UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

AUG 16 2007

THE ADMINISTRATOR

Mr. David M. Flannery, Esq.
Jackson Kelly, PLLC
P.O. Box 553
Charleston, WV 25322

Re: Petition of Midwest Ozone Group, et al., for Reconsideration of EPA's $PM_{2.5}$ Designations

Dear Mr. Flannery:

This letter is in response to your email of March 28, 2006, on behalf of the Midwest Ozone Group and the West Virginia Chamber of Commerce, concerning the designations for fine particulate matter ($PM_{2.5}$) promulgated by the Environmental Protection Agency (EPA) in December 2004, and effective in April 2005. We are treating your email as a petition to EPA for reconsideration of the $PM_{2.5}$ designations.[1]

In your petition, you expressed concern that EPA based the designations for the $PM_{2.5}$ national ambient air quality standards (NAAQS) on information that was in error. Specifically, you noted that EPA has subsequently revised its estimate of the carbonaceous portion of direct $PM_{2.5}$ emissions from electric generating units (EGUs). Because EPA has revised these emissions estimates downwards, you asserted that the prior estimates could have unduly influenced the designations process. The premise of your petition is that EPA erroneously included certain counties, or portions of counties, within designated nonattainment areas because the Agency overestimated the emissions from the EGUs located in such areas.

You specifically requested that EPA recalculate the weighted emissions scores used by the Agency in the designations process for all counties affected by the change in the

[1] You sent your email to EPA's Department of Justice (DOJ) counsel in the pending litigation concerning the $PM_{2.5}$ designations. EPA also received communications through DOJ from other parties joining in your petition. By email dated April March 29, 2006, Gale L. Rubrecht notified DOJ that amicus party Indiana Energy Association, Inc., joined in the petition for reconsideration, and by email dated May 17, 2006, Charles L. Franklin notified DOJ that Dynegy Midwest Generation, Inc., joined in the petition for reconsideration. EPA intends this response to address the issues for the original petitioner and those parties who later joined.

estimated direct carbonaceous $PM_{2.5}$ emissions from EGUs. You also specifically requested that EPA reconsider the effect of future controls for SO_2 and NO_x emissions from EGUs in the designations, on the theory that changes in the estimated carbon emissions would make the weighted emissions score more sensitive to changes in SO_2 and NO_x emissions. Finally, you requested that EPA reconsider the designations of nonattainment for the 23 counties named in your petition, and any similarly situated counties, because you believe use of the revised estimated carbon emissions for EGUs located in such counties would result in a modification or reversal of the designations.

EPA has carefully reviewed the arguments and the specific information that you provided in your petition. For the reasons discussed below, EPA is denying your petition for reconsideration.

First, EPA does not believe that a change in the speciation profiles for carbonaceous $PM_{2.5}$ emissions from EGUs is sufficient grounds for reconsideration. At the time of the designations in December 2004, EPA used what it considered to be the most up-to-date and accurate estimates of such emissions. It would not be appropriate to reconsider the $PM_{2.5}$ designations solely because the Agency has subsequently revised its estimates of carbonaceous $PM_{2.5}$ emissions from EGUs. In general, the Agency needs to make final decisions on the information available at the time of the decision and to move forward to protect public health and the environment. Repeated reevaluation of past decisions based upon subsequent information would prevent completion of the designations process and thereby preclude effective implementation of the NAAQS.

Second, revisions to the estimated carbonaceous $PM_{2.5}$ emissions from EGUs affect only one component of one type of information that EPA considered in the designations process. In making designation decisions, EPA evaluated a broad range of information including population, meteorology, geographic location of sources, and other relevant factors that would not be negated solely by revised estimates of such emissions from EGUs. Although emissions inventory information was a critical form of information considered by EPA, it was not the exclusive basis for the designations.

Third, EPA also considered the SO_2 and NO_x emissions from EGU sources as part of the designation process. Based upon analyses conducted to evaluate the potential for contribution from large sources to nearby violating monitors, EPA determined that, in appropriate circumstances, such sources should be included within the boundaries of nonattainment areas because of the magnitude of their total emissions and their proximity to areas violating the NAAQS. Thus, revised estimates of carbonaceous $PM_{2.5}$ emissions from EGUs would not negate the appropriateness of inclusion of such sources in those areas where EPA has already done so.

Fourth, to confirm EPA's view that the revised estimates of carbonaceous $PM_{2.5}$ emissions from EGUs would not have materially affected the designations process, we have recalculated the weighted emissions scores as you requested. Based upon this recalculation, we believe that even if EPA were to reconsider the designations, the area by area evaluation of counties with emissions sources or activities contributing to violations of the NAAQS

would not result in a different outcome. Of the counties identified in your petition, EPA sees no change in the rank or magnitude of scores relative to other counties in the areas that would negate the appropriateness of inclusion of the counties within their respective designated nonattainment areas.

Finally, EPA has already taken into consideration the effect of potential or projected emissions reductions as part of the designations process to the degree appropriate. EPA has concluded that it is not appropriate to revisit the circumstances under which these reductions should be taken into account as a result of revised estimates of carbonaceous $PM_{2.5}$ emissions from EGUs.

Based on the foregoing, EPA has concluded that the later revision of estimated emissions from EGUs is not an issue of such a magnitude and of such central relevance that it would significantly affect the outcome of the $PM_{2.5}$ designations decisions. The enclosed document provides the recalculated weighted emissions scores and addresses the specific issues and examples discussed in your petition in more detail. We hope that this information will allay your concern that the counties you listed in your petition are not properly designated nonattainment.

We thank you for your interest in this issue. EPA considers the designation of nonattainment areas with appropriate boundaries to be an important step toward attainment of the $PM_{2.5}$ NAAQS. In conjunction with other programs to reduce interstate transport of pollutants (i.e., the CAIR), and other federal measures to reduce $PM_{2.5}$-related emissions (e.g., federal measures to achieve emission reductions from mobile sources), we anticipate that adoption of appropriate state implementation plans within the designated nonattainment areas will help to ensure that all areas attain the $PM_{2.5}$ NAAQS as expeditiously as practicable. The Agency looks forward to working with the States, and with your clients and other stakeholders, to ensure attainment of the NAAQS.

