STATE IMPLEMENTATION PLAN REVISION TO REDUCE REGIONAL TRANSPORT OF OZONE

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1. Executive Summary

Pennsylvania is revising the State Implementation Plan (SIP) for ozone. The Environmental Protection Agency has issued a notice under Section 110 of the Clean Air Act that the current SIP does not sufficiently address the transport of pollutants to other states or nonattainment areas. This "SIP Call" requires the state to reduce emissions of nitrogen oxides (NO_x) in order to mitigate the transport.

Pennsylvania has adopted an Interstate Ozone Transport Reduction regulation. This regulation as it pertains to Pennsylvania will be submitted with this document to EPA as a revision to the SIP. This documents discusses the emission inventories and demonstrates that the NO_x budget will be met.

2. Overview

This document is a revision to Pennsylvania's State Implementation Plan (SIP), according to the provisions in the federal Clean Air Act Amendments (CAAA) Section 110 and the Pennsylvania Air Pollution Control Act (APCA). The purpose of this SIP revision is to describe Pennsylvania's plan for substantially reducing the emissions of nitrogen oxides (NO_x) from Commonwealth sources. Reducing NO_x will reduce ground-level ozone concentrations in Pennsylvania and in downwind areas.

NO_x is the most significant contributor to regional ground-level ozone. Research shows that some areas of Pennsylvania cannot attain and maintain the one-hour health-based ozone standard unless states to the west and south reduce their NO_x emissions. Similarly, the Philadelphia Consolidated Metropolitan Statistical Area as well as areas downwind of Pennsylvania cannot meet the standard unless Pennsylvania reduces its NO_x emissions.

EPA has promulgated regulations (63 *Fed. Reg.* 577356; October 27, 1998) which address interstate ozone transport and has required affected states to revise their State Implementation Plan.

Pennsylvania's SIP revision provides 2007 statewide NO_x "budgets" for mobile, area and stationary sources of NO_x. Meeting this budget will ensure Pennsylvania does not emit NO_x in amounts that contribute significantly to nonattainment in or interfere with maintenance of the 1-hour ozone standard by a downwind state. By complying with the NO_x emissions limits contained in the budget, the Commonwealth ensures that it does its fair share in reducing regional air pollution.

This SIP revision will be submitted to EPA with a regulatory program for large electric generating unit (EGU) and other industrial sources of NO_x. Pennsylvania's Interstate Ozone Transport Reduction program will allow Pennsylvania to meet its NO_x

budget, in conjunction with already adopted state and federal measures. The Interstate Ozone Transport Reduction regulation was adopted by the Environmental Quality Board on July 18, 2000 and published in the Pennsylvania Bulletin on September 23, 2000.

2.1 Ozone and Its Precursors

Ground-level ozone continues to be the primary air pollution problem in Pennsylvania. Reducing concentrations of ground-level ozone is important because ozone is a serious human health threat; it also can cause damage to important food crops, forests, and wildlife. (Ground-level ozone should not be confused with stratospheric ozone – located high above the ground in the upper atmosphere – which protects the earth by blocking out damaging solar radiation.)

Ozone is not emitted directly to the atmosphere, but is formed by photochemical reactions between oxides of nitrogen (NO_x) and volatile organic compounds (VOCs) in the presence of sunlight. The long, hot, humid days of summer are particularly conducive to ozone formation, so ozone levels are of general concern during the months of May through September.

VOC emissions have origins as diverse as automobiles, chemical manufacturing, paint shops, and other sources using solvents. NO_x emissions are produced by high temperature combustion processes from utilities, industries, vehicles and other sources that burn fuels.

An important characteristic of NO_x emissions is that they can be transported long distances and cause problems far from the original emissions source. This SIP revision is being developed in order to meet the requirements of the SIP Call and to conform to EPA's action on the Section 126 petitions submitted by Pennsylvania and 7 northeastern states and EPA's regional strategy to reduce NO_x. (See section below for an explanation of NO_x's specific role in ozone transport.)

Some areas of Pennsylvania may also need to reduce VOC emissions or reduce NO_x beyond the levels described in this SIP revision in order to meet and maintain the health-based ambient air quality standard for ozone. Any strategies necessary will be addressed in future SIP revisions.

The Family of Nitrogen Oxides

Nitrogen in the air and fuel nitrogen react with oxygen during the combustion process to form the NO_x compounds.

- NO – nitric oxide (most of NO_x)
- NO_2 – nitrogen dioxide (makes smog brown -- impairs visibility)
- Nitrate salts and particles (impair visibility)

N_2O – nitrous oxide – is a greenhouse gas and is not included when "NO_x" is monitored.

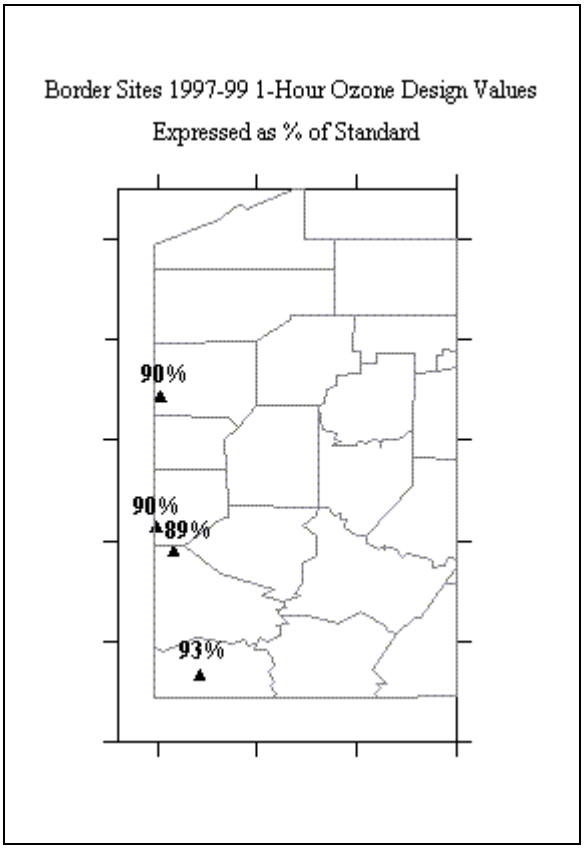
Health effects of ozone and nitrogen oxides. NO_x contributes to ground-level ozone.

Ozone causes human health problems because it damages tissue, reduces lung function, and sensitizes the lungs to other irritants. Scientific evidence indicates that elevated ambient levels of ozone not only effect people with asthma and others respiratory impairments, but also healthy adults and children, especially those who exercise or work outside. Exposure to ozone for several hours at relatively low concentrations has been found to significantly reduce lung function and induce respiratory inflammation in healthy people during exercise. This decrease in lung function generally is accompanied by symptoms including chest pain, coughing, sneezing, and pulmonary congestion.

Environmental effects of ozone and nitrogen oxides. Ground-level ozone damages vegetation and reduces crop yields. NO_x reacts with other substances to form acids which fall to the earth as precipitation or dry particles. Acid precipitation causes lakes and streams to become unsuitable for many fish, and damages forests and structures. Increased nitrogen loadings in water bodies, particularly coastal estuaries, upset the chemical balance of nutrients used by aquatic plants and animals and reduces fish and shellfish populations. Another member of the NO_x family, nitrous oxide, is a greenhouse gas, which contributes to global warming. Nitrate particles and nitrogen dioxide can also impair visibility, obscuring views in cities and rural areas.

2.2 Addressing Ozone Transport

All northeast states, except Vermont, have since 1990 experienced levels of ozone during the months of May through September in excess of the one-hour National Ambient Air Quality Standard (NAAQS).



Air comes into Pennsylvania already polluted. Pennsylvania has one of the nation's most extensive ozone monitoring networks. Ozone monitors on the border of Pennsylvania consistently show that highly polluted air enters Pennsylvania from areas to the west and south. When high levels of ozone and ozone-causing chemicals are transported into an area, it becomes impossible for Pennsylvania alone to protect public health.

