

Mr. Bruce F. Vento  
Chairman, Subcommittee  
on National Parks  
and Public Lands  
Washington, D.C. 20515-6201

Dear Mr. Vento:

This is in response to your June 10, 1992 letter regarding follow-up questions to the April 30, 1992 hearing on "Air Quality Issues Affecting Our Forests and Public Lands." Enclosed are responses to the questions in your letter.

Sincerely yours,  
William K.

Reilly  
Enclosures  
OAQPS:AQMD:PPB:NSRS:Solomon/deRoeck/Allman(541-5375/5593/MU)  
07/02/92; disk:deRoeck;hearing.2A

QUESTION 1. The Environmental Protection Agency's (EPA'S) TESTIMONY STATES THAT THE CLEAN AIR ACT AMENDMENTS OF 1990 (1990 CAAA) WILL HAVE A SIGNIFICANT POSITIVE IMPACT ON AIR QUALITY IN NATIONAL PARKS AND FORESTS, YET THERE IS NOTHING IN THE AMENDMENTS WHICH SPECIFICALLY ADDRESSES CLASS I AREAS EXCEPT STUDIES AND COMMISSIONS. PLEASE BE MORE SPECIFIC ABOUT EXACTLY WHAT IMPROVEMENTS YOU PROJECT FOR CLASS I AREA AND WHEN THEY WILL OCCUR BY.

The majority of significant and positive impacts on air quality in the national parks and forests will result from implementation of Title I and Title IV programs of the Clean Air Act (Act). These programs will significantly reduce emissions that create ozone and acid precipitation, especially across the Eastern United States. In general, the reduction in sulfur dioxide (SO<sub>2</sub>) emissions is expected to noticeably improve average visibility in national parks and forests along the entire Appalachian chain. This was noted in National Acidic Precipitation Assessment Program's Integrated Assessment. As required by the Act, EPA is currently reviewing the visibility changes expected from implementation of the 1990 CAAA for all Class I areas and will report to congress later this year.

A. PLEASE PROVIDE YOUR BEST PROJECTIONS FOR SO<sub>2</sub> AND nitrogen dioxide (NO<sub>x</sub>) EMISSIONS STATE BY STATE THROUGH THE YEAR 2001.

Using 1980 as the base year, national emissions of SO<sub>2</sub> and NO<sub>x</sub> are expected to decline by 2010. The emissions of SO<sub>2</sub> are expected to decline by a greater percentage than those of NO<sub>x</sub>. National estimates of SO<sub>2</sub> and NO<sub>x</sub> emissions for the period 1980-2010 can be found in National Air Pollutant Emission Estimates 1940-1990 (EPA-450/4-91-026; November 1991). Selected pages dealing with SO<sub>2</sub> and NO<sub>x</sub> emissions are enclosed for your information.

We have recently released proposed allocations of SO<sub>2</sub> allowances for Phase II of the acid rain control program; a copy of these proposed allocations are included as part of our response. The allocations give an overview of what all utility sources in each State may emit under the acid rain program. However, actual emissions may be limited by other Federal and State requirements (see 1B below). The major point to be made is that emissions of SO<sub>2</sub> will decline substantially on a nationwide basis.

We do not have State-by-State emission estimates for nonutility SO<sub>2</sub> sources in the year 2010. We believe that emissions from these sources will decline relative to 1980, as evidenced by the projection contained in the National Air Pollutant Estimates 1940-1990.

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We do not have State by State projections of NO<sub>x</sub> emissions at this time. As the enclosed information indicates, however, NO<sub>x</sub> emissions will be declining in the 1980-2010 time period.