Sincerely,

Stephen L. Johnson

Enclosure

cc: Gale L. Rubrecht, Esq.
Jackson Kelly, PLLC

Charles L. Franklin, Esq.
Akin, Gump, Strauss, Hauer & Feld

EPA Response to Petition for Reconsideration from Midwest Ozone Group, et al.

In order to respond fully to the issues raised in the petition for reconsideration, we first provide an explanation of the process by which EPA promulgated the designations for the 1997 $PM_{2.5}$ NAAQS, with emphasis upon the role played by carbonaceous $PM_{2.5}$ emissions from Electric Generating Units (EGUs). Within this discussion, we explain the change in estimated emissions from EGUs that forms the basis for the petition. Thereafter, we explain why EPA has determined that it is not necessary to grant the petition to reconsider the designations based upon revisions to the estimated emissions from EGUs that occurred subsequent to the designations.

I. Background.

To promulgate the designations, EPA followed the process set forth in section 107(d) of the Clean Air Act (CAA). In determining what specific areas to include within the boundaries of a designated nonattainment area, EPA followed the definition of "nonattainment" in section 107(d)(1)(A)(i). That provision requires EPA to designate as nonattainment any area that does not meet the NAAQS, or that contributes to ambient air quality in a nearby area that does not meet the NAAQS.

EPA identified areas that were violating the NAAQS based upon monitors that registered violations of the NAAQS over a three year period (either 2001-2003, or 2002-2004). In order to determine what nearby areas were contributing to these violations, EPA evaluated a broad range of information. As a part of this process, EPA reviewed the available technical data related to the considerations recommended in guidance issued by the Agency on April 1, 2003, and on February 12, 2004.[1]

Among other forms of information used to evaluate what areas were contributing to monitored violations of the NAAQS, EPA examined the county by county emissions inventories for direct $PM_{2.5}$, SO_2, NO_x, VOCs, and ammonia. These emissions are relevant because they either constitute, or are potential precursors to the formation of, ambient $PM_{2.5}$. Electric generating units (EGUs) are large sources of SO_2, NO_x, and direct $PM_{2.5}$, emissions. The latter type of emissions is the focus of the petition, but all three types of emissions are important in the context of the designations.

Direct $PM_{2.5}$ emissions are small particles emitted by various types of sources, typically as a result of fuel combustion. These directly emitted particles are composed of

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[1] See, "Memorandum, Designations for the Fine Particle National Ambient Air Quality Standards," from Jeffrey R. Holmstead, Assistant Administrator, to Regional Administrators, Region I – X, dated April 1, 2003; and "Memorandum, Additional Guidance On Defining Area Boundaries for $PM_{2.5}$ Designations," from Lydia N. Wegman, Director, Air Quality Strategies and Standards Division, to Air Division Directors, Regions I – X, dated February 12, 2004. Docket items EPA-HQ-OAR-2003-0061-0009 and 0016.

various carbonaceous and non-carbonaceous components. The carbonaceous components of direct $PM_{2.5}$ include organic carbon and elemental carbon. The non-carbonaceous (or inorganic) components of direct $PM_{2.5}$ include direct sulfate emissions, direct nitrate emissions, and other inorganic compounds (including metallic, geogenic, and other compounds).

EPA uses "speciation profiles" to estimate the amount of carbonaceous and non-carbonaceous emissions making up the total mass of direct $PM_{2.5}$ emissions from particular source categories, such as EGUs. This emissions breakdown is then used for air quality modeling and various types of data analyses conducted to evaluate air quality and the emissions control measures that can be effective to improve air quality in a given area. In particular, the speciation profiles provide a basis for emission estimates that are incorporated into emissions inventories.

The estimated direct $PM_{2.5}$ emissions from EGUs was part of one factor that EPA evaluated in the designations process. Specifically, these emissions were a component in the formula used by EPA to calculate the "weighted emissions score" for each county. EPA used the weighted emissions score as a tool to assess the relative contribution of emissions of direct $PM_{2.5}$, NO_x, and SO_2 to ambient $PM_{2.5}$ concentrations, on a county by county basis, in a given geographic area.

In addition, the weighted emissions score provided an indicator of the relative impacts of emissions that contributed to the "urban excess" $PM_{2.5}$ concentrations in areas with monitors that registered violations of the NAAQS. EPA calculated urban excess concentrations by comparing the sulfate, nitrate, direct carbon, and direct crustal $PM_{2.5}$ concentrations at a violating monitor in an urban area with the concentrations of those particles at a monitor in an upwind rural area that is representative of background or regional conditions. The difference in pollutant concentrations between the rural and urban monitors is indicative of the degree of contribution from local sources in the areas near the violating monitor. (See Appendix A attached to this response for more detailed information on the calculation of the weighted emissions score.)

In many areas with monitors registering violations of the NAAQS, EPA identified carbonaceous $PM_{2.5}$ as a significant fraction of the urban excess $PM_{2.5}$ mass, despite the fact that direct carbon emissions (typically in the hundreds or thousands of tons) are commonly much lower than SO_2 or NO_x emissions (typically in the thousands or tens of thousands of tons). This fact indicates that direct $PM_{2.5}$ emissions can have a greater relative impact per ton on nearby $PM_{2.5}$ concentrations than SO_2 or NO_x emissions because they do not need to undergo chemical transformation in the atmosphere to become $PM_{2.5}$. The weighted emissions score approach reflected this relationship by weighting county-level direct carbon emissions according to the percentage of the urban excess mass attributed to carbonaceous $PM_{2.5}$ in each area. EPA determined that this emphasis was appropriate because carbonaceous $PM_{2.5}$ measured at $PM_{2.5}$ monitors is typically an indication of impacts from sources in or around the urban area, rather than the result of pollutants transported from much more distant sources.