The Clean Air Act Amendments (Section 110) provides that each State Implementation Plan (SIP) must contain provisions preventing sources within the state from "contributing significantly to nonattainment problems or interfering with maintenance" in downwind states. In other words, this provision addresses the transport problems associated with ozone and pollutants such as NO_x that form ozone. Section 184 of the Clean Air Act

established the Northeast Ozone Transport Commission (OTC) to assist in developing recommendations for the control of interstate air pollution in 13 northeast states.

Section 182 of the federal Clean Air Act requires that states must develop and implement reasonably available control technologies (RACT) for existing major stationary sources emitting NO_x and VOCs. Because Pennsylvania is included in the OTC, these requirements are applicable throughout the state. Pennsylvania adopted regulations implementing the RACT requirements on January 15, 1994. However, more was needed to allow Pennsylvania and other OTC states to achieve the one-hour ozone NAAQS.

The National Research Council[1] and the Clean Air Act Amendments of 1990 first recognized NO_x as a major contributor to regional ozone pollution. Because large fossil fired combustion units are major NO_x generators, the OTC member states, including Pennsylvania, proposed development of a regional approach to address NO_x emissions. This regional approach resulted in a model rule applicable to fossil-fired combustion units with a rated capacity of 250 MMBtus per hour or more and electric generating units of 150 MMBtus per hour or greater. This regional approach was adopted by Pennsylvania on November 1, 1997 and began implementation on May 1, 1999. This program is designed to effectuate least cost NO_x emission reductions for the years 1999 through 2002 in the Northeast region.

As additional air quality modeling and analysis was developed, it became apparent that reductions of NO_x emissions in the OTC states alone would not result in attainment of the one-hour NAAQS along the eastern seaboard. In 1995, the Ozone Transport Assessment Group (OTAG) was formed by the Environmental Council of States and EPA. OTAG's goal was to "identify and recommend a strategy to reduce transported ozone and its precursors which, in combination with other measures, will enable attainment and maintenance of the National Ambient Ozone Standard in the OTAG region". OTAG was composed of the 37 eastern most states and included participation by EPA, industry and environmental groups.

OTAG undertook a comprehensive modeling effort to evaluate the impact on ozone formation and transport resulting from imposition of various emission reduction strategies. OTAG found that NO_x emission reductions are more effective than VOC emission reductions in reducing ozone transport. The OTAG recommendations therefore focus on achieving additional reductions of NO_x in order to meet the NAAQS for ozone. The more NO_x emission reduction, the more ozone benefit. The modeling also demonstrated that large fossil-fired combustion units in 22 of the 37 states significantly contributed to ozone nonattainment and will prevent attainment and maintenance of the ozone NAAQS.

As a result of both the OTAG analysis and independent analysis conducted by Pennsylvania and other northeastern states, on August 14, 1997, Governor Ridge filed a petition with EPA Administrator Browner for abatement of excess emissions under

[1] *Rethinking the Ozone Problem in Urban and Regional Air Pollution*, National Academy Press, 1991

Section 126(b) of the Clean Air Act. Pennsylvania's petition requested a finding that large fossil-fuel fired combustion units and electric generating units in Midwestern and Southern states significantly contributed to nonattainment of the ozone NAAQS in Pennsylvania. Pennsylvania requested that the Administrator of EPA establish emission limitations for these large NO_x emitters. Specifically, Pennsylvania petitioned the Administrator to establish a cap and trade compliance system to provide for the most cost effective emission reductions. Seven other northeastern states filed similar petitions with EPA.

On May 25, 1999, EPA took interim final action on these petitions. EPA's final action on includes partial approval based on technical considerations of six of the petitions and a finding that sources in 19 states (AL, CT, DE, IL, IN, KY, MD, MA, MI, MO, NJ, NY, NC, OH, PA, RI, TN, VA, WV) and DC significantly contribute to nonattainment or interfere with the ability to maintain clean air in one or more of the petitioning states. On January 18, 2000, EPA finalized the Section 126 remedy to correct the ozone transport pollution problem (65 FR 2674). That remedy establishes specific emission caps on certain large NO_x sources and allocates NO_x allowances. An allowance authorizes the source to emit one ton of NO_x. These sources may trade the NO_x allowances to achieve the lowest control cost.

The Section 126 remedy is based on emission inventories, ambient air quality and modeling data. This database was used in evaluating the pollution transport issue under Section 110 of the Clean Air Act.

EPA's Section 110 analysis demonstrates that 19 states and the District of Columbia significantly contribute to nonattainment of the ozone NAAQS in other states. On October 27,1998, the US Environmental Protection Agency (EPA) issued a regulation, based on OTAG findings and recommendations, which required 22 states and the District of Columbia to modify their State Implementation Plans (SIPs) to prevent this significant contribution by reducing NO_x emissions (63 FR 57356). The rule is informally referred to as "the NO_x SIP Call."

THE NOx SIP CALL STATES

Alabama*	North Carolina
Connecticut	New Jersey
Delaware	New York
DC	Ohio
Georgia*	Pennsylvania
Illinois	Rhode Island
Indiana	South Carolina
Kentucky	Tennessee
Massachusetts	Virginia
Maryland	West Virginia
Michigan*	Wisconsin
Missouri*	

* Implementation delayed

The rule assigns a summertime NO_x emissions limit or budget for all NO_x emissions in each affected state and requires the states to develop mechanisms to ensure that the budget is achieved. States were required, by EPA's final SIP call rule, to establish NO_x emission programs on or before September 30, 1999. If states fail to

establish SIP based programs, EPA will impose a Federal Implementation Plan (FIP) under Section 110 of the Clean Air Act. This rule was challenged in the U.S. Court of Appeals for the District of Columbia Circuit. On March 3, 2000, the Court issued an opinion generally upholding the SIP Call's applicability in 19 states and the District of Columbia. The Court also revised the SIP submission deadline to October 30, 2000.

EPA established the budgets by determining the amount of NO_x emissions that would remain in each state after reasonable, highly cost-effective control measures were applied. One of the mechanisms proposed by EPA that states could use to meet the budget is the cap and trade program for large fossil fired combustion boilers and electric generating units greater than 25 megawatts. EPA has developed a model cap and trade rule similar to the OTC model rule. EPA's proposal would extend the market for developing least cost controls to the 19 states and District of Columbia.

2.3 What this SIP contains

2.3.1 Budget demonstration

2.3.1.1 How EPA developed the budget

EPA began with an emissions inventory attributable to 1995 assembled from many data sources, including state sources. See Section 3.1 for a discussion of the use of 1996 for electric generating units.

EPA then developed a 2007 base year inventory by projecting the total amount of NO_x emissions that sources in each covered state would emit in light of expected growth through 2007. Measures required under the Clean Air Act as listed on Table 1 on the next page were assumed to be implemented. That is, even though this inventory is called a "base," it includes a whole list of control strategies, many of which were not in effect in 1996, which will produce significant NO_x emission reductions. For example, these strategies reduce nonroad emissions from 50,303 tons per ozone season to 30,635 tons per ozone season, according to EPA data.