**B. DOESN'T THE FLEXIBILITY INHERENT IN THE ACID RAIN TITLE'S MARKET-BASED APPROACH MEAN THAT EMISSIONS COULD INCREASE NEAR A CLASS I AREA IF ALLOWANCES WERE TRADED?**

The flexibility of the acid rain program passed by Congress will allow sources to purchase allowances from one another. However, regardless of the number of allowances a source may hold, its actual emissions are subject to several other constraints, including: new source performance standards (NSPS); State and local requirements [e.g., State implementation plan or other permit limits to protect national ambient air quality standards (NAAQS)]; and, prevention of significant deterioration (PSD) and visibility limitations. It is also not appropriate to look at a particular state's allowance allocations and make a determination about the potential impact of the acid rain title on a particular national park. For example, while emissions may rise in Virginia, it does not necessarily follow that Shenandoah National Park will automatically suffer adverse effects. Other States' emissions that impact the Shenandoah National Park need to be considered, such as emissions from Ohio, Pennsylvania, Kentucky, West Virginia, and

Tennessee are likely to decrease substantially, thus improving air quality around the park.

C. GIVEN THE PROVISIONS OF THE 1990 CAAA WHICH LIMIT SO2 EMISSIONS, WHAT FACTORS COULD ACCOUNT FOR THE INCREASES IN SO2 EMISSIONS IF THAT IS WHAT YOU PROJECT?

We do not project increases. Without the 1990 CAAA SO2 emissions were projected to increase in many States, particularly in the West, because of economic and population growth. The almost 50 percent reduction in SO2 required by the 1990 CAAA is expected to reduce emissions substantially in most States (e.g., the East) and limit emissions growth in States previously expected to experience increases (e.g., the West).

QUESTION 2. WHAT ARE EPA'S EXPECTATIONS FOR THE GRAND CANYON VISIBILITY TRANSPORT COMMISSION (Commission)?

A. WHAT WOULD BE THE BEST POSSIBLE RESULT FROM THE COMMISSION 4 YEARS FROM NOW? WHAT IS EPA DOING TO ENSURE THAT RESULT?

The commission was formed to incorporate a multi-State perspective in developing appropriate programs for remedying and preventing regional haze impairment at the national parks and wilderness on the Colorado Plateau. The EPA has supported the

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Commission with significant staff time and an initial grant of \$250,000 for this fiscal year.

The EPA is hoping that the Commission will review key technical issues based on available information and then work towards consensus on the most appropriate programs for protection of the visibility. The EPA expects the Commission to balance the consideration of visibility protection with other environmental goals as well as economic and social goals. By November of 1995, the Commission is expected to report to the Administrator its recommendations for regional haze programs. On June 21, at its third meeting, the Commission approved a work plan outlining its method for developing its recommendations to the Administrator. The EPA fully supports that plan and is committed to providing

continued grant dollars and staff time to implement that plan.

**B. WHAT LEVEL OF FUNDING IS NEEDED AND WHAT FUNDING HAS BEEN REQUESTED BY EPA FOR THE COMMISSION?**

The work plan was developed assuming a continued EPA grant of \$250,000 per year for 4 years. The work plan also assumes a significant comparable contribution of staff time, travel resources, and research resources from each of the member States as well as the Federal agencies. optional technical review tasks have been identified by the staff which could enhance the work plan process but at this time remain unfunded. The work plan structure allows for participation of all public groups on the technical and policy committees and this may act as additional resources.

**QUESTION 3. THE NATIONAL PARK SERVICE (NPS) AND OTHERS HAVE EXPRESSED CONCERNS THAT THE DRAFT WEPCO RULE WOULD FURTHER WEAKEN THE ABILITY OF THE PSD PROGRAM TO REVIEW INCREASES IN EMISSIONS THAT COULD BE HARMFUL TO CLASS I RESOURCES.**

**A. WHAT IS THE CURRENT STATUS OF THE WEPCO RULE?**

The final WEPCO rulemaking was signed on May 20, 1992. The EPA expects this rulemaking to be published in the Federal Register shortly.

**B. WHAT WOULD BE THE EFFECTS OF THE IMPLEMENTATION OF THIS PROPOSED RULE ON CLASS I AREAS?**

The purpose of the WEPCO rulemaking was to address new source applicability for utility projects so that utilities can undertake Title IV modifications without uncertainty as to the applicability of new source permitting requirements. Specifically, the rule excludes utility pollution control projects from new source review (NSR) and provides procedures for determining if a proposed physical or operational change at a utility should be considered a "major modification" under NSR.

For the most part, the pollution control exclusion and applicability procedures outlined in the rulemaking reflect established agency policy regarding utility modifications.