As part of this process, EPA also used the county by county emissions inventories to evaluate nearby areas that contain significant sources of SO_2 and NO_x emissions that contribute to an area's violating $PM_{2.5}$ monitors. The large amounts of SO_2 and NO_x emissions from EGUs are relevant because they contribute to secondarily formed sulfate and nitrate particles that contribute to ambient $PM_{2.5}$ levels. In this context, the total emissions from those sources was an important consideration, as well as the location of the sources in relation to the monitor registering violations of the NAAQS, and other considerations such as meteorology and topography (e.g., a large nearby source that is generally upwind of, and within the same airshed as, the violating monitor). As discussed in more detail below, EPA conducted modeling during the designations process to evaluate the issue of whether emissions from large sources contribute to violations of the PM NAAQS in nearby areas. Based on this general analysis and the specific facts and circumstances in each area, EPA included certain counties with EGUs within the designated nonattainment areas.

Following this reasoning, EPA designated as nonattainment those geographic areas that contain the sources or other emissions activities the Agency believes were contributing to violations of the NAAQS in each area with a violating monitor. A fuller explanation of EPA's analytical approach appears in EPA's final rule promulgating the $PM_{2.5}$ designations.[2]

The basis for the petitioner's concern is that after promulgation of the designations, EPA determined that it should revise the estimates of direct carbonaceous $PM_{2.5}$ emissions from EGUs. During the $PM_{2.5}$ designations process, beginning in early 2004 and continuing until the final designations decisions in December 2004, EPA used emissions inventories containing direct $PM_{2.5}$ emissions information for EGUs that was based upon a speciation profile that estimated direct $PM_{2.5}$ emissions from EGUs to be composed of 20% primary organic carbon and 1% primary elemental carbon, for a total carbonaceous fraction of approximately 21%. Later, however, during development of the emissions inventory to support analyses for the December 2005 proposed PM NAAQS revision, EPA determined that it would be more appropriate to use this speciation profile for sources that primarily burn lignite coal, and to use an additional speciation profile for sources that primarily burn bituminous or subbituminous coal.

For purposes of the analyses for the new PM NAAQS, therefore, EPA decided to use a speciation profile for EGUs that burn primarily bituminous and subbituminous coal which estimated direct $PM_{2.5}$ emissions to be composed of 1.07 % primary organic carbon and 1.83% primary elemental carbon, for a total of approximately 2.9% carbonaceous emissions. EPA used both speciation profiles in the PM NAAQS analyses because they better represent the typical emissions resulting from combustion of the different types of coal used by EGUs nationwide, depending upon location.[3] As the petitioner notes, use of the alternate speciation profile reduces the estimated direct carbonaceous $PM_{2.5}$ emissions from many EGUs.

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[2] See, "Air Quality Designations and Classifications for the Fine Particle ($PM_{2.5}$) National Ambient Air Quality Standards," 70 Fed. Reg. 944 (Jan. 5, 2005). Docket item EPA-HQ-OAR-2003-0061-0001.

[3] See, "Interim Regulatory Impact Analysis for the $PM_{2.5}$ National Ambient Air Quality Standards", chapter 3, December 20, 2005 (http://www.epa.gov/pm/actions.html). The coal combustion profile (code 22001) used more widely for the PM NAAQS analyses is documented in the SPECIATE database for speciation profiles, version 3.2. See, http://www.epa.gov/ttn/chief/software/speciate/index.html for more information.

Notwithstanding this reduction, EGUs remain large emitters of carbonaceous $PM_{2.5}$ as compared to other individual sources. Moreover, the revision to the speciation profile for direct $PM_{2.5}$ emissions from EGUs did not result in substantially lower total emissions estimates, it merely reapportioned those emissions into different components of direct $PM_{2.5}$. The reductions in carbonaceous $PM_{2.5}$ particles were offset in large part by increases in the estimate of "crustal" particles from EGUs. These crustal particles likewise comprise emissions governed by the $PM_{2.5}$ NAAQS.

It should be noted that EPA is continuing to revise and update its emissions inventory information. For example, in the recently developed 2002 base year emissions inventory (which will be used for analyses to support national rulemakings and for $PM_{2.5}$ SIP planning purposes), EPA has further updated $PM_{2.5}$ speciation profiles for certain source categories. In this latest update, the revised profile for direct $PM_{2.5}$ emissions from EGUs that burn primarily bituminous and subbituminous coal estimates $PM_{2.5}$ mass as 3.16% primary organic carbon and 1.88% primary elemental carbon, for a total of approximately 5% carbonaceous emissions. (See Appendix B attached to this response for more detailed information on each of the speciation profiles for EGUs.)

In summary, the direct carbonaceous $PM_{2.5}$ emissions from EGUs did play a role in the designations process, and was a component of EPA's evaluation of the counties identified in the petition. The question raised by the petition is whether EPA should revise the designations for those counties because of the later revisions to the estimated emissions from EGUs.

II. Analysis.

The petitioner argues that the lower estimated emissions of direct carbonaceous $PM_{2.5}$ emissions from EGUs that result from using the alternative speciation profile compel EPA to reconsider the designations for 23 counties listed in the petition and any similarly situated counties containing EGUs. We believe that this conclusion is incorrect for the following reasons.

A. EPA relied on the best information available at the time the $PM_{2.5}$ designations process was conducted.

Throughout the designation process, EPA used the best and most up-to-date information available. As with any administrative action, however, EPA must make decisions on the information then available, even though information that later becomes available might support or detract from the decision in retrospect. In the case of the $PM_{2.5}$ designations, EPA had a statutory deadline requiring the Agency to promulgate the designations no later than December 31, 2004.[4] As a result, EPA was obligated to promulgate the designations based upon on the information available at that time.

[4] CAA section 107(d)(6)(B).

