

# Petition of the Commonwealth of Pennsylvania for Abatement of Excess Emissions

## Introduction

1. This is a Petition of the Commonwealth of Pennsylvania (Pennsylvania) under Section 126(b) of the Clean Air Act (CAA) for a finding that fossil fuel-fired indirect heat exchange combustion units with a maximum rated heat input capacity of 250 MMBtu/Hr. or more and all fossil fuel fired electric generating facilities rated at 15 megawatts or greater (NO<sub>x</sub> Affected Units) in the States of Alabama, Arkansas, Georgia, Illinois, Indiana, Iowa, Kentucky, Louisiana, Michigan, Minnesota, Mississippi, Missouri, North Carolina, Ohio, South Carolina, Tennessee, Virginia, West Virginia and Wisconsin (Transport States) are emitting air pollutants in violation of Sections 110(a)(2)(D) and 126(c) of the CAA. NO<sub>x</sub> Affected Units are a group of stationary sources within the meaning of Section 126(b). Pursuant to Section 126(b) of the CAA, Pennsylvania petitions the Administrator of the EPA (Administrator) to establish a uniform emission limitation for the NO<sub>x</sub> Affected Units in the Transport States at levels designed to prevent the NO<sub>x</sub> Affected Units from contributing significantly to nonattainment in, or interfering with maintenance by Pennsylvania with respect to the National Ambient Air Quality Standard (NAAQS) for ozone. Pennsylvania further petitions the Administrator to establish both a cap and trade compliance system to provide for the most cost-effective emission reductions and a compliance schedule including increments of progress to require the NO<sub>x</sub> Affected Units to comply with the emission limitations as expeditiously as practicable.
2. Pennsylvania is acting through the Department of Environmental Protection which is the executive agency responsible under state law for developing the State Implementation Plan (SIP) for Pennsylvania under Section 110 of the CAA and the nonattainment plan for Pennsylvania under Sections 172 and 182 of the CAA. Even after the implementation of significant emission controls on stationary and mobile sources, Pennsylvania will be unable or will be substantially impeded in its efforts to attain and maintain the NAAQS for ozone as a result of the transport of ozone or nitrogen oxides (NO<sub>x</sub>) from the Transport States.
3. The NO<sub>x</sub> Affected Units in the Transport States emit large quantities of nitrogen oxides (NO<sub>x</sub>) as a byproduct of the combustion process. NO<sub>x</sub> reacts with volatile organic compounds (VOCs) in the presence of sunlight to produce significant levels of ozone during the months of May through September. NO<sub>x</sub> and ozone produced as a result of NO<sub>x</sub> emissions by the NO<sub>x</sub> Affected Units are transported by westerly and southwesterly winds to Pennsylvania where it causes and contributes to elevated levels of ozone and, from time to time, exceedances of the NAAQS for ozone.
4. Pennsylvania has and will continue to do its fair share to address the ozone nonattainment problem in the northeast. The Transport States must also do their fair share by controlling emissions of VOCs and NO<sub>x</sub> and the transport of ozone into Pennsylvania. EPA can ensure that the Transport States begin to do their fair share by establishing emission limitations on NO<sub>x</sub> Affected Units as requested by this petition and requiring each Transport State to modify its SIP to reduce levels of NO<sub>x</sub> and VOC emissions in the state to enable Pennsylvania to attain and maintain the NAAQS for ozone.
5. In requesting the Administrator's action with respect to NO<sub>x</sub> Affected Units in Transport States, Pennsylvania is not overlooking comparable sources within the Northeast Ozone Transport Region (OTR). Pennsylvania is reasonably confident that comparable reduction within the OTR to those requested in this petition will be achieved in a timely fashion through implementation of the NO<sub>x</sub> Memorandum of Understanding between the OTR states.

## Background

6. In passing the Clean Air Act Amendments of 1990, Congress both expanded and refined the nonattainment provisions relating to the ozone NAAQS. In Section 181 of the CAA, Congress created, for the first time, a classification system for ozone nonattainment areas. The classification system established marginal, moderate, serious, severe and extreme ozone nonattainment classifications based on the amount by which a particular area exceeded the ozone NAAQS.