Consequently, in that the rulemaking acts to confirm and codify established Agency policy in this area, it is not expected to result in a notable change in the type or number of utility projects currently undergoing NSR review. Therefore, EPA does not anticipate any affect on Class I areas from the rule.

For example, in recent years EPA has consistently excluded utility pollution control projects from NSR. The proposed regulatory exclusion formalizes the Agency's statutory authority to do so. By definition, pollution control projects reduce emissions of targeted pollutants. While emissions of other pollutants could in theory increase in a few cases, EPA does not expect this to result in significant impacts on Class I areas. Further, the EPA believes that the WEPCO rule allows reviewing authorities sufficient flexibility to protect, to the extent required under existing law, Class I areas from any possible adverse impacts from pollution control projects. In evaluating whether a utility unit is "less environmentally beneficial" after controls than it was before controls all environmental impacts, including those on Class I areas, can be considered.

Consequently, where prospective projects may be cause for concern, permitting agencies have the authority to require modeling to prevent increment or visibility violations, and likewise may solicit the views of others in taking any other appropriate remedial steps deemed necessary to protect Class I areas.

Regarding other changes at utilities, the rule does not exempt from NSR review increases in emissions that would result from a physical or operational change. Consequently, these emissions increases, if significant, are still subject to NSR. Although the rule may act to exclude certain utility projects from review, its "actual-to-actual" applicability test coupled with the additional requirement that utilities inform the permitting authority of post change emissions for a period of 5 years, ensures that a physical or operational change resulting in an "actual" increase in utility emissions will undergo NSR permitting, including any applicable Class I area impact assessment.

#### QUESTION 4. WHAT IS THE CURRENT STATUS OF THE TOP DOWN GUIDANCE?

A. DOES EPA INTEND TO CHANGE POLICY ON TOP DOWN BEST AVAILABLE CONTROL TECHNOLOGY (BACT)? IF SO, WHAT KIND OF ANALYSIS OR JUSTIFICATION WOULD THIS POLICY BE BASED ON?

As a direct result of an Agency commitment in a

October 14, 1992 letter to Michael Boskin, Chairman, Council of Economic Advisors, EPA will be undertake a rulemaking on BACT.

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The rulemaking is also part of a settlement agreement with the American Paper Industry (API). The intent of the rulemaking is to clarify Agency policy regarding the BACT decision making process. The rulemaking will focus on compliance with the statutory criteria for determining BACT, rather than the use of any single analytical BACT method (e.g., top down).

**B. WHAT IS WRONG WITH THE CURRENT TOP DOWN BACT POLICY WHICH HAS CAUSED THIS REVIEW?**

The API and others accused EPA of regulation through policy and guidance in employing top down BACT.

**C. WHAT WOULD BE THE EFFECT OF THIS CHANGE IN POLICY ON CLASS I AREAS?**

In determining BACT, the reviewing authority, on a case-by-case basis, evaluates the energy, environmental, and economic impacts and other costs associated with each of the candidate technologies considered in the analysis. The reviewing authority then specifies the emissions limitation for the source that reflects the maximum degree of reduction of each pollutant regulated under the Act, determined to be achievable taking into account the energy, environmental, and economic impacts and other costs. Historically, EPA has recognized that there are variety of permissible methods, including the top-down method, for determining BACT. In all cases, however, it is the EPA's position that the BACT analysis must include an evaluation and consideration of environmental impacts, regardless of the overall methodology used to determine BACT. Consequently, a change in BACT policy relative to the use of the top-down method would not have an affect on the consideration of Class I impacts in either the BACT analysis or the PSD review process in general.

**QUESTION 5. CONCERNS HAVE BEEN EXPRESSED ABOUT THE STANDARD OF PROOF AND THE MODELING USED BY EPA IN REVIEWING THE STATE OF VIRGINIA'S ISSUANCE OF A PERMIT FOR MULTITRADE COGENERATION FACILITY.**

A. COULD YOU EXPLAIN SOME OF THE LIMITATIONS OF THE MODEL YOU USED FOR REVIEWING THIS PERMIT?

Impacts on visibility and acid deposition expected from the operation of the new sources, in the Virginia parklands, were estimated using the Regional Eulerian Model for Air Pollution (RELMAP) model. The RELMAP is a Lagrangian model where 12 hour pollutant puffs are transported within a predefined domain. The RELMAP modeling domain encompasses central and eastern North America.

