania. In September 2007, yet another EMAP client received this coveted award (one of just eight awarded again nationally) and EMAP's contributions to small business energy efficiency were recognized by U.S. EPA Administrator Johnson with a special network partner ENERGY STAR Small Business Award. EMAP was again recognized in September 2007, when the entire EMAP staff team was recognized as the 2007 Pennsylvania State Star by America's Association of Small Business Development Centers during its annual conference in Denver, Colorado.

Small Business Compliance Advisory Committee

Section 7.8 of the APCA established a Compliance Advisory Committee.[47] The SBCAC consists of 11 members, including four appointed by the Governor, and four appointed by each of the majority and minority leaders of the state Senate and House of Representatives. Additional members include the Secretary of PA DEP or his/her designee, the Small Business Ombudsman or his/her designee, and the Secretary of the Department of Community and Economic Development or his/her designee. The SBCAC meets quarterly. The primary responsibility of the committee is to provide advice to PA DEP from a layperson's perspective about CAA requirements that affect small businesses that operate stationary emission sources. The committee relies heavily on the Air Quality Bureau to identify issues and to furnish information for the committee to consider. It also obtains useful information from EMAP.

One of the committee's major activities is reviewing and commenting on draft regulations. The committee also participates in the national conference on SBOs and Small Business Assistance Programs held annually by EPA.

ElectroTechnology Application Center

From 2002 – 2007, the Department executed four grants or grant amendments with the ElectroTechnology Application Center (ETAC) of the Northampton County Community College.

Main Volatile Organic Compound Grant (Main Grant) - In order to demonstrate technology alternatives that will assist small and medium businesses to achieve and maintain compliance with PA DEP's VOC regulations, the Department issued the Main Grant to the ETAC. The Main Grant has been in effect since August 1998. Following is a summary of the grants awarded to ETAC for each fiscal year:

[47] 35 P.S. § 4007.8

Table 6
Summary of PA DEP Funding to ETAC – Main Grant

Fiscal Year	Amount
98/99	$399,600
99/00	$399,600
00/01	$600,000
01/02	$600,000
02/03	$600,000
03/04	$600,000
04/05	$600,000
05/06	$500,000
06/07	$400,000
07/08	$300,000

ETAC specializes in applying technologies, e.g., infrared, ultraviolet, microwave, and radio frequency, to improve heating, drying, coating, and curing processes. These technologies release less VOCs than other more traditional solvent-based approaches. ETAC also assists companies in improving their processes and exploring pollution prevention and energy efficiencies. ETAC's services are confidential. A summary of ETAC's activities and the environmental benefits of the program are shown in Table 7.

Table 7
Summary of ETAC Activities and Benefits

Calendar Year	1999	2000	2001	2002	2003	2004	2005	2006	2007	Total
Companies Consulted	68	68	72	122	104	107	47	100	68	756
Different Industry Types	20	5	4	5	3	1	17	14	4	73
Different Counties	19	12	11	4	3	5	15	11	5	85
Demonstration Projects Completed	15	16	11	14	9	11	5	7	10	98
Emissions Reductions (tons per year) of VOC Projected Over 10 years	3383	10356	5260	7373	5655	2207	293	13977	4761	53265
Emissions Reductions (tons per year) of HAPS Projected Over 10 Years	0	251	438	4146	0	0	0	60	0	4895
Emissions Reductions (tons per year) of Particulates Projected Over 10 Years	70.5	0	0	0	2000	0	0	1	0	2071

Amendments # 1 and # 2 to the Main Grant – Two amendments to the Main Grant were executed; one for the term of October 1, 2001 through September 30, 2004, and the other for the term of October 1, 2004 through June 30, 2005. The purpose of these amendments was to add

additional funding for the development and demonstration of electron beam processing of polymers for the printing industry to reduce energy use and VOC emissions.

Table 8
Summary of PA DEP Funding to ETAC – Amendments # 1 and # 2

Fiscal Year	Amount
01/02	$99,615
02/03	$100,670
03/04	$101,750
04/05	$99,616

Electron Beam VOC Destruction Grant (E-Beam Grant) – The purpose of this grant is to demonstrate E-beam VOC destruction methodologies for small businesses. Although E-beam technology has been available for industrial applications for at least three decades, the cost and size of the units have made them an unattainable solution for most small businesses. Recent advances in E-beam technology have produced units that are more compact, have a self-contained vacuum, are a fraction of the cost of the larger units and still can effectively eliminate VOCs.

Table 9
Summary of PA DEP Funding to ETAC – E-Beam Grant

Fiscal Year	Amount
03/04	$600,000
04/05	$250,000
05/06	$250,000
06/07	$75,000
07/08	$75,000

The E-beam VOC destruction technology has been tested at small businesses representing the following industrial classifications: chemical, wood products, electronics, metal products and printing.

Discussion and Recommendations

Many small businesses are reluctant to contact the Department because they are afraid the contact will result in an enforcement action. Therefore, the confidentiality provisions established for the SBO, EMAP and ETAC must be maintained. The PA DEP can reduce this concern by continuing to publicize success stories and expanding efforts to make small businesses aware of these services as well as PA DEP's pollution prevention and compliance assistance activities. Only a small percentage of Pennsylvania's small businesses utilize these programs.

Activities of the Citizens Advisory Council and the Air Quality Technical Advisory Committee

Objective

Summarize and evaluate the activities of the Citizens Advisory Council (CAC or Council) and the Air Quality Technical Advisory Committee (AQTAC) as they relate to the Air Quality Program.[48]

Conclusion

The Citizens Advisory Council and the Air Quality Technical Advisory Committee have provided assistance to the Department on technical and policy issues.

Citizens Advisory Council

Organizational Structure, Responsibilities, and Staffing

Act 275 of 1970, which established the original Department of Environmental Resources, also created the CAC to enable citizen involvement in the state's environmental decision making.[49] The Council has 18 members. The Pennsylvania House of Representatives, the Senate and the Governor each appoint six members. In addition, the Secretary of PA DEP is a member of the CAC. The membership is geographically and professionally diverse and includes representatives from business, local government, and conservation and citizen organizations.

The Council is charged with reviewing all environmental legislation, regulations, and policies affecting the Department. More specifically, the mission established for CAC by Act 275 of 1970 includes performing non-partisan, independent oversight of PA DEP operations, management, and policy; evaluating environmental issues and laws; participating in the formulation of environmental regulations; and providing advice concerning environmental matters to the Department, the Governor, and the General Assembly.

The Council holds ten meetings annually, including one two-day meeting held in a different part of the state each year. Members also communicate through conference calls and subcommittee meetings. All meetings are open to the public and include opportunities to comment on the issues being considered. The Department's executive staff and the CAC also interact on a regular basis.