Table 1
Controls Assumed For 2007 Base Year Inventory

SECTOR	MEASURE
Stationary: Electric Generating Unit (EGU)	• Acid rain controls (Title IV of CAAA), Phases I and II • New Source Performance Standards (NSPS) or Prevention of Significant Deterioration (PSD) requirements for sources over 250 tons per year • NO_x Reasonably Available Control Technology (RACT) and New Source Review (NSR) in applicable nonattainment areas and throughout the Ozone Transport Region • OTC NO_x MOU Phase II
Stationary: Non-EGU sources	• NO_x RACT as above • VOC RACT at major sources in nonattainment areas and throughout the Ozone Transport Region • NO_x Maximum Available Control Technology (toxics control) standards at municipal waste combustors • OTC NO_x MOU Phase II
Stationary Area Sources	• Federal VOC Consumer Products Phase I and II • Federal VOC Architectural Coatings Phase I • VOC Stage I and II petroleum distribution controls in appropriate nonattainment areas • Federal VOC Autobody, Degreasing and Dry Cleaning Controls in nonattainment areas
Nonroad Mobile Sources	• Federal standards for small engines and marine engines • Federal Phase I standards for heavy-duty nonroad engines • Reformulated gasoline where applicable and federal evaporability standards elsewhere • Federal locomotive standards • Federal nonroad diesel engine standards, phases 2 and 3 • Onboard vapor recovery (automobile design)
Highway Vehicles	• National Low Emission Vehicle Program • Reformulated Gasoline where applicable and federal evaporability standards elsewhere • Inspection/maintenance where applicable • Federal NO_x standard for new heavy duty highway vehicles

EPA then projected the total amount of NO_x emissions that each of those states would emit in 2007 if each such state controlled its large stationary NO_x-emitting sources (by implementing highly cost effective measures). EPA found that the NO_x reduction resulting from this program would address contributions from affected states to other states' ozone nonattainment problem. That "controlled" 2007 inventory is the state's budget. The difference between the 2007 base inventory and the 2007 budget inventory for each covered state is the amount of NO_x emissions that each state's SIP must reduce under the SIP Call.

Separate budget line items have been provided by EPA for electric generating units (EGUs), non-electric generating unit stationary sources such as manufacturing facilities (non-EGUs), area sources, nonroad mobile sources and highway sources.

NOx Sources Include:

Electric generating units (EGUs): both large utility and large nonutility electric generating units.
Non-EGUs: Stationary sources that do not generate electricity.
Area sources: Other stationary sources too small to be accounted for individually.
Nonroad mobile sources: Equipment such as farm tractors, lawn mowers, bulldozers, airplanes.
Highway sources: Cars, trucks, buses, motorcycles

The methodologies employed by EPA to develop the budget are explained in the EPA document "Development of Emission Budget Inventories for Regional Transport NO_x SIP Call, Technical Amendment Version" dated December 1999. A copy of the report can be found on the EPA web site http://www.epa.gov/ttn/rto/sip/related.html

A key difference between EPA's NO_x SIP Call inventories and previous Pennsylvania emission inventories is that the NO_x SIP Call budget is a seasonal budget -- the NO_x emitted during the ozone season. Previous Pennsylvania budgets were expressed in terms of pollutant emitted during a typical summer day.

There were several periods during which EPA received comments on various aspects of the SIP Call emissions inventories. DEP submitted comments to EPA on aspects of its budget preparation before it became final to help EPA fine-tune its budget numbers where appropriate. Individual EGU and nonEGU sources also submitted comments independently. The final rulemaking establishing the inventories upon which the state budgets are based was published on March 2, 2000 (65 FR 11222).

2.3.1.2 Pennsylvania's Budget

Pennsylvania is using the EPA NO_x budget for the year 2007 of 268,158 tons per ozone season (May 1 through September 30) after controls.

EPA has calculated that budget as follows in Table 2:

Table 2
Tons of NO_x per ozone season

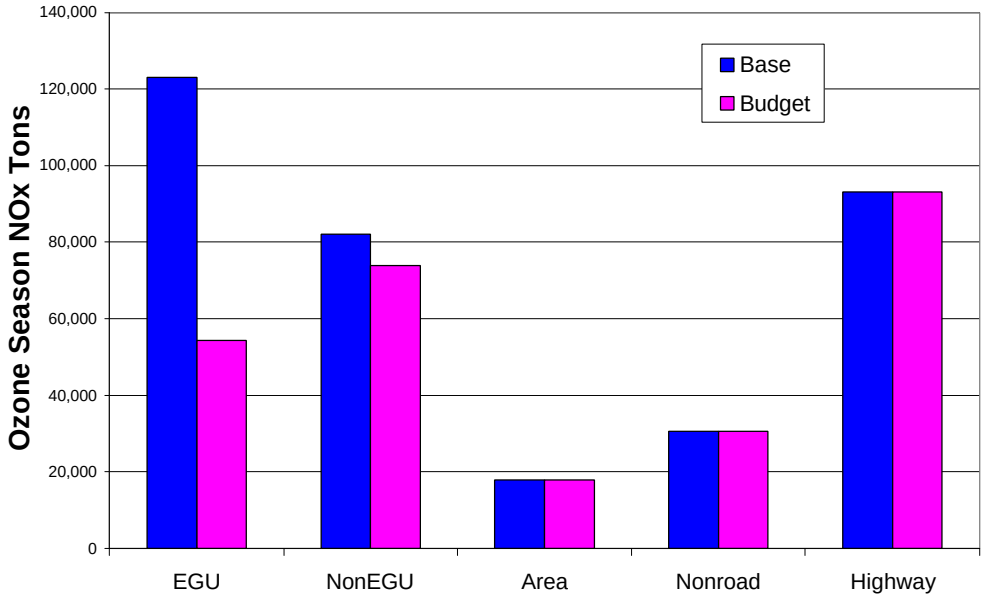
TOTAL	EGU	NonEGU	Area	Nonroad	Highway
268,158	54,268	73,899	17,842	30,571	91,578

This represents a 22 percent NO_x reduction from the baseline 2007 inventory of 345,210 tons per ozone season, the amount projected to be emitted if Pennsylvania does not implement its Ozone Transport Reduction regulation.

The chart below compares the emissions in 2007 before and after application of the additional controls envisioned by EPA, similar to Pennsylvania's Interstate Ozone Transport Reduction program. Because the program used to set the budget level effects only stationary sources, emissions in base and budget inventories for area, nonroad and mobile sources will be identical.

Please note that the actual emissions of highway vehicles will be less than estimated in this rule, because EPA did not include the effects of Tier 2 light-duty cars and trucks (taking effect in 2004) and cleaner diesel vehicles/fuel (some effects expected in mid-2006).

2007 Base and Budget Inventory Comparison



2.3.2 Pennsylvania's Interstate Ozone Transport Reduction Regulation

A brief description of the regulation is provided here for information purposes, to describe how Pennsylvania intends to meet its budget. The final Interstate Ozone

Transport Reduction regulation was adopted by the Environmental Quality Board on July 18, 2000 and published in the Pennsylvania Bulletin on September 23, 2000.

The NO_x SIP Call does not mandate which sources must reduce NO_x as long as states adopt regulations that will assure they meet their NO_x budget. Programs must be implemented no later than 2003. States must demonstrate that they have complied with their 2007 budgets. EPA has developed a model market-based "cap and trade" program that EPA will implement with those states that choose to reduce NO_x from utilities and other large point sources. Pennsylvania has based its NO_x reduction program on that model rule.

As discussed above, Pennsylvania has controlled NO_x from stationary sources since its adoption on Reasonably Available Control Technology (RACT) regulations in 1994. Pennsylvania adopted a cap and trade program in 1997 consistent with the Northeast OTC's model rule. The regulations being submitted with this SIP provide greater NO_x reduction than the existing cap and trade program, at 25 PA Code Chapter 123, in order to attain the NO_x reductions called for in the Section 110 NO_x SIP Call.

A cap and trade program places a cap on total emissions from a group of affected sources. The program then assigns allowances to individual sources. Facilities that reduce their emissions in greater amounts than required are then able to sell their excess NO_x emission reductions to those facilities in the program that cannot reduce emissions as quickly or cost-effectively. The "cap" ensures achievement of the requirement reductions, while the "trade" provides flexibility and cost effectiveness.

Pennsylvania's new Interstate Ozone Transport Reduction regulation in Chapter 145 of the Pennsylvania Code establishes requirements beginning in 2003 for:

- Fossil fired combustion boilers with a maximum design heat input greater than 250 million mmBtu per hour and
- Electric utility generators with a rated capacity greater than 25 megawatts.