7. In 1990, Congress also established mandatory SIP submission requirements with specified implementation dates based on the ozone nonattainment classification of the area in Section 182 of the CAA. Failure of the states to submit and implement the required SIPs results in the imposition of mandatory sanctions under Section 179 of the CAA. The sanctions are, first, 2:1 emission offsets in the affected area and, second, the loss of federal highway funds for the area. Each ozone nonattainment area must meet the requirements for lower classifications plus additional requirements for its classification. So, for example, a severe ozone nonattainment area must meet all of the SIP requirements for marginal, moderate and serious areas as well as the specific requirements for the severe area.
8. In passing the Clean Air Act Amendments of 1990, Congress also expressly recognized the regional nature of the ozone nonattainment problem in the northeastern portion of the United States. In Section 184 of the CAA, Congress established the OTR, composed of the States of Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont and the Consolidated Metropolitan Statistical Area for the District of Columbia, to address nonattainment of the NAAQS for ozone in the northeast. Congress imposed additional requirements on these States to address the regional ozone problem. As a result, areas of Pennsylvania that are classified as marginal areas or attainment areas are required to implement major stationary source requirements otherwise only applicable to moderate nonattainment areas. The emission thresholds for major stationary sources of VOCs were lowered in these areas to potential emissions of fifty (50) tons per year. (See Sections 184(b)(2) and (f)(1)). Finally, for mobile sources, Pennsylvania was required to implement the inspection and maintenance program requirements in metropolitan statistical areas of greater than 100,000 people as if those areas were classified as serious nonattainment areas. In other words, Pennsylvania is required to implement additional stationary and mobile source controls above and beyond what was required by the Transport States having areas with the same ozone nonattainment classification.
9. As a result of the Congressional mandate, Pennsylvania on a statewide basis, including attainment areas, has established reasonably achievable control technology (RACT) requirements on all existing major sources of VOC and NO<sub>x</sub>. It has also established new source review (NSR) requirements for all major sources (at the lowered major source thresholds at the lowered major source thresholds described above). Pennsylvania has established Title V operating permit programs for major sources at the lowered thresholds to inventory, monitor and control emissions of VOCs and NO<sub>x</sub>. Pennsylvania is also implementing enhanced inspection and maintenance programs otherwise only required in serious nonattainment areas and Pennsylvania is also implementing Stage II gasoline volatility requirements, or alternative strategies, on a statewide basis.
10. Because Pennsylvania recognized that the control measures expressly required by Congress would not be sufficient to achieve and maintain the ozone standard in Pennsylvania and throughout the northeast, through the Ozone Transport Commission (OTC), agreed to implement additional control requirements for both stationary and mobile sources. Pennsylvania is developing emission reduction requirements for NO<sub>x</sub> Affected Units pursuant to an OTC Memorandum of Understanding and a Model Rule which will result in reductions of emissions from NOx Affected Units by a minimum of fifty-five percent (55%) throughout Pennsylvania and sixty-five percent (65%) in Southeastern Pennsylvania from 1990 baseline emission levels beginning in 1999. Addition reductions up to seventy-five percent (75%) will be implemented, if necessary, beginning in 2003. In addition, Pennsylvania, pursuant to an OTC Memorandum of Understanding, is developing a low emission vehicle program.
11. The additional stationary and mobile source controls have resulted in significant additional control costs for businesses and residents of Pennsylvania as compared to the Transport States. Pennsylvania recognizes that additional emission reductions will be necessary within the OTC States to achieve the NAAQS for ozone within the OTR. Sections 184 and 110 of the Clean Air Act provide a mechanism for the OTC States and EPA to establish both the level of emission reductions necessary and the specific control measures appropriate to achieve the reductions within the OTR.
12. In Section 181 of the CAA Congress established dates by which ozone nonattainment areas must achieve the NAAQS. These dates are based on the nonattainment classification for the area. For example,

moderate nonattainment areas were required to demonstrate attainment by November 15, 1996. Severe areas must demonstrate attainment by 2005, etc. Section 181 also allows a limited extension of the attainment date under certain circumstances.