In making the $PM_{2.5}$ designation decisions, EPA relied upon many types of information to address a range of considerations recommended in its guidance. EPA used updated information throughout the designations process when such data was available. For example, EPA used updated air quality monitoring data throughout the process. The initial State designation recommendations due in February 2004 were necessarily based on air quality monitoring data from the 2000-2002 period. When EPA responded to the State recommendations in June 2004, however, EPA examined updated air quality data for the 2001-2003 period. At the end of the designations process, EPA also took into consideration air quality data from 2004, if States accelerated their evaluation and submission of that data to EPA prior to the effective date of the designations in April 2005.

Unlike air quality monitoring data, however, most of the types of information relied upon by EPA are not updated and revised, or reasonably susceptible to such updating and revision, on such a frequent basis. The information relating to speciation profiles for emissions sources and emissions inventories are among the types of information that are not susceptible to frequent reexamination and revision. The collection and evaluation of such information is a time and resource intensive undertaking that can only be addressed on a periodic basis. During the designations process, EPA relied on the 2001 base year modeling inventory, which at that time was the latest and most up-to-date nationwide emissions inventory available. This inventory was based upon information submitted to EPA by the States, and then reviewed and improved by the Agency through a comprehensive process. The emissions inventory information used for the designations process was thus the most reliable information available at that time.

EPA does not believe that a later revision to the estimated carbonaceous $PM_{2.5}$ emissions from EGUs necessitates a reconsideration of the $PM_{2.5}$ designations for several reasons. First, the mere change of any fact relied previously upon in an administrative decision does not, in and of itself, require reconsideration of the decision. At the time of the final $PM_{2.5}$ designations, EPA used information concerning direct $PM_{2.5}$ emissions from EGUs that was then the most current. At the time of its use, EPA believed this information to be correct. EPA's trust in the accuracy of this information is reflected in the Agency's use of the same data to support other Agency rulemaking efforts.

Second, EPA determined that it should revise the estimated carbonaceous $PM_{2.5}$ emissions from EGUs after the Agency's designation decisions in December 2004, and after the effective date of those designations in April 2005. EPA determined that it should use a different speciation profile for some EGU emissions later in 2005 as part of the overall emissions inventory used for technical analyses supporting the proposed revision of the PM NAAQS issued in December 2005. The petition thus raises issues concerning updated information that arose after the date of EPA's designation decisions.

Third, EPA notes that the updating of information is an ongoing effort for regulatory agencies. The later revision in EPA's estimates of direct $PM_{2.5}$ emissions from EGUs reflects the normal process of improvement and refinement of information used by the Agency. EPA believes that such updating and improving of information for ongoing purposes is necessary and appropriate, but is not always an appropriate basis to reconsider

past decisions. Such an approach would paralyze the administrative process and prevent any agency from fulfilling its obligations set forth by statute.[5]

Finally, EPA notes that updated $PM_{2.5}$ speciation profiles for EGU emissions will play an appropriate role in the development of state implementation plans (SIPs) for those areas designated nonattainment for the $PM_{2.5}$ NAAQS. States will use this updated information in developing an emissions inventory, in evaluating sources for controls, and in modeling for attainment by the appropriate attainment date. In this context, updated speciation profiles for direct $PM_{2.5}$ emissions from EGUs will assist States to focus control efforts in the most efficient and effective way. It does not follow, however, that updating a $PM_{2.5}$ speciation profile for a category of sources automatically means that such sources do not contribute to violations of the NAAQS in nearby areas for purposes of designations, nor that the emissions from such sources should not be taken into account in developing nonattainment area SIPs.

EPA concludes that it would not be appropriate to reconsider the $PM_{2.5}$ designations merely because the Agency has subsequently updated its estimates of emissions from EGUs. The Agency must make final decisions on the information available at the time of the decision; constant reevaluation of past decisions based upon subsequent information would paralyze the designations process and thereby preclude effective implementation of the NAAQS. We believe that this is a reasonable and well established principle. Absent compelling evidence that the change would have made a material difference in the designations process, we believe that the change is not a sufficient basis to reconsider the designations.

B. EPA did not base designations solely on the weighted emissions score.

Even assuming that a change in the estimated carbonaceous $PM_{2.5}$ emissions from EGUs might have affected EPA's assessment of emissions in a given county, it does not necessarily follow that this change would have materially affected the designation decisions. EPA believes that designation decisions should be based upon consideration of various forms of relevant information. Because the facts and circumstances of each geographic area differ, this assessment was necessarily and appropriately made on a case by case basis, taking into account a broad range of relevant information.

The emissions inventory, and the weighted emissions score methodology based on that emissions information, were an important part of EPA's evaluation of each area. Nevertheless, this metric was only one factor EPA used to consider pollutant emissions from a county, and emissions information was only one piece of the evaluation process. EPA also

[5] The petitioner asserts that EPA has made a "self-admitted error" based upon statements of an EPA employee at a public meeting. Even if these statements are quoted verbatim and are taken in proper context, however, the statements of opinion of an EPA employee in such circumstances do not constitute the official position of the Agency. More importantly, such statements do not negate EPA's determination in this petition response that it is not appropriate to reconsider the designations because of later revisions to the emissions estimates for direct carbonaceous $PM_{2.5}$ emissions from EGUs.

considered a range of information, including: (i) air quality data; (ii) population and degree of urbanization; (iii) growth rates; (iv) traffic and commuting patterns; (v) meteorology; (vi) existing controls on emissions sources; (vii) political and other boundaries; and (viii) topography.[6] In a given nonattainment area, some or all of these considerations played a role, and often one or more of these various considerations played a more important role. EPA's area by area evaluation of these various considerations is explained in the record for the designations.[7]

EPA agrees that emissions information for pollutants including SO_2, NO_x, and direct $PM_{2.5}$ was an important consideration in all of the counties containing EGU sources listed by the petitioner, but it was not the only factor that EPA considered. For example, the petition listed some counties that EPA included within designated nonattainment areas for a combination of reasons.[8] For all of the counties listed by the petitioner, however, EPA evaluated not only the weighted emissions score, but also other important considerations such as the magnitude of total emissions, the meteorology of the area, and the proximity of the emissions sources to the monitor registering violations of the NAAQS.[9] Thus, issues other than the precise amount of carbonaceous $PM_{2.5}$ emissions from the local EGU were important considerations.