The new regulation also replaces the existing NO_x allowance program in 2003.

The Pennsylvania cap and trade program contains a process for NO_x allowance allocation for the May 1 through September 30 control periods and establishes an accounting process for deposit, use and transfer of allowances between NO_x budget sources. Similar sources that are not otherwise covered may "opt-in" in order to participate in the cap and trade program. Like the existing NO_x cap and trade program, this program will be implemented through the Department's permits. In general, the Department plans to integrate this trading rule into its existing permitting program.

The sections of the regulation affecting the Pennsylvania budget will be included in the SIP submission to EPA.

3. Budget Demonstration

EPA determined the state-by-state budgets in three steps:

1. Estimating a 1995 base year inventory (one exception for electric generating units is discussed in Section 3.1).
2. Projecting that inventory to 2007 by taking into account economic growth and assumed control measures (see Table 1 on page 7) to obtain a 2007 base inventory.
3. Applying cost effective control programs for certain sources and subtracting the emission reductions expected from those controls from the 2007 base inventory. The remaining emissions become the state budget for the jurisdictions subject to the SIP Call.

The state budgets were calculated by summing the individual components described below. EPA has taken extensive public comment on preparation of the budgets. On October 27, 1998, EPA published the final NOx SIP Call regulation in the Federal Register (63 FR 57356). The rule provided a 60-day public comment period on the 2007 base inventories. On December 24, 1998, EPA then reopened and extended the comment period to take comment on source-specific data as well as data used to calculate highway vehicle emissions until February 22, 1999. On August 9, 1999, EPA published a notice of availability of the inventory (64 FR 43124). The final inventory was published by EPA on March 2, 2000 (65 FR 11222).

On March 3, 2000, the US Court of Appeals for the District of Columbia Circuit issued a decision on the appeal of the SIP Call. The Court ruled that the majority of the SIP Call was valid but remanded certain portions back to EPA for additional regulatory development. As a result, on April 11, 2000, EPA sent a letter to Governor Tom Ridge describing a two phased approach to the SIP Call. Phase I would include all emission reductions approved by the Court and would start in 2003. Phase II would include the additional controls for issues remanded by the Court. No start date for Phase II has been established.

This section summarizes EPA's methodology for calculating the budgets as described in "Development of Emission Budget Inventories For Regional Transport NOx SIP Call" and supporting documents obtainable at http://www.epa.gov/ttn/oarpg/otagsip.html

3.1 Electric Generating Unit (EGU) Point Source Emissions

What this sector includes. This inventory category includes both utility and nonutility electric generating units. The nonutility units include independent power producers (IPP) and other generators.

1996 Base Inventory. EPA developed the base inventory using three data sources. First, EPA used certified data submitted by sources subject to the acid rain program. Second, EPA used data submitted by electric generators to the Department of Energy, Energy Information Agency. Third, EPA used state and source information. A complete description of the inventory development is contained in the document: "Development of Emission Budget Inventories for Regional Transport NO_x SIP Call." The document can be obtained from EPA's web site at:
ftp://ftp.epa.gov/EmisInventory/NOxSIPCall_Mar2_2000/TSDmar00.PDF
EPA reviewed 1995 and 1996 heat input data for each electric generating unit. They summed each year's heat input and selected the year with the highest total heat input as representative for the state. For Pennsylvania, 1996 was the year with the highest heat input. Therefore, 1996 data was used as the base year for Pennsylvania for projecting to the future.

2007 Base Case Inventory. EPA developed the 2007 base inventory by projecting heat input from the base year to 2007. EPA used the Integrated Planning Model to predict growth rates for the electric generating units. A complete discussion of the IPM model forecast, including model runs, can be found on the EPA web site: http://www.epa.gov/capi/ipm/npr.htm.

Pennsylvania has implemented a number of controls. These control strategies were included in the base inventory estimates.

Acid rain controls (Title IV of CAAA)
New Source Performance Standards and Prevention of Significant Deterioration requirements
Reasonably Available Control Technology and New Source Review where applicable
OTC MOU Phase II NO_x reductions

2007 Budget Case Inventory. The SIP Call budget assumes a uniform 0.15 lb NO_x/MMBtu for units greater than 25 megawatts. The electric generating unit inventory does not include sources rated less than or equal to 25 megawatts. These sources are included in the non-electric generating unit category. However, due to the Court decision, EPA notified Pennsylvania that the budget needed to be recalculated to reflect the remand decision. The new budget is calculated with a 0.15 lb/mmBtu emission rate for units subject to the Acid Rain program and a RACT emission rate for all other electric generating units. RACT was assumed to be the emission rate from the 1996 baseline for each Pennsylvania unit.

TONS PER OZONE SEASON

1996 Base Year	2007 Base	2007 Budget
Not Estimated	123,102	54,268

A complete listing of the EPA electric generating unit inventory can be found at the following EPA web site:
ftp://ftp.epa.gov/EmisInventory/NOxSIPCall_Mar2_2000/

3.2 Non-Electric Generating Unit Point Source Emissions

What this sector includes. The non-electric generating unit point source inventory includes all the remaining point sources. These include industrial boilers and process heaters, cement kilns, stationary internal combustion engines, and electric generating units rated less than or equal to 25 megawatts.

1995 Base Inventory. EPA based its 1995 inventory on OTAG estimates, supplementing with state or national trends data if necessary. Emissions were then grown to 1995 using Bureau of Economic Analysis (BEA) historical growth estimates of industrial earnings at the state 2-digit SIC level. Reasonably Available Control Technology (RACT) for NOx was applied throughout the Ozone Transport Region (including Pennsylvania) and, outside the OTR, in appropriate nonattainment areas as required by the CAAA.

2007 Base Inventory. The 1995 data were projected to 2007 using BEA projections of Gross State Product (GSP) at the 2-digit SIC level, supplemented with state, local, and industry-provided growth factors. The following control strategies were assumed:

RACT, PSD, NSPS, NSR
MACT for municipal waste combustors (30% reduction)

2007 Budget Inventory. Budget controls were applied to only to "large" boilers, turbines, and cement manufacturing plants of the following sizes:

CATEGORY	**"LARGE" is…**
Boilers	More than 250 MMBtu/hr
Turbines	More than 250 MMBtu/hr
Cement Manufacturing Plants	More than 1 ton NOx per typical ozone season day

Small sources were included in this portion of the inventory at their 2007 base inventory levels, as were sources with insufficient information available to determine post-control levels.

TONS PER OZONE SEASON

1995 Base Year	2007 Base	2007 Budget
77,058	82,107	73,899

A complete listing of the EPA large non-electric generating unit inventory can be found on the EPA web site: ftp://ftp.epa.gov/EmisInventory/NOxSIPCall_Mar2_2000/

3.3 Stationary Area Source Emissions

What this sector includes. The area source inventory contains the information necessary to estimate emissions collectively for those sources that are too small or too numerous to be handled individually in the point source inventories above. Some examples include industrial processes, gasoline marketing, the use of consumer products, miscellaneous combustion sources, waste disposal and the use of solvents and paints.

1995 Base Inventory. EPA projected 1995 inventories from the OTAG 1990 inventory. EPA used Bureau of Economic Analysis (BEA) historical growth estimates at the state 2-digit Standard Industrial Code (SIC) level. EPA supplemented OTAG data as necessary with either state data or national trend information prepared by EPA. EPA multiplied the OTAG tons per typical summer day estimates by 153 days in order to calculate tons per ozone season.

2007 Base Inventory. The 1995 inventory was projected to 2007 using BEA projections supplemented by information from state and local agencies. Emissions were then reduced by the amount of reduction expected from the control measures below, taking into account the expected implementation dates of each regulation. Note that no NO_x reductions were anticipated from this category.