13. In Section 107(d)(3) of the CAA, Congress established the requirements that must be met for an area designated as an ozone nonattainment area to be redesignated as an attainment area. In addition to the area meeting all CAA requirements for the applicable ozone classification, the Administrator must find that the area has attained the NAAQS, that the improvement in air quality is due to permanent and enforceable reductions in emissions and that a maintenance plan providing for maintenance with the NAAQS for the next ten (10) years is adequate. These findings by the Administrator must be based on the results of air quality modeling performed by the state as part of the attainment demonstration.

14. Because of the regional nature of ozone pollution, air quality modeling necessary to support a redesignation request must account for the transport of ozone into and out of the nonattainment area. For modeling purposes, the area is divided into a series of grids where ozone levels are derived through mathematical formulas designed to replicate real world conditions. The modeling recognizes transport of NO<sub>x</sub>, VOCs and ozone into and out of the grid, emissions occurring from mobile and stationary sources, naturally occurring emissions and emission controls imposed on the area within the grid through SIP requirements. Because ozone formation is also a weather phenomena, the attainment modeling is required to be based on "worst case" meteorological conditions occurring during the period from May through September.

15. In order to get the most accurate results, the air quality models are run for past time periods where the state has actual ambient air quality readings. This allows the model to predict ozone levels that can be compared to those that actually occurred. The model is also verified by being run to predict other time periods to ensure that the results can be verified with data for these time periods. Once verified, the air quality models can be used as a predictive tool by inputting emission reductions resulting from the imposition of planned or proposed emission controls to determine the impact on ozone levels. These modeling results, while not completely accurate, represent the best predictive tool to evaluate the existing and predicted levels of ozone within an area and are one of the bases for the Administrators finding that an area can be reclassified from nonattainment to attainment.

## **SIP Requirements for Transport States**

16. Section 110(a)(2)(D) of the CAA requires the SIP for each state to:

"contain adequate provisions-

- (i) prohibiting, consistent with the provisions of this subchapter, any source or other type of emissions activity within the State from emitting any air pollutant in amounts which will-
- (I) contribute significantly to nonattainment in, or interfere with maintenance by, any other State with respect to any such national primary or secondary air quality standard ..."

17. In addition, Section 110(k)(5) of the CAA allows the Administrator, based on a finding that the applicable plan fails to meet the SIP requirements of Section 110(a)(2)(D), to require the state to revise the plan as necessary to correct the inadequacies. It also provides for a period of not greater than 18 months for the state to submit the revised plan. This provision has been interpreted to authorize EPA only to identify the failure and require the State to make the necessary corrections. It does not allow EPA to establish specific control measures. (Commonwealth of Virginia, et al v. EPA, U.S. Court of Appeals for the District of Columbia Circuit, No 95-1163)

18. Section 126(b) of the CAA authorizes a state to petition the Administrator for a finding that a major source or group of stationary sources emits an air pollutant in violation of the prohibition in Section 110(a)(2)(D). If the Administrator finds that the source or group of sources is emitting a pollutant in violation of Section 110, the source must cease its operation within three months, unless the Administrator permits it to continue under a plan to bring it into compliance as expeditiously as practical or within three years at the latest.

19. A source that emits NO<sub>x</sub> in amounts that will "contribute significantly to nonattainment in, or interfere with the maintenance by, any other State" of the NAAQS for ozone is emitting in violation of the prohibition of Section 110(a)(2)(D). Thus Section 126 of the CAA authorizes a petitioning state to request direct enforcement by the Administrator.

20. Section 126 of the CAA is particularly important to Pennsylvania which has already established and continues to develop significant controls on NO<sub>x</sub> Affected Units. It allows Pennsylvania to petition EPA to establish specific emission limitations on the NO<sub>x</sub> Affected Units in the Transport States and can work in concert with EPA's authority under Section 110(k)(5) to allow EPA to both identify necessary emission reductions and establish emission limitations for a group of major stationary sources to achieve those emission reductions.

## **Statement of Facts**

21. On May 18, 1995, the Ozone Transport Assessment Group (OTAG) had its first organizational meeting. OTAG was formed by the Environmental Council of States and EPA in response to a March 2, 1995 memorandum from Mary Nichols, Assistant Administrator of the EPA Office of Air and Radiation, requiring States to "participate in a consultative process to address regional transport". OTAG's express 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 is composed of the 37 eastern most states and includes participation by EPA, industry and environmental groups.

