



Pennsylvania Department of Environmental Protection

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January 30, 2006

Secretary

717-787-2814

Attention: Docket ID No. OAR-2003-0062  
Air and Radiation Docket and Information Center  
U.S. Environmental Protection Agency  
Mailcode: 6102T  
1200 Pennsylvania Avenue, NW,  
Washington, DC 20460

**Re: Proposed Rule to Implement the Fine Particle National Ambient Air Quality Standards, (40 CFR Parts 51 and 52) (November 1, 2005),  
Docket ID No. OAR 2003-0062**

To the Docket:

The Commonwealth of Pennsylvania's Department of Environmental Protection (Department) appreciates the opportunity to submit comments on the U.S. Environmental Protection Agency's (EPA) Proposed Rule to Implement the Fine Particle National Ambient Air Quality Standards, (40 CFR Parts 51 and 52), published for comment on November 1, 2005, at 70 Fed. Reg. 65984. On November 15, 2006, EPA published an announcement in the *Federal Register* extending the public comment period until January 31, 2006, to provide additional time for the preparation and submission of comments on the proposal. 70 Fed. Reg 69302.

In 1997, EPA promulgated the fine particulate (PM<sub>2.5</sub>) standard, which has not yet been fully implemented. As a result of the April 5, 2005, effective date for nonattainment designations, state and local agencies must develop cost-effective emission reduction strategies, promulgate regulations, and the requisite attainment demonstrations by April 2008. In order to protect public health and the environment from the undisputed adverse effects of fine particulates, it is imperative that EPA finalize the PM<sub>2.5</sub> implementation rule expeditiously. To this end, the Department's concerns with the proposed PM<sub>2.5</sub> Implementation Rule are set forth herein for your favorable consideration.

1. Pollutants states must address in nonattainment plan programs.

EPA recognizes that nitrogen oxides (NO<sub>x</sub>), sulfur dioxide (SO<sub>2</sub>), ammonia, and volatile organic compounds (VOCs) are potential PM<sub>2.5</sub> precursors but explains in the proposed rule that ammonia and VOC may not need to be specifically addressed in PM<sub>2.5</sub> nonattainment plan programs. EPA proposes not to regulate ammonia and VOCs unless a finding is made that these pollutants are significant contributors to local nonattainment of the fine particulate National Ambient Air Quality Standard (NAAQS). For ammonia, EPA's rationale is that there are



instances in which controlling ammonia emissions may be counterproductive. For VOCs, EPA's reasoning is that addressing VOCs may be duplicative since the fine particulate nonattainment areas correspond with eight-hour ozone areas where VOCs must be addressed. This assumption about VOCs is incorrect. Not all PM<sub>2.5</sub> nonattainment areas will also remain eight-hour ozone nonattainment areas. Many eight-hour ozone nonattainment areas already qualify for redesignation to attainment and will not require additional consideration of VOC emissions reductions. Nonetheless, the VOC emissions in those areas may contribute to PM<sub>2.5</sub> nonattainment and should be addressed by EPA's final rule and the PM<sub>2.5</sub> plan.

For ammonia, EPA in effect presumes that if an area does not address this pollutant the suppression mechanism EPA has described is occurring. Therefore, it would be necessary to sustain the emissions of ammonia in order to maintain the NAAQS, and ammonia would need to be included in the plan regardless.

Rather than make the presumption that controlling ammonia and VOCs may not always be productive, the Commonwealth recommends that EPA take the opposite approach and require states to include requirements for ammonia and VOCs in State Implementation Plans (SIPs) as inventoried precursors. Ammonia and VOCs should be addressed as part of the control strategy unless a state can demonstrate through speciation monitoring data conducted over a three-year period that ammonia and VOCs do not contribute significantly to particulate matter formation in the area. The Department recommends that significance for each would be defined as being greater than 10 percent of the emission inventory for the area and greater than 10 percent of the PM<sub>2.5</sub> fraction.

2. Presumption that the Clean Air Interstate Rule (CAIR) will provide emission reductions in the manner predicted by the Integrated Planning Model (IPM).