VOC Consumer Products Phase I and II
VOC Architectural Coatings Phase I
VOC Stage I and II petroleum distribution controls where appropriate
VOC Autobody, Degreasing and Dry Cleaning Controls in nonattainment areas

2007 Budget Inventory. No stationary area source would be subject to the additional controls EPA used to calculate the budget inventory. Therefore, the amount of emissions included in the statewide total budget is the same as in the 2007 base inventory, as summarized below.

TONS PER OZONE SEASON

1995 Base Year	**2007 Base**	**2007 Budget**
15,002	17,842	17,842

A complete listing of this inventory can be found at the EPA web site:
ftp://ftp.epa.gov/EmisInventory/NOxSIPCall_Mar2_2000/

3.4 Nonroad Area Source Emissions

What this sector includes. This sector includes a diverse collection of equipment such as lawn and garden equipment, agricultural and construction vehicles and equipment, aviation, locomotives, and boats.

1995 Base Inventory. EPA used a similar methodology to calculate nonroad area emissions as was used for stationary area emissions.

2007 Base Inventory. Again, a similar methodology was used. The control strategies shown below were assumed to be implemented.

Federal standards for small engines and marine engines
Federal Phase I standards for heavy-duty engines
Reformulated Gasoline where applicable and federal evaporability standards elsewhere
Federal locomotive standards
Federal nonroad diesel engine standards, phases 2 and 3
Onboard vapor recovery

2007 Budget. None of the sources included in this category would be subject to any additional controls, so the emissions included in the statewide budget inventory are the same as in the 2007 base inventory, as summarized below:

TONS PER OZONE SEASON

1995 Base Year	2007 Base	2007 Budget
50,303	30,571	30,571

A complete listing of this inventory can be found at the EPA web site:
ftp://ftp.epa.gov/EmisInventory/NOxSIPCall_Mar2_2000/

3.5 Highway Vehicle Source Emissions

What this sector includes. This sector including diesel and gasoline fueled light-duty vehicles, heavy-duty vehicles and motorcycles traveling on the Commonwealth roads. Both tailpipe and evaporative emissions are included. (Emissions from refueling are included in the stationary area inventory.)

1995 Base Inventory. EPA developed its Vehicle Miles Traveled (VMT) information from the Highway Performance Monitoring System's 1995 reports on a

statewide basis. EPA used census data to apportion statewide data to the county level. Vehicle emission inspection/maintenance programs in effect in 1995 were assumed.

EPA adjusted the inventory to account for the use of heavy-duty diesel "defeat" devices. These were devices that certain manufacturers installed to bypass the control equipment. While a consent decree has addressed future use of these devices by accelerating the implementation of more stringent new engine standards, those vehicles that were manufactured with the devices will continue to be in service for many years to come.

EPA and the states use the MOBILE computer model to estimate emission rates from highway vehicles. EPA ran this model for each area with a similar mobile control program in each state, using a countywide speed and statewide ambient monthly maximum and minimum temperatures.

2007 Base Inventory. EPA used OTAG methods to project VMT growth from 1995 to 2007. These methods are based on fuel consumption by vehicle type, which in turn are based on population projections. EPA made separate calculations for metropolitan statistical areas (MSAs) and for non-MSAs. The same speeds were used in the 2007 scenario as in the 1995 scenario. EPA allocated annual VMT projections to four seasons to compensate for differing travel patterns by season. Monthly allocations were then made, and the VMT for May through September was used to determine the ozone season total VMT.

The emission factors were derived from the MOBILE model, assuming controls as listed below applied in the appropriate geographic areas. The effects of heavy-duty diesel vehicle "defeat" devices were again included.

I/M programs where applicable
Heavy-duty engine standard for highway vehicles
National Low Emission Vehicle Program
Reformulated Gasoline where applicable and federal evaporability standards elsewhere

2007 Budget Inventory. Highway vehicles would not be subject to the additional controls included in this budget, so the emissions included in the statewide budget inventory are the same as in the 2007 base inventory, as summarized below:

TONS PER OZONE SEASON

	2007 Base	**2007 Budget**
Emissions	91,578	91,578

A complete listing of this inventory can be found at the EPA web site: ftp://ftp.epa.gov/EmisInventory/NOxSIPCall_Mar2_2000/

3.6 Pennsylvania Meets the Budget

The previous sections explain how the budgets were developed. The SIP Call requires that Pennsylvania demonstrate that the emission reductions achieved by the control measures are sufficient to achieve the budgets. This section demonstrates that Pennsylvania meet the budgets.

As previously explained, Pennsylvania has adopted a NO_x budget program. This regulation applies to certain large stationary sources of NO_x. See Section 2.3.2 for a more complete description.

The Chapter 145 regulation contains a budget of 47,224 tons for electric generating units. These units are listed in Appendix 2. The regulation has a budget of 3,619 tons for non-electric generating units. These units are included in the Appendix 3 listing. Appendix 2 and 3 do not list the allocations for each unit. They list the calculated contribution to the budget for each category. The Chapter 145 regulation, Section 145.42, specifies how allocations will be made.

Appendix 3 also lists a number of sources that have had emission reductions proposed by EPA in developing the EPA budget. The list contains cement kilns and stationary internal combustion engines. Pennsylvania has not included emission reductions from these sources at this time. Pennsylvania has proposed NO_x regulations for these sources but has not finalized those rules. Therefore, no NO_x reduction is being listed from these sources.

Pennsylvania is using the EPA emission inventory to demonstrate compliance with the budget. No additional controls are proposed for the area, non-road, and highway source categories beyond those discussed above. Therefore, the EPA emission projections will be used for the Pennsylvania demonstration.

The final emission budgets are included in the following table:

Comparison of EPA and Pennsylvania Budget Estimates
NO_x Tons per Control Period

Category	EPA	Pennsylvania
EGU	54,268	47,224
Non-EGU	73,899	77,411
Area	17,842	17,842
Non-road	30,571	30,571
Highway	91,578	91,578
Total	268,158	264,626

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Appendix 1. Acronyms

APCA: Air Pollution Control Act (Pennsylvania statute)
BEA: Bureau of Economic Analysis (US Department of Commerce)
CAAA: Federal Clean Air Act Amendments of 1990
EGU: Electric generating unit
MACT: Maximum Available Control Technology -- a requirement for toxics control
MMBtus*:* Million Btus (British thermal unit) -- a measure of heat
MSA: Metropolitan Statistical Area as defined by the federal government
NAAQS: National Ambient Air Quality Standards
NonEGU: Non-electric generating unit (a stationary source that does not generate electricity, such as a manufacturing plant)
NOx: nitrogen oxides
NSPS: New Source Performance Standards -- a requirement for some new and expanding stationary sources in nonattainment areas
OTAG: Ozone Transport Assessment Group
OTC: Ozone Transport Commission
OTR: Ozone Transport Region
PSD: Prevention of Significant Deterioration -- a requirement for some new and expanding sources in attainment areas
RACT: Reasonably Available Control Technology -- a requirement for some existing sources
SIC: Standard Industrial Code
SIP: State Implementation Plan
VMT: vehicle miles traveled
VOCs: Volatile organic compounds

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Appendix 2. Final NOx SIP Call Inventory: Electric Generating Units