EPA believes that the revised EGU emissions estimates for carbonaceous $PM_{2.5}$ would not negate the other factors and information relied upon by the Agency in the designations decisions. EPA therefore concludes that this change would not have materially affected the basis for the designations decisions.

C. EPA determined that emissions of SO_2 and NO_x from certain EGUs contribute to violations of the NAAQS in nearby areas and this information supported inclusion of the areas where such sources are located within the designated nonattainment areas.

Even if EPA were to reevaluate the designations in light of revised estimates of the carbonaceous $PM_{2.5}$ emissions from EGUs, we believe that this would have had no material effect on the need to include counties containing such sources within the designated

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[6] EPA has previously explained the relevance of each of these considerations. See, e.g., "EPA Technical Support Document for $PM_{2.5}$ Designations," Chapter 5. Docket item EPA-HQ-OAR-2003-0061-0611.

[7] See, e.g., "Technical Support for State and Tribal Air Quality Fine Particle ($PM_{2.5}$) Designations," December 2004 (the December 2004 TSD), and "Technical Support Document for $PM_{2.5}$ Designations – Supplemental Notice," April 5, 2005 (the April 2005 TSD). Docket items EPA-HQ-OAR-2003-0061-0612 to 0632, and EPA-HQ-OAR-2003-0061-0634.

[8] For example, EPA designated Hamilton County, Indiana, in the nonattainment area for Indianapolis, Porter County, Illinois, in the nonattainment area in Chicago, and Belmont County, Ohio, in the nonattainment area in Wheeling, based on a combination of reasons including high emissions, high population, and high VMT. See, December 2004 TSD at pages 6-263; 6-280; and 6-331. Docket item EPA-HQ-OAR-2003-0061-0611.

[9] For example, EPA designated Indiana County, Pennsylvania, in the nonattainment area for Johnstown, a portion of Randolph County, Illinois, in the nonattainment area for St. Louis, and Pike, Spencer, and Gibson Counties, Indiana, in the nonattainment area for Evansville, not only because of their high total emissions, but also because of the location of the sources, the topography, and meteorology in the respective areas. See, December 2004 TSD at pages 6-69; 6-256; and 6-275. Docket item EPA-HQ-OAR-2003-0061-0611.

nonattainment areas. In the 23 counties listed in the petition, and in any other counties EPA designated nonattainment that might be similarly situated, the EGUs are large emitters of both SO_2 and NO_x, both of which are chemical precursors to the formation of $PM_{2.5}$.

The counties and partial counties identified in the petition had average annual emissions of sulfur dioxide in 2001 of approximately 80,000 tons, and average annual emissions of nitrogen oxides in 2001 of approximately 30,000 tons. One of the counties identified had sulfur dioxide emissions of 191,000 tons, and another had nitrogen oxides emissions of 61,000 tons. Emissions in such large amounts often exceeded all other sources of SO_2 emissions combined in a given nonattainment area, and were large in comparison to those of other NO_x sources.[10] Therefore, EPA considered not only the weighted emissions score for counties with EGU sources, but also the magnitude of emissions of SO_2 and NO_x from those EGUs, when evaluating the counties for inclusion in nonattainment areas in which ammonium sulfate and ammonium nitrate comprised a significant percentage of the total $PM_{2.5}$ particle mass at violating monitors.[11]

To evaluate the general question of whether counties or parts of counties with large emissions sources should be included within $PM_{2.5}$ nonattainment areas, EPA also conducted a series of air quality modeling runs to evaluate the estimated impacts of representative EGUs on nearby violating monitors.[12] Three modeling runs were conducted: one "base case" simulating current air quality levels (1999 – 2003 average); one case in which eight geographically dispersed EGUs in the eastern U.S. were "zeroed out" (i.e., pollutant emissions were assumed to be zero); and one case in which 29 EGUs in the eastern U.S. (those identified in EPA's June 2004 letters to states as sources that EPA believed should be included within various nonattainment areas) were zeroed out. Both emissions reduction modeling runs evaluated the range of annual average air quality impacts associated with zeroing out emissions from EGUs of various sizes and located a range of distances from a

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[10] Among the counties identified in the petition, the possible exception to this rule is Hamilton County, Indiana. This county did not have SO_2 and NO_x emissions as high as the average SO_2 and NO_x numbers noted above, but it had the second largest population in the metropolitan area, had more absolute growth in population than any county in the area, and had the highest commuting and vehicle miles traveled rates of any county in the area. See, December 2004 TSD at page 6-280. In this case, even though this county had less overwhelming SO_2 and NO_x emissions levels, a number of other factors besides total emissions and the weighted emissions score were considered by EPA in making designation decision. EPA identified contributing counties for nonattainment status on the basis of the weight of evidence of all relevant factors and did not rely simply on the weighted emissions score. Docket item EPA-HQ-OAR-2003-0061-0611.

[11] We note that EGUs will be making significant reductions in both SO_2 and NO_x emissions through CAIR by the 2010 and 2015 compliance dates, but for purposes of designations the statute directs EPA to determine whether areas are achieving the NAAQS based upon current ambient data, and in the context of areas contributing to violations of the NAAQS, EPA therefore considered current emissions levels, or emissions levels reflecting reductions in emissions in the near term.

[12] EPA does not consider modeling a required step in the designations process for $PM_{2.5}$ given the other forms of information available, but it is a useful tool to address the general issue of whether large sources such as EGUs can contribute to violations of the NAAQS. The modeling analysis confirmed the Agency's conclusion that large sources of SO_2 and NO_x emissions in locations near violating monitors can contribute to $PM_{2.5}$ nonattainment, as contemplated in section 107(d)(1)(A)(i).

violating $PM_{2.5}$ monitor. (See Appendix C attached to this response for more details on this analysis.)