The CAC support staff consists of three full-time employees, the Executive Director, an Environmental Planner, and an Administrative Assistant. The staff is responsible for all of the Council's administrative functions. Staff also write and publish a monthly newsletter, The CAC

[48] 35 P S. § 4004.3 (6).
[49] Act 275 of 1970

Advisory, which covers multi-media environmental issues including air quality, maintain the CAC web site, and publish the Council's Annual Report.

The APCA of 1992 established the process for CAC consultations. Section 7.6 (a) of the APCA requires the Department to consult with the CAC, as appropriate in consideration of SIPs and regulations needed for the implementation of the federal Clean Air Act.[50] To facilitate consultations, the CAC amended its by-laws and convened a standing Air Committee to address air quality management issues and regulations. The Council is the only advisory committee in Pennsylvania that is authorized to consider not only the impacts of air pollution control, but also the interactive effects of air quality management on other environmental media. The CAC has formed an air committee.

Activities Performed by the Citizens Advisory Council

In fulfilling its responsibilities, the CAC not only responds to requests by the Department, but also independently initiates its own involvement in many issues. The main activities CAC has performed in relation to air quality management since 2002 are summarized in its *Five-Year Report: Summary of CAC Air Activities (July 2002 to June 2007).* The most notable activities are summarized below.

The CAC participated in the Mercury Rule Workgroup. On October 14, 2005, PA DEP's newly formed Mercury Rule Workgroup held its first meeting. Council and PA DEP's Air Quality Technical Advisory Committee, on behalf of PA DEP, jointly hosted this and future meetings to facilitate discussions of the workgroup's perspectives and other topics of interest, e.g., mercury emissions; transport/deposition; global/local impacts; hot spots; speciation; control equipment; electric system reliability; costs/benefits; compliance timeframes; and other topics germane to the mercury rulemaking process. The workgroup met again on October 28, November 18, November 30, and held their last meeting on February 22, 2006. Gail M. Conner, Esquire, and Bruce M. Tetkoskie represented Council on the Mercury Rule Workgroup. The Citizens Advisory Council submitted comments to the Environmental Quality Board in support of the proposed mercury rulemaking.

The Department has attended Council meetings and provided updates on rulemaking activities and SIP revision development.

The CAC has also provided advice on a large number of specific air quality regulations and issues. The topics examined include: RACT permitting for VOC and NO_x; emission reduction credits and associated offset provisions in the new source review program; permitting and emission fees under the Title V program; market-based incentives; strategies for complying with revisions to the NAAQS for ozone and particulate matter, including issues such as employer trip reduction, low emission vehicles, long-range transport of air pollutants, Stage II vapor recovery systems, and centralized and decentralized enhanced emissions inspection and maintenance programs for motor vehicles; the Small Business Compliance Assistance Program; Ozone Action Partnerships; emissions monitoring and ambient air quality monitoring; and public participation

[50] 35 P.S. § 4007.6 (a)

and education on issues relating to air quality management. In addressing these issues, CAC has sponsored numerous panel discussions of invited experts.

Members of CAC also serve in other regulatory and advisory capacities for PA DEP. Many of these roles relate, in whole or in part, to air quality management. In particular, five CAC members serve on the Environmental Quality Board (EQB), the 20-member body responsible for approving the adoption of PA DEP rules and regulations. CAC also selects a member to serve on the Rules Committee of the Environmental Hearing Board, and one CAC member is also a member of the AQTAC. Finally, CAC is a member of the Susquehanna Valley Ozone Action Partnership.

Table 10
List of Rulemakings Considered by the CAC and AQTAC

2008
Adhesives, Sealants and Primers – proposed rulemaking
Consumer Products Amendments - final-form rulemaking
Diesel Vehicle Idling - final-form rulemaking

2007
Consumer Products Amendments - proposed rulemaking
NO_x Emissions from Cement Kilns - proposed rulemaking
Diesel Vehicle Idling - proposed rulemaking
NO_x Emissions from Glass Furnaces - proposed rulemaking
Clean Air Interstate Rule - final-form rulemaking
Permit Streamlining - final-form rulemaking

2006
New Source Review modifications – final-form rulemaking
Mercury Emissions from Coal-Fired Electric Generating Units – final-form rulemaking

Discussion and Recommendations

The Department should continue to consult with the CAC, as appropriate under Section 7.6 of the Air Pollution Control Act.

Air Quality Technical Advisory Committee

Organizational Structure, Responsibilities, and Staffing

The Air Quality Technical Advisory Committee (AQTAC) is authorized under Section 7.6 (b) of the APCA. The AQTAC was originally part of a combined Air and Water Quality Technical Advisory Committee (AWQTAC) formed by the Department. The AWQTAC separated into two committees (AQTAC and the Water Resources Advisory Committee) in 1996 to enable its volunteer members to use their time together more efficiently.

The APCA mandates that AQTAC must include at least 11 members with technical experience in controlling air pollution from stationary or mobile sources. In contrast to CAC, AQTAC members are selected by PA DEP and interact primarily with the senior staff of the Bureau of Air Quality. Members are not appointed as a representative of a particular constituency. In practice, however, members are employees in specific industry sectors or members of specific organizations and often express opinions that are representative of those affiliations.

As required under Section 7.6 (b)(1) of the APCA, the AQTAC at the request of the Department provides technical advice on the policies, guidance and regulations needed to implement the Clean Air Act. The committee also facilitates public participation by encouraging attendees to comment on the technical issues under consideration at its meetings. Generally, AQTAC reviews and comments on each air quality regulation developed by the Department for EQB consideration.

The Air Quality Technical Advisory Committee meets approximately six to eight times annually and may suggest topics to the Department. Based on the suggestions, list of issues, guidance and regulations under development, PA DEP staff and the Chairperson of the AQTAC develop a specific agenda for each meeting. Notices of meetings are published in the *Pennsylvania Bulletin*, PA DEP's *Environmental Protection UPDATE* and on the PA DEP web site.

AQTAC Activities

The AQTAC has provided advice on the air quality regulations and programs considered by the Department. The AQTAC has provided significant input and advice on regulations impacting electric generating units including mercury emissions and the multi-pollutant proposals of the Ozone Transport Commission. The AQTAC provided significant input and advice to the Department during the development of revisions to the Department's Continuous Emission Monitoring manual. The committee provided comments on regulations for consumer products, portable fuel containers, small sources of NO_x, architectural and industrial maintenance coatings, new source review, permit streamlining, cement kilns, glass furnaces, clean vehicles program, Clean Air Interstate Rule, and diesel vehicle idling. Table 10 provides a listing of the rulemakings.

The AQTAC is routinely advised of all revisions to the State Implementation Plan. They have commented on enforcement policies and provided input on OTC model rules.

Members of AQTAC make several types of contributions to the Commonwealth's Air Quality Program. Members serve as a good sounding board for program staff and furnish valuable advice on key technical and program issues. Their technical insights have strengthened and, on occasion, redirected DEP's programs.