22. During the OTAG deliberations, ozone air quality modeling was conducted using the Urban Airshed Model version V (UAM-V). This work provides the largest available modeling information on long range ozone transport. UAM-V was verified for application in the states east of the Rocky Mountains. The model was run to identify the impact on ozone formation and transport resulting from the imposition of various emission reduction strategies. A technical discussion of the modeling results related to emissions from NO<sub>x</sub> Affected Units in the Transport States is attached as Appendix 1. The modeling demonstrates that the NO<sub>x</sub> Affected Units in the Transport States significantly contribute to ozone nonattainment and will prevent attainment and maintenance in Pennsylvania.

23. As a result of the OTAG modeling effort and process, on June 19, 1997, the OTAG members indicated that "...the Regional and Urban Scale Modeling and Air Quality Analysis Workgroups have drawn several conclusions regarding the benefits to be derived from NO<sub>x</sub> and VOC controls for all source sectors and regarding transport, Regional NO<sub>x</sub> reductions are effective in producing ozone benefits; the more NO<sub>x</sub> reduced, the greater the benefit...".

24. Each state is responsible for establishing and running the State and Local Air Monitoring System (SLAMS). SLAMS provides actual ambient air quality monitoring information for EPA and the States. The SLAMS data also demonstrates that the Transport States are not meeting the requirements of Section 110(a)(2)(D) related to the transport of ozone and NO<sub>x</sub>. A technical discussion of the monitoring results related to NO<sub>x</sub> and ozone transport from the Transported States to Pennsylvania is attached as Appendix 2.

25. Of particular relevance is the data from July 12 - July 15, 1995 (1995 Episode) from the westernmost border of the OTC, the Pittsburgh Consolidated Metropolitan Statistical Area (Pittsburgh Area). When the CAA amendments of 1990 became law, the Pittsburgh Area was a designated ozone nonattainment area classified as a moderate area. Based on 1991 through 1994 monitoring data, the EPA on July 19, 1995

determined that the Pittsburgh Area had met the NAAQS for ozone (60 Fed. Reg. 37015). During the 1995 Episode, there were exceedances of the ozone standard at monitors located in the Pittsburgh Area. As a result of these exceedances, the Pittsburgh Area violated the NAAQS for ozone and EPA was unable to redesignate Pittsburgh to attainment.

26. During the 1995 Episode, the SLAMS stations at Florence and Hookstown, closest to the Ohio Border, measured one hour ozone levels of 116 and 105 ppb respectively. Thus, the monitors demonstrate that during the 1995 Episodes that resulted in the Pittsburgh Area failing to attain the NAAQS for ozone, transport from outside of Pennsylvania accounted for between 85 and 94 percent of the standard. This data conclusively demonstrates that transport of ozone and NO<sub>x</sub> from other states significantly contributed to the failure of the Pittsburgh Area to achieve the Standard.

27. The data from the Pittsburgh Area is consistent with the remaining data contained in Appendix 2 which demonstrates that NO<sub>x</sub> and ozone from the Transport States significantly contributes to nonattainment of the NAAQS for ozone and failure to maintain the ozone standard in Pennsylvania.

28. Pennsylvania has also conducted air quality modeling for developing attainment demonstrations required under Sections 110(a)(2)(F) and 182 of the CAA. This air quality modeling also demonstrates that NO<sub>x</sub> Affected Units in the Transport States significantly contribute to ozone nonattainment and will prevent attainment and maintenance in Pennsylvania. A technical discussion of the modeling results is attached as Appendix 3.

### **Revised NAAQS for Ozone**

29. On July 18, 1997, the revised NAAQS for ozone was revised from the 120 parts per billion of ozone over one hour standard to a standard of 80 parts per billion over 8 hours, using the 4th highest reading per year, averaged over three years.

30. During the 1995 Episode, the SLAMS Stations at Florence and Hookstown measured the average 4th Maximum Daily running 8-hour ozone concentrations in excess of the revised NAAQS to ozone promulgated on July 18, 1997. The data conclusively demonstrates that transport of ozone and NO<sub>x</sub> will prevent Pennsylvania from achieving the revised standard. A summary of the monitoring data is included in Appendix 2.