The proposed PM<sub>2.5</sub> Implementation Rule states "CAIR, issued by EPA on March 10, 2005, employs the same emissions trading approach used to achieve cost-effective emissions reductions under the acid rain program." 70 Fed. Reg. 65991 (November 1, 2005). EPA's expectation that environmental progress resulting from the installation of emission controls like that which occurred under the Acid Rain program and the subsequent Interstate Ozone Transport NO<sub>x</sub> SIP Call program is ill founded. EPA's strategy for PM<sub>2.5</sub> reductions contained in the CAIR program will not ensure that adequate emission reductions will occur within Pennsylvania. Retrospective analysis shows that only a fraction of the projected or anticipated emission controls were installed on affected sources in Pennsylvania, and recent studies explain why that may continue to some extent under CAIR. This key component of EPA's fine particulate reduction strategy abandons state and federal responsibilities to ensure attainment of the PM<sub>2.5</sub> NAAQS to random market forces and distributes cost and benefits unevenly among states.

As with the Acid Rain Program, the cost of the CAIR program may outweigh the accrued benefits for Pennsylvania. Unfortunately, affected sources in this Commonwealth use the greatest amount of banked allowances to achieve compliance under the Acid Rain program. States can attempt to mitigate such inequities by tailoring the federal CAIR regulations, but only if they are willing to go beyond what the CAIR program requires. This would not be the most efficient approach. A more effective federal emissions trading program that is consistent among

states, that distributes costs and benefits evenly and that ensures, rather than impedes, attainment of the NAAQS is needed. Simply tightening the budgets and setting minimum emission limits requiring all sources over 500 MW to install controls would largely achieve this objective. Other components, such as Pennsylvania's Energy Deployment for a Growing Economy (EDGE) Initiative, which is designed to ensure that old, small, less efficient uncontrolled units are phased out and replaced with advanced clean coal gasification and liquefaction technology to ensure electric reliability, would also be helpful. A consistent, nationally applicable Non-EGU major source Reasonably Available Control Technology (RACT) requirement is also recommended.

There are several reasons why the projection data as generated by the IPM supporting CAIR should not be relied upon to plan for attainment and maintenance of the PM<sub>2.5</sub> NAAQS. Many of the existing emission projection modeling efforts, such as those performed to show the effects of the CAIR, are based on assumptions that have recently been rendered invalid and have projected parameters that reside, and are highly likely to continue to reside, outside the band of the sensitivity analyses conducted in their support. Many of these assumptions were based on Department of Energy (DOE) analyses. A full year prior to the release of the DOE's Annual Energy Outlook for 2006 (AEO2006) it was evident that several key predictions of the AEO2004 and AEO2005 were incorrect. However, EPA continued to derive many of its key energy inputs for use in its IPM analyses from the AEO2004.

The AEO2006 begins to recognize that forecast energy prices are much higher than previously estimated. The 2004 projections EPA relied upon did not see new nuclear generation plants, coal to liquid plants, the Energy Policy Act of 2005 (EPACT), or the steep increase in oil prices throughout the projection period. The AEO2006 is more appropriate because it considers those factors. The DOE's Energy Information Administration (EIA) concedes that it failed to foresee the rate of change occurring in the world economy that is now more clearly seen as a permanent feature. Due to the complex nature of the energy and electric systems, it is necessary to re-run the models to see the effects these changes will have on where emission controls will be installed, and where new plants will be constructed, and hence what the air quality implications of the CAIR trading program are for each PM<sub>2.5</sub> non-attainment area. This alone, however, will not remove all of the inaccuracies, and relying on the IPM alone for policy and plan development is a very poor choice that will result in many failed plans and continued delays in attaining and maintaining the health-based PM<sub>2.5</sub> NAAQS.

The IPM does not model generation unit owner behavior that is influenced by state electric utility laws. The IPM installs controls without regard to cost recovery potential and, therefore, does not accurately predict the location of controls, particularly in de-regulated states. This effect is evidenced by the response to the NO<sub>x</sub> SIP Call as explicated in an economic study of the issue: "*CSEM WP 149 Emissions Trading, Electricity Industry Restructuring, and Investment in Pollution Abatement*," Meredith Fowlie, November 2005. This paper is part of the Center for the Study of Energy Markets (CSEM) Working Paper Series. CSEM is a program of the University of California Energy Institute, a multi-campus research unit of the University of California, located on the Berkeley campus.

Compounding these issues are the many new and ever developing state, local and regional carbon and mercury control initiatives and other energy related initiatives. The resulting degree of unpredictability may become unacceptable to both states and EPA. Strict control

regimes in one state will bleed allowances into more permissive states and may change control decisions that have already been announced. This would then require the receiving states to re-plan and impose costly local controls. It is clear that the CAIR program in its current form is inadequate for PM<sub>2.5</sub> plans to rely upon it. Plans could be found adequate and yet not have real, enforceable emission control measures at specific locations adequate to provide for attainment.