Finally, AQTAC meetings have provided a forum for citizens, business, and industry to comment on regulations or programs before PA DEP formally proposes them.

Discussion and Recommendations

The Department should continue to consult with AQTAC in an advisory capacity on technical matters related to the air program. The optimal number and schedule of meetings should be determined jointly by PA DEP and AQTAC.

Summarize and Evaluate the Effectiveness of the Ozone Transport Commission in Meeting the Clean Air Mandates

Objective

Summarize and evaluate the effectiveness of the Ozone Transport Commission (OTC) in meeting the Clean Air Act mandates and include recommendations for improvement. [51]

Conclusion

Pennsylvania's congressionally mandated affiliation with the OTC has been very advantageous. The OTC created the first multi-state regulatory strategy for coordinated regional control of atmospheric ozone levels. PA DEP staff members attended all OTC meetings, led in the development of the numerous emission reduction strategies, and provided for uniform emission reduction strategies among the OTC states. The OTC provides a forum for representatives from different states to share information and develop measures to achieve and maintain the ambient ozone standard by attainment dates mandated under the Clean Air Act.

Background

The Clean Air Act of 1990 recognized that ambient ozone concentrations in excess of the NAAQS were occurring throughout much of the northeastern United States. Ozone and its precursors, NO_x and VOC, were routinely transported across the region by prevailing winds. Section 184(a) of the CAA established a single ozone transport region (OTR) by operation of law. The OTR is comprised of States of Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, northern Virginia and the District of Columbia.[52]

Section 176A(b) of the CAA also required the EPA Administrator to establish the Ozone Transport Commission (OTC), whose membership at a minimum consists of: (1) the Governor of each state in the region or a designee; (2) the EPA Administrator or a designee; (3) the Regional Administrator for each EPA Regional Office in the OTR and an air pollution control official representing each member state in the OTR, appointed by the Governor.[53] The OTC is required to assess the degree of interstate transport of ozone or its precursors throughout the OTR and to recommend regional strategies that mitigate interstate pollution. The Commission also recommends measures to the EPA Administrator for attaining the ozone standard that member states can include in their implementation plans.

Efforts of the OTC focus on four major areas: (1) analysis of the formation and transport of ozone; (2) development of mobile, stationary and area source emission reduction strategies; (3) advocacy for EPA to take action to reduce VOC and NO_x emissions using federal emission

[51] 35 S. § 4004.3 (7)
[52] 42 U.S.C. § 7511c
[53] 42 U.S.C. § 7506a (b)(1)

reduction measures; and (4) advocacy for states upwind of the OTR to reduce VOC and NO_x emissions transported into the OTR.

The analysis of the formation and transport of ozone was conducted through the cooperative efforts of the member states with assistance from EPA. This assessment was a major effort in which the states in the northeast region joined together to develop strategies to mitigate interstate pollution. New emission inventories were developed and modeled to simulate the formation and transport of ozone. The effort resulted in an improved understanding of the ozone problem and identified the importance of mobile source VOC and NO_x emissions and NO_x emissions from large stationary sources.

During the 2002 through 2007 time period, the OTC has focused on coordination of regional emission control measures including: consumer products, portable fuel containers, architectural and industrial maintenance coatings, solvent cleaning operations, mobile equipment repair and refinishing; and additional NO_x controls for industrial boilers, cement kilns, stationary reciprocating engines, and stationary combustion engines.

The OTC has been active in promoting additional multi-pollutant controls from electric generating units. The OTC has encouraged EPA to adopt national controls for architectural and maintenance coatings, consumer products, industrial/commercial/institutional boilers, portable fuel containers, municipal waste combustors, regionally consistent and environmentally sound fuels, small engine standards, and gasoline vapor recovery with compliance dates consistent with the implementation of the 8-hour ozone standard.

Discussion and Recommendations

Pennsylvania's association with the OTC has provided an increased opportunity to reduce the interstate transport of ozone entering Pennsylvania. The OTC has also enhanced Pennsylvania's call for a level playing field via uniform NO_x emission standards in the Eastern United States.

The OTC was instrumental in demonstrating to EPA and Environmental Council of States (ECOS) the importance of long-range transport leading to establishment of the Ozone Transport Assessment Group (OTAG). The information developed by OTAG further documented the impact of long-range transport on ambient ozone levels in the OTR and has been instrumental in the EPA decision to issue its "SIP Call" under Section 110 of the CAA. Further, the OTC-developed NO_x Budget Program and Allowance Trading System form the basis for the EPA "SIP Call." The OTC therefore has contributed materially to subsequent initiatives undertaken to deal with the long-range transport component of ambient ozone concentrations in the OTR and contributions from upwind states to the OTR.

The OTC also has been active in promoting several technologies for reducing emissions from mobile sources. It has been an advocate for both the National Low Emission Vehicle (NLEV) Program and the Tier II Motor Vehicle and Low Sulfur Fuel Standards that were promulgated by the EPA.

The OTC has been effective in developing more consistent and uniform ozone strategies; therefore, Pennsylvania is not put at an economic disadvantage relative to other states.

Membership in the OTC is mandated by federal law. Therefore, continued involvement in OTC activities in a leadership role is strongly recommended because of the universe of air contamination sources in the Commonwealth. The OTC has proven to be a useful forum for the exchange of information among states, development of regional control measures and the promotion of policies and programs that benefit Pennsylvania residents.

Impact of the Federal Government's Missed Deadlines

Objective

Evaluate the impact of missing federal deadlines identified under Section 7.12 of the APCA and the impact the missed deadlines has had or will have on implementing CAA programs. [54]

Conclusion

EPA has missed many deadlines established under the 1990 CAA. As described, several of the delays had impacts on the Department, on the owners of regulated facilities and on the environment. When EPA delays have caused the Department to miss Clean Air Act deadlines, EPA has generally waited a commensurate amount of time before initiating actions against PA DEP or provided guidance on how to deal with the delay without triggering sanctions or enforcement actions.

Background

In accordance with the CAA, EPA develops air quality standards, regulations, and guidance that the states must implement once they have agreed to operate air quality management programs. If a state fails to implement certain activities on a timely basis, EPA is authorized to impose sanctions on the state until the deficiencies are remedied. The sanctions EPA can use include withholding highway funds, withholding funds for constructing sewage treatment plants, and imposing more stringent requirements for offsetting emissions from new major sources.[55]

However, EPA has often missed deadlines for adopting standards and regulations or issuing guidance required by the CAA. Because EPA had to develop and implement more than 100 regulations and programs to implement new CAA requirements, missed deadlines were inevitable. When the Pennsylvania General Assembly enacted the APCA, it was concerned that the Commonwealth might face sanctions if the EPA missed deadlines for certain regulations and guidance.