31. The revised NAAQS for ozone will add additional nonattainment areas to both Pennsylvania and the Transport States and will make it increasingly difficult for Pennsylvania to attain the new standard without significant reductions in emissions of NO<sub>x</sub> from the NO<sub>x</sub> Affected Units located in the Transport States.

32. During development of the revised NAAQS for ozone, Pennsylvania specifically recommended that EPA focus on the issue of transported ozone and particularly NO<sub>x</sub> emissions from NO<sub>x</sub> Affected Units.

33. EPA has now indicated that implementation of the revised NAAQS for ozone will focus on the emission of NO<sub>x</sub> from major power plants.

### **Relief Requested**

34. Pennsylvania requests that the EPA, pursuant to 110(k)(5) of the CAA, require each Transport State to modify its SIP to reduce levels of NO<sub>x</sub> emissions from sources in the Transport State to enable Pennsylvania to attain and maintain the NAAQS for ozone.

35. Pennsylvania requests that EPA find that NO<sub>x</sub> emissions from NO<sub>x</sub> Affected Units in the Transport States violates the prohibition of Section 110(a)(2)(D) of the CAA and prohibit the NO<sub>x</sub> Affected Units from emitting any air pollutant in amounts which will contribute significantly to nonattainment in, or interfere with maintenance by Pennsylvania with respect to the ozone NAAQS.

36. Pennsylvania requests that EPA establish emission limitations for NO<sub>x</sub> Affected Units in Transport States including increments of progress that provide a uniform treatment for Pennsylvania and the Transport States and that ameliorates the disparity in treatment across the Pennsylvania border.

37. Based on the results of the OTAG and Pennsylvania modeling and the SLAMS monitoring data, Pennsylvania requests that EPA establish emission limitations for the NO<sub>x</sub> Affected Units in the Transport States requiring:

(a) reductions during the period May 1 through September 30 of each year in NO<sub>x</sub> emissions of fifty-five percent (55%), from 1990 baseline levels, or 0.2 lb./MMBtu, whichever is less stringent, on or before May 1, 1999,

(b) if necessary to reduce transport of ozone into Pennsylvania, reductions during the period May 1 through September 30, in NO<sub>x</sub> emissions of seventy-five percent (75%), from 1990 baseline levels, or .15 lb./MMBtu, whichever is less stringent, for the NO<sub>x</sub> Affected Units in Transport States beginning in 2003, and

(c) such additional reductions from 1990 baseline levels for the NO<sub>x</sub> Affected Units in Transport States beginning in 2005 as are necessary to reduce transport of ozone into Pennsylvania.

EPA should also allow market-based emissions trading between NO<sub>x</sub> Affected Units in order to allow for the most cost effective emissions reductions achievable under the emission caps.

38. Pennsylvania requests that EPA require each NO<sub>x</sub> Affected Unit in the Transport States to submit a plan, on or before May 31, 1998 for meeting the NO<sub>x</sub> emission limitations.

## **Conclusion**

39. Pennsylvania has done and will continue to do its fair share to achieve the NAAQS for ozone in Pennsylvania and the northeastern portion of the United States. Pennsylvania has and will continue to impose needed emission controls on industry and residents beyond the requirements imposed by the Transport States. Even with the imposition of these additional controls, it will not be possible for Pennsylvania to attain the NAAQS for ozone without the Transport States doing their fair share.

40. Transport States and the owners and operators of NO<sub>x</sub> Affected Units can begin to do their fair share by concurring with this Petition to EPA. The Clean Air Act requires the Transport States to accept this responsibility and equity compels them to do so. By concurring with this Petition, the Transport States will establish a level playing field for NO<sub>x</sub> Affected Units. This will be a major step toward achieving the air quality goals that Congress contemplated in 1990 with the passage of the Clean Air Act.

41. EPA can and must fulfill its statutory responsibility of ensuring that the State Implementation Plans for the Transport States and the emission limitations imposed on NO<sub>x</sub> Affected Units take a major step toward achieving the NAAQS for ozone in the OTC States.

42. EPA must take action on this Petition within 60 days after receipt. EPA should follow its announced schedule and implement the OTAG recommendations through SIP calls in September of 1997.

Respectfully submitted,  
By The Commonwealth of Pennsylvania

Thomas J. Ridge, Governor  
Date: 8/14/97