### 3. Discussion of economic cost/benefits of previous trading programs accruing to Pennsylvania.

Electric generating facilities in this Commonwealth emitted a total of 1.1 million tons of SO<sub>2</sub> in 1997. By 2004, these facilities emitted one million tons of SO<sub>2</sub>. In-state SO<sub>2</sub> emissions were reduced by less than 10 percent since 1997 and by four percent if compared to 1996. This indicates that the Acid Rain Program failed to motivate facilities in Pennsylvania to install controls and reduce emissions after 1996. Instead, the corporations purchased and/or transferred roughly 400,000 allowances from other states to cover SO<sub>2</sub> emissions. In fact, the owners and operators of electric generating units in Pennsylvania purchased/used more allowances to meet the compliance requirements of the Acid Rain program than any other state in the nation. The economic value is roughly \$650,000,000.00 to \$1,300,000,000.00 over eight years, without amortizing the cost and/or making other financial adjustments. As a result of the Acid Rain Program, emissions from these facilities may continue to impact air quality adversely. The annual cost to Pennsylvania's citizens, small business and industry, of complying by using, transferring, and buying allowances will continue to rise into 2009.

It seems that EPA's Acid Rain Program made Pennsylvania the largest consumer of SO<sub>2</sub> allowances originally issued to units in other states. The broad view outcome of the Acid Rain Program actually verifies that trading programs can be effective overall, but it also shows that they can seriously fail at regional and local levels. It further indicates that the most cost effective reductions that can be made are not equally distributed over the entire cap and trade region. EPA's own numbers show evidence of that. The Acid Rain Program also suggests that economic and health related costs and benefits might not be evenly distributed. Unfortunately, EPA's overall control strategy for PM<sub>2.5</sub> that includes reliance upon CAIR emission controls may share many of these same characteristics.

A recent University of California Energy Institute Study indicates that market based strategies used to reduce pollutants may result in problems for states, like Pennsylvania, whose electric utilities are deregulated. Disadvantaged due to cost recovery issues, specifically with regard to recovery of capital costs needed to install controls on cap and trade regulated units and due to multi-state corporate economic decisions, sources in Pennsylvania may be last in line to reduce SO<sub>2</sub> emissions through the use of controls and, therefore, the Commonwealth may not get the PM<sub>2.5</sub> emissions reductions as projected in EPA's modeling.<sup>1</sup>

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<sup>1</sup>) EPA's inputs for the IPM model runs, ultimately, were shown to deviate significantly as suggested by EIA's most current cost and projected consumption estimates for natural gas and coal. EPA persisted in using these obviously incorrect projections even after many States had questioned their validity in the analysis. EPA instead chose to model the impacts of CAIR, including future PM<sub>2.5</sub> impacts, relying upon a low cost gas and the best-case scenario analysis. IPM sensitivity analysis runs were probably too narrow to adequately project realistic outcomes of the CAIR rule and this makes it very difficult to determine if Pennsylvania's PM<sub>2.5</sub> nonattainment areas will actually reach attainment under EPA's current strategy.

In conclusion, EPA has relied upon macroscopic results to justify very liberal PM<sub>2.5</sub> planning requirements that virtually ensure inequitable results among states. In addition to requiring the use of realistic and commonly agreed upon IPM and planning assumptions, and a rational set of sensitivity runs that include an all "best case set", and an all "worst case set" of assumption runs, the planning rules should require states to harmonize the use of IPM and planning assumptions in order to avoid inequities from developing. This is also necessary since adjacent plans, having relied upon disparate assumptions, are prone to interfere with one another and are likely to result in failed plans. Plans should be designed to demonstrate attainment within the full range of sensitivity analyses as well.

### 3. PM<sub>2.5</sub> nonattainment area classification.

The proposed PM<sub>2.5</sub> Implementation Rule describes a no classification system or a two-tiered classification system for PM<sub>2.5</sub> nonattainment areas. EPA's preferred option is not to have any system for classifying PM<sub>2.5</sub> nonattainment areas or assigning attainment dates and control strategy requirements based on the severity of the nonattainment problem (e.g., the area's design value). EPA believes that an advantage of this approach is that it will provide a relatively simple implementation structure for state implementation of the PM<sub>2.5</sub> standards.