The basis for this concern was documented in a report published on March 5, 1992 by the Senate Environmental Resources and Energy Committee pursuant to Senate Resolution 68. The report, entitled *Status of Federal Clean Air Act Amendments Implementation in Pennsylvania*, contained a list of 13 major CAA regulations and actions mandated by Congress for which EPA had missed deadlines. The Regional Administrator for the EPA Region 3 stated in the report that even though EPA might be late in performing some of its required actions, his office might still impose sanctions on noncompliant states. He said: "I cannot commit to you that the sanctions will not be imposed even if the regulations aren't promulgated (by the EPA)."

[54] 35 P.S. § 4004.3 (8)
[55] 42 U.S.C. § 7509 (b)

The General Assembly wanted to ensure that sanctions would not be imposed on Pennsylvania because EPA contributed to PA DEP's delay in meeting its obligations under the CAA. It therefore enacted Section 7.12 of the APCA, which states:

> "Whenever the Environmental Protection Agency has missed a deadline for developing regulations or guidance on which states must rely to comply with deadlines in the Clean Air Act by more than ninety (90) days and, in the opinion of the department, the Environmental Protection Agency has failed to provide it with timely guidance needed to comply with the act in a timely manner, the department may bring a legal action against the Environmental Protection Agency in a court of competent jurisdiction seeking an injunction to restrain the Environmental Protection Agency from enforcing the applicable Clean Air Act deadline on the Commonwealth until and unless the Environmental Protection Agency develops the appropriate regulation or guidance which allows the Commonwealth a reasonable opportunity to comply with the Clean Air Act."

The Department has interpreted Section 7.12 as a provision pertaining to overall sanctions on the Commonwealth of Pennsylvania, and not to actions by EPA on or against individual emission sources in the state. To date, the PA DEP has not found it necessary to seek an injunction to restrain EPA from imposing sanctions on the Commonwealth.

Effects of EPA's Missing of Key Deadlines Specified by the Clean Air Act or by Regulatory Practice

In examining the repercussions the Commonwealth might experience as a result of EPA's missed deadlines, the examination focused on key deadlines. The Department examined missed deadlines that had or potentially may have important effects on air quality in Pennsylvania, on the development and approval of implementation plans for non-attainment areas, on PA DEP operations or administrative costs, or on timely or efficient compliance by emission sources in the state.

Of these, there was an examination of four major instances when EPA missed deadlines imposed by the CAA or the agency itself. Those instances relate to the EPA's slowness in issuing MACT standards for specific categories of emission sources, failure to issue timely new source review (NSR) and prevention of significant deterioration (PSD), compliance assurance monitoring, and sources' potential to emit regulations, and failure to issue implementation regulations for revised NAAQS.

EPA's failure to develop a new program to address NSR and PSD issues is longstanding. In fact, revision of these programs is more than ten years overdue. These revisions are necessary, among other things, to eliminate the volumes of sometimes-contradictory policy, guidance and court opinions that have developed over the past thirty years. Development of a comprehensive new NSR and PSD program is necessary to clear up ambiguities and uncertainties in the existing programs and to facilitate implementation of programs such as emission trading programs. To date, clarification of ambiguities and uncertainties has not been achieved by EPA actions.

Delays in Issuing MACT Standards

Section 112 of the CAA requires EPA to establish maximum achievable control technology (MACT) standards for a large number of categories of emission sources over a ten-year period. The Department uses those standards to determine the reductions in air toxics emissions that individual sources within a category must achieve.[56] EPA has missed the mandated deadlines for issuing MACT standards for certain source categories.

The EPA failed to issue MACT standards for certain source categories by a May 15, 2002, deadline. Consequently, Section 112 (j) of the CAA required the state to develop case-by-case MACT for that category. To date, EPA's delay in issuing MACT standards has not had much impact since PA DEP already issues permits to new sources and determines their allowable air toxics emissions on the basis of Best Available Technology in accordance with Section 6.6 of the Air Pollution Control Act.[57] In addition, EPA worked with the states to provide extensions of the "MACT hammer" provision to prevent multiple and inconsistent MACT decisions by the states.

The main consequence of EPA's missed deadlines for establishing MACT standards has been delays in setting emission limits for some existing air toxics sources. Missed deadlines for MACT standards may have delayed achieving some decreases in air toxics emissions.

The most important MACT issue during the 2002-2007 reporting period related to EPA's failure to comply with the CAA and issue MACT requirements for coal-fired electric generating units (EGU).

In December 2000, EPA found the regulation of electric generating units under Section 112 of the Clean Air Act to be "appropriate and necessary" through an aggressive Maximum Achievable Control Technology (MACT) requirement that achieves much greater and timelier reductions in mercury emissions. The federal Clean Air Mercury Rule (CAMR) promulgated by EPA on May 18, 2005, does not require any specific reductions in mercury emissions from any specific EGU facility. The Department has determined that EPA does not have the legal authority to develop a regulatory scheme for a hazardous air pollutant (HAP) under Section 111 of the CAA. The Congressional intent related to the regulation of mercury is clear and unambiguous – it must be regulated under Section 112 of the CAA. Mercury is explicitly identified as a HAP under Section 112(b). For sources other than coal-fired units, EPA must list source categories under Section 112(c) and the set emission standards for those categories under Section 112(d). While the statutory scheme for regulating mercury from coal-fired units is under Section 112(n), the Congressional intent is the same – mercury emissions from these units must be regulated under the Section 112 MACT approach. The EQB adopted a state-specific mercury regulation that requires significant emission reductions at each EGU on October 17, 2006. The final rulemaking was published in the *Pennsylvania Bulletin* on February 17, 2007.

The Commonwealth, and many other states, initiated litigation against EPA's actions on mercury. On March 14, 2008, the U. S. Court of Appeals for the District of Columbia issued an

[56] 42 U.S.C. § 7412
[57] 35 P S. § 4006.6.

expedited mandate remanding EPA's mercury regulations. EPA's actions on this rulemaking delayed implementation of control of a potent neurotoxin.

Delays in Issuing Federal Implementation Standards

In 1997, EPA adopted revisions of the National Ambient Air Quality Standards for ozone and fine particulates ($PM_{2.5}$). Due to litigation, these standards were not implemented until 2004. However, EPA did not issue the first portion of the ozone NAAQS implementation regulations until 2004 – after states had submitted attainment/nonattainment area designation recommendations. EPA issued the second portion of the ozone implementation rules in 2005. The Department and other states appealed the Phase 1 implementation rules. In 2007, the U. S. Court of Appeals for the District of Columbia remanded the rules to EPA for reconsideration.

In 2007, EPA issued the implementation rule for the $PM_{2.5}$ NAAQS adopted in 1997. The delay in issuing this rule caused delays in the Department's development of SIP revisions to EPA. The July 11, 2008 decision of the U.S. Court of Appeals for the D.C Circuit vacating the Clean Air Interstate Rule will result in further delays in publishing the revisions for public review and comment because the plans relied primarily on the NO_x and SO_2 reductions projected under the rule, starting in January 2009 and 2010, respectively.