One assumption inherent to all models of the RELMAP types is that the pollutant concentration anywhere within the cell

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containing a source are treated as homogenous within that cell. This then makes it impossible to apply these models for short transport distances, that is, distances less than or comparable to the cell dimensions. For the RELMAP analysis, this critical transport distance approximates 100 kilometers (km). Beyond 100 km, for many cases, the source plume becomes ill defined and blends into the regional concentrations from other sources. A possible exception would be for very stable regimes lasting for a day or more.

Since none of the proposed power plants are within the model cell containing the Shenandoah National Park, this is not a serious issue. However, there are four proposed plants within the model cell containing the James River Face Wilderness Area. Consequently, the model will overestimate the number of days plumes from these plants will affect the area. The model mean concentrations and depositions for this area will therefore be greater than expected. This does not have serious drawbacks, since the objective of this assessment is to focus on the worst cases.

The RELMAP was developed for long-term (monthly or greater) calculations of mean air concentrations and wet/dry depositions. All model evaluations and comparisons have focused on seasonal and annual periods. Therefore, its performance for shorter scales has not been assessed. Until this is accomplished, RELMAP output for shorter time periods should not be used. Therefore, for the Virginia application RELMAP was limited to predictions no shorter than individual months. This limitation was of considerable concern since much shorter time scales are important for evaluating



effects on visibility and arguably for acid deposition in certain circumstances.

**B. IS THIS THE MODEL THAT YOU WILL BE USING IN FUTURE CASES THAT MAY BE APPEALED TO YOU?**

No, limitations of the RELMAP model for Class I impact assessments were clearly recognized during the course of the Virginia permitting process. However, given the inherent time and resource constraints and the lack of appropriate technical tools RELMAP was considered the best approach available.

Recognizing the need for a better approach to estimating Class I area impacts an interagency workgroup has formed to address this issue. This workgroup is known as the Interagency workgroup on Air Quality Modeling (IWAQM). Federal agencies represented on the workgroup include: NPS, U.S. Forest Service, U.S. Fish and Wildlife Service and EPA. The workgroup is chaired by the NPS and representatives from the States of Virginia and Oregon are active participants.

The objective of IWAQM is to review existing modeling techniques to recommend a credible, regional scale model capable of providing the necessary information to assess air quality related values (AQRV's) in Class I areas as well as attainment of the NAAQS and regional scale PSD increment consumption. It is desired that the computer resources needed to assess the recommended modeling system for most applications be comparable to resources typically available to State and local air pollution control agencies.

It is IWAQM's plan to implement a phased approach. Phase I consists of reviewing EPA guidance and recommending a modeling approach to meet the immediate need for a regional scale model for ongoing permitting activity. During Phase II the workgroup will augment Phase I with a review of other available models and make a recommendation of the most appropriate modeling techniques. The workgroup is presently on schedule and a Phase I recommendation is expected by the Fall of this year. It is expected that IWAQM's Phase I recommendation will supplant analyses such as RELMAP in all future permitting actions.

C. DO YOU ALLOW FOR THE CUMULATIVE EFFECTS OF A NUMBER OF PLANTS TO BE EVALUATED TOGETHER WHEN REVIEWING A PERMIT FOR A SINGLE PLANT?

Yes, the standard approach for evaluating a proposed source's effects on air quality is to consider the cumulative effects of other sources in the area of the proposed source. Under the PSD program, a proposed source must demonstrate that its emissions will not cause or contribute to levels of air pollution that would violate any (NAAQS) or PSD increment. Also, a proposed source must not cause an adverse impact on any AQRV defined by the appropriate Federal land manager for a Class I area.

In fulfilling the prerequisite that a source not contribute to a violation, it is EPA's general policy to consider the cumulative effects of all "existing" sources. "Existing" sources includes sources already in operation, as well as permitted sources which have not yet begun operation. Generally, the impact of the proposed source itself is evaluated in order to determine whether such impact would be significant (in accordance with significance levels established by EPA regulation). If the proposed source would have a significant ambient impact, then a comprehensive analysis of all other source impacts would be carried out.