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Pennsylvania Electric Generating Units
NO_x SIP Call

fipscnty	Plant	plantid	pointid	fsip_heat	fsipnox_rt	f96_nox_rt	2007 NOx Mass (ton)
001	GPU GENCO HAMILTON	3109	1	18,327	0.15	0	1.6
001	HUNTERSTOWN	3110	1	13,787	0.33	0.33	2.6
001	HUNTERSTOWN	3110	2	21,804	0.33	0.33	4.1
001	HUNTERSTOWN	3110	3	17,045	0.33	0.33	3.2
001	GPU GENCO ORTANNA	3112	1	20,213	0.15	0	1.7
003	BRUNOT ISLAND	3096	2A	0	0.15	0.25	0.0
003	BRUNOT ISLAND	3096	2B	0	0.15	0.25	0.0
003	BRUNOT ISLAND	3096	3	0	0.15	0.25	0.0
003	PHILLIPS POWER STATION	3099	3	0	0.15	0.57	0.0
003	PHILLIPS POWER STATION	3099	4	0	0.15	0.57	0.0
003	PHILLIPS POWER STATION	3099	5	0	0.15	0.57	0.0
003	PHILLIPS POWER STATION	3099	6	0	0.15	0.57	0.0
003	CHESWICK	8226	1	14,742,145	0.15	0.39	1,271.5
005	KEYSTONE	3136	1	29,179,845	0.15	0.492	2,516.8
005	KEYSTONE	3136	2	28,218,479	0.15	0.398	2,433.8
005	ARMSTRONG	3178	1	4,994,875	0.15	0.35	430.8
005	ARMSTRONG	3178	2	4,479,821	0.15	0.389	386.4
007	AES BEAVER VALLEY	10676	032	1,908,744	0.15	0.63	164.6
007	AES BEAVER VALLEY	10676	033	1,687,357	0.15	0.7	145.5
007	AES BEAVER VALLEY	10676	034	1,777,215	0.15	0.66	153.3
007	AES BEAVER VALLEY	10676	035	844,895	0.15	0.66	72.9
007	BRUCE MANSFIELD	6094	1	21,910,132	0.15	0.4	1,889.7
007	BRUCE MANSFIELD	6094	2	22,072,564	0.15	0.429	1,903.8
007	BRUCE MANSFIELD	6094	3	22,451,636	0.15	0.427	1,936.5
011	TITUS	3115	1	1,852,102	0.15	0.375	159.7
011	TITUS	3115	2	1,854,597	0.15	0.405	160.0
011	TITUS	3115	3	1,985,538	0.15	0.372	171.3
011	TITUS	3115	4	10,185	0.37	0.37	2.2
011	TITUS	3115	5	13,468	0.37	0.37	2.9
017	PECO ENERGY CROYDEN	8012	11	131,898	0.15	0	11.4
017	PECO ENERGY CROYDEN	8012	12	88,474	0.15	0	7.6
017	PECO ENERGY CROYDEN	8012	21	67,888	0.15	0	5.9

fipscnty	Plant	plantid	pointid	fsip_heat	fsipnox_rt	f96_nox_rt	2007 NOx Mass (ton)
017	PECO ENERGY CROYDEN	8012	22	136,436	0.15	0	11.8
017	PECO ENERGY CROYDEN	8012	31	150,853	0.15	0	13.0
017	PECO ENERGY CROYDEN	8012	32	57,125	0.15	0	4.9
017	PECO ENERGY CROYDEN	8012	41	109,839	0.15	0	9.5
017	PECO ENERGY CROYDEN	8012	42	92,712	0.15	0	8.0
021	COLVER POWER PROJECT	10143	1	4,112,640	0.15	0.2	354.7
021	EBENSBURG POWER	10603	1	2,278,932	0.15	0	196.6
021	CAMBRIA COGEN	10641	1	2,067,000	0.15	0.24	178.3
021	CAMBRIA COGEN	10641	2	2,120,000	0.15	0.23	182.9
021	TRIGEN ENERGY SANSOM	880006	1	318,459	0.15	0	27.5
021	TRIGEN ENERGY SANSOM	880006	2	280,748	0.15	0	24.2
021	TRIGEN ENERGY SANSOM	880006	3	126,824	0.15	0	10.9
021	TRIGEN ENERGY SANSOM	880006	4	155,123	0.15	0	13.4
025	PANTHER CREEK	50776	1	1,493,207	0.15	0.12	128.8
025	PANTHER CREEK	50776	2	1,456,899	0.15	0.12	125.7
029	CROMBY	3159	1	4,694,874	0.15	0.417	404.9
029	CROMBY	3159	2	2,223,460	0.15	0.189	191.8
033	SHAWVILLE	3131	1	3,182,033	0.15	0.478	274.5
033	SHAWVILLE	3131	2	3,641,177	0.15	0.458	314.1
033	SHAWVILLE	3131	3	5,194,627	0.15	0.432	448.0
033	SHAWVILLE	3131	4	4,733,173	0.15	0.429	408.2
039	GPU GENCO WAYNE	3134	1	34,887	0.15	0	3.0
041	MOUNTAIN	3111	1	25,617	0.15	0.39	2.2
041	MOUNTAIN	3111	2	23,635	0.15	0.39	2.0
043	PP&L HARRISBURG	3143	1--4	62,998	0.15	0	5.4
043	PP&L WEST SHORE	3154	1--2	25,733	0.15	0	2.2
045	KIMBERLY-CLARK	3157	10	1,602,169	0.15	0	138.2
045	EDDYSTONE	3161	1	8,313,574	0.15	0.298	717.0
045	EDDYSTONE	3161	2	8,680,707	0.15	0.306	748.7
045	EDDYSTONE	3161	3	1,791,760	0.15	0.241	154.5
045	EDDYSTONE	3161	4	1,618,510	0.15	0.236	139.6
059	HATFIELD'S FERRY	3179	1	14,254,544	0.15	0.523	1,229.5
059	HATFIELD'S FERRY	3179	2	15,189,949	0.15	0.519	1,310.1
059	HATFIELD'S FERRY	3179	3	13,767,286	0.15	0.523	1,187.4
063	CONEMAUGH	3118	1	21,905,160	0.15	0.464	1,889.3
063	CONEMAUGH	3118	2	24,285,164	0.15	0.415	2,094.6
063	HOMER CITY	3122	1	13,436,987	0.15	0.639	1,158.9

fipscnty	Plant	plantid	pointid	fsip_heat	fsipnox_rt	f96_nox_rt	2007 NOx Mass (ton)
063	HOMER CITY	3122	2	21,669,554	0.15	0.416	1,869.0
063	HOMER CITY	3122	3	19,184,091	0.15	0.45	1,654.6
063	SEWARD	3130	12	716,472	0.15	0.585	61.8
063	SEWARD	3130	14	971,101	0.15	0.581	83.8
063	SEWARD	3130	15	5,252,232	0.15	0.576	453.0
069	ARCHBALD POWER	50279	1	808,960	0.15	0	69.8
069	NORCON POWER PARTNERS LP	54571	1	1,391,565	0.15	0.06	120.0
069	NORCON POWER PARTNERS LP	54571	2	1,488,480	0.15	0.06	128.4
071	HOLTWOOD	3145	17	3,257,728	0.15	0.911	281.0
073	NEW CASTLE	3138	3	1,643,883	0.15	0.414	141.8
073	NEW CASTLE	3138	4	1,205,599	0.15	0.417	104.0
073	NEW CASTLE	3138	5	2,083,333	0.15	0.474	179.7
077	PP&L ALLENTOWN	3139	1--4	51,041	0.15	0	4.4
079	PP&L HARWOOD	3144	1--2	28,243	0.15	0	2.4
079	PP&L JENKINS	3146	1--2	19,827	0.15	0	1.7
079	HUNLOCK PWR STATION	3176	6	1,554,602	0.15	0.495	134.1
081	PP&L WILLIAMSPORT	3155	1--2	28,716	0.15	0	2.5
093	MONTOUR	3149	1	20,207,921	0.15	0.444	1,742.9
093	MONTOUR	3149	2	10,944,482	0.15	0.447	944.0
095	WILLIAMS GEN - HAZELTON	10870	HRSG	128,752	0.15	0.53	11.1
095	WILLIAMS GEN - HAZELTON	10870	TURBN	2,331,840	0.15	0.53	201.1
095	PORTLAND	3113	--5	301,010	0.15	0.157	26.0
095	PORTLAND	3113	1	3,559,117	0.15	0.309	307.0
095	PORTLAND	3113	2	3,551,171	0.15	0.43	306.3
095	PORTLAND	3113	3	41,043	0.33	0.33	7.8
095	PORTLAND	3113	4	18,899	0.33	0.33	3.6
095	GPU GENCO SHAWNEE	3114	1	13,659	0.15	0	1.2
095	MARTINS CREEK	3148	1	4,404,488	0.15	0.494	379.9
095	MARTINS CREEK	3148	2	3,942,813	0.15	0.492	340.1
095	MARTINS CREEK	3148	3	2,868,742	0.15	0.362	247.4
095	MARTINS CREEK	3148	4	4,143,905	0.15	0.26	357.4
095	NORTHAMPTION GENERATING	50888	1	4,100,771	0.15	0	353.7
097	FOSTER WHEELER MT. CARMEL	10343	AB_NUG	1,882,496	0.15	0.1462	162.4
097	VIKING ENERGY NORTHUMBERLAND	UNK25	1	1,378,548	0.15	0	118.9
101	DELAWARE	3160	71	697,067	0.15	0.326	60.1
101	DELAWARE	3160	81	667,458	0.15	0.33	57.6
101	PECO ENERGY RICHMOND	3168	91	44,095	0.15	0	3.8