Delays In Issuing NSR Revisions

EPA finalized revisions to the New Source Review (NSR) program on December 31, 2002 and proposed additional changes on the same date. The finalized changes include procedures for baseline emissions determinations, actual to future actual methodology, plant wide applicability limits, "clean units" and pollution control project exemptions. These changes are currently being implemented in Pennsylvania under the attainment area Prevention of Significant Deterioration (PSD) program as Pennsylvania adopted the federal rules by reference. In an appeal, the U.S. Court of Appeals for the D.C Circuit vacated the Clean Unit and Pollution Control Project exclusion provisions.

On August 27, 2003, EPA announced the finalization of its routine maintenance and repair rule (RMRR) under the NSR program. Under this second final rule, an equipment replacement activity will be excluded from NSR if: it involves replacement of any existing component(s) of a process unit with an identical or functionally equivalent component(s); the fixed capital cost of the replaced component, plus the costs of any repair and maintenance activities that are part of the replacement activity (such as labor, contract services, major equipment rental, etc.), does not exceed 20 percent of the replacement value of the entire process unit; the replacement(s) does not change the basic design parameters of the process unit; and the replacement(s) does not cause the unit to exceed any emissions limits. This rule was published in the Federal Register on October 27, 2003, and challenged by petitioners including the Department. Subsequently the rule was stayed by the U.S. Court of Appeals for the DC Circuit in December 2003. On March 17, 2006, the Court vacated the RMRR in its entirety. See, New York v. EPA, No. 03-1380 (D.C. Circuit 2006)

Legal Actions Taken by PA DEP against EPA

Although PA DEP has not initiated legal action against EPA pursuant to Section 7.12 of the APCA of 1992, it has taken legal action against EPA on several occasions. The Department participated in litigation challenging EPA's Clean Air Mercury Rule, ozone and $PM_{2.5}$ implementation rules, and new source review rules and denial of the California waiver request to regulate greenhouse gas emissions from passenger cars and light-duty trucks.

Discussion and Recommendations

The PA DEP believes it has adequate legal authority under the APCA and CAA to remedy disputes with EPA. Therefore, the Department is not requesting or recommending additional authority from the General Assembly to take legal action against EPA.

Moreover, the evidence strongly indicates that good communication between the Department and EPA can mitigate problems arising from missed federal CAA deadlines. Since EPA's missed deadlines often affect many states, it would likely be more effective to collaborate with organizations including the Environmental Council of the States, the National Association of Clean Air Agencies, the OTC, and the Mid-Atlantic Regional Air Management Association to develop and implement strategies to reduce air pollution.

Conclusion

Since the Air Pollution Control Act amendments of 1992 were enacted, the Department has made significant strides in developing the programs mandated by the APCA and the federal Clean Air Act. These programs have improved air quality in most of the Commonwealth to levels that protect the public health. Ground level ozone air quality remains a concern in many areas of the Commonwealth. Existing and proposed emission reduction programs, however, are designed to assure that the remainder of the Commonwealth will achieve and maintain the NAAQS for ozone by the prescribed attainment dates.

The development and implementation of these ozone control programs have involved significant public input and support. Collaborations with the Ozone Transport Commission and other national and regional organizations have been instrumental in the development of emission reduction strategies to address not only transported pollution but also local needs and concerns. The Department has been a leader in Ozone Transport Commission activities. Through the efforts of Pennsylvania and other states in the Ozone Transport Region, significant ozone-related VOC and NO_x emission reduction programs that benefit the entire region have been developed. The involvement of the Citizens Advisory Council and advisory committees including the Air Quality Technical Advisory Committee in reviewing policy and regulations has been beneficial to the Department during the development of cost-effective measures.

The permitting programs for new and existing stationary sources assure that the health of Pennsylvania's citizens is protected while providing for industrial growth and development. The new source permit program assures that new sources will have "best available technology" controls to minimize the emissions of air pollutants. The Department's Title V permitting program was among the first approved by EPA. Permits issued under Title V clearly define compliance requirements for the source operator and the public, providing for citizen involvement and participation in the permitting process.

Funds available to support the program are no longer adequate and as a result, the fee schedule will need to be amended to ensure that fees are sufficient to cover the costs of administering the air program including the plan approval, operating permit program required by Title V of the Clean Air Act and the small Business Compliance Assistance Program. The combination of Title V permit fees and other permit fees, combined with other revenue sources, have enabled the Department to provide staffing and other resources to carry out program mandates. The funding for the Small Business Compliance Assistance Program has provided an invaluable service to small businesses in the Commonwealth.

The Department has determined that Section 4.2 has not hindered the Commonwealth's efforts to comply with the mandates of the 1990 CAA and should therefore be retained because programs mandated by federal and state law have been implemented effectively.