In the case of the Multitrade cogeneration facility, however, the Virginia Department of Air Pollution Control (VDAPC)--the delegated permitting authority for the PSD permit--did not require the proposed source to model its impact on the Class I increments, because (1) an existing VDAPC policy

precludes the need to model a source that is more than 100 km from a Class I area (Multitrade is located more than 120 km from the Shenandoah National Park), and (2) the VDAPC claim that the proposed source was "relatively small and the likelihood of any measurable impact upon the park is remote." Consequently, an analysis of the proposed source's (and other sources') ambient impacts was not required.

With respect to any adverse impacts on AQRV's, the VDAPC acknowledged that adverse effects already existed. However, the

VDAPC also contended that the Federal land manager failed to provide any quantitative demonstration that the proposed source would have a sufficient impact of its own to warrant a finding of adverse impact on the part of Multitrade.

QUESTION 6. AS THE 1990 GOVERNMENT ACCOUNTING OFFICE REPORT AND TESTIMONY FROM THE HEARINGS CLEARLY SHOW, THE VAST MAJORITY OF POLLUTING SOURCES OPERATING WITHIN 100 KM OF CLASS ONE AREAS ARE NOT COVERED BY THE PSD PROGRAM SINCE MOST OF THESE FACILITIES WERE "GRANDFATHERED" IN OR BECAUSE THEY WERE DEEMED MINOR SOURCES UNDER THE ACT. DOES EPA CURRENTLY HAVE THE AUTHORITY TO PROMULGATE REGULATIONS OR TO REQUIRE STATES TO PROMULGATE REGULATIONS WHICH WOULD INCLUDE MORE SOURCES UNDER THE PSD PROGRAM?

The Act is quite specific that until an existing source plans to make a physical change or a change in the method of operation, the PSD requirements will not directly apply to existing sources. Thus, the air quality impacts associated with existing sources may be considered in the PSD air quality analyses requirements, but such existing sources cannot be directly regulated as to those impacts until a modification is proposed. This is not to say that, in regulating new or modified stationary sources under the PSD regulations, existing sources can't be required to reduce or offset their emissions as a precondition to allowing a new source to construct. However, direct regulation of existing sources under the PSD requirements does not appear to have been intended under the Act.

QUESTION 7. FROM YOUR PERSPECTIVE, WHAT HAVE BEEN THE PRINCIPAL BARRIERS TO IMPLEMENTING THE VISIBILITY PROVISIONS OF THE ACT?

A. WHY HAS EPA BEEN UNABLE TO DEVELOP A REGIONAL HAZE PROGRAM AND PROMULGATE REGULATIONS FOR IT?

The major reason that the EPA has not developed a regulatory regional haze program has been a lack of technical tools necessary to link regional emission changes with visibility changes in a Class I area or grouping of Class I areas. During the 1980's the majority of technical expertise in this area was directed at acid deposition modelling under the National Acidic Precipitation Program. That program developed the Regional Acid

Deposition Model which formed the basis for a new model, the Regional Particulate Model (RPM). The RPM will be able to predict visibility changes by taking into account aerosol formation. Work to develop and validate this model is underway and is part of the research called for in Section 169B of Act.

The other reason that a national regulatory program to protect visibility in Class I areas has not been developed is due to the large differences in natural background conditions across the country. A program that protects or improves one area may allow degradation in another area.

**B. DOES EPA HAVE A TIMETABLE FOR PROMULGATING A REGIONAL HAZE PROGRAM? WHAT IS THAT TIMETABLE?**

The EPA looks to the Grand Canyon Visibility Transport Commission as the first step in a regional approach to visibility protection. That Commission is not scheduled to report to the EPA until November 1995. Certainly, the EPA will assess the Commission's work before taking final regulatory action with respect to regional visibility protection regulations in the West. In addition, EPA will implement the acid rain control provisions of the 1990 CAAA to provide some visibility improvements for Eastern Class I areas over the next decade.

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