This modeling indicated that EGU emissions have significant impacts on $PM_{2.5}$ concentrations at nearby locations, as well as the significant regional impacts at longer distances found in other assessments.[13] When these runs are compared to the base case, one can estimate the impact of the individual sources on nearby nonattainment areas. The eight source run analysis showed that estimated annual average impact from these sources was significant, on the order of a 0.3 to 0.7 ug/m^3 $PM_{2.5}$ contribution to the nearest nonattainment area. Such an impact is notable, especially in an area that may be close to attainment of the NAAQS, e.g., within 1.0 ug/m^3 of attainment. The 29 source modeling run included sources with a wider range of sizes, and it suggested comparable impacts on nearby violating monitors. Significantly, these analyses evaluated annual average impacts, and it is therefore reasonable to assume that on certain days, local impacts from EGUs could be even higher.

EPA notes that it performed this modeling using the same emissions inventories for carbonaceous $PM_{2.5}$ from EGUs about which the petitioner has raised concerns. Thus, the modeling analysis used direct carbonaceous $PM_{2.5}$ emissions that were higher than if EPA were to run the model using the current speciation profiles for such emissions. Nevertheless, we believe that the modeling results still support the conclusion that EGUs contribute to violations of the NAAQS in nearby areas. Changes in the estimated carbonaceous $PM_{2.5}$ from emissions from EGUs would not affect the results of the analysis with respect to SO_2 and NO_x emissions impacts from these sources.

As explained in the original memo summarizing the modeling results, the air quality impacts from these sources to nonattainment areas included a large component of secondarily formed sulfate particles. This information was also conveyed in the map of "Annual Avg Sulfate Reduction" within the memo that graphically depicts the geographic distribution of modeled sulfate contributions from the eight sources, with a maximum sulfate contribution of 0.62 ug/m^3. Table 1 of that memo shows total $PM_{2.5}$ impacts in the nearby nonattainment areas, but it did not include information comparing the estimated contribution from carbonaceous $PM_{2.5}$ to that of sulfate and nitrate, which are secondarily formed pollutants that result from EGU emissions. In order to provide that specific information to the petitioner on an area by area basis, we are attaching to this response a table showing those specific values. (See Appendix D attached to this response.) The latter table shows that in the 2004 modeling analysis in which EPA zeroed out emissions of eight power plants, the contribution of non-carbonaceous pollutants such as SO_2 and NO_x to fine particle concentrations in specific nonattainment areas greatly exceeded the contribution of carbonaceous $PM_{2.5}$. Typically, the ammonium sulfate and ammonium nitrate particles

[13] See, "Memorandum, Air Quality Modeling to Assess Power Plant Impacts," from Brian Timin, OAQPS, dated December 17, 2004; and "Memorandum, Air Quality Modeling to Assess Power Plant Impacts," from Brian Timin, OAQPS, dated January 20, 2006 [sic]; Docket items EPA-HQ-OAR-2003-0061-0537 and 0732. Please note that the latter document was improperly dated and was entered into the docket on January 20, 2005.

accounted for 80% or more of the modeled impacts at the monitors.[14] Reductions in the estimated carbonaceous $PM_{2.5}$ emissions would not significantly affect these impacts.

The petition suggests, in effect, that counties with sources that have some of the highest $PM_{2.5}$ precursor emissions levels in the country do not contribute to violating monitors solely because EPA has lowered the estimated carbon emissions from such sources. EPA has determined that large sources of SO_2 and NO_x emissions such as EGUs contribute to ambient $PM_{2.5}$ levels in nearby areas with violating monitors, regardless of the precise amount of carbonaceous $PM_{2.5}$ emissions. EPA concludes that to exclude such counties from the designated nonattainment areas would be inappropriate.

D. Even if EPA recalculates the weighted emissions scores using the revised speciation profiles for EGUs, it would not materially affect the $PM_{2.5}$ designations.

As discussed above, EPA does not believe that the revised estimate of direct carbonaceous $PM_{2.5}$ emissions from EGUs provides a basis for reconsidering the $PM_{2.5}$ designations. Nevertheless, in order to evaluate the petition fully we have recalculated the weighted emissions scores for selected areas as requested.

To assess what difference the revised emissions estimates might have made in the weighted emissions scores at the time of the designation decisions, EPA has recalculated the weighted emissions scores using emissions information based on the revised speciation profile for $PM_{2.5}$ emissions from EGUs and has compared the new scores to those used by the Agency in the designation decisions.[15] This comparison indicates that use of the revised speciation profile would result in no significant change in the weighted emissions scores for the counties containing EGUs identified in the petition, and thus no material change in the relative contribution of the counties that EPA evaluated in each geographic area with a violating monitor for the $PM_{2.5}$ NAAQS.[16] (See Appendix E attached to this response for a spreadsheet showing the old and new scores and the resulting rank of counties in relevant metropolitan areas.)

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[14] EPA notes that the reduced estimate of direct carbonaceous $PM_{2.5}$ emissions was largely offset by reapportionment of those emissions to the category of "crustal" particles that are emissions that are also subject to the NAAQS and are therefore relevant for purposes of designations and SIP planning.

[15] Per the petitioner's request, EPA recalculated the weighted emission scores with emissions information based on use of the updated speciation profile 22001, which was used in the development of the 2001 base year inventory for the PM NAAQS. EPA notes that were the Agency to recalculate the weighted emission scores using the most recent updated speciation profile, the scores for the 23 counties would be higher. Thus, use of the most recent speciation profile would also confirm that there is no basis for reconsideration of the designations.