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Appendix A: Acronyms

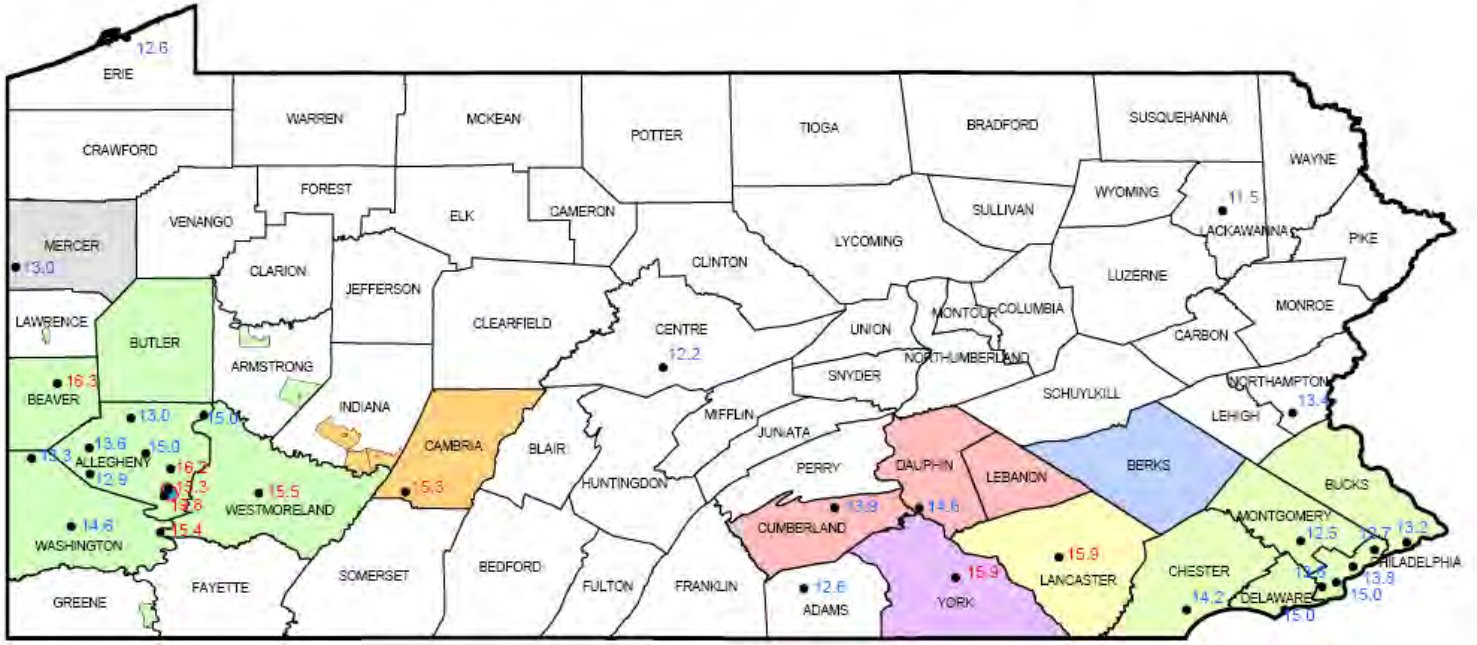
Acronym	Term
ACHD	Allegheny County Health Department
AIM	Architectural and Industrial Maintenance
AIMS	Air Information Management System
AIRS	Aerometric Information Retrieval System
AMIS	Automated Information Management System
AMS	Air Management Services – Philadelphia Department of Health
APCA	Air Pollution Control Act
AQTAC	Air Quality Technical Advisory Committee
BACT	Best Available Control Technology
BAQ	Bureau of Air Quality
BAT	Best Available Technology
Be	Beryllium
CAA	Federal Clean Air Act
CAC	Citizens Advisory Council
CAM	Compliance Assurance Monitoring
CAP	Compliance Advisory Panel
CO	Carbon Monoxide
DEP	Department of Environmental Protection
ECOS	Environmental Council of the States
EPA	U. S. Environmental Protection Agency
EQB	Environmental Quality Board
ERC	Emission Reduction Credit
ETAC	ElectroTechnology Application Center
FMVCP	Federal Motor Vehicle Control Program
H_2S	Hydrogen Sulfide
HAP	Hazardous Air Pollutant
I/M	Motor Vehicle Inspection and Maintenance Program
IPP	Independent Power Producer
LAER	Lowest Achievable Emission Rate
MACT	Maximum Achievable Control Technology
MARAMA	Mid-Atlantic Regional Air Management Association
MOU	Memorandum of Understanding
NAAQS	National Ambient Air Quality Standard
NESHAP	National Emission Standards for Hazardous Air Pollutants
NLEV	National Low Emission Vehicle
NO_2	Nitrogen Dioxide
NO_x	Oxides of Nitrogen
NSR	New Source Review
O_3	Ozone
OTC	Ozone Transport Commission
OTR	Ozone Transport Region
PAAQS	Pennsylvania Ambient Air Quality Standard

Acronym	Term
Pb	Lead
PennDOT	Pennsylvania Department of Transportation
PH	Log of the Concentration of Negative Ions
PM	Particulate Matter
PM_{10}	Particulate Matter with an Aerodynamic Diameter less than 10 Microns
$PM_{2.5}$	Particulate Matter with an Aerodynamic Diameter less than 2.5 Microns
RACT	Reasonably Available Control Technology
SBA	Small Business Administration
SBCAP	Small Business Compliance Assistance Program
SBO	Small Business Ombudsman
SBTCP	Small Business Stationary Source Technical and Environmental Compliance Assistance Program
SIP	State Implementation Plan
SO_2	Sulfur Dioxide
SO_x	Oxides of Sulfur
TRI	Toxic Release Inventory
TSDF	Transport, Storage and Disposal Facility
VOC	Volatile Organic Compound

Appendix B

Nonattainment Area Maps

2007 Annual $PM_{2.5}$ Design Values



Appearing in Red - 2007 Annual PM 2.5 Design Values Above the Standard of 15.0 ug/m3

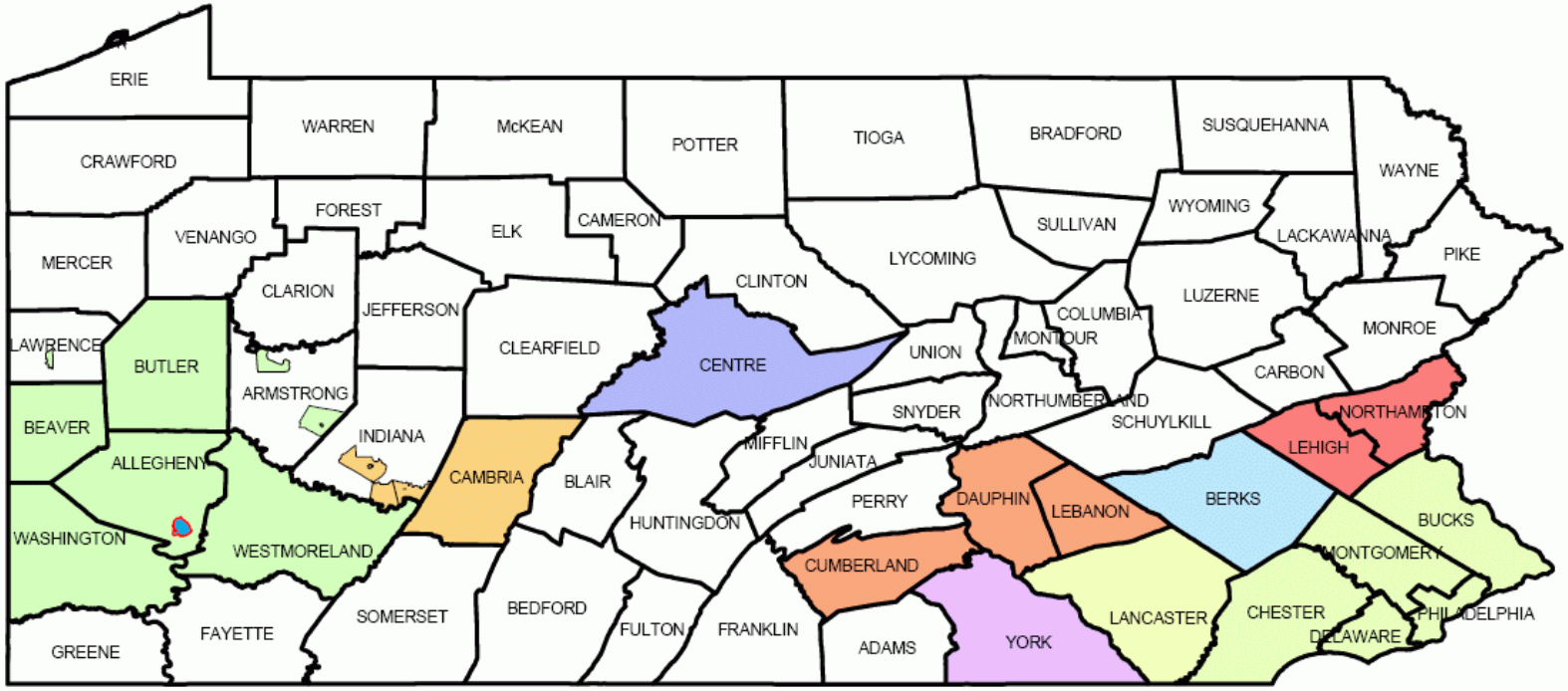
Appearing in Blue - 2007 Annual PM 2.5 Design Values Below the Standard of 15.0 ug/m3