fipscnty	Plant	plantid	pointid	fsip_heat	fsipnox_rt	f96_nox_rt	2007 NOx Mass (ton)
101	PECO ENERGY RICHMOND	3168	92	52,829	0.15	0	4.6
101	SCHUYLKILL	3169	1	775,253	0.15	0.329	66.9
101	PECO ENERGY SOUTHWARK	3170	3--6	40,449	0.15	0	3.5
107	GILBERTON POWER NUG	010113	AB_NUG	3,349,824	0.15	0.7317	288.9
107	PP&L FISHBACK	3142	1--2	15,489	0.15	0	1.3
107	NORTHEASTERN POWER	50039		2,556,358	0.15	0	220.5
107	SCHUYLKILL STATION (TURBI	50607	AB_NUG	9,698,357	0.15	0.7317	836.5
107	WESTWOOD ENERGY PROPERTIE	50611	031	1,214,160	0.15	0.102	104.7
107	WHEELABRATOR FRACKVILLE E	50879	GEN1	2,085,300	0.15	0.102	179.9
107	SCHUYLKILL ENERGY RESOURCES	880010	1	4,051,270	0.15	0	349.4
109	SUNBURY	3152	1A	1,706,398	0.15	1.02	147.2
109	SUNBURY	3152	1B	1,560,149	0.15	1.025	134.6
109	SUNBURY	3152	2A	1,725,504	0.15	1.021	148.8
109	SUNBURY	3152	2B	1,706,061	0.15	1.021	147.1
109	SUNBURY	3152	3	3,377,104	0.15	0.444	291.3
109	SUNBURY	3152	4	3,648,996	0.15	0.449	314.7
117	GPU GENCO TIOGA	3120	1	29,906	0.15	0	2.6
121	SCRUBGRASS GENERATING PLANT	50974	1	1,686,610	0.15	0	145.5
121	SCRUBGRASS GENERATING PLANT	50974	2	1,660,433	0.15	0	143.2
123	WARREN	3132	1	540,547	0.15	0.571	46.6
123	WARREN	3132	2	417,287	0.15	0.572	36.0
123	WARREN	3132	3	496,386	0.15	0.565	42.8
123	WARREN	3132	4	531,858	0.15	0.571	45.9
125	ELRAMA	3098	1	2,925,936	0.15	0.602	252.4
125	ELRAMA	3098	2	2,622,775	0.15	0.597	226.2
125	ELRAMA	3098	3	2,818,049	0.15	0.587	243.1
125	ELRAMA	3098	4	5,759,900	0.15	0.613	496.8
125	MITCHELL	3181	1	35,713	0.15	0.134	3.1
125	MITCHELL	3181	2	112	0.15	0.071	0.0
125	MITCHELL	3181	3	11,243	0.15	0.096	1.0
125	MITCHELL	3181	33	2,983,408	0.15	0.42	257.3
133	BRUNNER ISLAND	3140	1	7,628,186	0.15	0.378	657.9
133	BRUNNER ISLAND	3140	2	9,701,808	0.15	0.377	836.8
133	BRUNNER ISLAND	3140	3	20,568,371	0.15	0.413	1,774.0
31	PINEY CREEK	54144	1	1,377,003	0.15	0.13	118.8
WRN	WARREN	3132	CT1	200,994	0.15	0.43	17.3
YRK	TOLNA	3116	1	16,487	0.15	0.71	1.4
YRK	TOLNA	3116	2	31,097	0.15	0.71	2.7

Appendix 3. Final NOx SIP Call Inventory: Large Non-EGU Sources

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Pennsylvania Large Non Electrical Generating Units
NO_x SIP Call

plantid	plant	pointid	boilcap (mmBTU/ hr)	snox95	gf9507	snox07	noxce07b	sbnox
0039	KOSMOS CEMENT COMPANY	001	249	775.7	1.07	830.0	30	581.0
0039	ALLENTOWN CEMENT CO. INC.	121	249	913.3	1.09	995.5	30	696.8
0039	ALLENTOWN CEMENT CO. INC.	122	249	904.1	1.09	985.5	30	689.8
0026	ESSROC CEMENT CORP	501	249	642.6	1.09	700.4	30	490.3
0026	ESSROC CEMENT CORP	502	249	1,285.2	1.09	1,400.9	30	980.6
0024	SOUTHDOWN, INC	114	249	596.7	1.09	650.4	30	455.3
0024	SOUTHDOWN, INC	115	249	596.7	1.09	650.4	30	455.3
0024	SOUTHDOWN, INC	117	249	459.0	1.09	500.3	30	350.2
0019	LAFARGE CORPORATION - WHITEHALL PLANT	101	0	470.6	1.09	513.0	30	359.1
0019	LAFARGE CORPORATION - WHITEHALL PLANT	114	0	299.1	1.09	326.0	30	228.2
0049	ESSROC CEMENT CORP	101	249	174.4	1.09	190.1	30	133.1
0049	ESSROC CEMENT CORP	103	249	243.3	1.09	265.2	30	185.6
0049	ESSROC CEMENT CORP	104	249	257.0	1.09	280.2	30	196.1
0045	ESSROC MATERIALS, INC.	142	249	1,267.8	1.09	1,381.9	30	1,086.9
0006	HERCULES CEMENT CO.	102	249	381.3	1.09	415.6	30	290.9
0006	HERCULES CEMENT CO.	122	249	861.4	1.09	938.9	30	657.2
0012	KEYSTONE PORTLAND CEMENT CO.	101	249	195.4	1.09	213.0	30	149.1
0012	KEYSTONE PORTLAND CEMENT CO.	102	249	611.2	1.09	666.2	30	466.3
0060	LEHIGH PORTLAND CEMENT CO.	200	0	183.6	1.09	200.1	30	140.1
				11,118.0		12,104.0		8,592.0
0022	LTV STEEL COMPANY - PITTSBURGH WORKS	015	422	14.8	1.07	15.8	60	12.6
0022	LTV STEEL COMPANY - PITTSBURGH WORKS	017	422	14.8	1.07	15.8	60	12.6
0022	LTV STEEL COMPANY - PITTSBURGH WORKS	019	422	14.8	1.07	15.8	60	12.6
0022	LTV STEEL COMPANY - PITTSBURGH WORKS	021	422	12.2	1.07	13.1	60	10.5
0050	SHENANGO IRON & COKE WORKS	006	422	21.7	1.07	23.2	60	18.6
0050	SHENANGO IRON & COKE WORKS	009	422	17.7	1.07	19.0	60	15.2
0004	BMG ASPHALT CO.	101	251	0.0	0.99	0.0	60	0.0
0032	ZINC CORPORATION OF AMERICA	034	600	314.6	0.84	264.3	60	211.4
0032	ZINC CORPORATION OF AMERICA	035	600	310.3	0.84	260.6	60	208.5