[16] EPA notes that the petitioner included Clark County, Kentucky, on the list of counties for EPA to reconsider. EPA did not include this county in the designated nonattainment area for Lexington, Kentucky. See, December 2004 TSD at page 6-208. In addition, EPA has already determined that the entire Lexington area attained the NAAQS based upon 2002-2004 data, and the area is currently designated attainment for the $PM_{2.5}$ NAAQS. See, "Air Quality Designations and Classifications for the Fine Particle ($PM_{2.5}$) National Ambient Air Quality Standards – Supplemental Amendments; Final Rule," 70 Fed. Reg. 19,844 (April 14, 2005). Docket item EPA-HQ-OAR-2003-0061-0634; see also, 40 CFR section 81.318.

EPA's analysis compared the county by county weighted emissions scores used in the 2004 $PM_{2.5}$ designations process to hypothetical weighted emissions scores recalculated using the 2005 PM NAAQS inventory data for carbon emissions. We conducted this analysis for the 23 counties located in 13 nonattainment areas listed in the petition. We believe that the list of counties constitutes a representative sample of the counties that could even theoretically have been affected by any change in the weighted emissions score for carbonaceous $PM_{2.5}$; therefore these results are indicative for any similarly situated counties. In this analysis, EPA has used the revised county-level emissions of carbonaceous $PM_{2.5}$ and inorganic $PM_{2.5}$, and has not changed the county-level emissions of SO_2 and NO_x in order to evaluate the effects of the revised direct carbon emissions estimates. This allows an analysis of what effect the revised estimates of carbonaceous $PM_{2.5}$ emissions from EGUs would have had at the time of the designations.[17]

In reviewing the spreadsheet, it is important to note that total $PM_{2.5}$ mass is generally comprised of carbonaceous emissions and inorganic emissions. The speciation profiles for various source categories apportion total $PM_{2.5}$ mass according to the five sub-categories of emissions listed in Appendix A. Thus, the emissions columns in the spreadsheet referring to "total carbon" include "primary organic aerosol" and "primary elemental carbon." The columns referring to "crustal material" include "primary sulfate," "primary nitrate," and "primary other inorganics." The use of the EGU emissions information developed for the 2005 PM NAAQS proposal resulted in a decrease in total carbon emissions and a similar increase in "crustal" emissions for most counties.

In the $PM_{2.5}$ designations process, EPA used the weighted emissions scores as an indicator of relative emissions strength and contribution to the nonattainment problem in each specific geographic area. Because this evaluation was very fact specific, there was no bright-line threshold employed whereby only a county with a score above a certain "threshold" would be included in a nonattainment area. Instead, EPA evaluated each area and each county on a case-by-case basis.

The weighted emissions score was one metric used by EPA to compare the counties within each area in relation to each other. For this reason, the last column in the spreadsheet compares the designated nonattainment area counties by rank of weighted emissions score using the two speciation profiles and resulting inventories. Of the 23 counties specifically identified in the petition, 17 had no change in rank order within the nonattainment area. Of the five counties that dropped in rank order (i.e., counties with a negative number in the last column), none of them had a reduction in the weighted emissions score of such a magnitude that the "new" score was well out of the range of scores of the other counties in its nonattainment area. For the remaining county, the rank order actually increased.

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[17] EPA notes that it would not now be appropriate to revise the designations in light of whatever emissions reductions or increases may have occurred for various pollutants subsequent to the $PM_{2.5}$ designations in December 2004, because that would be tantamount to reconducting the entire designations process. Such an approach would be contrary to the statutory requirement to have completed this process by December 2004, and would result in unwarranted delays in implementation of the $PM_{2.5}$ NAAQS.

We conclude from this result that even with the updated emissions estimates for carbonaceous $PM_{2.5}$ factored into the calculation, there is no reason to expect that any of the 23 counties should not be included within the designated nonattainment areas. This is consistent with EPA's previous conclusions using the earlier estimates of EGU emissions. Also, the fact that there is little or no change in the rank of the counties as a result of the smaller estimated carbonaceous $PM_{2.5}$ emissions confirms that other considerations played a large role in the weighted emissions score. With respect to EGUs, we believe that this confirms that as large sources of SO_2 and NO_x, and as smaller but still relatively large sources of carbonaceous $PM_{2.5}$ emissions, it is not unreasonable to conclude that emissions from the areas where EGUs are located contribute to nonattainment in nearby areas with violating monitors.

The petition also specifically identified Jefferson County, Indiana in the Louisville, Kentucky, nonattainment area as an example of a county worthy of reconsideration. The weighted emission scores for the five counties designated nonattainment in the area ranged from 51.5 to 7.3, with Jefferson County having a score of 11.2. The petitioner estimated that with a revised emissions estimate for EGUs, the Jefferson County weighted emissions score would change from 11.2 to 6.2 and would be "well within the category of other Indiana Counties that were designated by USEPA to be attainment." The spreadsheet attached in Appendix E shows that if the revised 2001 inventory (with an updated $PM_{2.5}$ emissions profile for EGUs) were used, in fact the scores for the five counties would range from 51.5 to 8.3, with the Jefferson County score being 8.3 and the next highest score, for Floyd County, being 8.9. Thus, even if EPA were to reconsider the designation of Jefferson County using the revised $PM_{2.5}$ emissions estimate for EGUs, EPA believes that the score for Jefferson County would still be of a magnitude that is consistent with the scores of other counties within the nonattainment area.

In addition, the weighted emissions score is just one metric considered by EPA in evaluating contributing counties. The magnitude of emissions from sources in the county was also an important consideration. For example, of the five counties listed in the petition that dropped in rank order within their respective nonattainment areas based on changes in the weighted emissions score, all had significant levels of SO_2 emissions at the time of designations, ranging from 40,000 tons per year (for Jefferson County, Indiana) to 97,000 tons per year (for Coshocton County, Ohio). Thus, even if there is any change in county rank premised upon a revised speciation profile and the resulting revised estimated carbonaceous $PM_{2.5}$ emissions, the magnitude of SO_2 and NO_x emissions from those sources is such that inclusion within the nonattainment area was still reasonable and appropriate.