Annual PM 2.5 Designations Areas

Harrisburg-Lebanon-Carlisle, PA	Philadelphia-Wilmington, PA-NJ-DE	York, PA
Johnstown, PA	Pittsburgh, PA	Youngstown-Warren-Sharon, OH-PA
Lancaster, PA	Reading, PA	Liberty-Clairton

Areas are Shaded Based on EPA's December 17, 2004 Designations and as Amended on April 14, 2005

Recommended 24-hour PM 2.5 Nonattainment Areas

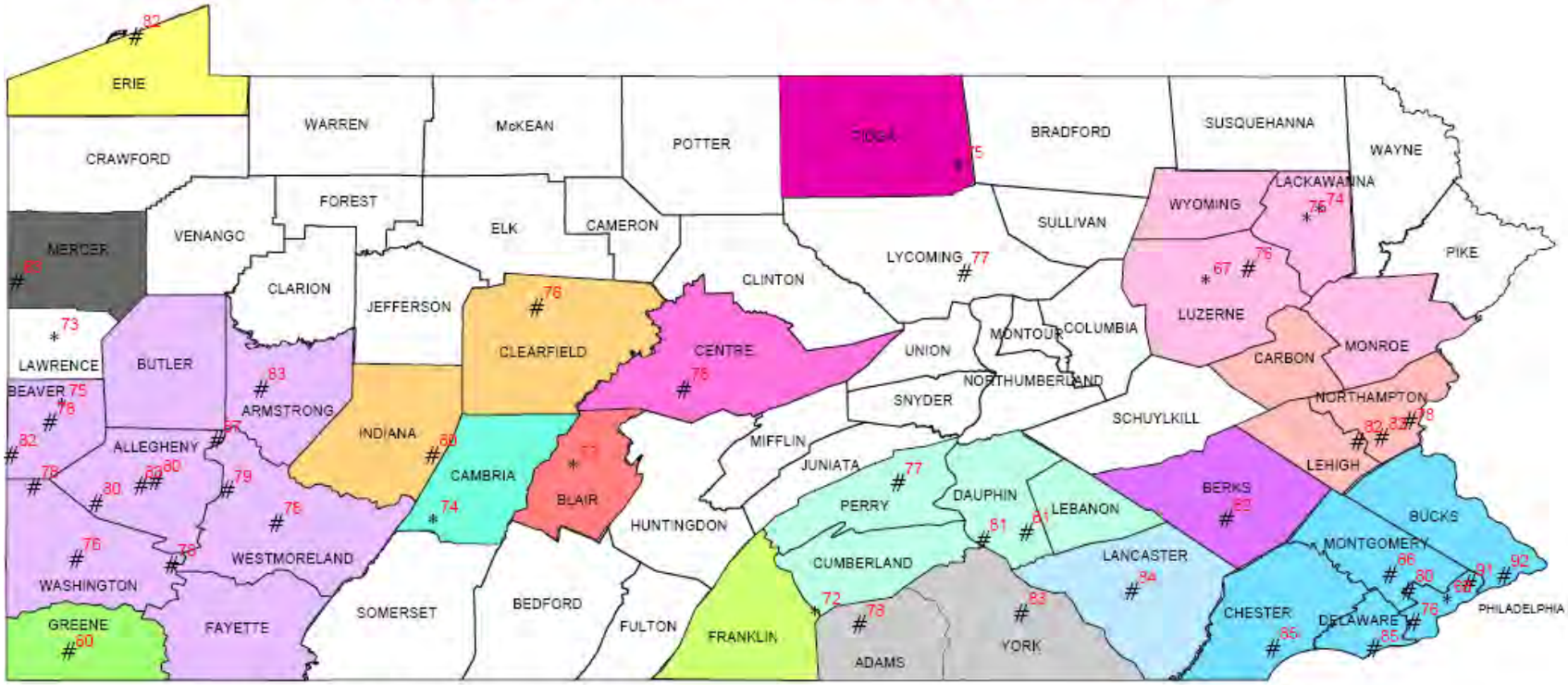


Proposed 24-Hour PM 2.5 Designation Areas

Attainment Counties	Johnstown, PA	Pittsburgh, PA	York, PA
Allentown-Bethlehem-Easton, PA	Lancaster, PA	Reading, PA	Liberty-Clairton
Harrisburg-Lebanon-Carlisle, PA	Philadelphia-Wilmington, PA-NJ-DE	State College, PA	

Pennsylvania Monitored 2007 8-Hour Ozone Design Values

Appearing in Red - 2007 8-Hour Ozone Design Value (in ppb)