The Commonwealth agrees with this approach, that prescribed local measures to address the PM<sub>2.5</sub> problem would not be productive due to the complexity and variability of the problem and recommends strongly that the no classification system be adopted in the final rule.

### 4. What constitutes improved monitoring?

EPA proposes that states may be able to use enhanced monitoring to identify previously undetected emissions and thereby potentially reduce emissions up to 15 percent. As described in the proposed rule, this is just a repackaging of rule effectiveness improvement programs. EPA requests submission of methodologies for estimation of reductions resulting from improved source monitoring. In theory, improving source monitoring should provide some reductions. However, translating these reductions into SIP credit would create false credits except in rare instances. It is not possible to quantify PM<sub>2.5</sub> reductions without first knowing what the emissions are—EPA is admitting here that the baseline inventory is not correct since it does not account for control excursions. In addition, EPA has not completed its Clean Air Act mandate to do adequate research on what fine particulate emissions are from most industrial sources. Therefore, EPA should require baseline inventory corrections and not allow credit to be taken for historical errors in emission reports.

### 5. New Source Review (NSR) issues EPA has failed to recognize and must be addressed in the PM<sub>2.5</sub> implementation rule.

The Clean Air Act specifies that offsetting emission reductions taken together with all other emission increases and decreases in a nonattainment area must provide for reasonable further progress (RFP). This is defined as an annual incremental improvement towards attainment of the NAAQS. As a result of inclusion of large power stations in rural nonattainment areas, many areas may see no RFP if controls are not installed on these plants. In order to allow new sources in the area, controls will have to be installed. However, all of the

reductions may not be surplus to the SIP if the state has already taken credit for CAIR reductions.

Typically, the planning emission inventory “credits” an allowance program by setting the projected emissions from budget program-covered sources equal to their allocated allowances. The allocated allowances are usually less than the source’s base year actual emissions. If the source installs controls, it cannot take NSR offset credit for the reduction down to the allocation level since the SIP already took this credit. If the source reduces its emissions below the SIP credit level it could generate NSR credit but in order to fulfill the SIP budget obligations, an equivalent amount of allowances must be surrendered for any new emissions that are allowed by the offset credit. Otherwise, the emission reductions are being counted and used twice. If the new source is subject to the budget program this will be satisfied automatically; if not, allowances equal to the allowable emissions from the new source need to be retired.

Since EPA's CAIR and NSR regulations do not address this issue, and because of the overlapping complexity inherent to the NSR and CAIR requirements, it is virtually guaranteed that double counting may occur if the issue is not addressed in the final rule. The simplistic general NSR requirement that credits be “surplus to the SIP” is inadequate to prevent double counting from occurring. Pennsylvania has adopted NSR and interstate ozone transport NO<sub>x</sub> Budget Trading Program provisions that remedy this defect. Provisions as outlined below (*25 Pa. Code* Chapter 145, Section 145.90) and tailored as necessary to integrate with individual state emission credit transfer mechanisms, should be included in each state’s New Source Review and allowance based trading program regulations:

- (a) NO<sub>x</sub> budget units may create, transfer and use emission reduction credits (ERCs) and any other creditable emission reductions in accordance with Chapter 127 (relating to construction, modification, reactivation and operation of sources) and this section. ERCs and any other creditable emission reductions may not be used to satisfy NO<sub>x</sub> allowance requirements.
- (b) A NO<sub>x</sub> budget unit may transfer NO<sub>x</sub> ERCs and any other creditable emission reductions to a NO<sub>x</sub> budget unit if the new or modified NO<sub>x</sub> budget unit’s ozone season (May 1 through September 30) allowable emissions do not exceed the ozone season portion of the baseline emissions which were used to generate the NO<sub>x</sub> ERCs.
- (c) A NO<sub>x</sub> budget unit may transfer or use NO<sub>x</sub> ERCs or any other creditable emission reductions to a non-NO<sub>x</sub> budget unit under the following conditions:
  - (1) The non-NO<sub>x</sub> budget unit’s ozone season (May 1—September 30) allowable emissions may not exceed the ozone season portion of the baseline emissions, which were used to generate the NO<sub>x</sub> ERCs.
  - (2) The NO<sub>x</sub> allowance tracking system account for NO<sub>x</sub> budget units which generated ERCs And any other creditable emission reductions transferred to or used by non-NO<sub>x</sub> budget units, including prior to the date of publication in the

*Pennsylvania Bulletin*, shall have a corresponding number of NO<sub>x</sub> allowances retired that reflect the transfer of emissions regulated under this subchapter to the non-NO<sub>x</sub> budget units. The amount of annual NO<sub>x</sub> allowances deducted shall be equivalent to that portion of the non-NO<sub>x</sub> budget unit's NO<sub>x</sub> control period allowable emissions, which were provided for, by the NO<sub>x</sub> ERCs or any other creditable emission reductions from the NO<sub>x</sub> budget unit.