Based upon a comparison of the weighted emissions scores EPA used for the December 2004 $PM_{2.5}$ designation decisions to the hypothetical revised weighted emissions scores using the updated estimates of carbonaceous $PM_{2.5}$ emissions, EPA does not believe that the change in the estimated emissions from EGUs is of such a magnitude that it would have affected the outcome of the $PM_{2.5}$ designations decisions. Therefore, EPA concludes that even if it were to reconsider the designations using the revised speciation profiles for EGUs, that it would not make a material difference in the designations process.

E. EPA appropriately took into consideration only near term emission reductions that were certain to occur in its evaluation of areas that contribute to nonattainment, not all potential or projected future emission reductions.

The petitioner asserted that a change in the estimated carbonaceous $PM_{2.5}$ emissions from EGUs would make the weighted emissions score "more sensitive to changes in SO_2 and NO_x emissions." The petitioner noted that emissions reductions will occur as a result of future controls "in response to CAIR and the NO_x SIP call, among other programs." Therefore, the petitioner asked EPA to reconsider the effect of expected future controls on SO_2 and NO_x emissions from EGUs.

We reiterate that EPA made $PM_{2.5}$ designation decisions based upon current ambient air monitoring data, not future projected attainment after installation of emissions controls. For example, EPA did not designate an area presently violating the $PM_{2.5}$ NAAQS (based upon 2001–2003, or 2002–2004 data) as "attainment" premised upon emissions reductions that we project will occur after full implementation of the 2010 or 2015 phases of the CAIR. The definitions of attainment and nonattainment provided in section 107(d)(1)(A) are phrased in the present tense, and therefore EPA has designated as nonattainment those areas that were violating the NAAQS based on the then current monitoring data.

In the context of determining what areas contribute to $PM_{2.5}$ levels in nearby areas violating the NAAQS, however, EPA considered the level of emissions from sources in such areas and, in appropriate circumstances, took into account near term emissions reductions that were certain to occur at such sources. Thus, in the $PM_{2.5}$ designations process, EPA did consider emissions controls on specific plants that were not installed at the time of designation, but for which there existed a federally enforceable provision requiring installation of state of the art emissions controls (e.g., scrubbers for SO_2 and selective catalytic reduction for NO_x) by January 2009.[18] The CAA requires that nonattainment areas attain the NAAQS "as expeditiously as practicable," but no later than five years following designation, i.e., April 2010. For areas to attain at least by the presumptive attainment date of 2010 (based on 2007-2009 air quality data), EPA reasoned that reductions are needed no later than the beginning of the 2009 emissions year in order to observe adequate improvements in air quality. In order for EPA to be able to rely on the projected emissions reductions, such federally enforceable agreements needed to be in place by the time that EPA was required to promulgate the designations in December 2004.

In addition to general statements about the impacts of future control measures, the petitioner also specifically identified certain control measures that would result in emissions

[18] For example, EPA took into consideration emissions reductions of both NO_x and SO_2 at a specific source located in Kenosha County, Wisconsin, when federally enforceable documents were in place to ensure that emissions controls for both pollutants were certain to occur in the near term. See, December 2004 TSD, Region 5 response to comments, docket item EPA-HQ-OAR-2003-0061-0625. By comparison, EPA declined to take such emissions reductions into account when they were uncertain or too late to be relevant for consideration. See, e.g., Letter dated January 20, 2006, from EPA to Paul E. Guterman, pertaining to the petition for reconsideration of Dynegy Midwest Generation, Inc. Docket item EPA-HQ-OAR-2003-0061-0739.

reductions at the Clifty Creek plant located in Jefferson County, Indiana. The petitioner noted that selective catalytic reduction controls were installed at that plant on Units 1 through 5 in 2004. These reductions are relevant, and constitute a good step towards achievement of the NAAQS in this area, but EPA does not believe that such NO_x emissions reductions alone are outcome determinative in this instance. The petitioner also specifically noted that there is a commitment to install scrubbers for SO_2 removal at the Clifty Creek plant that would commence operation in 2010. However, this latter commitment was not announced before the designations process was finalized in December 2004, and therefore could not be taken into consideration. A press release announcing a commitment to complete installation of the scrubbers and begin operation in 2010 was issued well after the designations process was finalized, in May 2006.[19] In such circumstances, EPA believes that the evaluation of the timing and level of emissions control at such a source is more properly a matter for consideration during the State's development of the nonattainment area plan for this area, and EPA's evaluation of such plan. The State of Indiana may ultimately conclude that this source is sufficiently controlled, consistent with the requirements of the CAA and applicable regulations, but it would be premature and inappropriate for EPA to make such a judgment at this point.

Finally, the petitioner suggested that use of revised carbonaceous $PM_{2.5}$ emissions estimates for EGUs would necessarily make the weighted emissions score more sensitive to SO_2 and NO_x emissions reductions. As discussed above in connection with the recalculation of the weighted emissions scores, the use of the updated speciation profile and the revised emissions estimates in the calculations did not result in material changes to the weighted emissions scores, and did not result in material changes to the rank of the areas containing EGUs in the analysis of each nonattainment area. Thus, EPA concludes that the changes in the estimated carbonaceous $PM_{2.5}$ emissions from these sources were not sufficient to make a significant difference, even taking into account the adjustments that EPA already made for relevant changes in SO_2 and NO_x emissions.

III. Conclusion.

Based upon the foregoing analysis, we believe that the petition for reconsideration should be denied. The potential seriousness of the issue raised in the petition has caused us to examine this matter closely. Nevertheless, after evaluation of the issue, the Agency believes that the designation decisions for the $PM_{2.5}$ NAAQS remain correct, for the reasons discussed above.

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[19] Press release issued by The Ohio Valley Electric Corp. (OVEC) and its subsidiary, Indiana-Kentucky Electric Corp. (IKEC), May 11, 2006. See http://www.ovec.com/News%20Release%205-11-06%20OVEC-IKEC.pdf.