plantid	plant	pointid	boilcap (mmBTU/ hr)	snox95	gf9507	snox07	noxce07b	sbnox
0087	TEXAS EASTERN GAS PIPELINE COMPANY	031	261	0.0	1.23	0.1	60	0.0
0055	PECO	043	469	10.5	0.84	8.8	60	3.5
0055	PECO	043	469	239.7	0.84	201.4	60	80.5
0055	PECO	043	469	59.0	0.84	49.5	60	19.8
0055	PECO	044	469	15.5	0.84	13.0	60	5.2
0055	PECO	044	469	308.1	0.84	258.8	60	103.5
0055	PECO	044	469	64.9	0.84	54.5	60	21.8
0055	PECO	045	469	14.8	0.84	12.4	60	5.0
0055	PECO	045	469	267.4	0.84	224.6	60	89.9
0055	PECO	045	469	71.5	0.84	60.0	60	24.0
0008	INTERNATIONAL PAPER : LOCKHAVEN	033	350	278.5	1.23	342.5	60	137.0
0008	INTERNATIONAL PAPER : LOCKHAVEN	034	350	316.7	1.23	389.6	60	155.8
0030	BP OIL, INC.	032	350	67.4	0.99	66.7	60	26.7
0030	BP OIL, INC.	033	350	61.3	0.99	60.7	60	24.3
0016	KIMBERLY CLARK CO	035	799	105.9	1.07	113.3	60	45.3
0016	SCOTT PAPER CO.	034	251	195.9	1.07	209.6	60	83.9
0025	SUN REFINING & MARKETING CO.	089	440	162.7	0.99	161.1	60	64.4
0025	SUN REFINING & MARKETING CO.	090	639	149.6	0.99	148.1	60	59.3
0005	WILLIAMETTE	040	251	218.8	1.23	269.1	60	107.7
0005	WILLIAMETTE	041	251	229.9	1.23	282.8	60	113.1
0009	GENERAL ELECTRIC CO.	032	0	695.9	0.96	668.1	60	267.2
0009	GENERAL ELECTRIC CO.	032	420	0.0	0.96	0.0	60	0.0
0028	MERCK SHARP & DOHME	039	251	84.2	1.02	85.8	60	34.3
0048	BETHLEHEM STEEL CORP.	041	251	382.1	0.84	321.0	60	128.4
0048	BETHLEHEM STEEL CORP.	041	251	169.7	0.84	142.6	60	57.0
0048	BETHLEHEM STEEL CORP.	041	251	36.7	0.84	30.8	60	12.3
0048	BETHLEHEM STEEL CORP.	042	251	520.9	0.84	437.6	60	175.0
0048	BETHLEHEM STEEL CORP.	042	251	237.8	0.84	199.7	60	79.9
0048	BETHLEHEM STEEL CORP.	042	251	37.0	0.84	31.1	60	12.4
0048	BETHLEHEM STEEL CORP.	067	251	433.1	0.84	363.8	60	145.5
0048	BETHLEHEM STEEL CORP.	067	251	197.7	0.84	166.1	60	66.4
0048	BETHLEHEM STEEL CORP.	067	251	39.1	0.84	32.8	60	13.1
0001	TEXAS EASTERN GAS PIPELINE CO	031	261	0.0	1.23	0.0	60	0.0
1551	ALLIED CHEMICAL CORP	052	325	28.9	1.02	29.5	60	23.6
1551	ALLIED CHEMICAL CORP	052	325	72.6	1.02	74.1	60	59.3
1501	SUN REFINING AND MARKETING 1 O	020	450	54.4	0.99	53.8	60	21.5

plantid	plant	pointid	boilcap (mmBTU/ hr)	snox95	gf9507	snox07	noxce07b	sbnox
1501	SUN REFINING AND MARKETING 1 O	021	450	83.6	0.99	82.8	60	33.1
1501	SUN REFINING AND MARKETING 1 O	022	450	131.5	0.99	130.2	60	52.1
1501	SUN REFINING AND MARKETING 1 O	023	600	122.6	0.99	121.4	60	48.6
9702	U.S. NAVAL BASE	016	317	0.0	1.02	0.0	60	0.0
9702	U.S. NAVAL BASE	016	317	0.0	1.02	0.0	60	0.0
9702	U.S. NAVAL BASE	017	384	0.0	1.02	0.0	60	0.0
9702	U.S. NAVAL BASE	098	384	0.0	1.02	0.0	60	0.0
9702	U.S. NAVAL BASE	099	317	0.0	1.02	0.0	60	0.0
0007	MONESSEN INC.	031	251	0.0	0.84	0.0	60	0.0
0009	PROCTER & GAMBLE PAPER PRODUCTS CO.	035	644	550.8	1.23	677.5	60	271.0
0016	GLATFELTER, P. H. CO.	031	251	0.0	1.23	0.0	60	0.0
0016	GLATFELTER, P. H. CO.	034	0	295.5	1.23	363.5	60	145.4
0016	GLATFELTER, P. H. CO.	035	0	291.3	1.23	358.3	60	143.3
0016	GLATFELTER, P. H. CO.	036	0	317.4	1.23	390.4	60	156.2
				8,342.0		8,315.0		3,619.0
0015	CONSOLIDATED GAS TRANSMISSION CORP.	101	249	185.1	1.07	198.1	90	19.8
0015	CONSOLIDATED GAS TRANSMISSION CORP.	102	249	188.2	1.07	201.4	90	20.1
0015	CONSOLIDATED GAS TRANSMISSION CORP.	104	249	171.4	1.07	183.4	90	18.3
0015	CONSOLIDATED GAS TRANSMISSION CORP.	105	249	198.9	1.07	212.8	90	21.3
0015	CONSOLIDATED GAS TRANSMISSION CORP.	106	249	200.4	1.07	214.5	90	21.4
0047	TRANSCONTINENTAL GAS PIPELINE STN 200	041	23	169.1	1.23	208.0	90	20.8
0047	TRANSCONTINENTAL GAS PIPELINE STN 200	042	38	193.0	1.23	237.4	90	23.7
0018	INDIANA UNIVERSITY OF PENNSYLVANIA	035	249	24.2	1.02	24.7	90	2.5
0018	INDIANA UNIVERSITY OF PENNSYLVANIA	035	249	412.7	1.02	421.0	90	42.1
0018	INDIANA UNIVERSITY OF PENNSYLVANIA	036	249	24.2	1.02	24.7	90	2.5
0018	INDIANA UNIVERSITY OF PENNSYLVANIA	036	249	393.8	1.02	401.7	90	40.2
0018	INDIANA UNIVERSITY OF PENNSYLVANIA	037	249	24.2	1.02	24.7	90	2.5
0018	INDIANA UNIVERSITY OF PENNSYLVANIA	037	249	395.4	1.02	403.3	90	40.3
0018	INDIANA UNIVERSITY OF PENNSYLVANIA	038	249	18.0	1.02	18.4	90	1.8
0018	INDIANA UNIVERSITY OF PENNSYLVANIA	038	249	397.5	1.02	405.4	90	40.5
0005	TENNESSEE GAS PIPELINE STATION #313	041	0	171.4	1.23	210.8	90	21.1
74-1056569/0	TENNESSEE GAS PIPELINE STATION #313	041	0	171.4	1.23	210.8	90	21.1
0053	TRANSCONTINENTAL GAS PIPELINE STN 195	036	33	239.6	1.23	294.7	90	29.5
0053	TRANSCONTINENTAL GAS PIPELINE STN 195	037	33	235.9	1.23	290.2	90	29.0
				3,814.0		4,186.0		419.0