(3) Allocations for NO<sub>x</sub> allowance control periods following 2002 to the NO<sub>x</sub> ERC generating or other creditable emission reductions source may not include the allowances identified in paragraph (2).

These provisions address the multiple aspects of ERC and allowance interactions and fully prevent double counting without constraining the proper functioning of either program. The provisions also do not allow non-ozone season ERC reductions to allow ozone season emissions growth, see paragraph (b).

It is recommended that PM<sub>2.5</sub> NSR revisions include similar provisions. The PM<sub>2.5</sub> implementation program perpetuates this defect but it can be addressed by including additional NSR rule amendments in the PM<sub>2.5</sub> rule.

#### 6. Pollution Control Project emission increases.

Pennsylvania's regulations do not allow significant increases in criteria pollutants that may result from so called "pollution control projects" to escape NSR. It is well within the cost effective range to require emission controls that do not result in adverse increases of other pollutants. In fact, raising this issue opens the door for consideration of increased toxic impacts that have been demonstrated when, for instance, only an SCR is installed on a coal-burning unit. The bio-available oxidized mercury released to the environment may increase dramatically. EPA's section 112 exemption dissolves and the unit must comply with a MACT standard. Therefore, it appears that EPA has violated the CAA by not establishing a MACT for this inevitable eventuality which EPA itself brought into being under CAIR. Establishment of CAIR should have triggered a MACT standard determination for units installing SCR-only controls.

#### 7. What Reasonably Available Control Technology (RACT) and Reasonably Available Control Measures should be required.

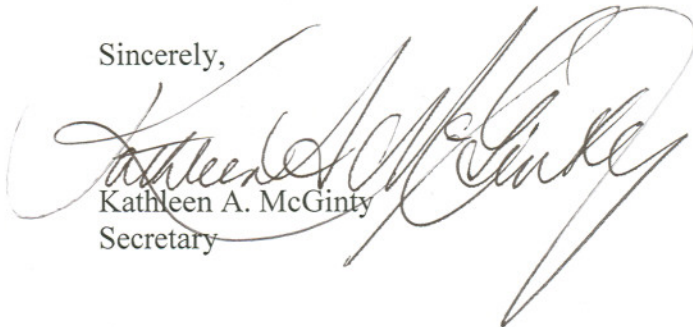
EPA suggests that plans may be formulated to take credit for upwind source reductions if the sources are within 200 kilometers of the impacted nonattainment area, and asks how this might be justified and implemented. If this is allowed, it should only be on the condition that all other major sources in the 200 km boundary are also not allowed to increase emissions. EPA is allowing states to include the benefits of upwind reductions that CAIR is predicted to provide. The Clean Air Act set forth an Ozone Transport Region (OTR) and required specific control measures, including RACT, that were applicable statewide and OTR states have implemented such measures. Taken together, these considerations suggest that a nationwide set of RACT emission limits for major sources, that are as strict on average as those that were implemented in the OTR, should to be established and required. This would ease modeling and planning

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considerably, SIPs could then take credit for the presumptive controls, including those in upwind areas, while it would also provide a much higher degree of equity between states, and reduce the opportunity for emissions "leakage" to uncontrolled border areas.

If you have questions or need additional information regarding our comments, please contact Thomas K. Fidler, Deputy Secretary for Waste, Air and Radiation Management, by e-mail at [tfidler@state.pa.us](mailto:tfidler@state.pa.us) or by telephone at 717-772-2724. You may also contact Joyce E. Epps, Director of the Bureau of Air Quality, by e-mail at [jeepps@state.pa.us](mailto:jeepps@state.pa.us) or by telephone at 717-787-9702.

Sincerely,

A large, stylized handwritten signature in black ink, appearing to read 'Kathleen A. McGinty', is written over the typed name and title.

Kathleen A. McGinty  
Secretary