2007 Monitor Status

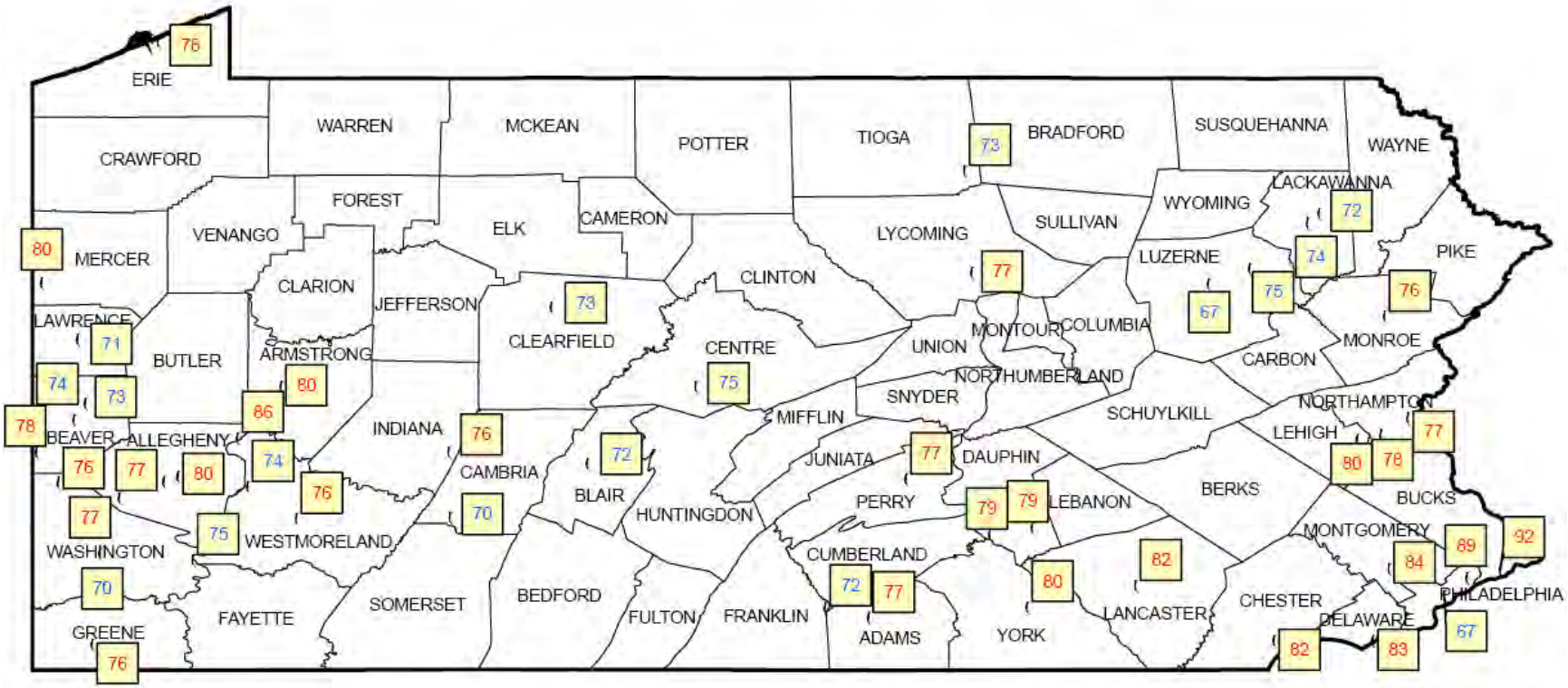
* Attaining Standard (DV <=75)

\# Not Attaining Standard (DV > 75)

Nonattainment Areas

- Allentown-Bethlehem-Easton, PA
- Altoona, PA
- Clearfield-Indiana, PA
- Erie, PA
- Franklin Co, PA
- Greene Co, PA
- Harrisburg-Lebanon-Carlisle, PA
- Johnstown, PA
- Lancaster, PA
- Philadelphia-Wilmington-Atlantic_City_PA-DE-MD-NJ
- Pittsburgh-Beaver Valley, PA
- Reading, PA
- Scranton-Wilkes-Barre, PA
- State College, PA
- Tioga Co, PA
- York, PA
- Youngstown-Warren-Sharon_OH-PA

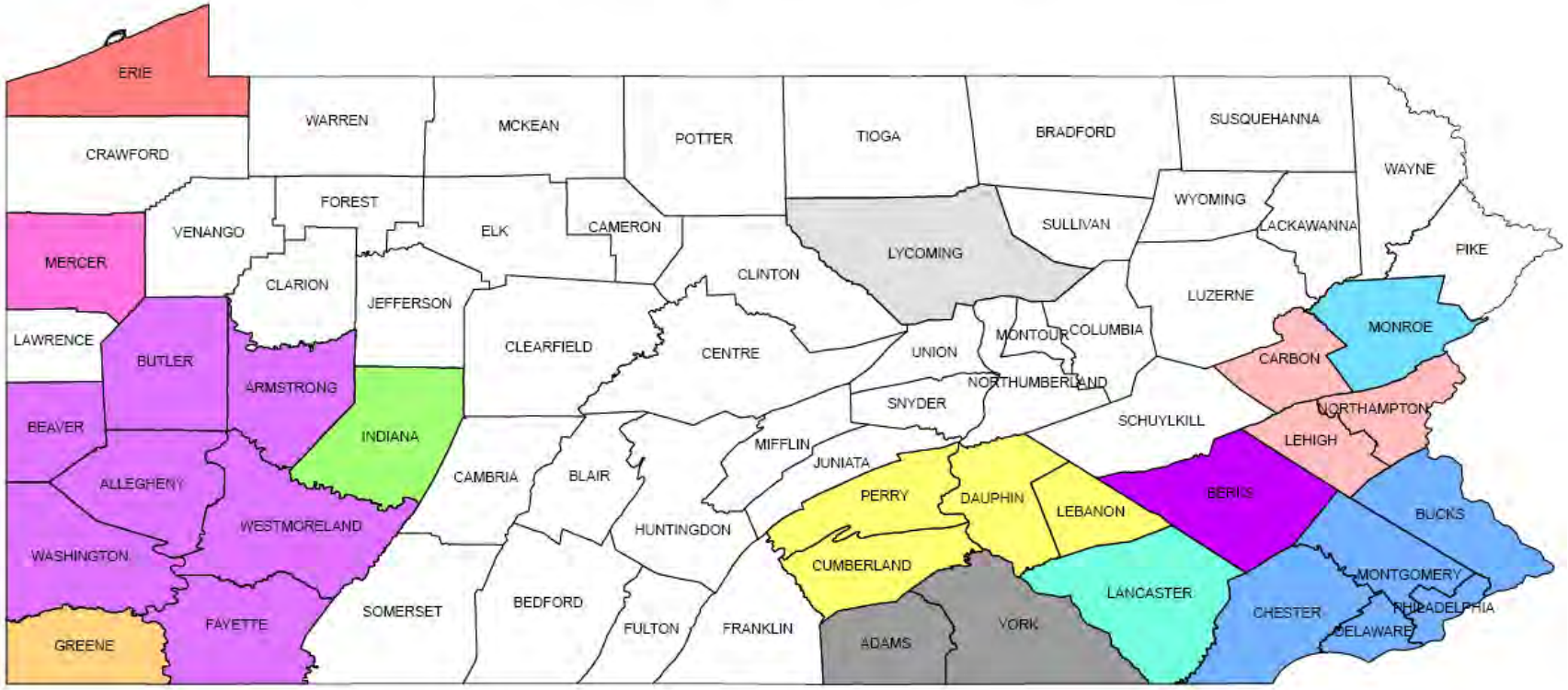
2008 8-Hour Ozone Design Values



Appearing in Red - 2008 8-Hour Ozone Design Values Above the Revised Standard of 75 ppb

Appearing in Blue - 2008 8-Hour Ozone Design Values At or Below the Revised Standard of 75 ppb

Recommended 8-Hour Ozone Nonattainment Areas



Proposed 8-Hour Ozone Designation Areas

- Allentown-Bethlehem-Easton
- Erie
- Greene
- Harrisburg-Lebanon-Carlisle
- Indiana
- Lancaster
- Monroe
- Philadelphia
- Pittsburgh-Beaver Valley
- Reading
- Youngstown-Warren-Sharon
- Williamsport
- York